Development Planning and Multi-purpose Resource Centre Proposal for Wesha and Ndagoni communities, Ras Mkumbuu, Pemba, Tanzania 2011

Eco Africa

ASCLME
Agulhas and Somali Current Large Marine Ecosystems Project

UNDP

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Caveat

The current document is a work in progress. Many people contributed to its production by way of field trips, and through providing diverse information or other input. Most importantly, the local communities and stakeholders gave extensive input through open community meetings as well as more specific planning sessions. The document provides a solid foundation on which to base further planning and implementation, as it captures the needs and aspirations of the local community. The document is not perfect and can be expected to evolve as circumstances change and more parties become involved, and make further changes to it. That is why it is labelled “Version 1”.

List of Acronyms

ASCLME	Agulhas and Somali Current Large Marine Ecosystem
BOQ	Bill of Quantities
CV	Curriculum Vitae
DLIST	Distance Learning and Information Sharing Tool
GEF	Global Environment Facility
LED	Local Economic Development
MACEMP	Marine and Coastal Environment Management Project
MICA	Misali Island Conservation Association
MPRC	Multi-Purpose Resource Centre
NGO	Non-Governmental Organisation
PECCA	Pemba Channel Conservation Area
SSB	Stabilised Soil Block
TCEI	The Clean Energy Initiative
TZS	Tanzanian Shilling
UNDP	United National Development Programme
UNIDO	United Nations Industrial Development Organisation
WB	World Bank

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Proposal for Multi-purpose Resource Centres – Ndagoni and Wesha in Ras Mkumbuu, Pemba

1. Introduction

The Zanzibar Archipelago has two main islands - Unguja and Pemba. The peninsula of Ras Mukumbuu is located in the centre of the west coast of Pemba, the lesser known of the two sister islands of Zanzibar. The west coast of Pemba is full of small islands, bays, lagoons and the shores are covered with dense mangroves. Around the islands there are rich coral reefs with high diversity of both fish and corals. Ras Mkumbuu is located in the Chake Chake Bay, which is relatively shallow and covered by dense seagrass meadows. The run-off from land makes water in the bays quite murky and the high sediment load makes this area less suitable for coral growth. It is nevertheless a region with very rich marine resources and the communities living here rely heavily on the marine resources, using traditional methods to collect shells, molluscs and other marine resources at low tide. The ideal location, with Misali Island just in front of the bay also supports a large group of artisanal fishers in the area. The entire west coast of Pemba was declared a Marine Conservation Area in September 2005 – the Pemba Channel Conservation Area (PECCA). Mangroves follow the coast lines, and some local mangrove planting initiatives have been quite successful.

Ras Mkumbuu is relatively near the main town and the airport in Chake Chake. It is a narrow peninsula with some subsistence farming of cassava, mangoes and other basic food items. The main source of protein for the people in this area is from the sea in forms of fish and molluscs collected in the intertidal area at low tide. On Ras Mkumbuu there are many small villages, and the peninsula is divided into two Shehias (districts) – Wesha and Ndagoni. The main village in Wesha is located near the old power generator in the bottom right corner of Map 1 and the Ndagoni Shehia covers the villages further out on the peninsula. Ndagoni is more isolated than Wesha due to limited accessibility on the poorly maintained dirt road. Other points of interest on Ras Mukumbuu are the historical sites (ancient ruins that are believed to be one of the first mosques in Pemba) at the very tip of the peninsula, the “sunken” road running from the north east of the tip of the peninsula, just by the old ruins. The villagers talk about a sunken city that disappeared into the sea when an earthquake occurred a long time ago, but no evidence has so far been found to proof this legend. This makes the area very interesting also from a heritage perspective and possibilities for community based cultural tourism.

Map 1: Overview of the Ras Mkumbuu peninsula

1.1. The DLIST ASCLME project

Local communities are easily overlooked in large-scale planning processes and to avoid this in the Agulhas and Somali Current Large Marine Ecosystem Project (ASCLME, www.asclme.org), the communities will be involved already in the planning phase thanks to the implementation of a tried and tested community empowerment and outreach tool – the Distance Learning and Information Sharing Tool (DLIST). The two neighbouring Shehias of Wesha and Ndagoni have been selected as the demonstration site for this regional DLIST ASCLME Project (www.dlist-asclme.org). The Project is aiming at involving the local stakeholders, the main resource users, in making a plan to achieve more sustainable use of the marine and coastal recourses in the region. DLIST focuses on communication and stakeholder involvement and works with the communities on the ground to create a plan for how they can reach a better future and more sustainable resource use. All the countries along the East African coast (South Africa, Mozambique, Tanzania, and Kenya) and the Indian Ocean Island states (Comoros, Seychelles, Madagascar and Mauritius) are part of the project.

Figure 1: Women agreeing to be part of the DLIST ASCLME project at a meeting in Wesha

Each country has one demonstration site, except Tanzania where there is one on the mainland (Kilwa) and one in Zanzibar (Ras Mkumbuu in Pemba).

2. Objective

The Objective of this proposal is to provide support to the communities according to the weaknesses and opportunities they have identified in the DLIST planning process (see table 1 and 2). The suggested Multi-Purpose Resource Centres (MPRC) will improve the lives of thousands of people in these remote and marginalised communities, by addressing many of the issues and alternative livelihoods options identified by the communities. The proposed MPRC will address food security issues and give people a better chance to adapt to the environmental changes caused by climate change. The two communities identified lack of reliable water supply as their main weakness. This issue will be addressed by the Zanzibar Water Authority in the near future when new water pipes will be installed in this area, see Figure 2 for further details. Also the issue of lack of electricity supply was identified as a high priority problem. The new underwater cable which supplies electricity to Pemba has recently been installed and the cables pass right through the Ras Mkumbuu peninsula. To connect the two communities to the power line is part of this proposal, even if the two proposed MPRCs will contain elements of renewable energy supply systems.

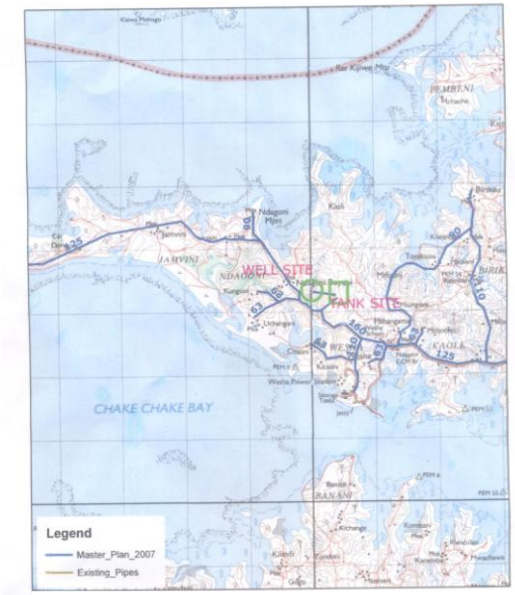


Figure 2: Map over the planned extension of the water pipe system in the Ndagoni village area

The two communities have identified slightly different needs and therefore the two MPRCs will be somewhat different in terms of the services they provide and the features they have.

In the Ndagoni Shehia, the community groups and the planning committee identified lack of a health facility as the second biggest obstacle to development. Other issues were lack of ideas and training for improved agricultural techniques, lack of funds for initiating small businesses, lack of a community meeting room, no clean and suitable market area for agricultural products, lack of awareness in environmental issues and also problems with destructive and illegal fishing being practiced.

The community and the planning committee in Wesha on the other hand ranked environmental problems such as tree cutting, pollution and low awareness about environmental issues as their second highest priority. It should be pointed out that Wesha already has a small health care facility centrally located in the village. Other issues that were also mentioned in Wesha were lack of good agricultural practices, lack of efficient fishing gear, and political conflict.

3. Methodology

The DLIST team first visited Pemba to meet with the communities in January 2010, when the aim of the project was clearly explained and the community members decided that they wanted to take part. During the second community visit, which was arranged in March 2010, a Local Economic Development Planning exercise was initiated. As part of this process the different groups of stakeholders were identified in the village and interviews were conducted with these groups to collect their input to the LED plan in terms of identifying the weaknesses they are experiencing in their village, what opportunities they see for the future and also to create a vision for the future of the village. Figure 3 shows an overview of the LED process, how it was presented to the communities. Additional site visits to elaborate the details of the proposed MPRCs have been conducted in June/July and August 2010.

3.1 Community identified challenges and opportunities

The community based stakeholders include the different committees that exist in the village such as the Sheha's committee, the environmental committee, the health committee, the development committee, the fishers' committee etc. Each of the communities also selected a group of elders and a group of young/students to take part in the planning exercise. Overall women were well represented in the different committees ensuring gender equality in the planning process. In Pemba there is an NGO called Misali Island Conservation Association (MICA) that has been very active in the villages in this area, assisting with mangrove planting projects etc and they have established committees in both villages. All of these groups/committees contributed to the planning process by identifying issues/weaknesses, opportunities and alternative livelihood options as well as by giving their idea for a future vision for the community.

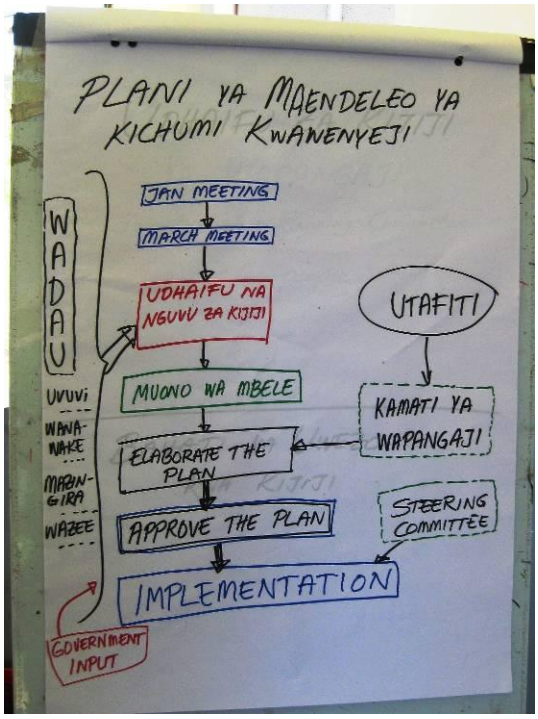


Figure 3: Overview of the LED planning process with the DLIST community in Pemba

More than 200 people from the two villages were present at the DLIST meeting in March and together they identified issues/weaknesses such as lack of clean water, inadequate health facilities, bad roads leading to limited access, beach erosion which in some cases has lead to salt water intrusion in low land rice paddies, declining fish catches resulting in lack of food and unreliable food security in the area. Insufficient education (many of the women are illiterate), low awareness about environmental and health related issues, absence of a clean and central market area where produce can be stored, bought and sold as well as lack of access to modern techniques for farming and fishing were also identified as issues that

affect the lives of the people in the communities to a large extent. The main weaknesses and alternative livelihood options that were identified were also ranked in order of importance by the selected planning committees. An overview of the ranked weaknesses and alternatives are found in Table 1 and 2.

Table 1: Weaknesses identified by the communities ranked in order of importance

Rank	Wesha	Ndagoni
1	Water – there is insufficient and unreliable source of piped/tap water. People often rely on traditional ground wells.	
2	Environmental problems – issues of reckless tree cutting, oil spills and sewage discharge exacerbate water pollution caused by lack of proper toilet/sanitary facilities	Healthcare facilities – rely on an insufficiently operating clinic at Wesha or even beyond to Chake Chake.
3	Lack of agriculture implements/inputs – subsistence farming rely only on traditional practices with yearly reduced farm productivity	Lack of capital stocks/funds for small businesses and alternative livelihoods activities.
4	Lack of equipment for efficient fishing – with the traditional boats and gear that limit fishers' access to the open sea for pelagic species.	Lack of agriculture implements/inputs – subsistence farming rely only on traditional practices with yearly reduced farm productivity.
5	Insufficient school and healthcare facilities including boarding facilities for secondary schools.	Lack of equipment for efficient fishing – with the traditional boats and gear that limit fishers' access to the open sea for pelagic species.
6	Lack of capital stocks/funds for small businesses and alternative livelihoods activities	Illegal and destructive fishing.
7	Political oppression and conflicts – though this is a very big challenge to the economic development it was put the least important because the committee deemed it difficult for an economic development initiative to solve.	Insufficient school facilities, there is neither secondary school nor nursery school.
8		Lack of environmental awareness and education – specifically on issues such as tree cutting and sewage pollution.
9		Poor road infrastructure – This was mentioned as big problem especially during rainfall. At rainfall period they use sea transport which is also dangerous during southeast season (rain season) due to harsh condition. This is a very big challenge, but was not put on the top list because it needs cooperation with the government to build a road – difficult to implement by this project
10		Political oppression and conflicts – though this is a very big challenge to the economic development it was put the least important because the committee deemed it difficult for an economic development initiative to solve.

Table 2: Opportunities and alternative livelihoods options identified and ranked in order of potential, according to the planning committee of each respective community

Rank	Wesha	Ndagoni
1	A central market for agricultural products will boost local business in the village. People who want to sell things will rent spaces.	A grinding/processing machine for cereals and cassava. A community committee/group would be formed and given charge of the project.
2	Poultry farming, both local free range chicken for meat and layers for eggs.	
3	Fish farming	
4	A nursery school will be a good initiative and business too.	A central market for agricultural products will boost local business in the village. People who want to sell things will rent spaces.
5	Vegetable farming, with good tools, fertilisers and training (onions, carrots, cabbage, green peppers, tomatoes).	
6	A community hall for meetings and ceremonies hall – a local committee would be formed to manage the hall.	Improved seaweed farming.
7	Handicraft and jewellery for local as well as tourists. Develop Ras Mkumbuu old cemetery and other historical land marks for tourism promotion.	
8	Tree planting programmes for community/household woodlots both for income and household consumption. This could also ease the reckless cutting on natural mangroves and other terrestrial forests.	Cassava processing into various products. They grow lots of cassava, therefore there is a need to find a way of improving cassava products for business.
9	A grinding/processing machine for cereals and cassava. A community committee/group would be formed and given charge of the project.	Beekeeping in mangroves would be good for the village, while ensuring conservation.
10	Beekeeping in mangroves would be good for the village, while ensuring conservation.	Tailoring. Training is needed

The communities in Wesha and Ndagoni are struggling to get by, and with the added pressure caused by climate change (coastal erosion, disrupted rain patterns, coral bleaching etc), deteriorating resource base, rapid population growth and inadequate basic infrastructure such as access to electricity, reliant water supply, access to health facilities and schools, their situation calls for urgent action. To address the issues of low community health, climate change impact, poor health and food security, inadequate access to clean water and sanitation, and low levels of literacy (particularly among women) and low environmental awareness – a truly innovative approach is called for, to reach maximum output with limited funding.

Figure 4: The DLIST team interviewing a group of elders in Ndagoni Shehia to get their input to the LED plan

3.2 How the situation could be improved

The identified weaknesses and alternatives were discussed with the team of people involved in the March field trip and it was agreed that one possible way to address many of the identified issues, would be to construct a so called Multi-Purpose Resource Centre for each of the communities. This idea was further discussed with other experts in development projects, such as Professor Francois Odendaal. He has been involved in similar development project all over eastern and southern Africa and has given much input to the idea of constructing MPRCs for the two communities.

Figure 5: Ndagoni community members looking at the suggested construction site with Architect Karel Bakker from Pretoria University

The team went back to the sites in the end of June/beginning of July to present the idea of the Multi-Purpose Resource Centre to the communities (see Figure 5). The project idea was very well received

by the planning committees and the communities were eager to contribute with their ideas for how and where the centre could be built. It was also during this trip that the details of what features should be included in the centres were discussed. The two Centres will be slightly different as the needs in the two areas differ. During this visit the team was accompanies by an experienced architect who made draft site plans that are found below in Figure 9, 10, 12 and 13.

4. A Multi-Purpose Resource Centre

A so called "Multi Purpose Recourse Centre" (MPRC) is a building complex which contains a number of different facilities and services depending on the setting and the needs of the community that will use it. The detailed plan for what each centre should contain has to be made together with the community members and they will also select the locality for the construction. Preferably it should be located in a central place where as many people as possible have easy access. The MPRC is not only a building, but it is a service centre where activities will take place that will contribute to the development of the community. The Centre should be managed by a local project team which could be the same group that have already been involved during the development phase (the DLIST planning committee, see Table 3) with support from a advisory committee with members from the community and other relevant parties (for example the Ministry of Health, The Ministry of Agriculture, the Ministry of Education, EcoAfrica team members). The local project team should be responsible for collecting fees from people who rent market stalls, shops and the ones who rent the meeting venue for celebrations, meetings and courses. This will contribute to make the centre self sustained after a few years of operation and hopefully enable it to carry the costs for renovations etc. More detailed information about the structure of the MPRC management is found under section 5 (Project implementation and partners).

Table 3: DLIST Planning Committees in Wesha and Ndagoni

WESHA	GENDER	NDAGONI SHEHIA	GENDER
Ashura Mohamed Saidi	F	Nunuu Ali Juma	F
Abdalah Mohamed Juma	M	Asina Hamis Abdallah	F
Hashife Mohamed Juma	F	Mafunda Omar Rashid	F
Mafunda Fundi Saburi	F	Juma Saleh Omar	M
Hadija Suleiman Omar 0776-122125, hadija.omary@yahoo.com	F	Mohamed Manga Hamadi (0773-175837)	M
Waziri Abubakar Waziri	M	Ali Juma Ali	M
Seleman Juma Hamisi	M		
Elder Representatives			
Musa Hamisi Hija	M	Sheha Kahtan Khamis	M
Hatima Hamisi Maarufu	F		
Yusuph Hamad Omar	M		

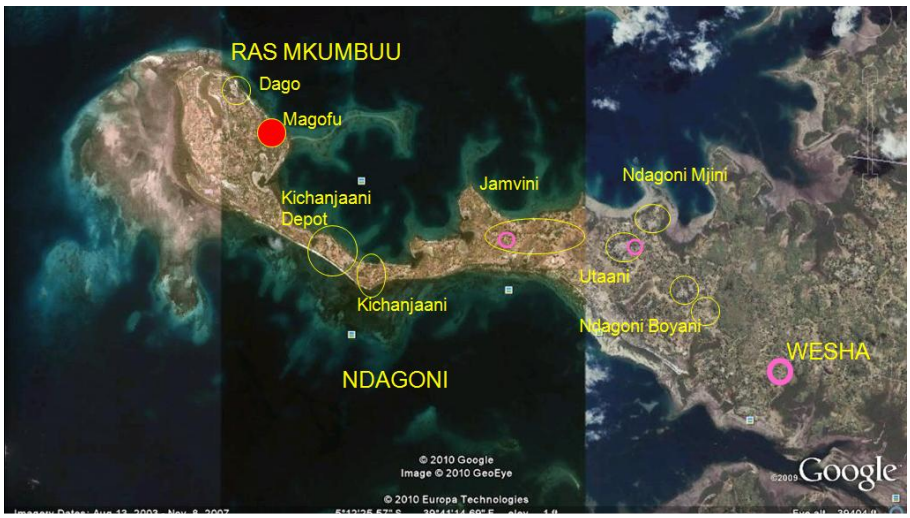


Figure 6: Map of Ras Mkumbuu showing the villages and the proposed sites for the MPRCs in Wesha (big pink circle) and Jamvini and Utaani in the Ndagoni Shehia (two small pink circles)

Two possible sites were suggested for the construction of the MPRC in Ndagoni (see Figure 6). One site is close to the village where the Sheha (the community leader) lives, in Utaani. The other site is next to the school in the west side of the village of Jamvini. After some discussions with the community members it was agreed that the construction would benefit people more if it was situated further out on the peninsula and near the school, so the final decision favoured the Jamvini option. Also in Wesha, the proposed site is next to the school. This will ensure that the centre will benefit also the students and teachers of the schools, by giving easy access to the computer and library facilities that have been requested as one part of each of the centres. Overview maps of the selected sites are found in Figure 8 and 11 below.

To promote the use of sustainable and environmentally friendly technologies, both centres should also be equipped with rain water harvesting equipment and solar and/or wind power. Both communities have also identified the need for a big community meeting hall as an important need and this should be included in the MPRC. Another issue identified by both communities is the need to further education and training in specific topics such as improved agricultural techniques, environmental and health awareness etc. Therefore both MPRCs should be fitted with one or two smaller meeting/seminar rooms where adult training and smaller group meetings can take place. It is also very important that the centres are equipped with good toilet facilities to improve the sanitation situation in the villages.

Figure 7: A solar drying facility in Ndagoni, recently funded by UNIDO

Both communities have also identified the need for a market area and some small shops as a major opportunity for good development. The market area should be small and simple and give people a space to sell their produce in a hygienic environment with access to cool storing facilities and clean water. The planning committees further identified the need for a “drying oven”

where small fish, fruits and other food items can be dried even during the rainy season to increase the capacity to store food for times when access to fresh produce is limited. A small drying oven could be built in with the village centre and powered by a renewable energy system. When the team were back for the third visit in June/July 2010 the Ndagoni community had just received funding from UNIDO for construction of a small solar dryer and a drying oven for anchovies, so this was removed from the plan for the Ndagoni Centre. For the MPRC in Wesha this remains one of the important features that will be included as part of the overall design. More detail on the solar drying hub for Wesha is found in Appendix 1.

Ndagoni is located further out on the Peninsula and has extremely limited accessibility to health care facilities. Therefore, the Multi-Purpose Resource Centre would contribute even more to the welfare of the community if it was also equipped with a small clinic and a dispensary. The community has identified the need for a maternal ward as extremely important and this is therefore included in the current proposal.

Wesha and Ndagoni are also ideally located for people who want to visit the heritage site of Ras Mkumbuu. The Department of Antiquities want to develop the heritage site and there is a plan for involving the local communities in tourism activities on the site. If the MPRCs are constructed in the appropriate manner, they can also serve as visitors' information centres where tourists can meet with their local heritage guide and read about the history of the site before they continue the journey out to the ruins. Table 4 gives an overview of the features and activities for each of the MPRCs.

Table 4: Overview of the features for each Multi-Purpose Resource Centre

Wesha	Ndagoni
Big community meeting hall	Big community meeting hall
Small meeting and training rooms	Small meeting and training rooms
Toilets	Toilets
Market area and small shops with a food stall	Market area and small shops with a food stall
Computer room and library	Computer room and library
Tourist information centre	Tourist information centre
Drying oven and a mill/grinder machine	Clinic and maternity ward
Rain water harvesting and storage facilities	Rain water harvesting and storage facilities
A sustainable energy solution (solar power seems more suitable)	A sustainable energy solution (wind power seems more suitable considering the location on a high hill)

The planning committee in Wesha suggested also other activities that they would like to address. For example they have identified the need for a veterinary clinic and a big storage facility for agricultural products. Due to the nature of these activities it was decided that they don't fit very well together with the options mentioned in Table 4, and they should better be addressed separately.

In Ndagoni the points listed in Table 4 were the main priorities, but they also wish to get a nursery school for the community at some point. Due to the size of the available land and the location next to the main road it was agreed that the nursery school should not be included in this initial proposal, but should be addressed separately. It might be possible for

the community to construct a small nursery school somewhere at the back of the existing school building at a later stage.

4.1 The MPRC in Wesha

During the visit in June/July 2010 in Wesha, the planning committee and the DLIST team visited a few possible sites where the MPRC could be constructed. For many reasons the available land in front of the school was selected as the most suitable area (see Figure 8).

Figure 8: The proposed plot for construction of the MPRC in Wesha, next to the existing school

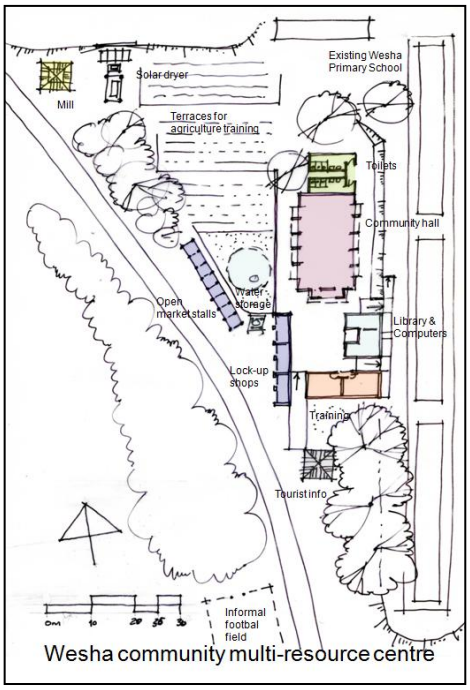


Figure 9: Site plan for the MPRC in Wesha, next to the existing school

This area was chosen because it is centrally located in the village and it is near both the school and the clinic – i.e. most of the villagers spend a lot of time in this area. When considering the aspects of a market and a tourist information site, it is also ideally located next to the main road and the junction where people turn off to go towards the heritage site in Ras Mkumbuu.

Based on the features of the proposed site, Professor Karel Bakker made an initial site proposal (see Figures 9 and 10). The proposal is based on the features identified by the community and the planning committee in the planning exercises, and also fitted to the existing available land. Fatma Khelef has also produced draft detailed drawings of the buildings in the Wesha MPRC. These are found in Appendix 4.

This proposal contains a small tourist information centre at the bottom, market stalls and small shops next to the road, small meeting rooms (pink) and a computer room with a library (light blue) close to the school. A big community hall (purple) and toilets (green) are located at the centre. The existing agricultural fields in the slope between the road and the school have been kept in place and can be used for experiments and practical training for future training activities in improved agricultural techniques. There is a rain water storage facility placed at the lowest point. Far away from the school class rooms and close to the road for easy access, the mill and the drying oven have been placed.

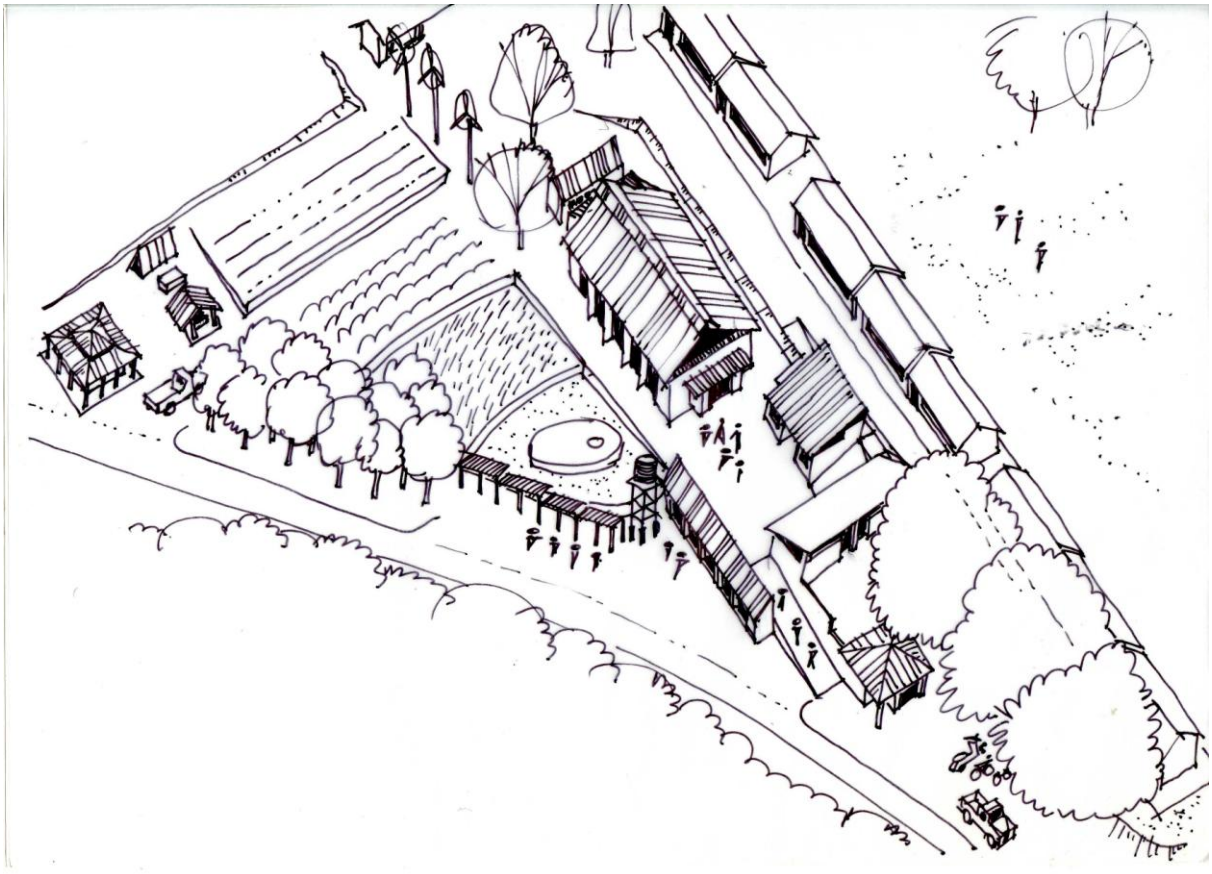


Figure 10: Initial site plan for the Multi-Purpose Resource Centre in Wesha

4.2 The MPRC in Ndagoni

In Ndagoni there were initially two different plots suggested for the construction. After discussions with the planning committee, Sheha and community members all agreed that the site next to the existing school in the west side of the village of Jamvini would be the most suitable place (see Figure 11). The selected land is ideal because it is situated next to the school and gives easy access for students and teachers to utilise the computer and library facilities as well as the big meeting hall. The plot is also next to the main road, which makes it ideal for the market and shops. The central location on the peninsula also makes is a fair location for most inhabitants for a new clinic. It will significantly reduce the distance that people have to travel to seek medical care compared to today's situation.

Figure 11: coordinates and outlines of the selected plot in Jamvini, Ndagoni Shehia

Based on the size and features of the selected plot, Professor Karel Bakker made an initial site plan proposal (see Fig 12 and 13). This plan includes all the features and ideas that the community have wished to include in the MPRC. From the left side (closest to the school) the centre has a computer room and a small library, in light blue. Next to the computer room are two small training/meeting rooms in pink. After that comes the toilets (green) and the big meeting hall is centrally located. Next to the road are the market and shops and also a small area for a food stall/restaurant as well as the tourist information centre. On the right side (yellow) is the proposed clinic area with an open waiting area, and a dispensary. The proposed maternity ward is at the back side of the clinic and there is also room for a small doctors/nurse apartment in the centre.

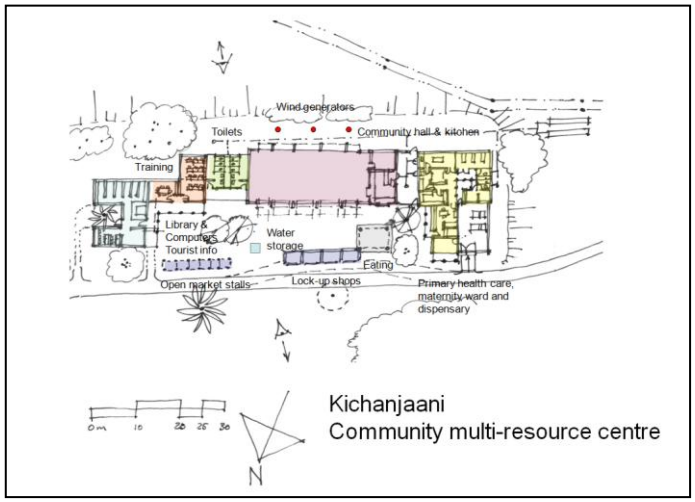


Figure 12: Site plan for the proposed MPRC in Ndagoni

In the middle of the open ground are the proposed water storage tanks and behind the big meeting hall it is foreseen that the wind power mills can be located for maximum efficiency.

The land papers for the proposed plots are attached in Appendix 3 (Ndagoni and Appendix 4 (Wesha).

Detailed drawings for the buildings in the proposed MPRCs have been developed by a Zanzibari architect, Ms Fatma Khelef. Funding for her involvement was provided by Danida. The constriction drawings are attached in Appendix 5.

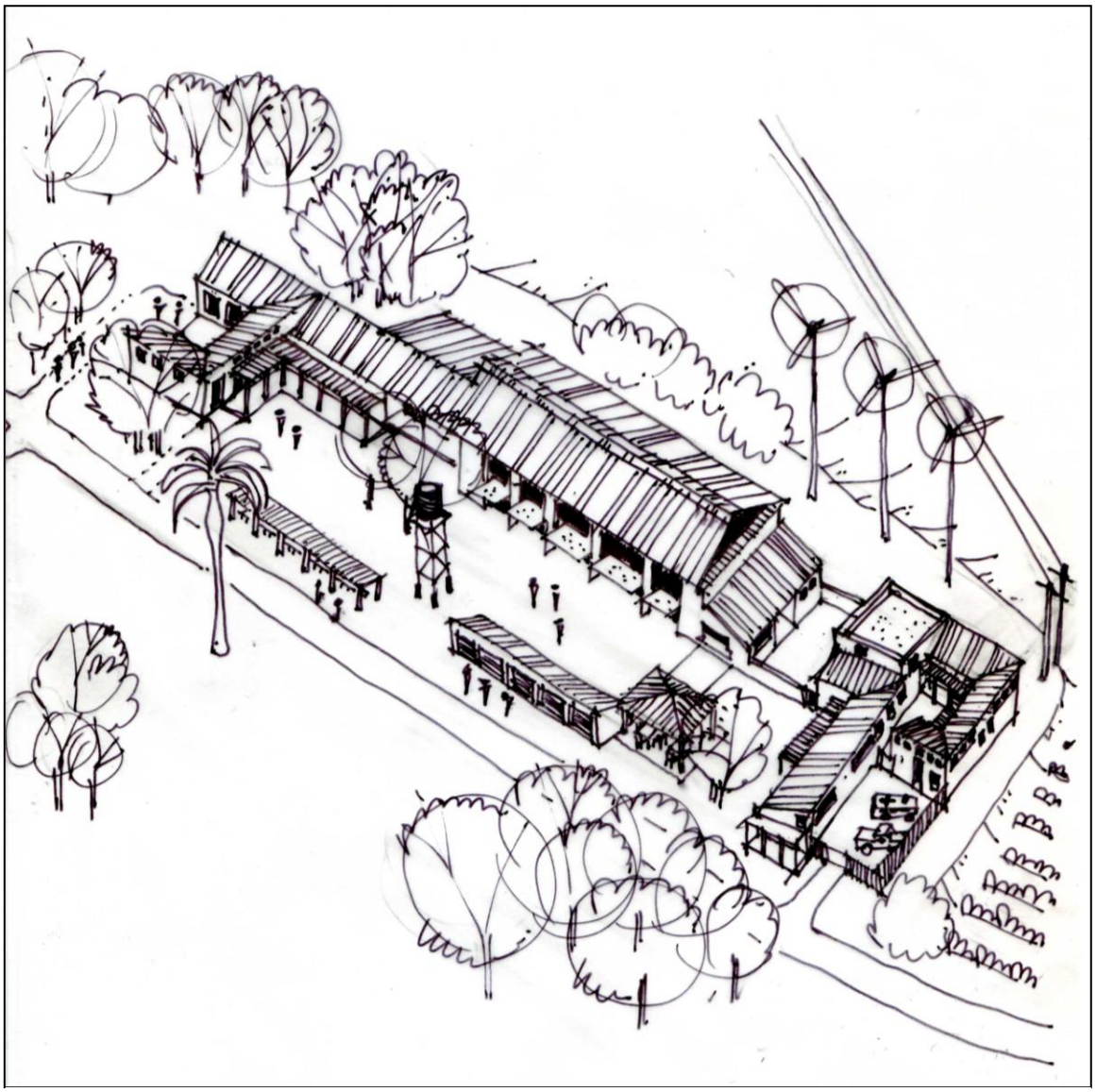


Figure 13: A three-dimensional overview of the proposed Multi-Purpose Resource Centre in the Ndagoni Shehia, situated in the western part of the Jamvini village, next to the existing school

5. Project implementation plan and partners

An overview of the proposed implementation of the different steps to complete the Multi-Purpose Resource Centres is seen in Table 5 with more detailed descriptions following below. These will all be initiated in the first year, during the MPRC establishment and are hence described more in detail.

Table 5: Overview of the steps to be undertaken to implement the proposed Multi-Purpose Resource Centre

Activity	Implementing agent	Duration
Securing land and permits	The planning committees and Shehas of each village with the support of EcoAfrica	The committees have already started this process, but it is foreseen that 2-3 weeks will be needed to finalise the paperwork. Only when the detailed drawings are completed and the construction permits from the Dept of Construction under the Min of Lands be obtained. This will take 1 week and can be done parallel to cost estimate investigation.
Construction cost estimates and material sourcing investigation for production of a BOQ (bill of quantities)	Danida, EcoAfrica and a local construction company	2 weeks in total.
Production and approval of a total construction budget, using local construction workers from the respective villages	Danida, EcoAfrica and a local construction company	2 weeks in total
Undertaking of a baseline socio-economic and health survey in the targeted communities	EcoAfrica and associates from the Institute of Marine Sciences[1]	1-2 month. This study should be undertaken before construction is initiated
Construction of the MPRCs	Construction workers from the communities, and a local construction company for overseeing in collaboration with EcoAfrica. Expert input needed from the Min of Health, the Sustainable Energy Initiative and the Dept of Antiquities	1 year
Training of special groups	EcoAfrica and relevant specialists sourced by EcoAfrica	Can start already before construction is finalised and will continue for the entire implementation phase
Running of the Centres/Project Management	The community committees with support from EcoAfrica and other relevant specialists[2]	Once the construction is finalised and the centres are officially open. Will continue for the entire implementation phase

5.1 Securing the land and needed permits

Both in Wesha and Ndagoni the DLIST planning committees have already started working to secure the availability of the proposed plots for construction. Since both plots are on the

[1] The design of the socio-economic baseline study has already been initiated with funding from Danida. Two experts from the Institute of Marine Sciences in Zanzibar are developing the survey.

[2] See figure 14 for an overview.

land that belongs to the school an initial approval has been given by the respective head teachers (Mr Ali Khamis Ali in Ndagoni and Mr Salim Mohamed Salim in Wesha). The committee in Ndagoni have already been able to secure a land deed and approval letters from the Ministry of Health and Ministry of Education to use the proposed land for the MPRC and clinic (see Appendix 3). The only remaining permit needed for Ndagoni is therefore the construction permit and this can only be applied for once the detailed construction drawings have been finalised. The committee in Wesha have also started the process and the land application papers are found in Appendix 4. The committee in Wesha are still communicating with the Ministry of Education to get all needed approval papers to use the suggested land, but with the support of the entire community, the Sheha, and the head teacher of the school it is not foreseen to be any problem to obtain the needed permits.

5.2 Producing the detailed construction plans and cost estimating construction

The production of the detailed construction drawings for all buildings within the two centres have been developed by Fatma Khelef. These drawings are attached in Appendix 5.

Once the final design of each building are approved and agreed by all partners, a local construction company should be hired to support the investigation of the total production cost[3]. To get a clear overview of what materials are available locally and what must be imported to the site should also be part of this investigation. The end product of this task is to produce a Bill of Quantities (BOQ) which will guide how to handle the construction contracting. Depending on the total cost for construction the tendering rules will be different.

It is however seen as a key factor of the MPRC development that the constructions work is not given to a commercial construction company which will bring in people from the outside to do the construction work. The Multi-Purpose Resource Centre has to be built using local material and local craftsmanship and labour as far as possible, to contribute to poverty reduction and livelihoods creation in the target communities.

5.3 A socio-economic baseline study

To get a clear picture of the current situation in the target communities it is important to carry out a thorough socio-economic baseline study before the construction is initiated. Ideally this exercise should be carried out during the planning phase and in the early stages of construction. The reason it should not be undertaken later is that even the construction phase will have a positive impact on people's livelihoods as the community will be part of the construction team. To get a real overview of the situation before and after the MPRC project, the data must be collected before any community member start making money or benefitting from the project. The same study should be carried out again after 5 years of implementation (or annually during implementation) to measure the impact of the Multi-Purpose Resource Centre on the two target communities.

[3] Draft cost estimates were carried out in April 2011 by Ali Issa Kara and his estimates are attached in Appendix 6

This survey should not only give a picture of the socio-economic status of the community, but it should also include topics that reflect nutritional status, basic health standards and level of awareness of environmental issues. Also an element of livelihoods security should be included to see if the MPRC has an effect of diversifying peoples' sources of income and making the community less vulnerable to effects of climate change, declining fish stocks and unsuccessful agricultural harvests. The design of the baseline study has already been done by two experienced socio-economic researchers at the Institute of Marine Sciences in Zanzibar (Mr. Mwita Mangora and Ms. Mwanahija Shalli), and the questionnaires are ready.

5.4 Construction of the MPRCs

The physical construction of the MPRCs should be carried out by people from the communities, using locally available material as far as possible. It is suggested that a local contractor is hired to oversee and supervise the construction. For the specific aspects of rain water storage tanks, rain water harvesting technologies and sustainable energy solutions it is suggested that an external expert from the Clean Energy Initiative (www.tcei.info) is involved. Mr Jason Morenikeji has been giving input and advice to the design process and for continuity it is recommended that he remains involved also during the construction phase. He will also be able to provide input for the design and construction of the drying oven and the mill for the MPRC in Wesha (see Appendix 1) and training to community workers on how the design and make bricks, tiles and other construction material.

Other specific expert input will be needed from the Ministry of Health for the construction of the clinic in Ndagoni. Experts from EcoAfrica and the Department of Antiquities will be needed for the construction and design of the tourist information displays.

5.5 Training of special groups and running the MPRCs

Once the Centres are constructed, there must be a Local Project Team/ Management Committee and an Advisory Committee put in place for the management of the Centre. The Local Project Team/Management Committee should consist of people from the communities and it is recommended that the committee consists of 5-6 community members (these can potentially be the same people that were selected for the DLIST planning committee listed in Table 3 as they already know the project very well and have been selected by the entire community). See figure 14 for an overview.

The Local Project Team will have to choose a chair person, a treasurer and a secretary for the committee. This group selected from the community will need training in basic management skills and financial management in particular. This Local Project Team will be in charge of renting out market/shop spaces as well as the community hall and any proceeds will go to a fund to cover running costs of the MPRC.

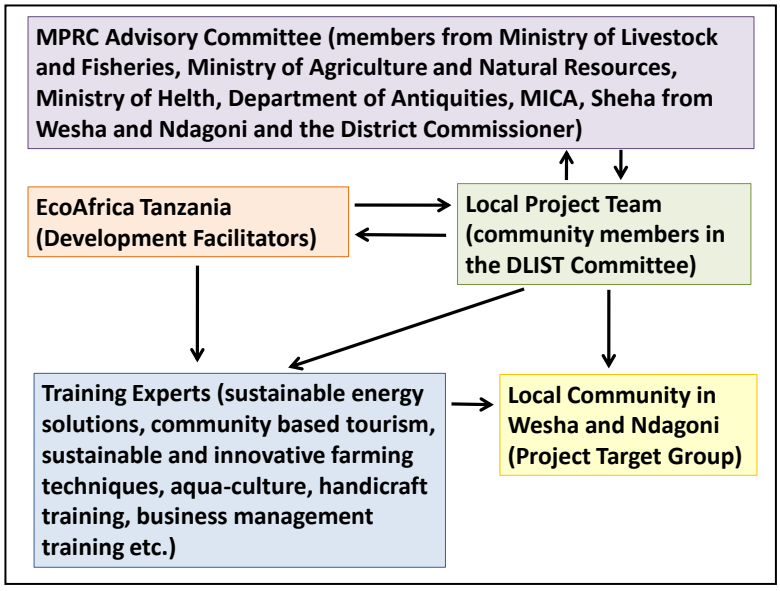


Figure 14: Overview of the management and implementation structure for the MPRC

Also some outside experts will be needed to ensure a well functioning MPRC. These experts should ideally form an advisory committee who meet with the management committee twice/year and oversee the operations of the MPRC. It is suggested that the advisory committee consists of one member from MICA (the local NGO who knows the area and the community very well), one representative from the Ministry of Health, one representative from the Department of Fisheries in Pemba, on representative from the Department of Antiquities, the Sheha of each Shehia, and the District Commissioner in Chake Chake. A representative from EcoAfrica Tanzania (the Development Facilitators) should also participate in the annual meetings and coordinate feedback from the Local Project Team to the Advisory Committee and the other way around.

Throughout the implementation of this project, it is foreseen that the Local Project Committee will need support and input from the Development Facilitator, EcoAfrica. EcoAfrica will support the committee by preparing project proposals, finding training experts, setting up of management systems etc.

It is foreseen that the MPRC will not be self-sustaining in the first years of operation and additional financial support will be needed for operations. A cost/income projection for the first 5 years is found in Appendix 2.

When the centre is fully operational many other projects can support the initiative by providing adult education activities and alternative livelihoods activities (handicraft training, community tourism initiatives etc). It is foreseen that the Ministry of Health will carry out health training activities, the Department of Fisheries and the MACEMP project and support the fishers by providing training in sustainable and good fishing practices. The Department of Antiquities can continue to support the antiquities committees and give additional guide training etc. The women's groups have also asked for training to do handicraft, soaps etc and this can be arranged with external experts, using the MPRC facility. An overview and time-line of the general activities that are foreseen are found in Table 6.

Table 6: Overview and time line for predicted activities during the first five years

Predicted activity	Year				
	1	2	3	4	5
Undertaking of socio-economic baseline study					
Securing land papers and construction permits					
Finalise architectural plans and prepare a BOQ					
Secure funding for construction					
Training and capacity building with community construction team					
Overall MPRC construction and furnishing					
Construction of Ndagoni Clinic					
Construction of the Solar drying hub in Wesha					
Set-up of solar drying committee and training and capacity building					
Marketing of the solar dried produce and business establishment					
Establishment of the tourism information centres					
Furnishing of the computer rooms and accompanied training of key community members					
Training of Local Project Teams (business management etc)					
Set-up of Advisory Committee					
Annual or 6 monthly meetings with Advisory Committee					
Marketing of the MPRC and its activities					
General facilitation (by EcoAfrica)					
Identification of community training needs					
Community training and capacity building initiatives					
Development and operation of additional activities					
Survey of buildings and annual maintenance (annually after rainy season in June)					
Monitoring and Evaluation (regular socio-economic survey, Advisory Committee meetings etc)					

6. Budget

6.1 Construction costs

At this stage only rough cost estimates have been undertaken, showing that each MPRC will cost around 350,000 US$. More detailed costing estimation is part of this proposal and the final costing plans will have to be revised in collaboration with the donor once the detailed drawings and the BOQ have been prepared. Appendix 2 contains an overview of the estimated costs for different parts of the construction and other management and maintenance costs for the proposed activities for the first 5 years (based on Table 6 above).

6.2 Costs for expert input

It is foreseen that not only the physical construction of the MPRC will need expert input, but also the training components with the community to make good use of the centre. Table 7 lists external experts, their main tasks, their fee and the estimated number of days that will be needed, during the first year of implementation/construction. Full CVs of the listed experts are found in Appendix 6.

Table 7: Detailed list of proposed external expert input during implementation, their main tasks, their fees and estimated number of days needed

Name	Main tasks	Fee	Number of days	Total cost
Prof. Francois Odendaal	Provide input for design of visitors' centre and management training for the Local Project Team	400$/day	20	8,000$
Mr. Jason Morenikeji	Give input for the architectural design on the sustainable energy solutions and rain water harvesting techniques (during detailed drawings/costing stage as well as during construction)	250$/day	15 days (detailed drawing and cost estimates) 30 days during the construction	11,250$
Ms. Frida Lanshammar	To coordinate the project, oversee the designs, link with the community and oversee the socio-economic baseline study	400$/day	20	8,000$
A representative from Dept of Antiquities	To provide input and information for the design of the visitors' centres related to Ras Mkumbuu	80$/day	10	800$
Prof. Karel Bakker	To design the visitors' centres for both the MPRCs	400$/day	10	4,000$
A representative from the Min of Health	To provide input for the construction and design of the clinic and	200$/day	10	2,000$

	maternity ward in Ndagoni			
Mwanahija Shalli	To design, carry out and analyse data for the socio-economic survey prior to construction	100$/day	50	5,000$
Mwita Mangora	To design, carry out and analyse data for the socio-economic survey prior to construction	100$/day	50	5,000$
TOTAL COST FOR EXPERT INPUT				**44,050**

6.3 Running costs for the MPRCs

During the first years a lot of community training will be needed. These costs have to be met by a donor until the centre starts generating its own funds. Also cost for minor repair work and other unforeseen expenses might be needed for the first years. An overview of the estimated costs for training and maintenance/repairs are found in Appendix 2, following the activity plan in Table 6.

6.4 Project Management

The EcoAfrica Tanzania office will oversee and manage the implementation of the project, by acting as a Development Facilitator. For this task it is estimated that 20 days full time work will be needed, which comes to an annual fee of 8 000$. Frida Lanshammar will be the Project Manager for the implementation from the EcoAfrica side.

6.5 Income generating activities as part of the MPRC

The market area, the shops, the community hall and the class rooms/ computer rooms will be rented out to community members and other external parties. Below is a draft price list for the use of the different facilities. Estimated total income generation is part of the cash flow projection in Appendix 2. It is foreseen that the tourist information centre will be able to bring in a small annual income once it is in place as visitors will be encouraged to donate money to the MPRC and will also be charged a small fee for using the facilities. The main income generating aspect of the MPRC in Wesha is however the solar drying hub. If the products (sun dried mangoes and tomatoes) are packed and labelled nicely it is estimated that the sale of these products can bring in thousands of dollars/year.

Price list for market area, community hall and class rooms in the Wesha and Ndagoni MPRCs

Market space: It is foreseen that mainly members of the local community will be interested in renting a table/stall in the market. The area will be fitted with renewable energy, but there are some maintenance costs involved and people renting the space have to pay rent to contribute to the sustainability of the MPRC.

- The rent for an open market space: 8,000 TZS/month
- The rent for a shop: 15,000 TZS/month
- The use of the freezer: 100 TZS/kg/day

Community hall: The community hall on the other hand will be used by both members from the local community, outsiders as well as international NGOs/donors etc. and the price will differ depending on who is using the hall and for what. Below are the main categories;

- Day rental by outside party (NGO, Government, donor): 100 US$
- Afternoon/evening rent by community member: 15,000 TZS
- Full day rental (weekend) by community member: 30,000 TZS

Class rooms/computer rooms: The computer room and class rooms can be used for free for training of community members related to the development of the MPRC. If outside parties want to use the class rooms/computer room they have to pay rent.

Appendix 1a: Solar Drying Hub for Wesha:

Generating clean and sustainable energy
Avenida Eduardo Mondlane 178
Pemba, Cabo Delgado
Mozambique
+258 8283 64854

Re: Proposal for Multi-purpose Resource Centres

Solar Drying Hub: Wesha Village:

Introduction:

Food security and income generation through food preservation: Many of the smallholder farmers in Wesha Village grow fruit and vegetables as their main cash crop, but much of the fruit goes to waste, particularly during the months of peak production, because there is insufficient market within a reasonable transport distance.

This makes the provision of solar driers an ideal and accessible technology to enhance local-level socio-economic conditions. The dehydration process can be used to for a wide variety of produce including: Peas, corn, cabbage, broccoli, peppers, melon, plums, onions, tomatoes, asparagus, celery, bananas, mangoes, dates, figs, apricots, grapes, bananas, pineapples, herbs, cassava, yams, potatoes, corn, garlic, carrots, peppers, coffee, meat, and fish.

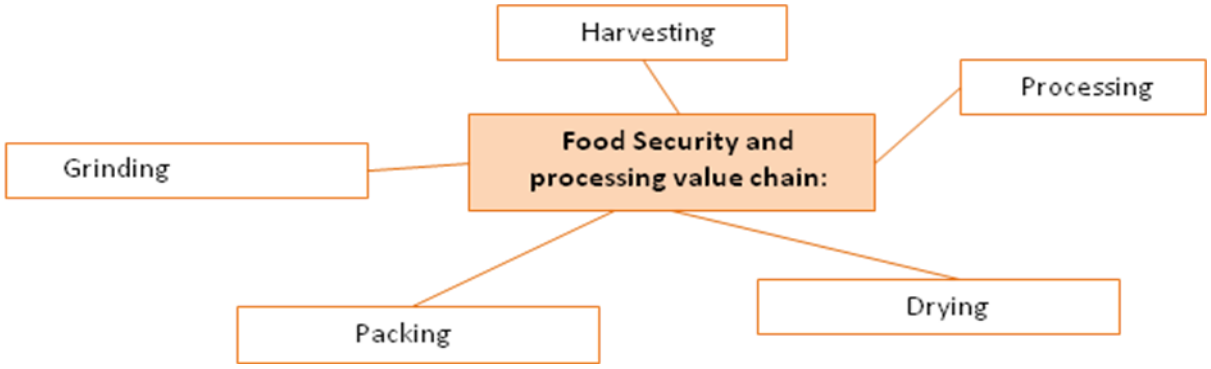
The introduction and associated capacity building of produce preservation through solar drying is an ideal and accessible technology in response food security in the region which the potential to enhance local-level socio-economic conditions. Establishing a small-scale commercial hub for produce preservation can:

Generate income.
Energy Conservation: Solar drying units using renewable energy technology not only save energy but also save time, improve quality, make the process efficient and protect the environment. Solar energy helps to provide industrial and agricultural drying with a non-conventional and economical way to dry foodstuffs.
Offer triple-bottom-line sustainability.

Projection replication.
Project dissemination (Awareness and sensitization to the nutritional and commercial benefits of solar dried food items).

In this regard, solar dryers are a cost-effective solution to food preservation and food security for low income communities as the process is socio-economically compatible in areas where fruit is plentiful at the end of the growing season but because there is no simple and economic method to preserve produce.

As a result, the impact of simple food preservation technology by solar drying can offer significant improvement in livelihood to small-scale farmers and food processors through extended value-chain. This approach has the potential to significantly aid the transportation of excess fruit, vegetable and fish from rural growers/fishermen to local and international markets and in doing so bring skills and income all along the supply chain.



An illustration indicating the potential for an integrated and extended value chain

Wesha and Ndagoni Village: Enhancement and capacity building:

Although sun-drying (dehydration) of anchovies takes place in the two villages, the process has much potential for socio-economically enhancement. This is especially true as there is no simple and economic method to preserve produce as much produce is left to rot in peak season, while in the dry months there are localised food shortages. With the cash crops grown in and around Wesha and Ndagoni villages, there exists significant value-added opportunity for local processors and farmers as there is a ready market for the produce both locally within the villages, on Pemba Island and for export trade to Zanzibar, Mainland and abroad. Such a project would complement the intervention of UNIDO – who have recently funded the Ndagoni for construction of a small solar dryer.

Photos of the UNIDO solar and bio-mass fish dryer (Source: Jason Morenikeji).

Intervention Benefits: Solar drying:

Health benefits:	By reducing the moisture content of food to between 10 and 20%, bacteria, yeast, mould and enzymes are prevented spoiling produce.
	Microorganisms are effectively killed when the internal temperature of food reaches 145 degrees Fahrenheit.
	Dried foods are high in fibre and carbohydrates and low in fat, making them healthy food choices.
Food quality and preservation benefits:	The produce is protected against flies, pests, rain and dust during drying process.
	High quantities of vitamins, minerals and fibre. The flavour and most of the nutritional value is preserved and concentrated.
	Vegetables, fruits, meat, fish and herbs can be dried and preserved for several years.
	Protect the products from contamination by dirt, debris, insects, or germs.
Commercial benefits:	The market for dried fruit and other healthy snacks is growing (Tastes related to dried foods can be unique in their flavour and texture).
	Fruits and vegetables can be easily reconstituted with or added in their dry form to soups/stews offering marketing opportunities.
	The energy input is less than what is needed to freeze or can produce.
	Less risk of spoilage because of the speed of drying (if the drying process is slow

	fruit starts to ferment and the produce is spoilt).
	The product can be left in the dryer overnight or during rain.
Community benefits	Run as a community project, households can be encouraged to establish their own farm gardens.
	It puts food in the 'cupboard' for later use and increases household food security.
	Surplus food can be dried to avoid waste.
Socio-Economic benefits:	Improves the bargaining position of farmers. Farmers sell at low prices during the harvest season as they cannot preserve their surplus produce.
	It can create employment opportunities and a sustainable income.

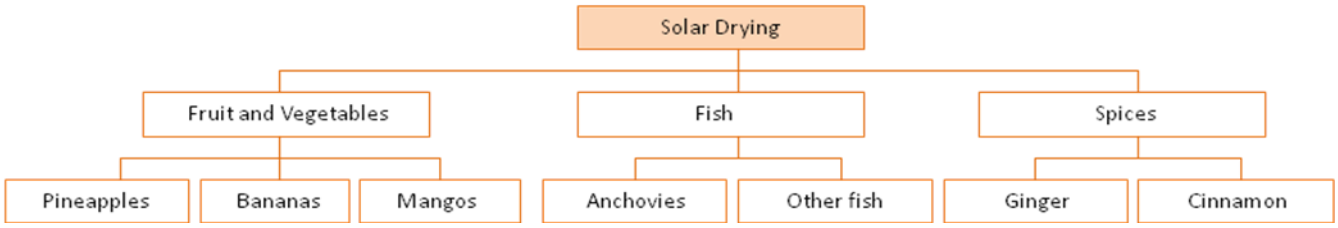
Overview: The Drying Process:

Most foods are traditionally dehydrated over a period of 1-3 days to achieve a moisture content of 5-25% at temperatures of 130 degrees Fahrenheit, or 54 degrees Celsius to effectively kill bacteria and inactivate enzymes. Traditional solar drying (as seen in Wesha Village) takes place directly in the sun. However, there are many disadvantages to this traditional approach resulting in reduced yield quality due to exposure to dust, rain and wind, insects, birds, rodents and domestic animals while drying. Soiling, contamination with microorganisms, formation of mycotoxins, and infection with disease-causing germs are the result.

The key to successful food dehydration is the application of a constant temperature and adequate air flow to remove moisture as quickly as possible at a temperature that does not seriously affect the flavour, texture and colour of the food. This can be achieved using an **indirect solar dryer** or **thermo-siphon collector and a separate drying chamber**. These systems operate efficiently and allow more control over direct drying techniques.

Photos illustrating direct solar drying in Wesha Village (Source: Jason Morenikeji).

During the site visits to Wesha and Ndagoni villages indicated the follow produce were seen to have the greatest potential:



The Dehydration Process: Enhanced Solar Drying:

Enhanced Solar Drying: Or enhanced food dehydration by definition is the application of a constant temperature and adequate air flow to remove moisture as quickly as possible at a temperature that does not seriously affect the flavour, texture and colour of the food. Dehydration takes place when warm dry air moves past the fresh produce, picking up the moisture. Therefore, a functional food dyer must have a way to keep the air moving, vents to let dry air in and more vents to let wet air out. In this manner the provision of sufficient air flow within the dehydrator is a crucial component of 'indirect' food drying.

This can be achieved using an indirect solar dryer or thermo-siphon collector and a separate drying chamber. These systems operate efficiently and allow more control over traditional (or direct) drying techniques. To achieve the improved control of the drying process a small ventilation fan - powered by wind/solar PV panels – passes air over solar thermal collectors and a heat exchanger. This active method of heat transfer benefits from an enhanced flow of warm air through the tiers of interchangeable racks inside the dryer thus ensuring uniform drying of the produce with improved control of temperature and hygienic conditions. The faster the air current and the better the ventilation, the faster and better food will be dehydrated.

Although requiring high initial investment they are designed to dry very large quantities of produce with improved control of temperature and hygienic conditions and have the potential for significant income generation.

The Proposition: Food security and income generation: A Centre of Excellence

A pilot-project and business model for the implementation of a medium-scale solar drying within Wesha for income generation.

Key Parameters:

- The solar drying component will be synergenicatlly integrated within the 'The Community Central Market Concept' and developed as a simple but an innovative 'architectural hub' ideally suited to the socio-cultural dynamics of the area, the communities of Wesha and Ndagoni and linked to localised resources and supply/markets networks.
- The project must encourage a shared partnership ownership and pride. This should be done with effective communication and dialogue with local stakeholders and communities.

- The nature and role of the project should act as 'flagship' Centre of Excellence and offer transferable learning and empowerment to all those involved especially the socio-economic enhancement of the low-income communities involved.

Project Framework:

- Village association trained in effective [organic] farming techniques, hygiene, fruit drying, and business management.
- Community association collects/buys fruit from primary producer groups in the area.
- Produce hygienically prepared for drying (peeled, sliced etc.)
- Sliced fruit is laid out on mesh trays inside the drier.
- Use of 'indirect cabinet driers' used to preserve the produce (the drier can produce between five and 25-100kg of dried fruit, vegetable per day).
- Sorting and inspection with predetermined quality standards (any substandard produce is rejected and can be used for local consumption).
- The dried fruit is packed into sealed polythene bags.
- Commercialisation: sale and distribution of packaged (and branded produces).
- Export markets: Supply chain developed to organic certified standards. The produce produced at crops are an ideal value-added opportunity for the Wesha Village farmers and processors as there is a ready market for the product both domestically and in the export trade.

Integrated Enhanced Solar Drying Hub: Wesha and Ndagoni Villages:

The proposed Centre of Excellence for Wesha Village will include a self-contained integrated hub where produce (fish, vegetables and fruit) can be delivered, processed and sold within a single architectural structure (as shown in the figure below).

Centre of Excellence: Self-contained integrated hub (Source: Jason Morenikeji)

In line with the dehydration process, the architectural structure has been configured to reflect the process-flow in preparing the dried produce - such that the 'raw' produce is delivered in one door and sold from the other -as illustrated in the architectural layout below:

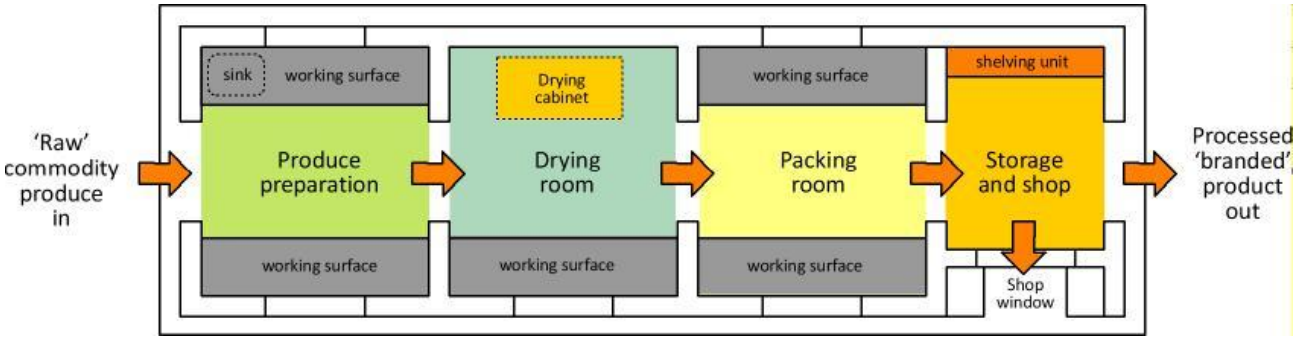
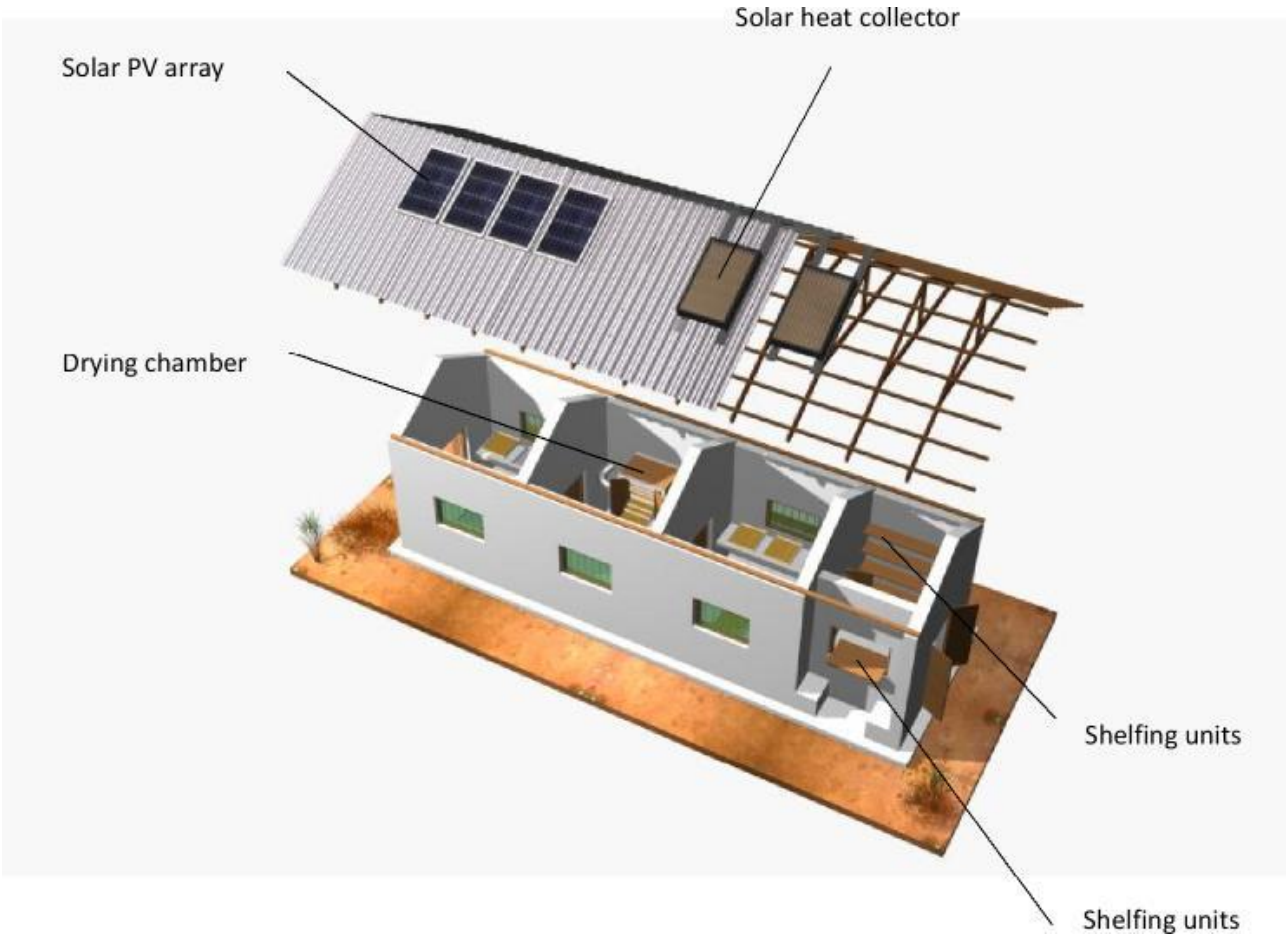
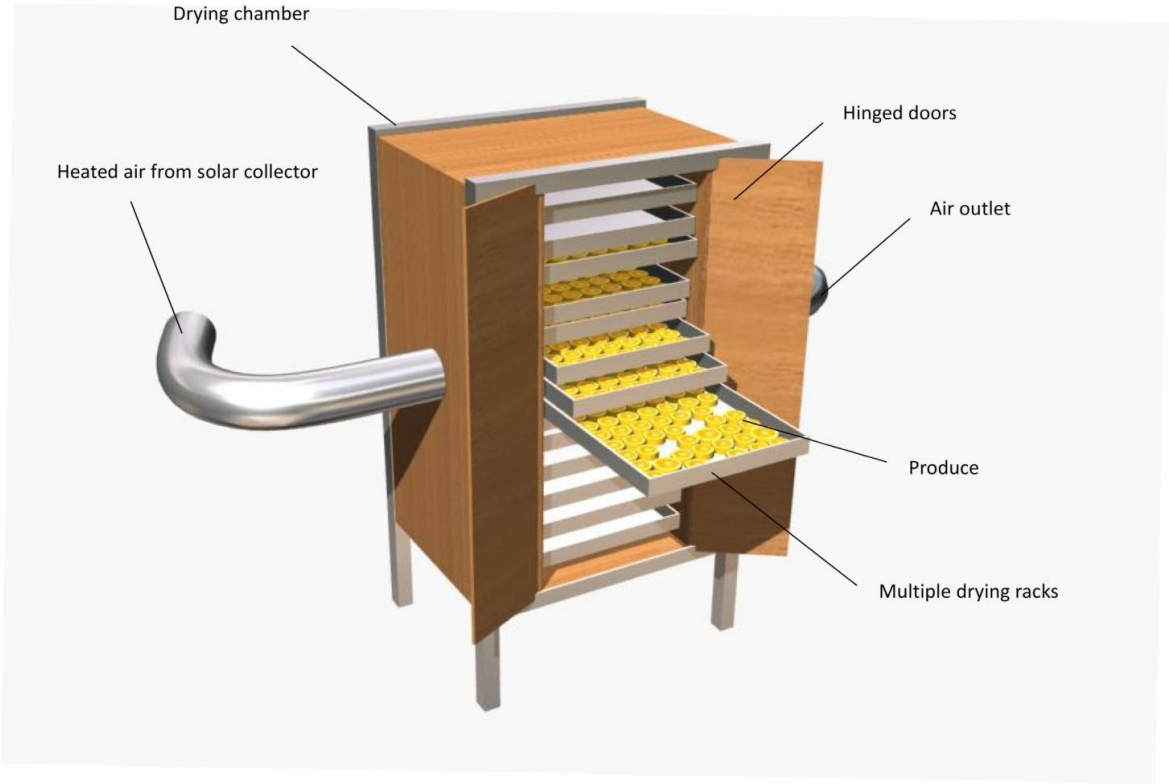


Illustration of the Wesha integrated hub layout (source: Jason Morenikeji)



Computer visualisation of integrated enhanced solar drying hub (source: Jason Morenikeji)

The proposed drying chamber can be fabricated locally and designed to be cost effective and efficient. It has a horizontal air flow with a solar PV-powered fan located on the back of the unit) resulting in a more even distribution of air throughout the food dehydrator as the air blows over the food and food trays.



Computer visualisation of solar drying chamber (source: Jason Morenikeji)

Packaging: To ensure high hygiene standards, convenience (shelf-ready packaging), and consumer attractiveness - the dried produce is packed into sealed polythene bags using a heat sealer powered by the solar PV (as shown below).

Photo of heat-sealer device to ensure hygiene (source: Jason Morenikeji)

Cold storage: Solar Refrigeration:

In line with the food security and income generation intervention and in response to the Local Economic Development Plan (LED) outcomes, a cold-chain is also proposed to aid produce/fish longevity using a solar powered freezer. The solar powered freezer will complement the solar dryer propositions in providing Wesha and Ndagoni villages with food preservation facilities. The freezer/refrigeration unit powered by solar photovoltaic power has the benefits of lower running costs, greater reliability and a longer working life than kerosene refrigerators or freezers powered by grid power/diesel generators.

The refrigeration unit operating on a 12/24 volt system - in line with the solar PV installation for the solar dryer - will feed from the same battery bank, battery charge regulator and controller thereby ensuring cost and system efficiency. The refrigerator will include a freezer compartment for ice pack freezing which will aid cold chain transportation.

Load Profile: Wesha Villlage Renewable Energy

Wesha: Independent Renewable Hub.

	DC Loads:					
Application:	**Type**	**No:**	**Power (Watts)**	**Peak load**	**hr/day**	**Watt-hour/day**
DC Solar fridge	DC	1	60		12	720
Miscelleous loads	DC	2	40		4	320
Total DC						1,040

	AC Loads:					
Application:	**Type**	**No:**	**Power (Watts)**	**Peak load**	**hr/day**	**Watt-hour/day**
Hot-wire sealer	AC	1	250	250	3	750
Energy-saving lighting	AC	4	20	80	4	320
Miscellaneous	AC	2	40	80	4	320
Desk-top computer	AC	3	200	600	5	3,000
Ink-jet printer	AC	1	50	50	2	100
Total AC						4,490

Peak load (watts) for inverter:	**1,060**	
Allowance for **Inverter Losses** (approx.10% of load)		449
Standby losses for inverter (10w x 24)		240
Input **Energy to Inverter**:		5,179
To load (DC) load		6,219
Allowance for **Battery Losses** (approx. 5% of load):		311
Allowance for **wire losses** (approximate 5% of power generated)		311
Input Energy required by battery store (energy required from wind andor solar):		6,530
System voltage		24
Input power - Amp/hours		272

Battery Sizing

Daily Energy Requirement (Ah)	272	x	Number of Storage Days	1	÷	Max Discharge Level	50%
					=	Required Batteries (Ah)	544
Deep cycle batteries (Ah)	130		Number of batteries (series)	4.2		Total batteries	8
			Number of batteries (parallel)	2		Rounded-up	8

Input from other sources (gen-set)	0		Daily Load Demand (WH)	6,530	÷	System Voltage (V)	24
				Daily System Charge Requirement (Ah)			272.1

Sizing the Solar Panels

Daily Charge Requirement (Ah)	272	÷	Peak Sun Hours	5.2	=	Charging Current (Ah)	52.3
						Estimate (Watts)	941.8
Charging Current (Ah)	52	÷	Solar Panel Rating (Amps)	5.56	=	Number of Solar Panels	9.4
						Rounded up	9

Cost Breakdown: Wesha Villlage Renewable Energy

Wesha Village Renewable Energy Hub:					
Photovoltaic panels (polycrystaline)	100-watt	Panel	485	9	4,365
Mounting frame for Photovoltaic panels	-	Unit	330	1	330
Inverter (Pure sine wave)	2000-watt	Unit	1,800	1	1,800
Charge controller/regular	40amp/24volt	Unit	340	1	340
Deep cycle 12-volt batteries	100Ah	Units	460	8	3,680
Battery interconnection cables	70mm2	Metre	12	3	36
Photovoltaic panel cabling	7mm2	Metre	4	20	80
Inverter cable	10mm2	Metre	7	5	35
Wall-mounted IP-Junction box	-	Unit	25	2	50
Control Timer switches	-	Unit	15	4	60
DIN Rail	-	Unit	27	1	27
Changeover switch	-	Unit	110	1	110
Heavy-duty fuse for battery/circuit protection	-	Unit	8	4	32
General electrical cabling	-	Metres	1	100	100
Electrical plugs	-	Units	2	6	12
Light fittings	-	Units	12	5	60
Miscellaneous fastenings and fittings	-	Unit	250	1	250
DC Solar fridge	165-litres	Unit	1600	1	1,600
Equipment transportartion to Pemba Island	-	Unit	350	1	350
TOTAL:					**13,317** US$

Appendix 1b: Solar PV and Wind Hybrid Renewable Energy Profile:

Generating clean and sustainable energy
Avenida Eduardo Mondlane 178,
Pemba, Cabo Delgado, Mozambique.
+258 8283 64854

Re: Proposal for Multi-purpose Resource Centres

Clinic, Maternity Ward and Computer facilities: Ndagoni Village:

Load Profile: Ndagoni Village Renewable Energy

Ndagoni: Independent Renewable Hub.

	DC Loads:					
Application:	**Type**	**No:**	**Power (Watts)**	**Peak load**	**hr/day**	**Watt-hour/day**
DC Solar fridge	DC	1	60	60	12	720
Miscelleous loads	DC	2	40	80	4	320
Total DC						1,040

	AC Loads:					
Application:	**Type**	**No:**	**Power (Watts)**	**Peak load**	**hr/day**	**Watt-hour/day**
Energy-saving lighting	AC	12	20	240	4	960
Miscellaneous	AC	2	40	80	4	320
Desk-top computer	AC	3	200	600	5	3,000
Ink-jet printer	AC	1	50	50	2	100
Total AC						4,380

Peak load (watts) for inverter:	1,110

Allowance for **Inverter Losses** (approx.10% of load)	438
Standby losses for inverter (10w x 24)	240
Input **Energy to Inverter**:	5,058
To load (DC) load	6,098

Allowance for **Battery Losses** (approx. 5% of load):	305
Allowance for **wire losses** (approximate 5% of power generated)	305
Input Energy required by battery store (energy required from wind andor solar):	6,403
System voltage	24
Input power - Amp/hours	267

Battery Sizing

Daily Energy Requirement (Ah)	267	x	Number of Storage Days	1	÷	Max Discharge Level	50%
					=	Required Batteries (Ah)	534
Deep cycle batteries (Ah)	130		Number of batteries (series)	4.1		Total batteries	8
			Number of batteries (parallel)	2		Rounded-up	8

Wind and Solar PV

Daily Load Demand (WH)	6,403	-	Estimated Wind components	2,000	÷	System Voltage (V)	24
			Gen-set input	0			
			Total	2,000		Daily Charge Requirement (Ah)	183.5
Sizing the Solar Panels							
Daily System Charge Requirement (Ah)	183	÷	Peak Sun Hours	5.2	=	Charging Current (Ah)	35.3
						Estimate (Watts)	635.0
Charging Current (Ah)	35	÷	Solar Panel Rating (Amps)	5.56	=	Number of Solar Panels	6.3
						Rounded up	6.0

Cost Breakdown: Ndagoni Village Renewable Energy System:

Ndagoni Village Renewable Energy Hub:

Photovoltaic panels (polycrystaline)	100-watt	Panel	485	6	2,910
Secure mounting frame for Photovoltaic panels	-	Unit	450	1	450
Micro wind turbine	1,000-watt	Unit	2,800	1	2,800
10-metre turbine mounting tower	-	Unit	950	1	950
Ground anchors and guy-wires (for tower mounting)	-	Unit	250	1	250
Turbine electric cabling	-	Metres	150	2	300
Load diversion controller	40-amp	Unit	360	1	360
Dump-load reseistors	1-ohm	Unit	36	8	288
Inverter (Pure sine wave)	2000-watt	Unit	1,800	1	1,800
Charge controller/regular	40amp/24volt	Unit	340	1	340
Deep cycle 12-volt batteries	130Ah	Units	460	8	3,680
Battery interconnection cables	70mm2	Metre	12	3	36
Photovoltaic panel cabling	7mm2	Metre	4	20	80
Inverter cable	10mm2	Metre	7	5	35
Wall-mounted IP-Junction box	-	Unit	25	2	50
Control Timer switches	-	Unit	15	4	60
DIN Rail	-	Unit	27	1	27
Changeover switch	-	Unit	110	1	110
Heavy-duty fuse for battery/circuit protection	-	Unit	8	4	32
General electrical cabling	-	Metres	1	100	100
Electrical plugs	-	Units	2	6	12
Light fittings	-	Units	12	5	60
Miscellaneous fastenings and fittings	-	Unit	250	1	250
DC Solar fridge	165-litres	Unit	1600	1	1,600
Equipment transportartion to Pemba Island	-	Unit	350	1	350
TOTAL:					**16,930** US$

JM 05-01-11

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Appendix 1c: Construction Approach: Stabilized Soil Block Press

Generating clean and sustainable energy
Avenida Eduardo Mondlane 178
Pemba, Cabo Delgado
Mozambique
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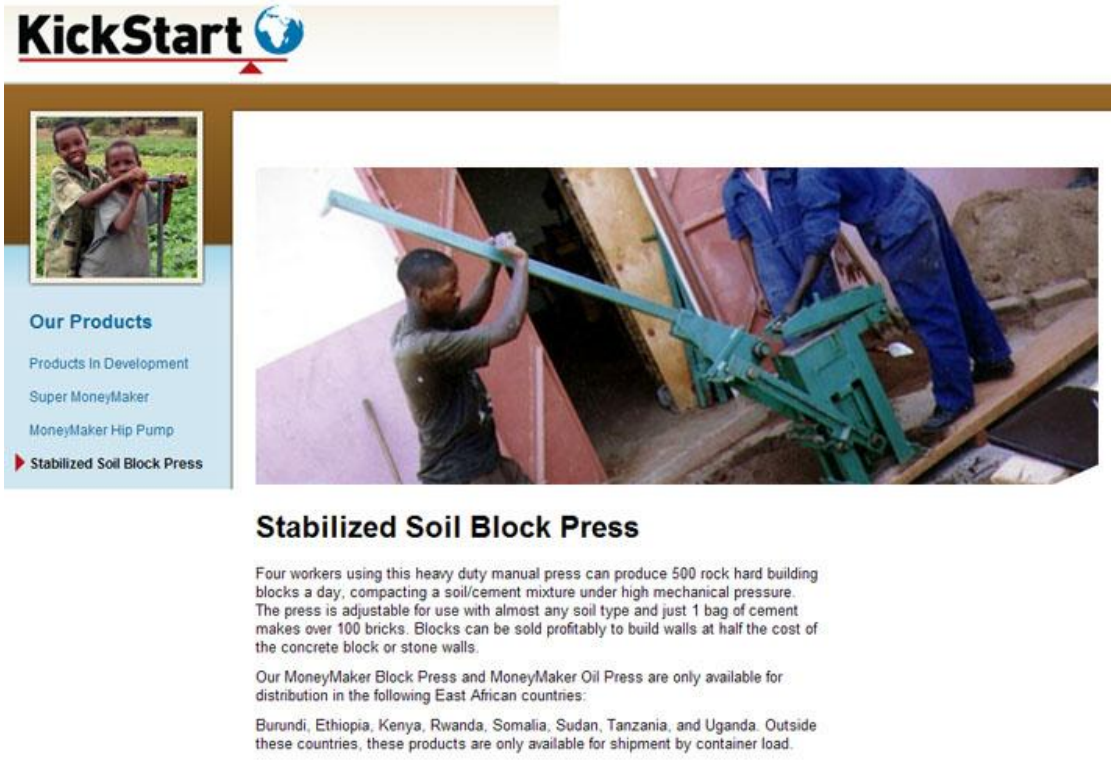
Re: Proposal for Multi-purpose Resource Centres

Construction Approach: Stabilized Soil Block Press

The SSB alone costs **$1,060** ex-works Nairobi, before transport, packing & handling.



TECHNICAL SPECIFICATIONS FOR STABILIZED SOIL BLOCKS MANUFACTURED USING THE ACTION PACK BLOCK PRESS

Description	*Specifications*
Nominal size	290mm x 140mm x 115mm
Average weight	8kgs
Average No. of blocks per square metre	28
Average No. of blocks per 50kg bag cement	90-110 blocks
Recommended curing period	7 days (Blocks are ready for use after 14days)
Min. dry compressive strength	2.5M/mm2
Min. wet compressive strength (after 28days)	1.5KN/mm2
Max. Water Absorption (after 28days)	15%

Cement/Soil Ratio: This will vary according to soil type used and should be determined by testing the soil for shrinkage using a special shrinkage box supplied with the block press.

SHRINKAGE

Shrinkage (using shrinkage box)	Cement/Soil ration by volume	Approximate No. of blocks per 50 kg bag of cement
Less than 12mm	1:18	110
12-24mm	1:16	93
24-39mm	1:14	87

Where shrinkage exceeds 40mm the soils may require further stabilization with sand.

ACTION PACK BLOCK PRESS

Typical Compaction Force	80-100KN (on selected soils)
Weight (Mass)	130Kg
Typical Daily Production with 5 workers for 8Hrs	400-500 blocks
Warranty	One year warranty with KickStart Design Mark of quality
Price FOB Nairobi	USD 1060
Transport to place of use	Charged at cost

JM 05-01-11

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Appendix 2: MPRC Business Plan – cost and income estimates per year

YEAR ONE				
	Line items	**Est. Cost (US$)**	**Est. Income (US$)**	**Balance (US$)**
	Pre-construction activities			
1	Design of socio economic baseline study	3 000	0	3 000
2	Data collection and analysis	10 000	0	10 000
3	Securing land and construction permits	500	0	500
4	Produce detailed architectural drawings and BOQ	5 000[4]	0	5 000
5	Find local contractor and purchase construction material	40 000[4]	0	40 000
6	Initiate training with community construction team	5 000	0	5 000
	Construction of main MPRC			
7	Community hall	180 000[4]	0	180 000
8	Market area and shops	65 000[4]	0	65 000
9	Class rooms	40 000[4]	0	40 000
10	Sustainable energy set-up (Ndagoni)	16 936	0	16 936
11	Computer room and library	48 000[4]	0	48 000
	Solar drying hub in Wesha			
12	See Appendix 1a	30 317	0	30 317
	Construction of Ndagoni Clinic			
13	Estimated 150,000 US$ divided over 2 years	75 000[4]		75 000
	Advisory Committee establishment			
14	Identify and approach suggested members	1 000	0	1 000
15	Arrange first meeting in Pemba	500	0	500
	Marketing of MPRC activities			
16	Reports/flyers to private sector and government	1 500	0	1 500
	General facilitation			
17	Overall project Management by EcoAfrica	8 000	0	8 000
	Identification of community training needs			
18	Training of local project team (business management etc)	8 000	0	8 000
19	Community consultations to identify training needs	2 000	0	2 000
BALANCE FOR YEAR ONE				**539 753**

[4] Detailed cost estimates for construction of each part of the MPRC will be part of the BOQ development

YEAR TWO				
	Line items	**Est. Cost (US$)**	**Est. Income (US$)**	**Balance (US$)**
	Construction of main MPRC			
1	Design and construction of tourism information centres	60 000	0	60 000
2	Operating market area (water and some electricity cost)	1 000	2 400	-1 400
3	Operating community hall	1 000	1 440	-440
4	Operating classrooms	1 000	3 000	-2 000
	Solar drying hub in Wesha			
5	Training of solar drying hub committee	4 000	0	4 000
6	Marketing and selling of solar died produce	500	1 500	-1 000
	Construction of Ndagoni Clinic			
7	Estimated 150,000 US$ divided over 2 years	75 000[5]		75 000
	Advisory Committee establishment			
8	Annual meetings in Pemba (2)	1 500	0	1 500
	Marketing of MPRC activities			
9	Reports/flyers to private sector and government	1 500	0	1 500
	General facilitation			
10	Overall project Management by EcoAfrica	8 000	0	8 000
	Identification of community training needs			
11	Training of local project team	8 000	0	8 000
12	Computer training	5 000	0	5 000
13	Community consultations to identify training needs	2 000	0	2 000
	Monitoring and evaluation			
14	Annual MPRC maintenance	2 000	0	2 000
15	Annual socio economic baseline study collection and analysis	3 000	0	3 000
BALANCE FOR YEAR TWO				**160 160**

[5] Detailed cost estimates for construction of each part of the MPRC will be part of the BOQ development

YEAR THREE				
	Line items	**Est. Cost (US$)**	**Est. Income (US$)**	**Balance (US$)**
	Operations of MPRC			
1	Operating community tourism information centre	500	1 000	-500
2	Operating market area (water and some electricity cost)	1 000	4 800	-3 800
3	Operating community hall	1 000	2 880	-1 880
4	Operating class rooms	1 000	4 000	-3 000
	Solar drying hub in Wesha			
4	Training of solar drying hub committee	4 000	0	4 000
5	Marketing and selling of solar died produce	500	3 000	-2 500
	Ndagoni Clinic			
6	operations of Ndagoni clinic (costs covered by Min of Health)	0	0	0
	Advisory Committee establishment			
7	Annual meetings in Pemba (2)	1 500	0	1 500
	Marketing of MPRC activities			
8	Reports/flyers to private sector and government	1 000	0	1 000
	General facilitation			
9	Overall project Management by EcoAfrica	8 000	0	8 000
	Identification of community training needs			
10	Training of local project team	2 000	0	2 000
11	Computer training	2 000	0	2 000
12	Community consultations to identify training needs	2 000	0	2 000
	Monitoring and evaluation			
13	Annual MPRC maintenance	2 000	0	2 000
14	Annual socio economic baseline study collection and analysis	3 000	0	3 000
BALANCE FOR YEAR THREE				**8 820**

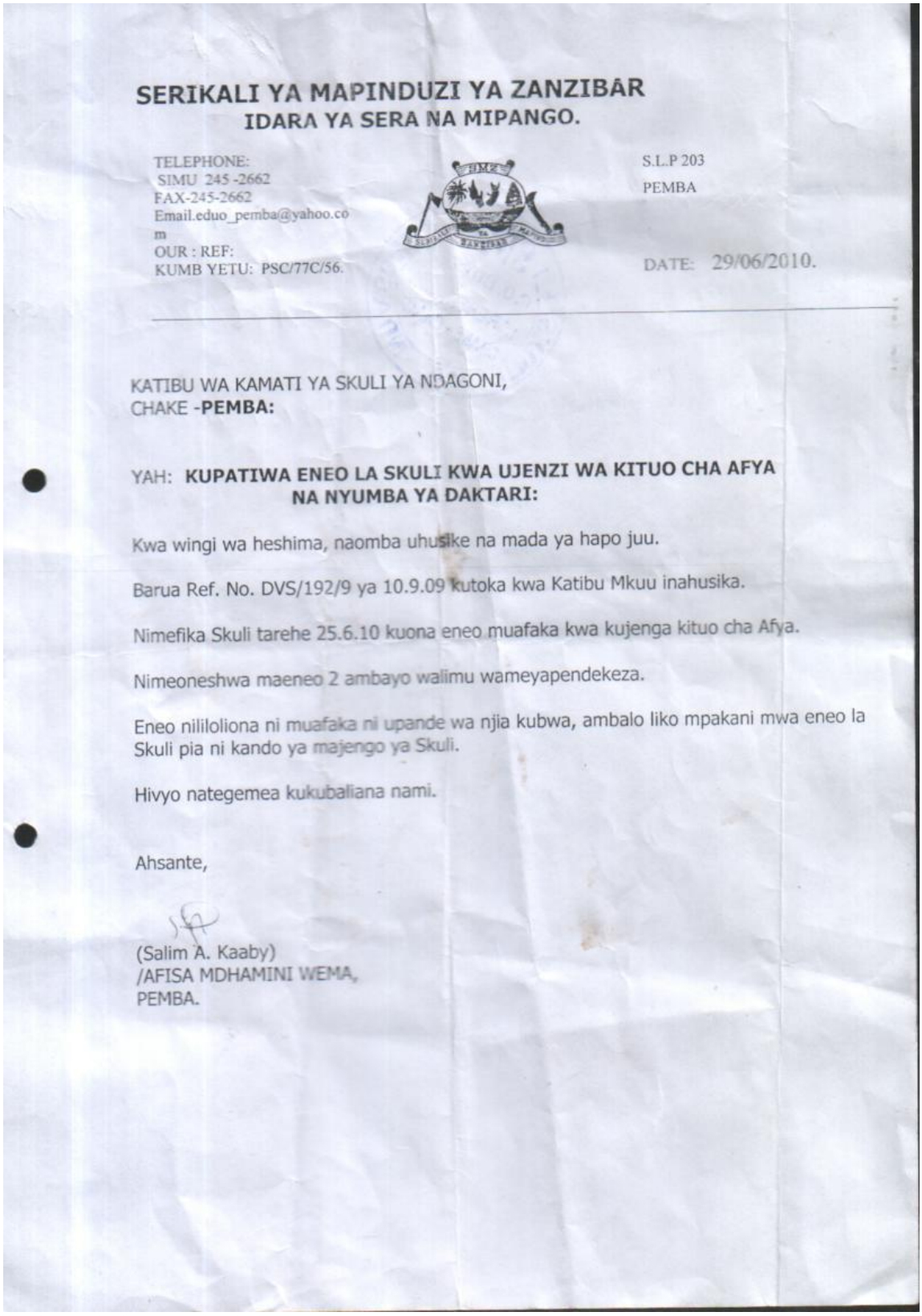
YEAR FOUR				
	Line items	**Est. Cost (US$)**	**Est. Income (US$)**	**Balance (US$)**
	Operations of MPRC			
1	Operating community tourism information centre	500	1 000	-500
2	Operating market area (water and some electricity cost)	1 000	6 000	-5 000
3	Operating community hall	1 000	3 600	-2 600
4	Operating class rooms	1 000	6 000	-5 000
	Solar drying hub in Wesha			
4	Training of solar drying hub committee	500	0	500
5	Marketing and selling of solar died produce	500	5 000	-4 500
	Ndagoni Clinic			
6	operations of Ndagoni clinic (costs covered by Min of Health)	0	0	0
	Advisory Committee establishment			
7	Annual meetings in Pemba (2)	1 500	0	1 500
	Marketing of MPRC activities			
8	Reports/flyers to private sector and government	1 000	0	1 000
	General facilitation			
9	Overall project Management by EcoAfrica	8 000	0	8 000
	Identification of community training needs			
10	Training of local project team	1 000	0	1 000
11	Computer training	1 000	0	1 000
12	Community consultations to identify training needs	1 000	0	1 000
	Monitoring and evaluation			
13	Annual MPRC maintenance	3 000	0	3 000
14	Annual socio economic baseline study collection and analysis	3 000	0	3 000
BALANCE FOR YEAR FOUR				**-3 600**

YEAR FIVE				
	Line items	**Est. Cost (US$)**	**Est. Income (US$)**	**Balance (US$)**
	Operations of MPRC			
1	Operating community tourism information centre	500	2 500	-2 000
2	Operating market area (water and some electricity cost)	1 000	8 400	-7 400
3	Operating community hall	1 000	7 680	-6 680
4	Operating class rooms	1 000	8 000	-7 000
	Solar drying hub in Wesha			
4	Training of solar drying hub committee	0	0	0
5	Marketing and selling of solar died produce	500	7 000	-6 500
	Ndagoni Clinic			
6	operations of Ndagoni clinic (costs covered by Min of Health)	0	0	0
	Advisory Committee establishment			
7	Annual meetings in Pemba (2)	2 000	0	2 000
	Marketing of MPRC activities			
8	Reports/flyers to private sector and government	500	0	500
	General facilitation			
9	Overall project Management by EcoAfrica	8 000	0	8 000
	Identification of community training needs			
10	Training of local project team	1 000	0	1 000
11	Computer training	500	0	500
12	Community consultations to identify training needs	500	0	500
	Monitoring and evaluation			
13	Annual MPRC maintenance	4 000	0	4 000
14	Annual socio economic baseline study collection and analysis	3 000	0	3 000
TOTAL FOR YEAR FIVE		23 500	33 580	**-17 080**

Overview of total cost, income and balance for the first 5 years:

Total cost for 5 years	790 253
Contingency (10% of total cost)	79 025
TOTAL COST FOR 5 YEARS	**869 278**
Estimated income for 5 years	79 200
Balance	**790 078**

Appendix 3: Land papers for the plot in Ndagoni



SERIKALI YA MAPINDUZI YA ZANZIBAR
IDARA YA SERA NA MIPANGO.

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FAX-245-2662
Email.eduo_pemba@yahoo.com
OUR : REF:
KUMB YETU: PSC/77C/56.

S.L.P 203
PEMBA

DATE: 29/06/2010.

KATIBU WA KAMATI YA SKULI YA NDAGONI,
CHAKE -**PEMBA:**

YAH: **KUPATIWA ENEO LA SKULI KWA UJENZI WA KITUO CHA AFYA NA NYUMBA YA DAKTARI:**

Kwa wingi wa heshima, naomba uhusike na mada ya hapo juu.

Barua Ref. No. DVS/192/9 ya 10.9.09 kutoka kwa Katibu Mkuu inahusika.

Nimefika Skuli tarehe 25.6.10 kuona eneo muafaka kwa kujenga kituo cha Afya.

Nimeoneshwa maeneo 2 ambayo walimu wameyapendekeza.

Eneo nililoliona ni muafaka ni upande wa njia kubwa, ambalo liko mpakani mwa eneo la Skuli pia ni kando ya majengo ya Skuli.

Hivyo nategemea kukubaliana nami.

Ahsante,

(Salim A. Kaaby)
/AFISA MDHAMINI WEMA,
PEMBA.

SMZ

SERIKALI YA MAPINDUZI ZANZIBAR

KAMISHENI YA ARDHI NA MAZINGIRA
ZANZIBAR

OFFER NAM KAM/MK/2289

Kumbukumbu Nam. KAM/MK/2289

BARUA YA HAKI YA UTUMIAJI WA ARDHI

Hii ni kuthibitisha kuwa Bwana/Bibi AFISA MHAMINI WIZARA YA ELIMU - PEMBA

mwenye ombi Namba 114 la tarehe 17 Sep. 1999 umekubaliwa kukabidhiwa rasmi barua hii ya haki ya utumiaji wa ardhi kuanzia tarehe 16 Dec. 19 99 kwa masharti yafuatayo:-

1. Ataitumia ardhi kwa UJENZI WA SKULI
2. Utumiaji ufanyike kabla ya miaka miwili kuanzia tarehe ya kukabidhiwa barua hii.
3. Uchoore ramani ya jengo lako na ifikishwe na mchoraji mwenyewe Idara ya Upimaji kwa mazingatio ya Mipanga Miji, katika Kamisheni ya Ardhi na Mazingira.
4. Utumiaji wa ardhi ufuate Sheria, kanuni za ujenzi za Mipango ya Miji na Vijiji na Sheria yoyote nyengine iliyohusika na utumiaji wa ardhi iliyodhinishwa kisheria.
5. Kwa muda wote uliopewa kuitumia ardhi hii utaiangalia vizuri kwa kuweka majengo yako katika hali inayoridhisha.
6. Jengo lolote lisianzishwe kabla ya kupata Idhini ya Halmashauri ya Udhibiti na Idhini za Majenzi, kwa kutayarisha ramani na maelekezo yake na kuyafikisha kwenye Halmashauri hiyo kwa kupata kibali.
7. Utakuwa na dhamana ya kuhifadhi mawe ya mipaka iliyowekwa wakati wa Upimaji na utakuwa dhamana wa kuyarejesha mawe hayo ya mipaka endapo yatang'olewa kwa kuripoti katika Idara ya Upimaji na kugharamia kazi ya kurejesha mawe hayo.
8. Hairuhusiwi kuigawa au kuuza haki hii kwa yeyote.
9. Utahitajika kulipa gharama zote za upimaji, utengenezaji wa ramani na utengenezaji wa barua hii pamoja na malipo mengine yatakayotakiwa na Serikali kwa muda wowote wa kumiliki haki hii.
10. Haki hii inaweza kubatilishwa ikiwa ardhi haikutumiwa kwa mujibu wa masharti yaliyoelezwa juu au isipotumiwa kwa kipindi kilichozidi miaka miwili tangu tarehe ya kukabidhiwa barua hii au kwa mujibu wa Sheria yeyote itakayobatilisha umilikaji kwa manufaa ya Taifa.

MAELEZO YA KIWANJA

UNAYO HAKI YA ARDHI YOTE INAYOONESHWA KATIKA RAMANI NAM 1

ENEO LA NDAGONI YA KIWANJA NAM 1

CHENYE UKUBWA WA 33087 Sq. m. AMBACHO KINAONESHWA KWA RANGI NYEKUNDU KATIKA RAMANI HIYO AMBAYO INAWEKWA NA KUDHIBITIWA KATIKA IDARA YA UPIMAJI - ZANZIBAR.

KAMISHENI YA ARDHI NA MAZINGIRA

Naibu Katibu Mtendaji
Kamisheni ya Ardhi na Mazingira
Pemba

CHAKE CHAKE - PEMBA

SMZ
P.O.BOX 203
CHAKE-CHAKE

SERIKALI YA MAPINDUZI YA ZANZIBAR
WIZARA YA ELIMU NA MAFUNZO YA AMALI
IDARA YA MIPANGO NA BAJETI

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Ref: BVS/192/9

S. L. P 394
Zanzibar
Tanzania
Tarehe: 10 – 09 - 2009

Nd. Ali Khamis Ali
Katibu wa Kamati ya Skuli
Skuli ya Ndagoni,
CHAKE CHAKE
PEMBA.

KUH: OMBI LA KUPATIWA ENEO LA SKULI KWA UJENZI WA KITUO CHA AFYA NA NYUMBA YA DAKTARI

Kwa heshima naomba urejee barua yako ya tarehe 4/8/2009 yenye mada ya hapo juu.

Napenda kukujuilisha ya kuwa, kimsingi Wizara haina tatizo au pingamizi kwa kujengwa kituo cha Afya katika eneo la skuli ya Ndagoni kwani kinahitajika katika eneo hilo. Kwa maana nyengine ruhusa ya kujenga Kituo hicho imetolewa.

Hata hivyo kabla ya ujenzi wa Kituo hicho cha Afya kwanza itabidi Afisa wetu wa Majenzi aje skulini kwako ili akagaue eneo linalopendekezwa kujengwa ili lisiwe karibu na majengo ya skuli, kwa vile kituo hicho pia kitatumiwa na wananchi.

Kwa nakala ya barua hii Afisa Mdhamini wa Wizara ya Elimu na Mafunzo ya Amali Pemba unaombwa kuchukua hatua za kumpeleka Afisa wetu wa Majenzi ili kukagua eneo linalotaka kujengwa Kituo cha Afya.

Natanguliza shukrani za Wizara kwa mashirikiano yako.

Ahsante,

(Rijaal A. Rijaal)
Kny. Katibu Mkuu,
Wizara ya Elimu na Mafunzo ya Amali,
Zanzibar.

Nakla: 1. Afisa Mdhamini (WEMA) Pemba
2. Afisa (EMA) Mkoa Kusini Pemba
3. Afisa (EMA) Wilaya ya Chake Chake Pemba

SMZ
P.O. BOX 203
PEMBA
CHAKE-CHAKE
SKULI YA NDAGONI

04/08/09

SKULI YA NDAGONI
NAMBARI YA USAJILI: SK/MS/34
CHAKE CHAKE
PEMBA
04-08-2009

KATIBU MKUU
WEMA ZANZIBAR

IMPITIE

AFISA MDHAMINI - WEMA

IMPITIE

AFISA (EMA) MKOA KUSINI - PEMBA

IMPITIE

AFISA (EMA) WILAYA YA CHAKE CHAKE

NDUGU:

KUH: OMBI LA KUPATIWA ENEO LA SKULI KWA UJENZI WA KITUO CHA AFYA NA NYUMBA YA DAKTARI

Kwa uningi wa heshima naomba uhusike na mada ya hapo ju Kamati ya skuli iliyokutana Jumapili tarehe 17-05-2009 saa 8:52 jioni chini ya mwenyekiti wa muda ndugu SHEHA KAHATAN KHAMIS, ambae sasa ndie mwenyekiti wa kamati ya skuli. Aidha kikao hicho kilichohudhuriwa na wajumbe 8 kati ya 11, kwa kauli moja wajumbe walikubaliana na kupendekeza kupatka ombi hilo kwenu

Natanguliza shukurani zangu kwenu

Ahsante
Mfanyakazi mtiifu

(signature)

ALI KHAMIS ALI - 1/178
ZANTEL 0773 283949

(signature)

SHEHA KAHATAN KHAMIS
ZANTEL 0773 708386
MW/KAMATI YA SKULI

UTANGULIZI

Skuli ya Ndagoni iliyoanzishwa tarehi 25-02-1999. Hivi sasa ni skuli ya msingi na kati (STD I – F III) Mwalimu muanzilishi wa majengo na mwalimu mkuu hadi sasa ni Ali Khamis Ali. Yapo majengo mawili ya kudumu yenye idadi ya vyumba 9 vya kusomea, Chumba cha walimu, Afisi ya mwalimu mkuu, na ghala na vyoo viwili vyenye matundu 8. Hivi sasa wapo walimu 14 wote wanaume na idadi ya wanafunzi 812 kati ya hao 331 ni wanawake na 318 ni wanaume.

ENEO LA SKULI AU MAELEZO YA KIWANJA

Hati ya ardhi imeoneshwa kama ifuatavyo:

Tarehe ya kutolewa 16-02-2000.

Kiwanja nambari 1

Ramani nambari 1 Eneo la Ndagoni

Ukubwa wa Eneo 33087 Sq. m.

UPATIKANAJI WA MATIBABU

Walimu na wanafunzi hulazimika kutembea kilomita kumi na moja zisizo makisio kwenda na kurudi kufuatilia matibabu, yaani kutoka Skuli ya Ndagoni hadi kilipo kituo cha afya Wesha. Hali hii hupelekea visingizio mbali mbali vya kweli na visivyokuwa vya kweli kitu ambacho kinapelekea kutokuwa na utendaji nzuri wa kazi na kushamiri utoro uliokithiri kwa wanafunzi. Kwa kutumia hali hiyo Skuli hulazimika kutumia fedha nyingi kununua dawa (FIRST AID) hali ambayo kama kituo cha afya kitajengwa kitaondosha visingizio vyote visivyokuwa vya lazima kwa watendaji na wanafunzi.

SERA YA ELIMU

Lengo la Serikali ya mapinduzi ya Zanzibar ni kuboresha sera ya elimu visiwani kwa kuanzisha Skuli za maandalizi, kitaifa ifikapo mwaka 2012 kila Skuli ifanye hivyo na kimataifa 2015 maazimio hayo yafikiwe. Kutokana na hali hiyo watoto hao wadogo watakuwa vigumu kufuatilia huduma hiyo ya afya. Ili kwenda sambamba na sera hiyo Skuli yangu imekusudia kuanzisha au kufungua madarasa ya maandalizi kabla ya mwaka 2012, lakini kukosekana huduma hiyo ya afya (kwa kutojengwa kituo cha afya

hali itakuwa ngumu zaidi kiutendaji.

MAOMBI YA ZIADA

(i) Wizara ya Elimu na mafunzo ya Amali ifanye mazungumzo na Wizara ya afya juu ya jambo hilo, ikiwa ni pamoja na kutembelea kwa wahisani.

(ii) WEMA iruhusu kamati ya skuli kutafuta wafadhili wa ndani na nje ya nchi.

HITIMISHO

Kamati inaamini ombi letu wizara husika italipokea ikiwa ni pamoja na kupatiwa ruhusu ya kutumia eneo hilo kwa ujenzi wa kituo cha afya.

Ansante

Mfanyakazi mtiifu

ALI KHAMIS ALI

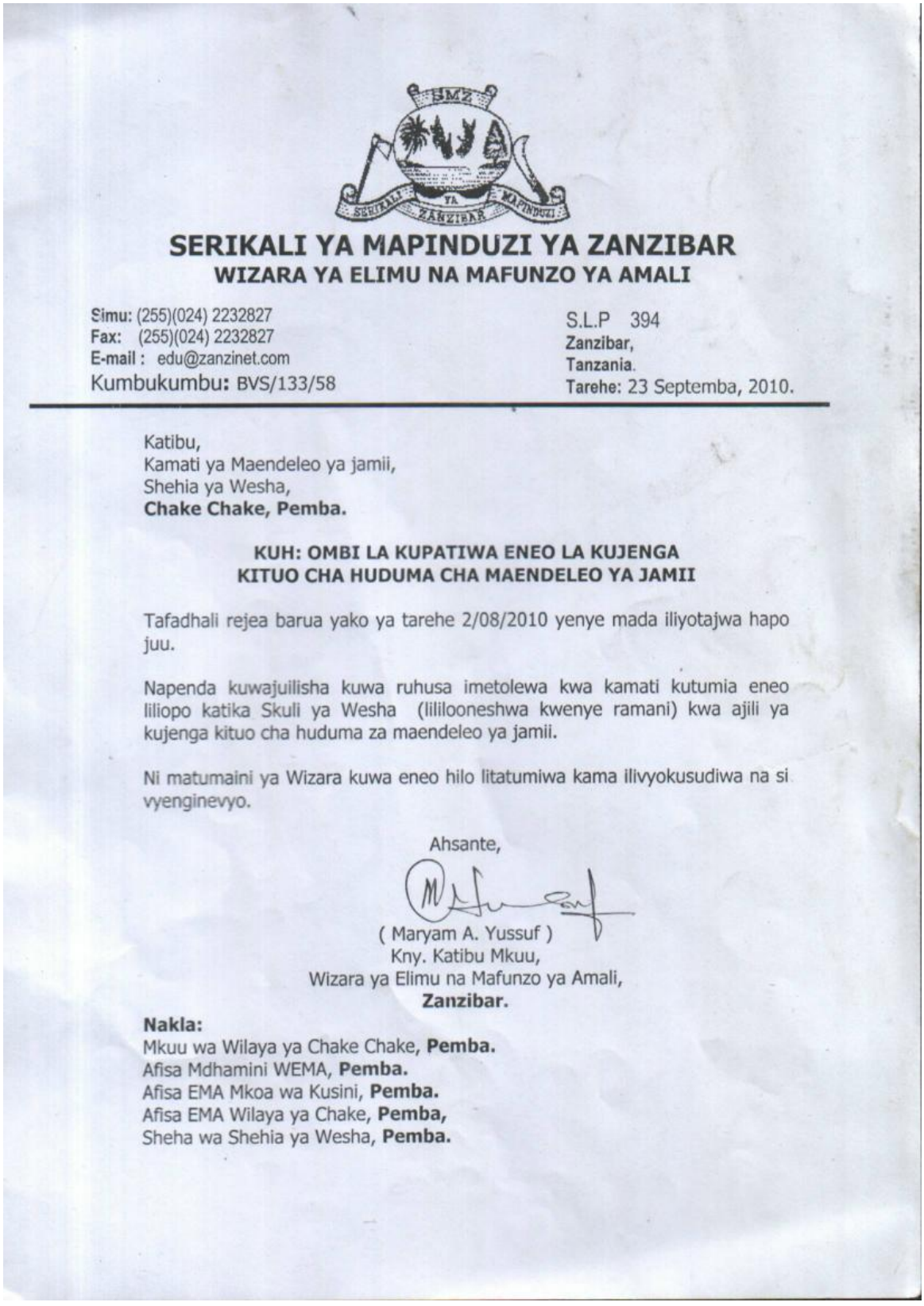
KATIBU WA KAMATI YA SKULI

WAJUMBE WALIOHUDHURIA

	JINA	SAHIHI	WADHIFA	MAELEZO
1	SHEHA KAHTAN KHAMIS	[illegible]	MWENYEKITI	-
2	ALI KHAMIS ALI	[illegible]	KATIBU	-
3	HAJI ALI MCHA	[illegible]	MJUMBE	-
4	NUNU ALI JUMA	[illegible]	MJUMBE	-
5	MAKAME HAJI MAKAME	[illegible]	MJUMBE	-
6	ISSA ALI MOHD	-	MJUMBE	UDHURU
7	JUMA HAMAD JUMA	[illegible]	MJUMBE	-
8	JUMA RAMADHAN CHANDI	JRF	MJUMBE	-

[illegible stamp]

Appendix 4: Land papers for the plot in Wesha



SERIKALI YA MAPINDUZI YA ZANZIBAR
WIZARA YA ELIMU NA MAFUNZO YA AMALI

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S.L.P 394
Zanzibar,
Tanzania.
Tarehe: 23 Septemba, 2010.

Katibu,
Kamati ya Maendeleo ya jamii,
Shehia ya Wesha,
Chake Chake, Pemba.

KUH: OMBI LA KUPATIWA ENEO LA KUJENGA KITUO CHA HUDUMA CHA MAENDELEO YA JAMII

Tafadhali rejea barua yako ya tarehe 2/08/2010 yenye mada iliyotajwa hapo juu.

Napenda kuwajuilisha kuwa ruhusa imetolewa kwa kamati kutumia eneo liliopo katika Skuli ya Wesha (lililooneshwa kwenye ramani) kwa ajili ya kujenga kituo cha huduma za maendeleo ya jamii.

Ni matumaini ya Wizara kuwa eneo hilo litatumiwa kama ilivyokusudiwa na si vyenginevyo.

Ahsante,

(Maryam A. Yussuf)
Kny. Katibu Mkuu,
Wizara ya Elimu na Mafunzo ya Amali,
Zanzibar.

Nakla:
Mkuu wa Wilaya ya Chake Chake, **Pemba.**
Afisa Mdhamini WEMA, **Pemba.**
Afisa EMA Mkoa wa Kusini, **Pemba.**
Afisa EMA Wilaya ya Chake, **Pemba,**
Sheha wa Shehia ya Wesha, **Pemba.**

NDAGONI - JAVINI
WILAYA YA CHAKE-CHAKE
MKOA WA KUSINI - PEMBA
20 - 08 - 2010.

DLIST ASCLME project.
Impetii
MWALIMU MKUU Nimeiyona, naiomba DLIST ASCLME project iendelee
SKULI YA NDAGONI na ujenzi bila ya wasiwasi. Amimis. 0773288747
NDUGU:

YAH: RUHUSA YA KUPEWA ENEO KWA KULITUMIA KWA MAJENGI YALIYOKUSUDIWA LIKIWEMO LA HOSPITALI

Tafadhali husika na mada ya hapo juu.
Kutokana na Shughuli muhimu iliyokusudiwa. Tumeamua kutowa eneo letu (ARDHI (SHAMBA) kwa ajili ya kuendeleza majengi yaliyokusudiwa. Sehemu ambazo tumeamua kutowa katika shamba yetu hiyo ni upande wa kusini (SOUTH) na upande wa matulia jua (WEST). Uwamuzi wa kufanya hivyo, umekuja baada ya kuwa na wasiwasi, kuwa huenda eneo lililomilikiwa ni Skuli kutotosheleza majengi yaliyokusudiwa. Tunawaagiza wenye mradi kulitumia eneo kwa kuendeleza kazi zao bila ya woga. KAMA kutatokea madai dhidi ya eneo hilo aonane na walio towa eneo kwa kupata maelekezo zaidi na sio vyenginevyo.

Nawatakia maisha marefu na kazi njema.

Ahsante.

Uthibitisho wa ruhusa ya kujengwa kwa eneo hilo ni picha na saini zetu kama zinavyojionesha hapo chini

Ali Khamis Kwale

Haji Hamad Kwale
SIM NO 0773 662704
HHamad

KAMATI YA MAENDELEO YA JAMII
SHEHIA YA WESHA,
CHAKE PEMBA.
2/8/2010.

KATIBU MKUU WIZARA YA ELIMU NA
MAFUNZO YA AMALI ZANZIBAR.

IMPITIE.

AFISA MDHAMINI WIZARA YA ELIMU NA MAFUNZO YA AMALI
PEMBA

IMPITIE,

MWALIU MKUU SKULI YA WESHA

Kikao cha kamati ya skuli na maendeleo kilikaa [illegible]
- Wanakamati wamekubaliana kujengwa kituo hicho.
- Kwa kuwa kutakuwa na mambo yatakayo saidia maendeleo ya skuli. Tukaona tukubaliane na hili.
- Hivyo tunaomba turuhusiwe.
[illegible]
m/m

6/8/2010

YAH: OMBI LA KUPATIWA ENEO LA KUJENGA KITUO CHA HUDUMA CHA MAENDELEO YA JAMII

Naomba uhusike na mada hiyo hapo juu.

Kwa heshima tunaomba tupewe eneo liliopo hapo skuli ya Wesha ambalo tunataka kujenga kituo cha huduma za maendeleo ya jamii, kituo hicho kitajumuisha mambo mengi kama hivi ifuatavyo:-

Chumba cha Computa Nusary School, Mkataba, holi kubwa na dogo hivi vitasaidia skuli yetu na skuli jirani.

Vile vile kituo hicho kitajumuisha majengo mengine kama maduka mikahawa na sehemu nyengine za kupumzikia.

Ujenzi wa kituo hichi utadhaminiwa na Danida. Mradi huu uliibuliwa na Jumuiya ya ECO kutoka Africa ya Kusini ambao unatoa msaada wake kwa Rasi Mkumbuu ikiwemo shehia ya Wesha.

Kwa vile umekusudia kuleta maendeleo ya jamii utafanya kazi kwa muda wa miaka ishirini mbele inshaallah.

Kwa hiyo sisi walimu wakuu sheha wa shehia Wesha pamoja na kamati zote tunaomba eneo hili kwani na hata wataaluma wetu ndipo walipoafikiana kuwa panafaa kujenga kituo hicho.

Pamoja na barua hii naambatanisha na vivuli vya ramani ya jengo la kituo hicho.

Tunataraji ombi letu litakubaliwa kwa uzito wa haja.

Tunaomba mashirikiano mema.

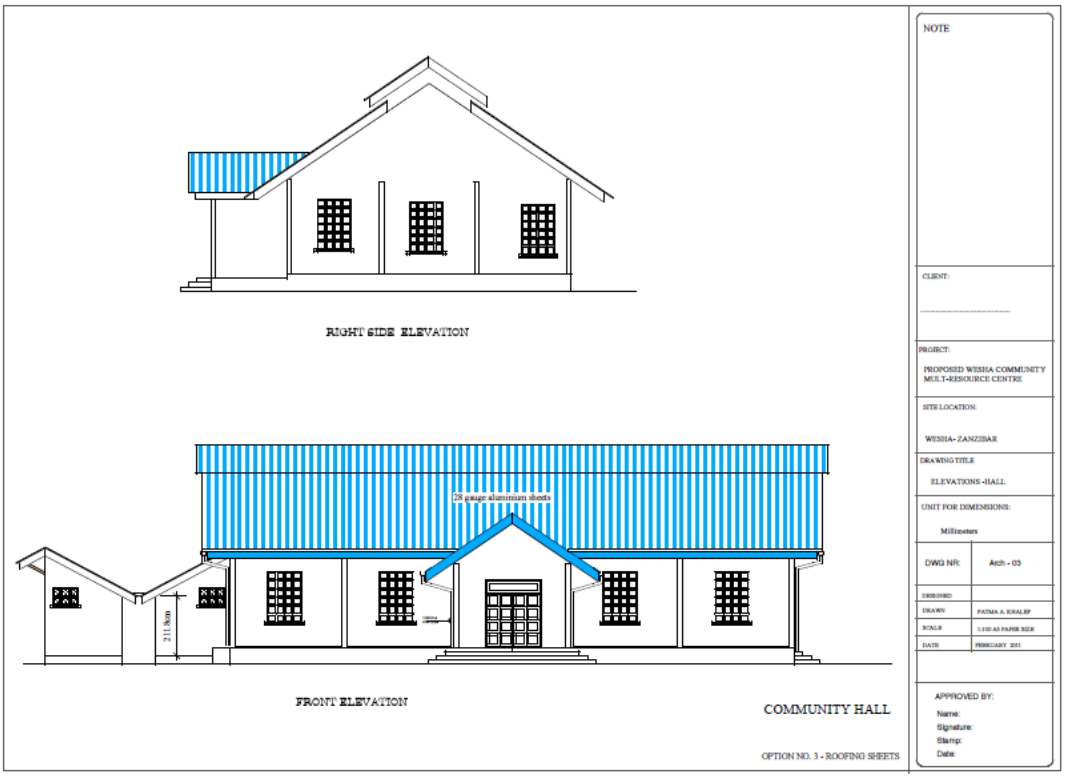
Ahsante.
Wenzenu kwa ajili ya maendeleo.

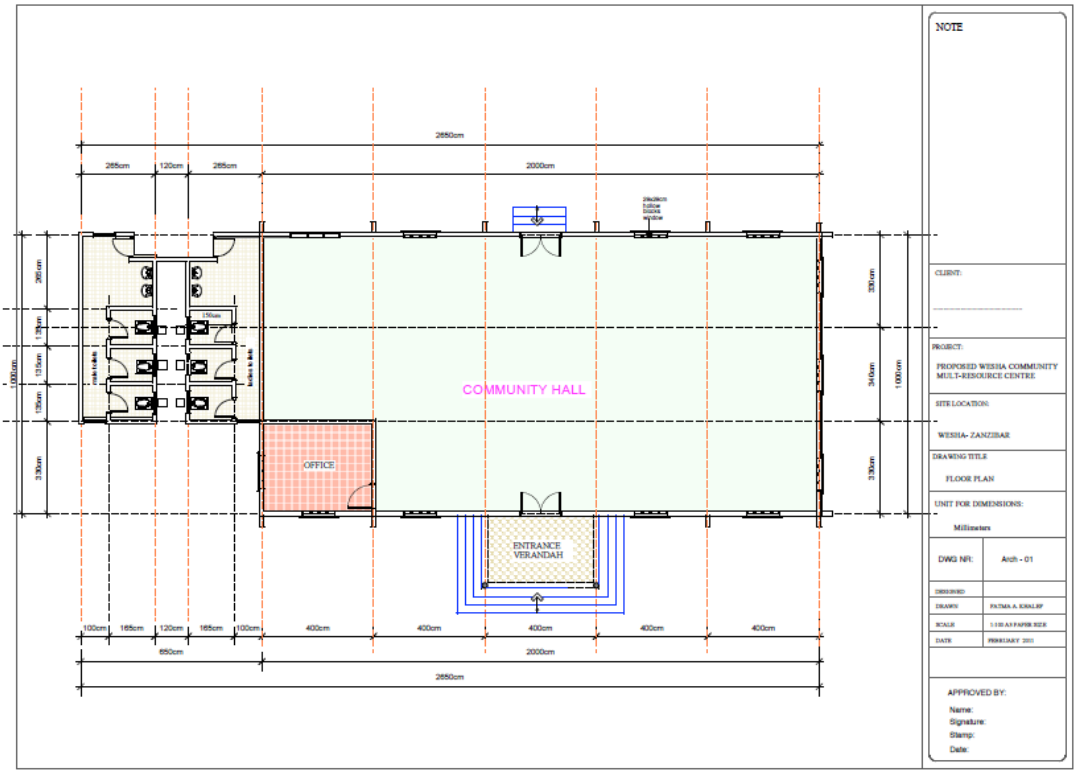
6/2/10
.....
Katibu wa Kamati ya Maendeleo

Nakala:
- Mkuu wa Wilaya (kwa taarifa)
- Afisa Elimu Mkoa (kwa taarifa)
- Afisa Elimu Wilaya (kwa taarifa)
- Mkurugenzi Mtendaji Jumuiya ya hifadhi kisiwa cha Mithali Mika (kwa taarifa).
- Afisa Mkuu Idara ya Uvuvi na Mazao ya Baharini
- Afisa Mkuu Idara ya Magofu na mambo ya kale
- Sheha wa shehia
- Kamati ya maendeleo ya jamii ya Wesha.

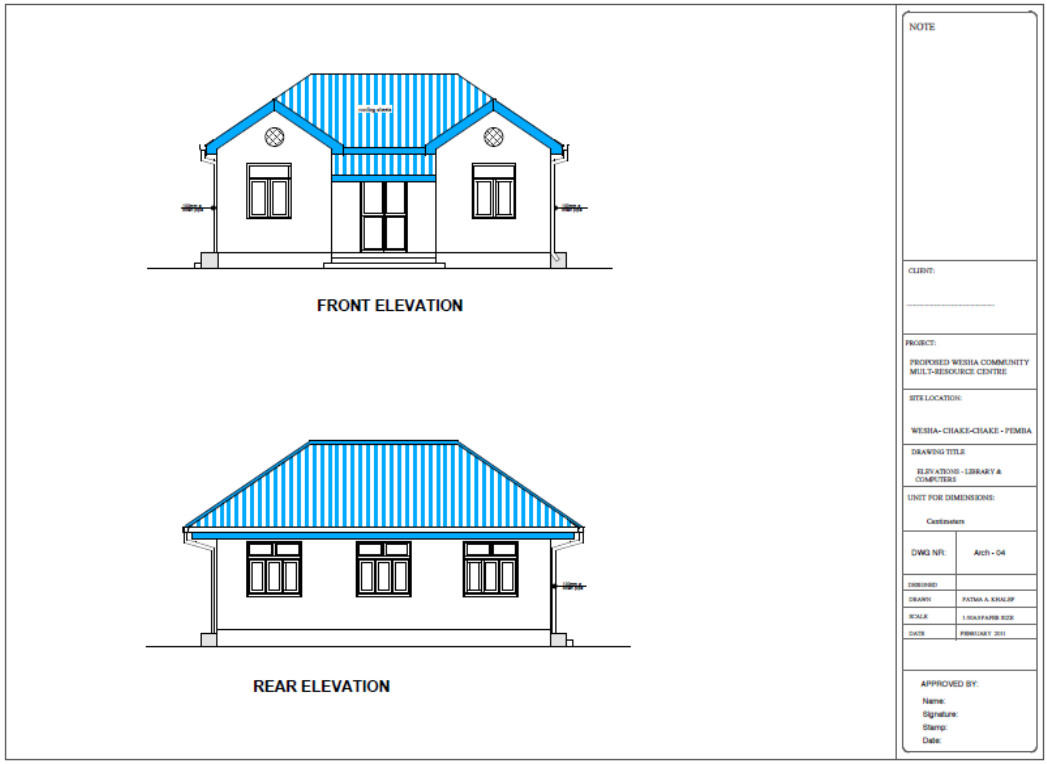
Appendix 5: Detailed construction drawings for the MPRC buildings

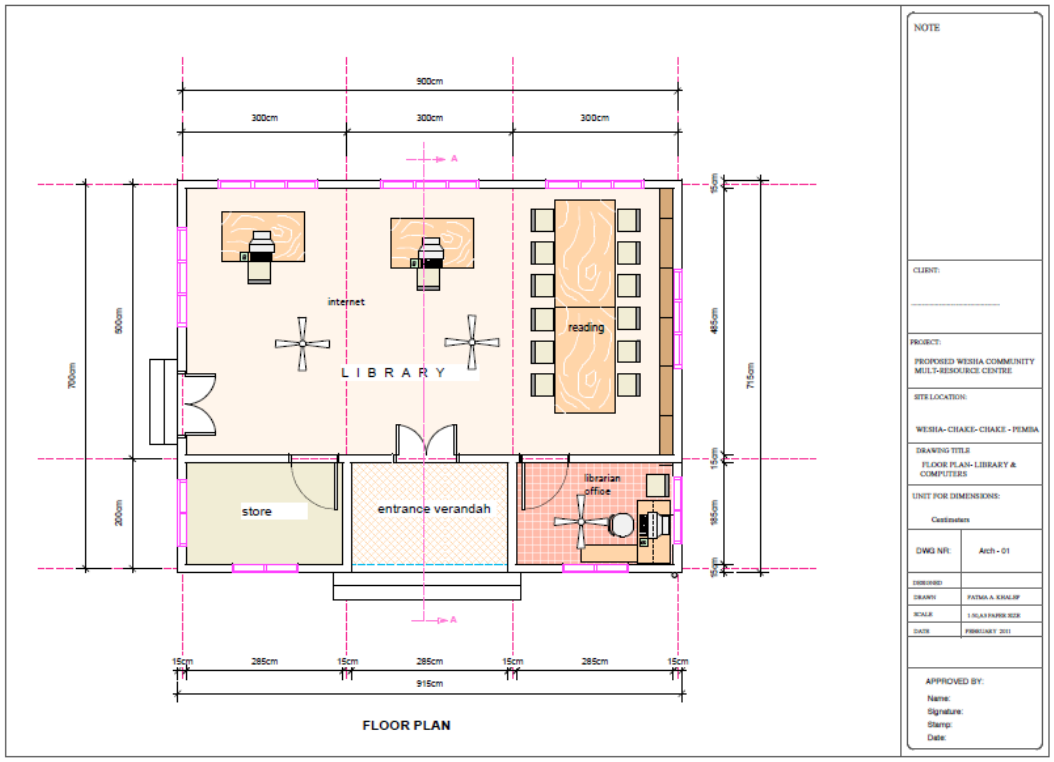
5.1 Community meeting hall



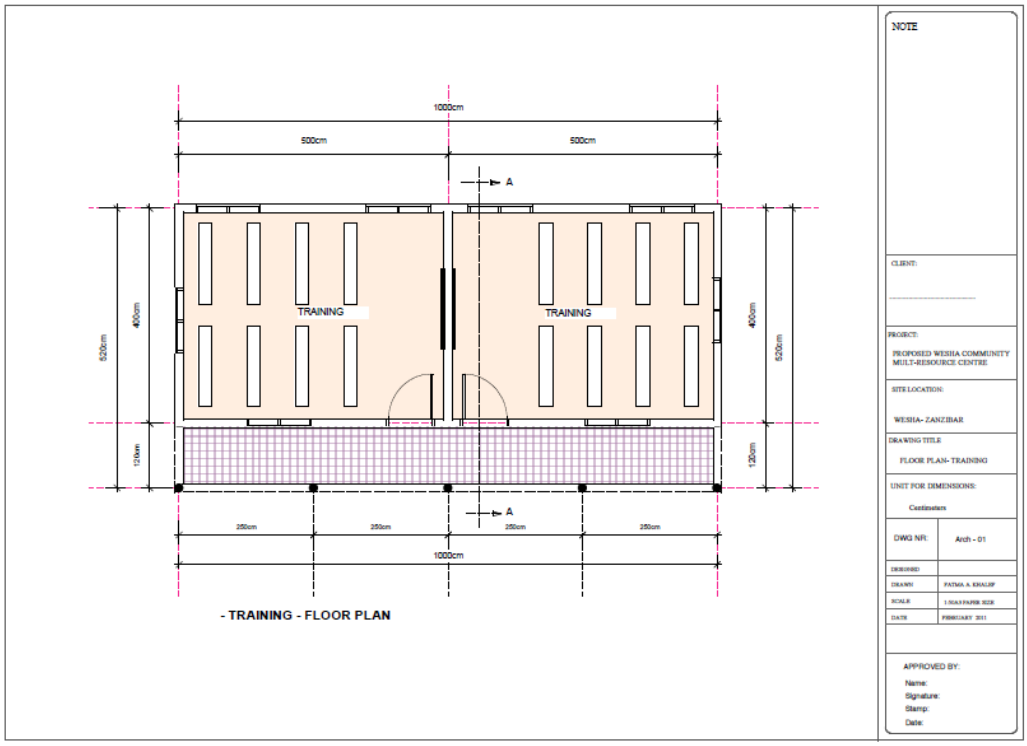


5.2 Class rooms/training rooms

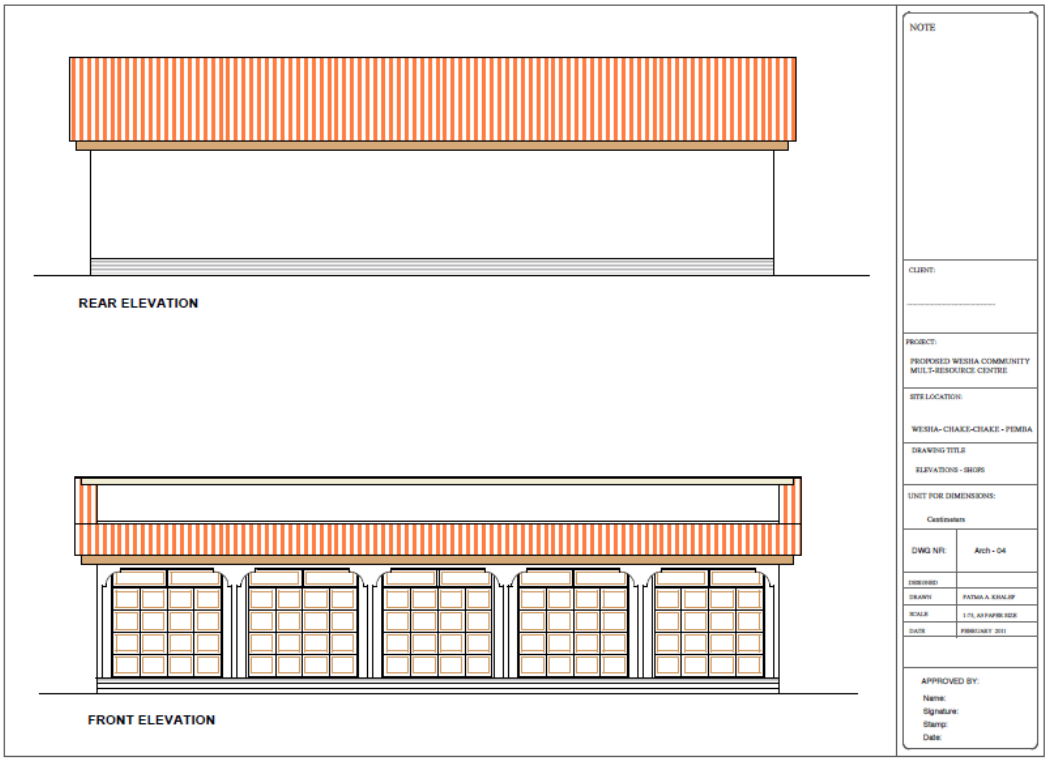


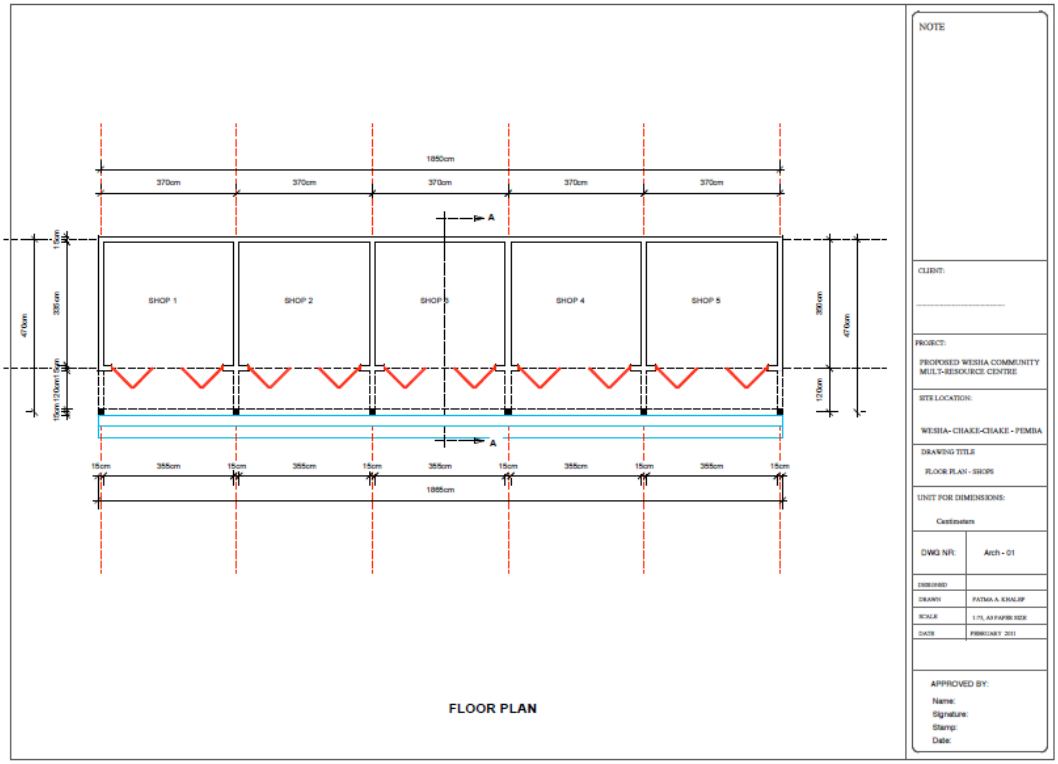



FRONT ELEVATION -
TRAINING
REAR ELEVATION
NOTE
CLIENT:
PROJECT:
PROPOSED WESHA COMMUNITY MULT-RESOURCE CENTRE
SITE LOCATION:
WESHA- ZANZIBAR
DRAWING TITLE
ELEVATIONS - TRAINING
UNIT FOR DIMENSIONS:
Centimeters
DWG NR:
Arch - 01
DESIGNED
DRAWN
FATMA A. KHALIF
SCALE
1:75A3 PAPER SIZE
DATE
FEBRUARY 2011
APPROVED BY:
Name:
Signature:
Stamp:
Date:

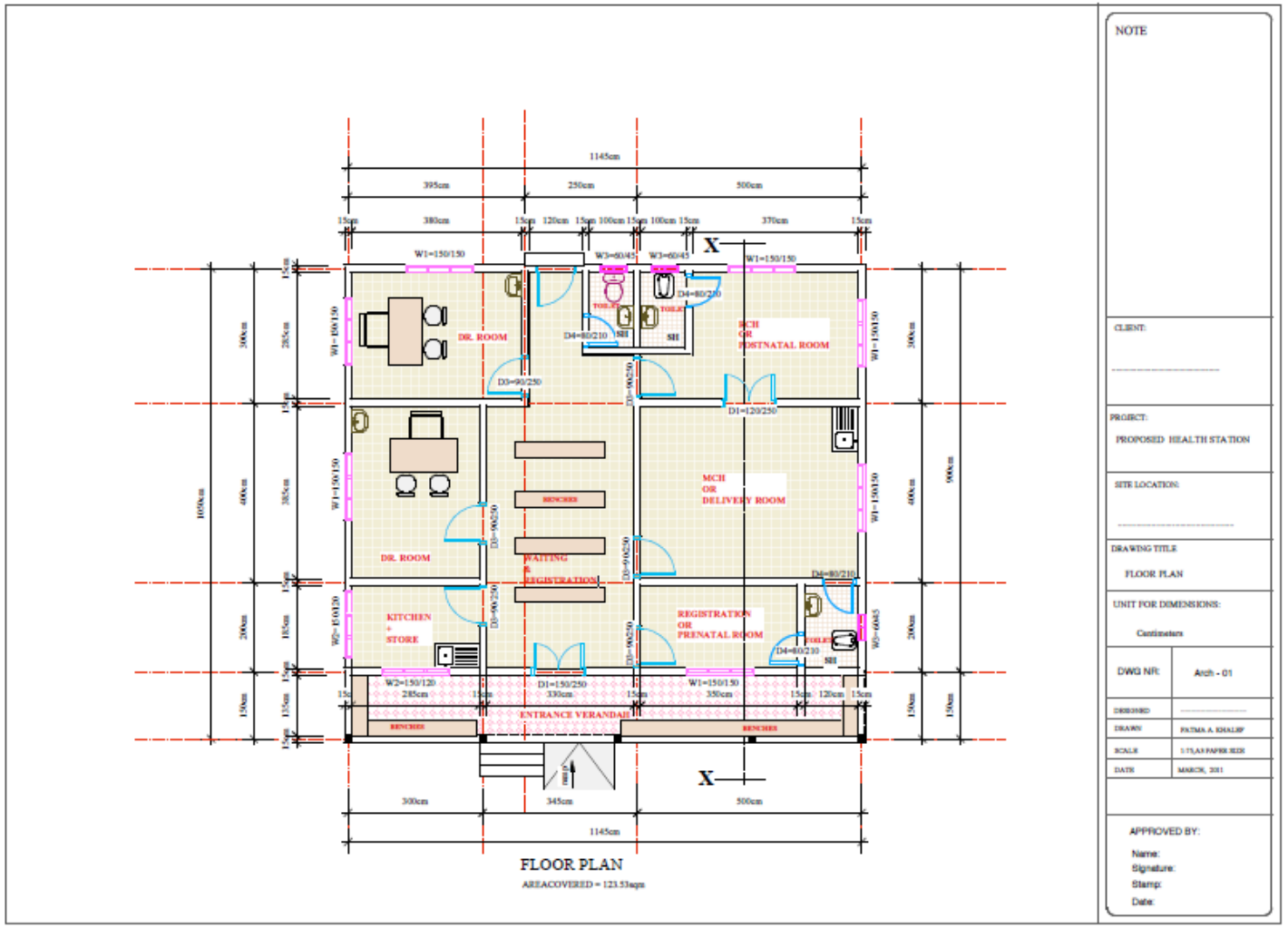

1000cm
500cm
500cm
A
TRAINING
TRAINING
520cm
400cm
120cm
400cm
520cm
120cm
250cm
250cm
250cm
250cm
1000cm
- TRAINING - FLOOR PLAN
NOTE
CLIENT:
PROJECT:
PROPOSED WESHA COMMUNITY MULT-RESOURCE CENTRE
SITE LOCATION:
WESHA- ZANZIBAR
DRAWING TITLE
FLOOR PLAN- TRAINING
UNIT FOR DIMENSIONS:
Centimeters
DWG NR:
Arch - 01
DESIGNED
DRAWN
FATMA A. KHALIF
SCALE
1:50A3 PAPER SIZE
DATE
FEBRUARY 2011
APPROVED BY:
Name:
Signature:
Stamp:
Date:

5.3 Shops


REAR ELEVATION
FRONT ELEVATION
NOTE
CLIENT:
PROJECT:
PROPOSED WESHA COMMUNITY MULT-RESOURCE CENTRE
SITE LOCATION:
WESHA- CHAKE-CHAKE - PEMBA
DRAWING TITLE
ELEVATIONS - SHOPS
UNIT FOR DIMENSIONS:
Centimeters
DWG NR:
Arch - 04
DESIGNED
DRAWN
FATMA A. KHALIF
SCALE
1:75, A3 PAPER SIZE
DATE
FEBRUARY 2011
APPROVED BY:
Name:
Signature:
Stamp:
Date:


1850cm
370cm
370cm
370cm
370cm
370cm
A
SHOP 1
SHOP 2
SHOP 3
SHOP 4
SHOP 5
470cm
385cm
150cm
120cm
390cm
470cm
120cm
15cm
355cm
1885cm
FLOOR PLAN
NOTE
CLIENT:
PROJECT:
PROPOSED WESHA COMMUNITY MULT-RESOURCE CENTRE
SITE LOCATION:
WESHA- CHAKE-CHAKE - PEMBA
DRAWING TITLE
FLOOR PLAN - SHOPS
UNIT FOR DIMENSIONS:
Centimeters
DWG NR:
Arch - 01
DESIGNED
DRAWN
FATMA A. KHALIF
SCALE
1:75, A3 PAPER SIZE
DATE
FEBRUARY 2011
APPROVED BY:
Name:
Signature:
Stamp:
Date:

5.4 Ndagoni clinic



Appendix 6: Cost estimates for MPRC construction

Kara, Aly Issa,
Quantity Surveyor,
P.O. Box 4624,
Zanzibar.

18th April 2011.

DANIDA HSPS,
ZANZIBAR.

Acc
18.04.11.

Book under Strategic Initiatives (Ras Mkumbuu)

Dear Sir

RE: PROPOSED WESHA COMMUNITY MULTI-RESOURCE CENTER.

SUB: PREPARATION OF ESTIMATE FOR THE PROJECT.

The above heading refers.

We would like to present the estimate of the above mentioned project amounting to Tshs 839,500,000/- excluding VAT as per attached sheets.

Also we are requesting payment for the above work amounting to Tshs 875,000/- (Eight hundred and seventy five thousand only).

Thanks.

Yours,

A. I. Kara.

GENERAL SUMMARY

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	AMOUNT (Tshs)
	GENERAL SUMMARY				
1	COMMUNITY HALL				302,000,000
2	TRAINING CENTER				66,500,000
3	LIBRARY				82,000,000
4	SHOPS				109,000,000
5	INFORMATION CENTER				20,000,000
6	PROVISIONAL SUMS				260,000,000
	WESHA COMMUNITY CENTRE.				
	GRAND TOTAL IN TSHS EXCLUDING VAT				839,500,000

Page 1 of 1

Appendix 7: CVs of proposed experts

UPDATED: JANUARY 2010

FRANCOIS J. ODENDAAL, Ph.D., FRGS

Managing Director

BIRTH	25 January 1955
CITIZENSHIP	South Africa
EDUCATION	Ph.D. Flinders University of South Australia, Australia, 1981
	B.Sc. Honours, University of the Witwatersrand, South Africa, 1977
	B.Sc. University of Natal, South Africa, 1976
ACADEMIC	
APPOINTMENTS	Adjunct Professor, Environmental Resource Centre, Cape Peninsula University of Technology, South Africa, 2008 - Present
	Visiting Professor, Department of Science Education and
	Environmental Studies, Connecticut State University,
	USA, 1993 - 2000
	Chief Scientific Officer, Marine Research Institute, Zoology
	Department, University of Cape Town, South Africa, 1992-1996
	Senior Researcher, Zoology Department, University of Cape Town, South Africa, 1988 - 1991
	Research and Teaching Associate, Zoology Department, Duke University, USA, 1985 - 1988
	Post-Doctoral Research Fellow, Department of Biological Sciences, Stanford University, USA, 1981 - 1984
AFFILIATIONS	Fellow, British Royal Geographic Society, London (FRGS)
	Founding member of the Global Sustainable Tourism Council
	International member of the IAIA (International Association for Impact
	Assessment)

TEACHING AND ADMINISTRATIVE EXPERIENCE

1994 - Present	Department for Science Education and Environmental Studies, Connecticut State University, USA
	Visiting Professor
	Responsible for teaching the following courses: Masters Level (EVE 573) on Tropical Rainforest Ecology; Masters Level (EVE 594) on Global Ecological Case Studies; Masters Level (EVE 598) on Ecotourism Development
1998 - Present	Supervise numerous interns on work-study or dissertation assignments for European and US universities as Eco-Africa's Chief Executive Officer
1998 - Present	University of Cape Town, South Africa
	External Supervisor
	Supervised four interns in Environmental Science, three masters students and one doctoral student
1997 - 1998	University of Tamatave, Madagascar
	External Supervisor
	Supervised one Masters students in Contemporary Environmental History of the Masoala Peninsula, Madagascar
1995 - 1997	Peninsula Technikon, South Africa
	Consultant
	Designed and taught a semester course in Environmental Engineering which has now become an established course in the Engineering Department
1994 - 1995	University of Antananarivo, Madagascar
	External Supervisor
	Supervised two Masters students in Fisheries and Coastal Zone Management
1986 - 1987	Duke University, North Carolina, USA
	Teaching and Research Associate (Animal Diversity 125)
1981 - 1984	Rocky Mountain Biological Laboratories, USA
	Managed the *Euphydryas* population biology research team
1981 - 1984	Stanford University, California, USA
	Designed and taught BIO 199 and Independent Studies 101
1980 - 1981	Flinders University of South Australia, Australia
	Teaching Assistant (Ecology and Population Biology)
1977	University of the Witwatersrand, South Africa
	Teaching Assistant (Zoology 1)
1975 - 1976	Natal University, South Africa

Financial Planning Committee, and Vice-President and Treasurer of the Students' Representative Council

FUNDING AND AWARDS[6]

GTZ (German Foreign Aid and Technical Agency), 1999/2000:

Facilitation and preparation of the Integrated Development Plan for the Richtersveld.

IUCN / IFC / World Bank 2002: Preparation of a GEF full project brief for "Biodiversity Conservation and Community Development in Vilanculos Coastal Wildlife Sanctuary".

World Bank, 1999: Design and Implementation of a Distance Learning and Information Sharing Tool (DLIST) for the Northern Cape and Namibian coasts (Norwegian Trust Funding)

World Bank, 1999: Preparation for Strategic Environmental

Assessment (SEA) of the Northern Cape, South Africa, and Namibian coastal regions (under Knowledge Management Program)

Global Environment Facility (GEF), 1999: For PDFA, Community-based Conservancies in Namaqualand (World Bank, Implementing Agency)

GTZ (German Foreign Aid and Technical Agency), 1999: three different integrated conservation and development contracts in South Africa

GTZ (German Foreign Aid and Technical Assistance Agency), 1998: Environmental Economic Analysis of Richtersveld region in South Africa

GTZ (German Foreign Aid and Technical Assistance Agency), 1998: Assessment of Field Guides

SEACAM (Secretariat of East African Coastal Areas Management)/SAREC/World Bank, 1998/9: Hired to teach two Environmental Assessment (EA) courses to representatives from eleven countries

SEACAM (Secretariat of East African Coastal Areas Management)/SAREC/World Bank, 1998/9: For drawing up Environmental Assessment Guidelines (co-author)

SEACAM (Secretariat of East African Coastal Areas Management)/SAREC/World Bank, 1998: For NGO Capacity Building Training Course (co-trainer)

USAID/ANGAP, 1996. Ecotourism study on the relationship between the national park system, the private sector and local communities

University of Cape Town; Research Council Grant, 1993

ESKOM, the South African Power and Electricity Commission, 1990 - 1991. Study on the sensitivity of the intertidal zone to acquisition of one or more sites for possible nuclear development

De Beers Division of Anglo American, 1990 - 1992. Study on of natural recovery of overburden dumps on DBCM coastal properties in Namaqualand

[6] Note that Dr Odendaal has also received considerable other funding for projects in the name of his company ECO-AFRICA ENVIRONMENTAL CONSULTANTS (these are listed under Commissioned Consultations below as well as the attached Profile of Contracts)

US Department of Agriculture (USDA), Forestry Service, Louisiana, 1992. A study on pine beetle movement patterns with the aim of finding biological control methods to help counter massive pine beetle attacks on pine stands in the South-eastern states

SANF (WWF) Research Grant, 1988. Study on small reserves for insect conservation

Earthwatch Research Grant, 1986. Project on butterfly ecology in Texas

NSF Grant, Population Ecology Panel; *Battus* research in Texas (to M. Rausher), 1985

National Science Foundation Grant, Population Ecology Panel; *Euphydryas* research in Colorado (to F. Stermitz), 1984

Postdoctoral Fellowship, Stanford University, Population Biology Fund, 1982 - 1983

Postdoctoral Fellowship, Stanford University, Population Biology Fund, 1982 - 1983

Overseas Postdoctoral Fellowship, Council for Scientific and Industrial Research (CSIR), South Africa,1980 - 1982

Most Outstanding Student Seminar in Australia, Australian Society of Herpetologists, 1979

Most Outstanding Student Seminar in Australia, Australian Society of Herpetologists, 1978

Postgraduate Award, Rotary International, 1978 - 1979

INTERESTS

Integrated coastal zone management; information sharing technology for coastal zone management; integrated conservation and development; rehabilitation of coastal systems; desertification; living marine resource harvesting and cultivation; integrated resource management and planning; conservation biology; marine ecology; marine resource exploitation; community-based natural resource management (CBNRM); tropical reef and rainforest ecology; global ecological issues; sustainable ecotourism development.

CONSULTATION

Integrated Coastal Zone Management (ICMP); Strategic Planning; Integrated Development Planning; Strategic Environmental Assessment (SEA); environmental education; development of nature-based livelihood options; marine and coastal community ecology; sustainable development; land-use planning, coastal zone management; integrated resource planning and management; Environmental Assessment (EA); integrated development planning (IDP); renewable energy; mariculture; protected areas delimitation, management and development; community-based resource management and conservation; ecotourism development; NGO capacity building.

TRAINING COURSES AND SYMPOSIA

2005/6

Development and restructuring of the online courses offered in three countries through the information sharing platform Distance Learning Information Sharing Tool (DLIST) that is funded by the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP)

2004/5	Design and delivery of Environmental Assessment seminars and training workshops to local, district and national government officials of the Revolutionary Government of Zanzibar, with funding from the Ministry of Foreign Affairs (MFA), Finland
1994-2000	Development and delivery of Masters Modules in Ecotourism Development, Global Ecological Case Studies, Tropical Rainforest Ecology and Environmental Filmmaking at Southern Connecticut State University
2000	Module on community involvement in ICZM: Coastal Management Course. University of Cape Town, Cape Town, South Africa
2000	On living marine resource exploitation with specific reference to worker-owned kelp companies. Symposium on Co-Management of Resources off the Southwestern Coast of Africa, Luderitz, Namibia
2000	On Information Sharing and Collective Planning in the transboundary SEA in Namibia and South Africa, introducing DLIST. Symposium on Co-Management of Resources of the Southwestern Coast of Africa. Luderitz, Namibia
2000	Involvement of communities in the decision-making process with reference to community-based conservancies and coastal zone management. Second Annual Spring Forum: Effective Global Change. Connecticut State University
2000	Training Course (Principal Trainer): Environmental Assessment of Tourism. For Secretariat for Eastern African Coastal Area Management (SEACAM). In Madagascar: for Madagascar, Re-Union, Mauritius, Comoros and Seychelles
1998	NGO Capacity Building Training Course (Co-Trainer). For SEACAM. In South Africa: for South Africans and Namibians
1998	Training Course (Principal Trainer): Environmental Assessment of Tourism. For Secretariat for Eastern African Coastal Area Management (SEACAM). In South Africa: for South Africans, Namibians, Mozambicans, Tanzanians and Kenyans
1998	Lecture on community participation in environmental management. In: Environmental Management Course, University of Cape Town
1998	Module on Community Participation in Integrated Coastal Zone Management. Coastal Management Course, University of Cape Town
1977	Recipe for Survival on a Small Green Planet. Harry Haakonsen Memorial Lecture, Southern Connecticut State University
1966	Ecotourism trail runs as a tool for Responsible Development. Ecotourism Symposium, Yale University School of Forestry and Environmental Studies
1996	Patterns and Conflict. Symposium speaker for Course in Coastal Zone Management, University of Cape Town
1994	Potential exploitation of marine resources and the development of ecotourism in the new Groen-Spoeg Marine National Park, SA National Parks Board: Public Meeting for the creation of South Africa's largest marine and coastal national park (in Northern Cape)

1994	Community-based Exploitation of marine resources and the development of ecotourism (Speaker: West Coast National Park)
1994	The Socio-economics of Artisanal Fisheries on the Masoala Peninsula, Madagascar. Southern African Marine Science Symposium, South Africa
1994	The human perspective in marine exploitation and the relationship between marine resource exploitation and rainforest destruction. Southern African Marine Science Symposium, South Africa
1994	On the ecology and exploitation of coral reefs and lagoons. Southern African Marine Science Symposium, South Africa
1987	On the relationship between physiology, ecology and behaviour in butterflies. Ecological Society of America, Columbus, Ohio, USA
1987	On the mating systems of insects. Society for Study of Evolution, Columbus, Ohio, USA
1980	The ecology of two parapatric frog species. Annual Symposium of the Australian Society of Herpetologists
1978	The ecology of diurnal geckoes in the Namib Desert of Africa. Annual Symposium of the Australian Society of Herpetologists

Numerous other minor workshops and lectures were given in Australia, Europe, USA, Madagascar, and South Africa

INSTITUTION	The University of the Witwatersrand; The Flinders University of South
SEMINARS	Australia; Stanford University (2x); The South Australian Museum; The Transvaal Museum (2x); The Rocky Mountain Biological Laboratories (2x); Duke University (2x); The British Royal Geographic Society (2x); Le Centre National de la Recherche Scientifique (France), The University of Cape Town (2x), The University of Port Elizabeth, The University of Pretoria; Yale University; Charles Darwin Research Station (Galapagos); Southern Connecticut State University (3x)
ACADEMIC	Evolution, Ecology, American Naturalist, Oecologia, Austr J Zoology,
REVIEWS	J Zoology, Herpetologica, J Herpetology, J Insect Behaviour, Biotropica, Animal Behaviour, Oikos, National Science Foundation, SA J Zoology, CSIR (South Africa), HSRC (South Africa); numerous theses and research projects

CURRENT ACADEMIC RESEARCH PROJECTS

1. *Establishing guidelines for the choosing of sites for marine parks*. This biogeographic approach takes into account both uniqueness of sites and representativity of potential areas in relation to large-scale marine biogeographic areas. The approach is already being applied to one marine reserve along the West Coast of South Africa, three marine national parks on the Masoala Peninsula, Madagascar and two coastal sensitive sites along the Namaqualand Coast of South Africa.

2. *The role of small reserves in protecting and maintaining biological diversity*. In many parts of the world the establishment of large reserves is no longer an option. The question is whether small reserves are at all useful in protecting species and populations, and if so, if their value is mainly esoteric or if they can benefit local human populations or not. Case studies in the Richtersveld, South Africa, Madagascar and Botswana.

3. *The role of different socio-economic management systems in achieving sustainability of exploitable marine resources*. The "Tragedy of the Commons" is frequently expressed in developing countries. One potential

way of avoiding the sometimes total and irreversible depletion of natural resources is to establish private-ownership concessions. This option is often difficult to pursue from a political or moral point of view as many open-access resources, such as certain resources in the sea, are traditionally viewed as belonging to everyone. Furthermore, privatisation of resources does not necessarily prevent private owners from liquidating the resource and moving on to other means of livelihood. Other options under consideration are community-based exploitation of resources and co-operatives that may transcend traditional community boundaries. Case studies in South Africa, Madagascar and Botswana.

4. *How areas in which primary resources have been depleted can be converted to potential ecotourism destinations.* Many mining areas in Southern Africa are reaching the end of their lifetime. Several of these areas have unique geographical and biological features to warrant investigations of how current physical mining structures, as well as the infra-structure of mining towns, can be converted and modified to support small, local ecotourism industries. The case studies are the diamond mining areas in Namaqualand where the new Richtersveld National Park has just been established, and the Masoala Peninsula in Madagascar where marine parks have been created in traditionally open-access fishing grounds.

5. *Monitoring processes that shape the distribution and abundance of organisms in marine ecosystems.* Many different processes influence the structure of communities, such as human impact, storms and other stochastic events, and ecological processes such as competition, predation and recruitment. A long-term monitoring and experimental program was designed to tease apart the various influences on community structure, and is now being implemented at several sites along the West Coast of South Africa. The monitoring project is being extended to coastal and terrestrial systems in Namaqualand. A part of the project is now involving schools in monitoring environmental parameters such as recovery of areas under rehabilitation and doing biodiversity inventories of proposed conservancies.

6. *Knowledge management of complicated systems*, in particular large-scale geographical areas designated for development, with the aim of promoting sustainable development. This involves strategic environmental assessment, situational analyses and the use of mechanisms such as distance learning tools. Current studies include the Masoala Peninsula Madagascar, and the Namibian and Northern Cape, South Africa, coastal regions where several studies are ongoing and funded by the World Bank and Global Environment Facility (GEF).

PUBLICATIONS IN SCIENTIFIC JOURNALS

1. Odendaal, F.J. 1979. Notes on the adaptive ecology and behaviour of four species of Rhoptropus (Gekkonidae) from the Namib Desert with special reference to a thermoregulatory mechanism employed by Rhoptropus afer. Madoqua II(3):255-260.

2. Odendaal, F.J. & C.M. Bull. 1980. Influence of Water Speed on Tadpoles of Ranidella signifera and R. riparia. (Anura: Leptodactylidae). Australian Journal of Zoology 28: 79-82.

3. Haacke, W.D. & F.J. Odendaal. 1981. The distribution of the genus Rhoptropus (Reptilia, Gekkonidae) in the central Namib Desert. Madoqua XII(4): 199-215.

4. Odendaal, F.J. 1981. The role of the environment and interspecific interaction in determining the distribution of two frog species. Ph.D. thesis, Flinders University of South Australia, Adelaide, South Australia.

5. Odendaal, F.J. & C.M. Bull. 1982. A parapatric boundary between Ranidella signifera and R. riparia (Anura: Leptodactylidae) in South Australia. Australian Journal of Zoology 30: 49-57.

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8. Odendaal, F.J., Bull, C.M. & S.R. Telford. 1983. The vocabulary of calls of Ranidella riparia(Anura: Leptodactylidae). Copeia 1983 (2): 534-537.

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12. Iwasa, Y. & F.J. Odendaal. 1984. Theory of operational sex ratio: the active-inactive model. Ecology 65(3): 886-893.

13. Odendaal, F.J., Bull, C.M. & S.J. Richards. 1984. Interactions over a natural food resource between tadpoles of Ranidella signifera and R. riparia (Anura: Leptodactylidae). Journal of Herpetology 18(4):489-492.

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28. Turchin, P., Odendaal, F.J. & M.D. Rausher. 1991. Quantifying insect movement in the field. Environmental Entomology 20(4):956-963.

29. Odendaal, F.J., Jones, K.N. & F.R. Stermitz. 1989. Mating behavior of the explosive-breeding butterfly Euphydryas anicia (Nymphalidae). Journal of Research in Lepidoptera 28 (1-2):1-13.

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32. Emanuel, B., Bustamante R.H., Branch G.M, Eekhout S. & F.J. Odendaal. 1993. A zoogeographic and functional approach to the selection of marine reserves on the West Coast of Southern Africa. SA Journal of Marine Science (12):341-354.

33. Odendaal, F.J., Bergh, M.O. and G.M. Branch. 1993. The exploitation of sessile/sedentary marine organisms: potential management options and their implications. In: R. Siegfried (ed). Exploitation of Intertidal Organisms in Chile and South Africa, pp 155 –167. Springer-Verlag.

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35. Turchin, P., and F. J. Odendaal. 1996. Measuring the effective sampling area of a pheromone trap for monitoring population density of southern pine beetle (Coleoptera: Scolytidae). Environmental Entomology **25**: 582-588.

36. Brown, A.C. and F.J. Odendaal. The Biology of Oniscoid Ispoda of the genus Tylos. Advances in Marine Biology 30:1-65.

37. Odendaal, F.J. 1996. Ecotourism trial runs as a tool for responsible coastal zone development. Tropical Oceans Vol 3(1):19-20.

38. Odendaal, F., Jaomanana & Marcel K. (1995). The delimitation of Marine Reserves on the Masoala Peninsula, Madagascar. 69pp+ annexes. CARE Madagascar.

39. Odendaal F J (1996) Trial runs as a Tool for Responsible Ecotourism Development. In: The Ecotourism Equation: Measuring the Impacts, E Malek-Zadeh, Yale University Bulletin Series Vol 99, Yale University, USA.

40. Odendaal, F.J., Eekhout, S., Branch, G.M. & A.C. Brown. In press. An incidental-effect hypothesis explaining aggregations in a semi-terrestrial isopod inhabiting sandy beaches. SA J Zoology.

41. Odendaal, F.J., Hewawasam, I., McLean, B., Mitha, S., Phillips, L., & J. Stephanus. The Namaqualand and Namibian Coastlines: A dynamic situation that calls for Strategic Environmental Assessment (SEA). Proceedings of the Symposium on Co-Management of Resources off the Southwestern Coast of Africa. In press.

42. Phillips, L., Odendaal, F.J. & J. Kingwill. Living Marine Resources in Namaqualand: obstacles, opportunities and cross-border implications. Proceedings of the Symposium on Co-Management of Resources off the Southwestern Coast of Africa. In press.

43. Branch G.M. and Odendaal F. The effects of marine protested areas on the population dynamics of a South African limpet, *Cymbula* oculus, relative to the influence of wave action. Biological Conservation, in press.

44. Grange, N. and F.J. Odendaal. 1999. Guidelines for the Environmental assessment of Coastal Tourism. 197 pp. Secretariat for East African Coastal Area Management (SEACAM), Maputo, Mozambique.

45. Turner, I., Edelstein, S., Williams, W., Martin, R., Phillips, T. and F. Odendaal. Lessons Learned from Poverty Alleviation Projects in the Northern Cape, South Africa. Submitted.

46. F. Odendaal. Incremental Value of Poverty Alleviation Funding for Sustainable Development – a case study from Namaqualand, South Africa. Submitted.

47. Odendaal, F. Edelstein, S. and I Hewawasam. Knowledge Management, Capacity Building and a Collective Approach to Sustainable Development in the Coastal Areas of the Northern Cape, South Africa. Submitted.

ARTICLES IN PREPARATION

48. The rehabilitation of surface mining in the Namaqualand region of South Africa: I. Natural rehabilitation and long-term consequences.

41. The rehabilitation of surface mining in the Namaqualand region of South Africa: II. The role of soil and the modification of mining methods in achieving sustainability.

42. The role of small reserves in urban areas in maintaining biological diversity: the case of the nymphalid butterfly *Aloeides dentatis*.

43. The role of ecotourism and co-operative management of national resources in the protection of natural resources: examples from Southern Africa.

44. Community-based harvesting of natural resources and co-operatives: redistributing natural resources and establishing control in third world countries: pros and cons with special reference to marine resources and land tenure.

45. Monitoring plots in the marine environment: statistical implications of the many small vs few large plots controversy.

46. Competition between adults and recruits in the limpet Patella granatina: implications for the exploitation of sedentary marine organisms.

47. Monitoring the processes that shape the distribution and abundance of intertidal marine organisms: the roles of competition, recruitment, and stochastic events.

48. Artisanal fisheries in Masoala, Madagascar.

49. Examining the causes of rainforest destruction in third world countries: examples from Nigeria, the Philippines and Madagascar.

50. The problem of effective governance in coastal zone management: obstacles and solutions.

51. The role of information sharing in a common “pool of knowledge” in bringing players together and advancing collective planning efforts.

COMMISSIONED CONSULTATIONS

52. “A preliminary report on the feasibility and effectiveness of the Ruimsig Entomological reserve in protecting the butterfly species Aloeides dentatis: the role of active management in manipulating

population size." For South African Nature Foundation (later to become WWF, South Africa) and Roodepoort City Council, 1989 -1993.

53. "NSIP West Coast Site Specific Environmental Study: The Sensitivity of the intertidal zone to acquisition of one or more sites for possible nuclear development." For the Environmental Evaluation Unit (EEU), University of Cape Town, commissioned by ESKOM, the South African Power and Electricity Commission, 1990 - 1991.

54. "Report on the study of natural recovery of overburden dumps on DBCM properties in Namaqualand." For the Environmental Evaluation Unit (EEU), University of Cape Town, commissioned by De Beers Consolidated Diamond Mines (Namaqualand), 1990 - 1992.

55. A study on pine beetle movement patterns with the aim of finding biological control methods to help counter massive pine beetle attacks on pine stands in the South-eastern states. For US Department of Agriculture (USDA), Forestry Service, Louisiana, 1992.

56. An evaluation of marine resources and artisanal fisheries on the Masoala Peninsula, Madagascar. "A Preliminary report on the marine resources of the Masoala Peninsula, Madagascar." For CARE INTERNATIONAL, 1993.

57. An investigation of the ecotourism potential on the Masoala Peninsula, Madagascar. "A preliminary investigation of the Ecotourism Potential of the Masoala Peninsula, Madagascar." For CARE INTERNATIONAL, 1993.

58. Consultant for marine resources, Masoala Peninsula, Madagascar. Duties include delimitation of marine reserves, devising methods of making artisanal fisheries sustainable, and linking marine resources with ecotourism development. For CARE INTERNATIONAL and ANGAP, the national system of protected areas in Madagascar, 1994 -1995.

59. Consultant for ecotourism development, Masoala Peninsula, Madagascar. Duties involve designing community-based ecotourism practises and running trial runs. For CARE INTERNATIONAL and Project Masoala, 1994 -1995.

60. Ecotourism development on the Masoala Peninsula, Madagascar. Design community-based ecotourism practices, guide training and ecotourism trial runs. For CARE INTERNATIONAL, 1993 -1995.

61. Ecotourism consultant on the relationship between the national park system, the private sector and local communities. "Rapport Relatif a l'appui communautaire a l' ecotourisme et au marketing." For ANGAP, USAID and Tropical Research and Development (TR&D), 62 pages, 1996.

62. Consultant for the development of alternative economy to diamond mining. "Northern Namaqualand Tourism feasibility Report: Can Tourism Offer Alexkor Ltd. an Opportunity for diversification?" For Alexkor Ltd., 1997.

63. Review of Aldabra management plan, 1997. For the World Bank.

64. Tourism consultant for the development of tourism in the Western Cape Province of South Africa. "Cape Town and Tourism: Development of Cape Town as a year round destination, 52 pages. For Cape Metropolitan Council, 1997.

65. Robben Island Tourism EIA on Visitor Upgrades. For Robben Island Museum (RIM). 1997.

66. Coastal Management Policy Programme (CMPP): Study on Related Initiatives Currently Underway in South Africa. Department of Environment and Tourism (DEA&T). 1997-8.

67. Tourism Development in Namaqualand. For Scott-Wilson Consultants. 1998.

68. Consultant for the development of alternative economy to diamond mining. “Northern Namaqualand Coastal Feasibility Study.” For Alexkor Ltd, 1998.

69. Tourism Potential and Carrying Capacity for Robben Island. The Robben Island Museum (RIM), 1998.

70. Advisor on community-based tourism development and environmental education for Feon’ ny Ala (Voice of the Forest) in Madagascar, including successful preparation of Small Grant to IUCN (Netherlands). For Feon’ ny Ala and Greendevelopment (Netherlands).

71. Consultant on environmental economics and situational analysis of Northwestern Namaqualand (with B McLean): “Situational Analysis of the Richtersveld”, 65 pp. For the Transform programme (then a partnership between the German government’s GTZ and the South African Department of Land Affairs, DLA), 1999.

72. Consultant on establishment of a field guide system in the Richtersveld. “Assessment of the Field Guide System in the Richtersveld”, 93 pp. For the Transform programme (a partnership between the German government’s GTZ and the South African Department of Land Affairs, DLA), 1999.

73. Consultant to draw up Environmental Assessment Guidelines for Tourism for the East Coast of Africa and Western Indian Ocean Island States. “Environmental Assessment Guidelines for Tourism”, 112 pp. For SEACAM/World Bank/SAREC, 1999.

74. Facilitator for establishing the provincial Coastal Working Group (CWG) for the Northern Cape Province in South Africa. This CWG will implement the White Paper on Sustainable Coastal Development in the province. For stakeholders including national, provincial and local government, 1999.

75. Establishment of nine worker-owned kelp companies and successful preparation for Marine Resource quota applications. For the Fishing and Mariculture Development Association (FAMDA), 1999.

76. Preparation of successful proposal for a Global Environment Facility (GEF) Pdf Block Award for a network of protected areas along the coast and the interior of the Richtersveld. For Richtersveld Transitional Council, 1999.

77. Design, fundraising and successful establishment of the coastal Hondeklipbaai Multi-Purpose Resource Centre (MPRC). For the Fishing and Mariculture Development Association (FAMDA) and the Department of Environment and Tourism (DEA&T), 1999-2000.

78. Design, fundraising and successful establishment of the Sizamile Multi-Purpose Resource Centre (MPRC). For the Department of Environment and Tourism (DEA&T), 1999-2000.

79. Design, fundraising and successful establishment of the Kookfontein Community Tourism Development Centre. For the Steinkopf Tourism Committee and the Department of Environment and Tourism (DEA&T), 1999-2000.

80. Advisor in design and fundraising for the Vanrhynsdorp Poverty Alleviation Project. For the Masibambani Community Centre and the Department of Environment and Tourism (DEA&T), 1999-2000.

81. Visitor Assessment and Tourism Feasibility and Marketing Study for the Cape Peninsula National Park. For the South African National Parks (SANParks), 1999-2000.

82. Environmental Mitigation Report for Residential Development along the Knysna Western Heads Coastal Sensitive Area. For Knysna Timber Homes, 2000.

83. Social Regeneration Study for Hondeklipbaai. For the Namaqualand District Council, 2000.

84. Facilitator and co-ordinator of community-based tourism development along the South-North Tourism Route from Cape Town to the Namibian border. For the emerging South-North Tourism Route association (SNTRA), 2000.

85. Preparation of successful proposal for a Global Environment Facility (GEF) Medium-Sized Project (MSP) Project Brief for the Richtersveld Community-based Biodiversity Conservation Project. For Richtersveld Local Government, 2000.

86. Development of a Distance Learning Information Sharing Tool (DLIST) for the West Coast of South Africa and the Namibian coast. For the World Bank with Norwegian Trust Funds, 2000.

87. Implementation of a Distance Learning Information Sharing Tool (DLIST) for the West Coast of South Africa and the Namibian coast. For the World Bank and International Waters (IW): Learn with funding from the Global Environmental Facility (GEF).

88. Preparation of successful proposal for the South-North Tourism Route Association (SNTRA) and implementation of poverty alleviation project. For SNTRA and the Department of Environmental Affairs and Tourism (DEA&T), 2000-2001.

89. Design, fundraising and implementation of the Orange River Mouth Transfrontier Conservation Area (ORM TFCA) rehabilitation programme's *Working for Water* project. For Richtersveld Transitional Council, Department of Water Affairs and Forestry (DWAF) and the Department of Environmental Affairs and Tourism (DEA&T), 2000-2001.

90. Preparation of successful proposal to NORAD for the Richtersveld World Heritage Site (WHS) Project and its implementation over three years. For the Department of Environment and Tourism (DEA&T), 2000 - 2003.

91. Investigating Small-scale Fisheries and the implementation of a Subsistence Fisheries Programme for South Africa. For Subsistence Fisheries task Group and Marine and Coastal Management (MCM) of the Department of Environment and Tourism (DEA&T). 2000 - 2001.

92. Knowledge Management: Coastal Management Policy, Information Sharing, Distance Learning and a Collective Approach to development in the Northern Cape Province of South Africa. Input into WSSD through Paris meetings and subsequent publications. For the World Bank, 2000-2001.

93. Community participation in the Development Planning Process for the Orange River Mouth Transfrontier Conservation Area (ORM TFCA). For the Gariep Spatial Development Initiative (SDI), 2000-2001.

94. Co-ordinator for Socio-Economic component of the Succulent Karoo Environmental Profile (SKEP). For Conservation International, 2000-2001.

95. Facilitator for establishing the Integrated Coastal Zone Management Committee (ICZMC) in Namibia. This committee will be overseeing coastal planning and management along the entire Namibian coast. For the ICZMC and the Global Environment Facility (GEF), 2000-2002.

96. Preparation of successful Global Environment facility (GEF) Pdf Block A request for the coastal regions of Namibia. For the ICZMC (coastal regional councils), the World Bank and the Global Environment Facility (GEF), 2001.

97. Marketing and Booking System for the South-North Tourism Route. For SNTRA and GTZ/Transform, 2001.

98. Successful proposal and Implementing Agent for the Paulshoek Community-based Tourism Project. For Paulshoek Tourism Committee and the Department of Environmental Affairs and Tourism (DEA&T), 2001.

99. Planning, Environmental assessment and Development of the Rooiberg Complex in the Richtersveld Community-based Conservancy. For GTZ/Transform, 2001.

100. Facilitator for the Transfrontier Integrated Conservation and Development Workshop (Namibia/South Africa). For Conservation International, GTZ/Transform and the Department of Environment and Tourism (DEA&T), 2001.

101. Advisor and Implementing Agent for the Working for the Coast (CoastCare) Programme for the Northern Cape Province. For Marine and Coastal Management (MCM) of the Department of Environmental affairs and Tourism (DEA&T), 2001-2002.

102. Design and writing of successful proposal and subsequently Implementing Agent for the Richtersveld Waste Management Project. For Richtersveld Local Government and the Department of Environment and Tourism (DEA&T), 2001-2002.

103. Preparation of successful Global Environment Facility (GEF) PDF Block B request for the coastal regions of Namibia, namely the Namib Coast Biodiversity Conservation and Management Program (NACOMA). For the ICZMC (coastal regional councils), the World Bank and the Global Environment Facility (GEF), 2001-2002.

104. Facilitator for the Integrated Development Planning Process (IDP) 1999/2000 in the communal areas of the Richtersveld, South Africa. For Richtersveld Transitional Council and GTZ/Transform, 1999-2000.

105. Facilitator for the Integrated Development Planning Process 2001/2 for the Richtersveld Municipal Area, South Africa. For Richtersveld Local Municipality and GTZ/Transform, 2001-2002.

106. Facilitator in Richtersveld for the signing of the bilateral international Memorandum of Understanding for the Richtersveld/Ais-ais Transfrontier Park between South Africa and Namibia (on the South African side). For Peace Parks Foundation (PPF), 2001.

107. Social Plan Fund Phase I & II. Regeneration of Local Economy in the Richtersveld. Richtersveld Municipality, 2001.

108. Development of a Distance Learning and Information Sharing Tool (DLIST): internet-based information-sharing platform and distance-learning course on Integrated Coastal Zone Management for coastal stakeholders along the West Coast of South Africa and the four Namibian coastal regions. World Bank and IW:Learn, a GEF-funded initiative. 2000-2004.

109. Development of a SMME Strategy for the Richtersveld Municipality. For GTZ/Transform and the Richtersveld Municipality, 2002.

110. Strategic Plan for the Sustainable Use of Marine Resources in the Vilanculos Wildlife Sanctuary', Draft: October 2002. For the International Finance Corporation and IUCN.

111. Facilitation, Training and Capacity Building of the Richtersveld Community Property Association (CPA). For GTZ/Transform, 2002-2003.

112. Ecotourism marketing pilot for Madagascar. Critical Ecosystems Partnership Fund (CEPF). 2003.

113. Hardap Region Tourism Development Plan. Hardap Regional Council. 2003.

114. Environmental Advisor for the Coastal Areas of the Richtersveld in terms of Rehabilitation and Planning. For the Richtersveld Sida !Hub Community Property Association (CPA), 2003 – 2004.

115. Environmental Advisor to the Revolutionary Government of Zanzibar, Tanzania. Preparation of a five-year plan for the Sustainable Management of Land and the Environment (SMOLE). For the Ministry of Foreign Affairs, the Government of Finland and the Revolutionary Government of Zanzibar, 2003 – 2005.

116. Conceptualisation of the Greater Gariep Transfrontier Conservation Area (TFCA). For Conservation International, 2004.

117. Chief Technical Advisor, the Richtersveld Community-based Natural Resource Management (CBNRM) Programme. For Conservation International. 2002 – 2004.

118. Consultant to production of IUCN's Global Marine Promotional Film, 2003 – 2004.

119. Consultant to production of Benguela Current Large Marine Ecosystem (BCLME) promotional film, 2003 – 2004.

120. Consultation for linking coastal communities into the GEF-funded Benguela Current Large Marine Ecosystem (BCLME) Programme: in South Africa, Namibia, Angola. For BCLME Programme, 2003 - 2004.

121. Consultation on the establishment of the Orange River Mouth Transfrontier Conservation Area between Namibia and South Africa. For Conservation International, 2004 – 2006.

122. Feasibility study for the Transfrontier World Heritage Site (WHS) between South Africa and Namibia. For the Department of Environment and Tourism (DEA&T), South Africa and NORAD, 2003 – 2004.

123. Preparation of a local government mining policy for the Richtersveld Municipality. Richtersveld Municipality, 2003 -2004.

124. Training in Local Economic Development (LED) of Mariental Municipality and Hardap Regional Council. For the Hardap Regional Council, Namibia, 2004.

125. Conceptualisation and facilitation of the Greater Gariep Transfrontier Conservation Area (TFCA) and building of transfrontier links with Namibian entities. Conservation International, 2004 – 2005.

126. Environmental Assessment (EA) training and preparation of an EA Manual for the Zanzibar government and other sectors of society as part of the Sustainable Management of Land and Environment (SMOLE) Strategy. For the Revolutionary Government of Zanzibar and the Ministry for Foreign Affairs, Finland, 2003 – 2005.

127. Analysis of the Institutional Capacity of the Namib Coast Regional Councils in Relation to the Decentralisation Process. For the National Government of Namibia and the World Bank, 2004 – 2005.

128. Rapid Assessment of the Development Plans, Biodiversity Conservation Projects and Socio-Economic Situation of the Namib Coastal Regions. For the National Government of Namibia and the World Bank, 2004 – 2005.

129. Chief Technical Advisor in the development of the 160 000 ha Richtersveld Community Conservancy with Social Responsibility Funding from the Department of Environment and Tourism (DEA&T), South Africa, 2005 – 2007.

130. Advisor on community-based land use planning by the Richtersveld Sida !Hub Community Property Association (CPA) in the northwestern coastal regions of the Northern Cape, South Africa, funded by a GEF Small Grant through the United Nations Development Programme (UNDP), 2004 – 2005.

131. Advisor on the Working for Wetlands rehabilitation programme at the Orange River Mouth Ramsar Site that is part of the ORM Transfrontier Conservation Area, funded by the South African National Biodiversity Institute, 2005 – 2006.

132. Advisor on the development of three courses in sustainable development in coastal areas for upgrading at the Cape Peninsula University of Technology (CPUT) in South Africa, and development in the University of Namibia (UNAM) and the Agostinho Neto University in Angola, funded by the Global Environment Facility (GEF) through UNDP, 2005 - 2006.

133. Rapid Assessment of the Proposed Pemba Channel Conservation Area (PECCA), a study for the United Republic of Tanzania/World Bank as part of the Marine and Coastal Environment Management Project (MACEMP), 2004-2005.

134. The Pemba Channel Conservation Area (PECCA) – A Feasibility Study for Nomination as World Heritage Site, a study for the United Republic of Tanzania/World Bank as part of the Marine and Coastal Environment Management Project (MACEMP), 2005.

135. Mnemba Island and Chwaka Bay Conservation Areas: A Preliminary Situational Assessment for, and funded by the Revolutionary Government of Zanzibar, 2005.

136. Chief Technical Advisor, Orange River Mouth GEF Small Grant, including EIA course for local government, NGOs and CBOs. International Knowledge Management (IKM) and UNDP, 2005.

137. Rapid Assessment of Menai Bay Conservation Area, a study for the United Republic of Tanzania/World Bank as part of the Marine and Coastal Environment Management Project (MACEMP), 2005.

138. Nomination dossier for the proposed Richtersveld World Heritage Site. Funded by UNESCO. 2005-6.

139. General Facilitation of the Coastal Management White Paper for Namibia. Funded by NACOMA/World Bank. 2006-7

140. Training on ICZM and Sustainable Tourism in the PERSGA region (Djibouti, Egypt, Jordan, Saudi Arabia, Somalia, Sudan, and Yemen). Funded by PERSGA/GEF 2006-7.

141. Contingency Plan for Management of Dune Belt Area between Swakopmund and Walvis Bay, Namibia. Funded by NACOMA/World Bank 2006-7.

142. Draft National Strategy for East Coast Marine Research, South Africa. For the Department of Science and Technology, South Africa 2006-7.

143. Nomination dossier for the proposed Le Morne World Heritage Site in Mauritius. Funded by Government of Mauritius. 2006-7.

144. Management plan for the Le Morne coastal and mountain reserve protected area. Funded by the Government of Mauritius. 2006-2007.

145. Training Selected Members of Communities in Adventure Tourism in the Maloti-Drakensberg Transfrontier Project (Lesotho). Funded by MDTP/Global Environment Facility. 2006-7.

146. Management Plan for the Ae! Hai kahalari Heritage Park in the greater Kgalagadi Transfrontier Park. South African National Parks. 2008.

147. Management Plan for the Richtersveld Cultural and Botanical Landscape World Heritage Site. Northern Cape Provincial Government. 2008.

148. Vilanculos District Tourism Master Plan. Funded by Government of Mozambique/World Bank/GEF. 2008.

149. Training and Capacity Building Strategy NACOMA/World Bank/GEF. 2008.

150. Extension of Communication and Awareness Strategy. Government of Namibia/World Bank/GEF. 2008.

151. Provision of Technical Support for Development of Specific Conservation and Sustainable Use Investment Proposals at Site and Landscape Levels. Government of Namibia/World Bank

BOOKS

A number of books were written, and one is currently being prepared on the Richtersveld for a major publisher.

DOCUMENTARY FILMS: SINGLE FILMS

Produced and directed numerous films of an environmental nature in over ten countries.

POLICY AND NGO ACTIVITIES

CMPP (Coastal management Policy Program, South Africa), 1997-8: consultation to help draw up the coastal management policy for South Africa, and one of the authors of the White Paper on coastal management policy

SATOUR/DEAT (Department of Environment Affairs and Tourism), 1998-9: co-author of the section on guides for South Africa's new Tourism Policy

Member of various other policy-related and economic and environmental restructuring and strategy committees in South Africa, 1998 - Present

President of *Feon' ny Ala* (Voice of the Forest) non-governmental organisation (NGO) in Madagascar, an organisation involved in strategic planning and implementation on the Masoala Peninsula in Madagascar, 1997 - Present

Board member of Connected Cultures a non-governmental organisation (NGO) based in Connecticut that focuses on between country educational exchanges, 1997- Present

Chairperson of International Knowledge Management (IKM), a regional NGO with members in five African countries, 2003 - Present

Jason Morenikeji

Address: Avenida Eduardo Mondlane 178, Pemba, Cabo Delgado, Mozambique.
Date of Birth: 23rd August, 1969.
Nationality: British.
E-mail address: jason_morenikeji@hotmail.com
Telephone: +258 8283 64854.

Education:

- **MSc. Architecture: Advanced Materials & Energy Studies:** CAT, 2007 -Current.
- **M.A. Industrial Design:** Central St. Martins School of Art & Design, London. 1993-1995.
- **B.A. (Hons.) Industrial Design/Engineering**: Teesside University, Cleveland. 1989-1992.
- **10 'O' Levels & 3 'A' Levels**: Caterham School, Surrey. 1979-1989.

Career:

Founder and Director, The Clean Energy Company, Mozambique.
August, 2008 – November, 2009.

- Established an innovative social enterprise in Northern Mozambique.
- Fabricated 2 pilot PMG micro-wind turbines for local market.
- Procurement and sourcing of fabrication materials.
- Award winner in the BiD Network Challenge 2009-2010.
- Won SEED Awards 2009 for Entrepreneurship in Sustainable Development.

Project Coordinator for Infrastructure and the Built-Environment: Aga Khan Foundation (Mozambique).
March, 2008 – September, 2008.

- Implementing and overseeing the built-environment projects for Aga Khan Foundation in Pemba.
- On-site supervision of construction ensuring adequate community consultation and involvement.
- Procurement and sourcing of environmentally responsive materials.
- Ensuring environmentally-sensitive, locally appropriate designs and timely, effective construction.
- 'Hands-on' problem-solving relating to natural resources utilization and construction.
- Recruited a pan-community/cultural construction team.

Site Architect, Project and Construction Manager: Guludo Beach Lodge, Mozambique.
July, 2007 – January, 2008.

- Responsible for the architectural/design detailing, planning and building at Guludo Beach Lodge.
- Supervision and implementation of on-site construction.
- Procurement and sourcing of environmentally responsive materials.
- Design and development of passive solar heating systems.
- Established an economically viable ceramic tile production co-operative.
- Assisted management team with wide ranging general administration tasks.

Senior Designer: Design Bridge, London and Amsterdam.
March, 2006 – March, 2007.

- Delivering strategic design thinking for a wide range of 3D branding solutions for both structural and merchandising briefs.
- Implemented a monthly consumer and market insight news letter to aid the new business and marketing teams.
- Developed and implemented analytical marketing tools which integrated new business, strategy, 2D branding teams.
- Clients included: Carlsberg, Cadbury, Coca-Cola, Imperial Tobacco and Reckitt Benckiser.

During a 12-month career break in East Africa I volunteered at several community work projects and travelled across Mozambique, Tanzania, Kenya and Comoros Islands.
March, 2005 – February, 2006.

Design Consultant: Fundi Design Co-operative, Lamu Island, Kenya.
July, 2005 – December, 2005.

- Established a community based design co-operative in partnership with the National Museums of Kenya, Polytechnic of Lamu, and local craftsmen.
- Implemented a skill-sharing network at the Polytechnic of Lamu involving a series live projects, demonstrations and student lectures.
- Identified a local and national sales network.
- Produced design concepts and high quality innovative Swahili style furniture units utilizing local resources.

Creative Director: PI³, London, England.
November, 2000 – March, 2005.

- Responsible for the creative direction, design standards and output of a structural design consultancy.
- Implemented a PR and communication programme significantly raising the profile of PI³'s core skills and key competencies.
- Clients included: P&G, GSK, Nestle US, Reckitt Benckiser, Cadbury Trebor, Wrigley's, Allied Domecq.

Director: The Photosynthesist, Bath.
March 1998 – November 2000.

- Established a successful and exciting start-up product development business.
- Created comprehensive business plan, which involved: setting objectives, conducting research, and presenting financial projections and analysis to prospective stakeholders and investors.
- Involved in wide-ranging decision-making including: product design, negotiation, third-party manufacturing, setting the marketing and sales strategies for four products.

Senior Structural Designer: PI Design International, London. 1997 -1998.

- Responsibility for the management of a large number of successful structural design projects, involving packaging design, short and long term marketing strategy and merchandising.
- Clients included Guinness, Kelloggs Foods, Kerry Foods, Proctor and Gamble, Pfizer, Eli Lilly and GlaxoWelcome.

Industrial Designer: Novo Design, Lisbon, Portugal. 1995-1997.

- Responsibility for the management of a large number of successful structural design projects, involving design, short and long term marketing strategy and merchandising
- Collaborated with graphic and interior design departments in the delivery of multi-disciplinary design solutions.
- Managed a client retention and PR project in which I was responsible for the conception and design of high value corporate gifts.

Interests:

Traditional Swahili architecture, life-drawing, kite-surfing.

Software skills:

Solidworks, 3DS Max, Freehand, Photoshop, FrontPage, Microsoft Office.

UPDATED: DECEMBER 2010

FRIDA S. K. LANSHAMMAR, M.Sc. in Environmental Engineering

Business Manager and Senior Consultant

BIRTH	20 May 1977
CITIZENSHIP	Sweden
EDUCATION	M.Sc. in Aquatic and Environmental Engineering, Uppsala University, Sweden, 2004
COURSES	Course in Coral Reef CSI, Sodwana Bay, South Africa, 2009
	Course in Fish Ecology, 5 credits, University of Gothenburg, 2005
	Course in Management of Aquatic Resources in the Tropics, 10 credits, Stockholm University, 2003
	French Language studies, Université der Sciences Humaines, Strasbourg, France, 1997
WORK EXPERIENCE	
Sept 2009 - Present	EcoAfrica Environmental Consultants (Tanzania) Ltd. Business Manager and Senior Consultant working on the following projects;
	Course development in Environmental Communication and Environmental Economics for the Hamdan Bin Mohammed e-University in Dubai
	Project Manager for DLIST Agulhas and Somali Currents Large Marine Ecosystem, GEF/UNDP
	Team member for DLIST Benguela Current Large Marine Ecosystem, GEF/UNDP
	Rapid Assessments for Tumbatu and Changuu-Bawe Marine Conservation Areas in Zanzibar, MACEMP, GEF/WB
	A Guide to Marine Conservation Areas in Zanzibar (an information booklet), MACEMP, GEF/WB
Jan 2008 – Sept 2009	
	Project Manager for Chumbe Island Coral Park Ltd., a privately managed Marine Protected Area in Zanzibar, Tanzania.

Oct 2006 – Dec 2007

Conservation and Education Programme Coordinator for Chumbe Island Coral Park Ltd. overseeing the research and environmental education activities within the project.

Nov – Dec 2005 Lecturer and Field Trip Assistant (to Tanzania and Kenya) at an ICZM Course at Kalmar University, Sweden

Aug 2004 – Sept 2006

Project Manager for the Stockholm Junior Water Prize at the Stockholm International Water Institute in Stockholm, Sweden.

Aug 2003 Technical Assistant during the World Water Week, Stockholm Sweden

June 2000 – Sept 2002

Manager and Divemaster at Spice Divers dive centre, Perhentian Islands, Malaysia

FUNDING & AWARDS

ReCoMap 2009: Expansion of the Environmental Education Programme on Chumbe Island, Zanzibar, Tanzania.

Seacology, SADC-REEP, WWF and other smaller grants writing and reporting during my years with Chumbe Island Coral Park.

PUBLICATIONS

1. Lanshammar F., 2010. The DLIST approach is deployed in the Agulhas and Somali Currents region. Presented at the 2nd Annual Agricultural Research Review Workshop in Zanzibar, Oct 2010.

2. Nordlund, L., Lanshammar, F. and Langjahr, K., 2010. Smashed reef, crime scene investigation and reef remediation in the Chumbe Island Reef Sanctuary. Presented at the 2nd Asia Pacific Coral Reef Symposium - Collaboration for Coral Reef Conservation in a Changing Climate (20 - 24 June 2010) Phuket, Thailand.

3. Nordlund L. & Lanshammar F., 2009. Environmental hands-on education for school children on Chumbe Island, Tanzania. Presented at the 6th WIOMSA Scientific Symposium, La Reunion, August, 2009.

4. Lanshammar F. & Nordlund L., 2009. Sustainable MPA Management – Experiences from more than 10 years of Private MPA Management on Chumbe Island, Zanzibar, Tanzania. Presented at the 6th WIOMSA Scientific Symposium, La Reunion, August, 2009.

5. Lanshammar F, 2008 (3). Conservation and environmental education efforts funded through eco-tourism - Chumbe Island Coral Park as a case study. Presented at the Travelers' Philanthropy conference, Arusha, December, 2008.

6. Lanshammar F, 2008 (2). Eco-Tourism can help preserving threatened eco-systems for the future. Presented at the International Conference on Tourism and Poverty Alleviation, Zanzibar, November 2008.

7. Lanshammar F, 2008 (1). Pioneer project introducing environmentally friendly technology for water and sanitation in Tanzania. Presented at the World Water Week, Stockholm, August, 2008.

8. Lanshammar F. & Muhando C., 2008. Ecological effects of the crown-of-thorns starfish removal programme on Chumbe Island Coral Park, Zanzibar, Tanzania. Presented at the 11th ICRS July 2008.

9. Lanshammar F., 2004. The effectiveness of the Chumbe Island Coral Park (CHICOP) with respect to abundance and diversity of four reef fish families, in Zanzibar, Tanzania. M.Sc. report, Aquatic and Environmental Engineering, Uppsala University School of Engineering, 2004.

OTHER ASSIGNMENTS

March 2008 – present Chairperson for the International Year of the Reef 2008 in Zanzibar

Feb 2009 – present Treasurer for Zanzibar Employers Association

SYMPOSIA/CONFERENCES

Oct 2010	Second Annual Agricultural Research Review Workshop by the Ministry of Agriculture in Zanzibar, Zanzibar, Tanzania
Dec 2008	Travellers Philanthropy, Arusha, Tanzania
Nov 2008	International Conference on Tourism and Poverty Alleviation, Zanzibar, Tanzania
Aug 2008	World Water Week in Stockholm, Sweden
July 2008	11th International Coral Reef Symposium, Florida, USA
Aug 2006	World Water Week in Stockholm, Sweden
Oct 2005	WEFTEC in Washington DC, USA
Aug 2004	World Water Week in Stockholm, Sweden
Aug 2003	World Water Week in Stockholm, Sweden

INTERESTS	Sustainable management of coastal and marine resources; integrated coastal zone management; information sharing technology for coastal zone management; environmental education, rehabilitation of coastal systems; living marine resource harvesting and cultivation; integrated resource management and planning; conservation biology; marine ecology; marine resource exploitation; community-based natural resource management (CBNRM); tropical reef and ecology; global ecological issues; sustainable ecotourism development and management.
CONSULTATION	Integrated Coastal Zone Management (ICZM); environmental education; marine and coastal community ecology; sustainable development; coastal zone management; protected areas delimitation, management and development; community-based resource management and conservation; ecotourism development.

Biographical data

Surname	BAKKER	**Maiden name**		NOT APPLICABLE			
First names	KAREL ANTHONIE	**ID Number**		5604035004088			
Citizenship	RSA	**Title**	PROF	**Female**		**Male**	X
Place of birth	RSA	**Date of birth**		03-04-56			
Marital status	MARRIED	**Telefax No.**		012-4202552			
Direct Telephone	083 5640381	***E-mail***		kabakker@telkomsa.net			
Residential address	229 KLIP ST, MUCKLENEUK, PRETORIA	***Postal address***		229 KLIP ST, MUCKLENEUK, PRETORIA. 0002			

Qualifications

Degree/ Diploma	**Field of study**	**Higher education institution**	**Period**	**Year of graduation**	**Distinctions**
BArch	Architecture	University of Pretoria	6 years	1981	
MArch	Architecture	University of Pretoria		1993	Cum Laude
PhD (Arch)	Architecture	University of Pretoria		2000	Not applicable

Employment status

Member of Cultmatrix cc - Heritage management Specialists

Head of Department – Department of Architecture, University of Pretoria

Professional Registration Category

Professional Architect – South African Council of Architectural Professions. Registration No. B00078.

Membership of Professional bodies and relevant Institutions

Member of the SA Council of Architectural Professions

Member of the SA Institute of Architects

Expert member of the National Heritage Committee of the South African Institute of Architects.

Member of the International Committee on Monuments and Sites (ICOMOS).

Vice President and of the National Executive Committee of the International Committee on Monuments and Sites (ICOMOS), South Africa. (ICOMOS is an international conservation body also acting for UNESCO re the World Heritage Site process).

Rating as scientist

National Research Foundation rating – C2

Relevant projects in private practice – Heritage Impact Assessment, EIA Reviews, Guidelines for urban design and urban projects,

BAKKER, K.A. & VD WAAL, G. 2000. *Affordable Housing project, Pilgrims Rest. Heritage Impact Assessment.* Pretoria: Cultmatrix CC.

A specialist technical report as heritage consultancy for the Mpumalanga Department of Art, Culture, Sport and Technology: An Heritage Impact Assessment regarding the introduction of a low-cost housing development in the Historical area of Ponieskrantz (Pilgrim=s Rest), nominated as a possible World Heritage Site.

BAKKER, K.A. 2001. *Pilgrim's Rest HIA: Field Notes*. Pretoria: Cultmatrix CC.

A specialist technical report as heritage consultancy work for Mindwalks CC for a review of future classification of heritage resources for the National South African Heritage Resources Agency (SAHRA).

BAKKER, K.A. & DE JONG R.C. 2001. *New headquarters for the Dept Foreign Affairs at the Union Buildings: Heritage Impact Assessment.* Pretoria: Cultmatrix CC.

A specialist technical report as heritage consultancy work for the Department of Foreign Affairs, Public Works Department and the Tshwane Megacity Council: An Heritage Impact Assessment regarding the introduction of the proposed new headquarters of the DFA west of the Union Buildings heritage area in Pretoria.

BAKKER, K.A. & DE JONG, R.C. 2002. *The ;Mamelodi rondavels'.* Pretoria: Cultmatrix CC.

A specialist technical report as heritage consultancy work for the Tshwane (Pretoria) City Council: Scoping and research towards a Heritage Impact Assessment regarding the historical Rondavels in Mamelodi (campus where many Struggle leaders resided during Apartheid).

BAKKER, K.A. & DE JONG, R.C. 2002. *Heritage Impact Assessment: Historic elements at ESKOM Park, Witbank*. Pretoria: Cultmatrix CC.

A specialist technical development strategy as heritage consultancy for the Electricity Supply Commission (ESCOM) for the conservation of elements of the historical Witbank Power Station erected in 1925, oldest of the national power stations of South Africa.

BAKKER, K.A. 2002. *Interim report on the heritage impact of the Gautrain Rapid Rail on Salvokop*. Report to the Salvokop Steering Committee. Pretoria: Cultmatrix CC.

BAKKER, K.A. & DE JONG, R.C. 2003. Salvokop Development Framework: *Heritage Report A and B*. Pretoria: Cultmatrix CC.

A specialist technical report as heritage consultancy for the Salvokop Steering Committee for the Development Framework and Urban Design of the historical railway precinct of Salvokop, started in 1894.

BAKKER, K.A. 2003. *Salvokop interim heritage impact assessment report for the access road to the Freedom Park national legacy site*. Pretoria: Cultmatrix CC.

A specialist technical report as heritage consultancy for the Freedom Park Trust for the execution of the access road to Freedom Park within the proposed Development Framework of Salvokop.

BAKKER KA & DE JONG RC. 2004. *Heritage scoping report: Erf No 2300, Pretoria Township*. Pretoria: Cultmatrix cc. A specialist report as heritage consultancy for Felehetsa Environmental (Pty) Ltd.

BAKKER KA, NAUDE M, CLARKE N, VAN SCHALKWYK J, VAN VUUREN CJ & VAN ZYL C. 2004. *VREDEFORT DOME CULTURAL HERITAGE SURVEY AND CONSERVATION MANAGEMENT PLAN*. Final Report 23 Nov 2004. Pretoria: BKS. On behalf of the South African Heritage Resources Agency.

http://www.domebergland.co.za/sahra/final23Nov04.pdf
www.otters.co.za/VDOME%20CONSERVATION%20&%20MGMNT%20PLA

BAKKER KA & DE JONG RC. 2005. *Heritage scoping report: Proposed 2010 Soccer stadium and associated commercial uses known as Rainbow Junction, City of Tshwane, Gauteng province*. Pretoria: Cultmatrix CC.

A specialist report as heritage consultancy for Rock Environmental Consulting.

BAKKER, KA. 2005. *Vredefort Dome Built heritage survey and analysis component*. In: BKS. 2005. *Conservation Management Plan for the Vredefort Dome as proposed World Heritage Site.* Pretoria: BKS. Specialist report as heritage consultancy with BKS for South African Heritage Resources Agency.

BAKKER, KA. 2005. *Heritage assessment of the buildings on the Union Buildings estate.* In: UBAC. 2005. *Conservation Management Plan for the Union Buildings.* Pretoria: UBAC. Document requested by the Department of Public Works.

BAKKER, KA. 2005-6. *HIA for proposed Audi show room expansion, Pretorius St, Pretoria.* Pretoria: Cultmatrix CC. Specialist Study for JM Henrey & Associates.

BAKKER, KA. 2005. HIA for the Walton Jameson Memorial, due to the enlargement of the R588, Soweto, Johannesburg. Pretoria: Cultmatrix CC. Specialist Report for Rock Environmental.

BAKKER, K.A. & DE JONG, R.C. 2005. Heritage impact Assessment: Proposed Voorspoed Mine, North of Kroonstad, Free State. Pretoria: Cultmatrix CC. For Metago Environmental Engineers.

BAKKER, KA. 2005. Heritage scoping report for development in Lynnwood, Pretoria. Pretoria: Cultmatrix CC.

Specialist report for Abland.

BAKKER, KA, & DE JONG,.RC. 2006. Heritage assessment for Huddle Park Golf Course Development, Johannesburg. Pretoria: Cultmatrix CC. Specialist report for SEF Environmental.

BAKKER, KA. 2006. Heritage scoping report for the proposed *AFRICAN RENAISSANCE* Golf Estate and Business Centre, remaining extent of portion 6 and portion 138 of the farm Zwertkoppies JR 364 in Kungwini Local Municipality. Specialist report for Rob Taylor & Associates CC.

BAKKER, KA. 2006. Architectural guidelines for a clustered development on the farm Wachteenbeetjeshoek, Mpumalanga. Pretoria: Cultmatrix CC. Specialist report for Highlands Estates.

BAKKER, KA. 2006. Heritage Impact Assessment for new Student Housing in Festival St Hatfield. Pretoria: Cultmatrix CC. Specialist report for Roquenau Pty (Ltd).

BAKKER, KA & DE JONG, RC. 2006. *Development of a new National Heritage Resources Information System for the National Inventory of the South African Heritage Resources Authority* (SAHRA) with Ciber international, as well as a priority heritage audit of Parliament, Tuynhuis, Grootte Schuur, Union Buildings, Mahlamba Ndlopvu, Oliver Tambo House, Government Guest House. Pretoria: Cultmatrix CC.

BAKKER, KA. 2006. PRODUCT CODE PA1300 - SCOPING AND STANDARDS REPORT. *The NHRIS, the National*

Inventory and a set of new Core Data Standards for heritage sites with architectural and landscape Resources. Performed for CIBER Information International (Pty) Ltd. (The Report is part of the System for Heritage Information for the National Estate (SHINE), leading to the formulation of the National Heritage Resources Information System for the National Inventory of the South African Heritage Resources Authority (SAHRA)).

BAKKER, KA. 2006. Report and the on-site mission evaluation for the Richtersveld Cultural and Botanical Landscape World Heritage Site Nomination, held during 2-7 October, 2006. REPORT ON REQUEST OF THE PRESIDENT OF ICOMOS.

BAKKER, KA. 2006. Review of the Dossier for the Le Morne World Heritage Site Nomination. Pro amico - by invitation of the consultant for the Nomination and the Ministry of Arts & Culture, Mauritius.

BAKKER, KA. 2007. PLANNING POLICY GUIDELINES for the Le Morne Cultural Landscape for the Dept Housing and Lands. LMCL is currently nominated for World Heritage status. Appointment by the Ministry of Arts & Culture, Mauritius. http://www.gov.mu/portal/goc/housing/file/lemorne2.pdf

BAKKER, KA. 2007. EIA Review for the proposed RPP housing and hotel development in the Core Zone of the Le Morne World Heritage Site. Pro amico - By invitation of the Ministry of Arts & Culture, Mauritius.

BAKKER, K.A. 2007. Independent review of the EIA for a report development by the Le Morne Brabant IRS CO. LTD on a portion of the Le Morne peninsula. Pro amico - Commisioned by the Minister of Environment, Mauritius.

BAKKER, KA. 2007. HIA for the revised design of Festival Place, a mix-use and housing developmment, Festival St Hatfield Pretoria. Pretoria: Cultmatrix CC. Specialist report for Roquenau Pty (Ltd).

BAKKER, KA. 2007. Heritage Impact Assessment of Pproposed conservation through repair and maintenance, restoration, adaptation and upgrade of services for Tudor House, to allow for continued compatible use by Barclay Properties. Pretoria: Cultmatrix CC.

Specialist report for Barclay Properties (Pty) Ltd.

BAKKER, KA. 2006/7. Heritage Survey of Leeu-Gamka. Study performed with Honours level heritage students at Dept Architecture, commissioned by the Dept Environment and Tourism for the sustainable use of heritage resources in Leeu-Gamka – First Draft 2006, Report completed November 2007.

BAKKER, K.A. 2007. Design and management process for the UNESCO Slave Route Monument for Mauritius. Invited consultant for the UNESCO Slave Route Sub-committee in Mauritius. Monument site inauguration by the President of UNESCO World Heritage and PM of Mauritius on 1 Feb 2008. Pretoria: Cultmatrix CC.

BAKKER KA & KRIGE S. 2008**.** Level 1 Heritage Impact Assessment for mixed use development by OMIGPI in Newton, Johannesburg**.** Pretoria: Cultmatrix CC.

Specialist Report for Old Mutual Investment Group Property Investment.

BAKKER, KA & ELOUNDOU, L. 2008. Joint ICOMOS/UNESCO (WHC) expert Mission Report: Stone Town of Zanzibar, United Republic of Tanzania (C 173 rev), 5 May – 10 May 2008. World Heritage Committee 32ND session Quebec City, Canada,/ 2 – 10 July 2008. Item 7 of the Provisional Agenda: State of conservation of properties inscribed on the World Heritage List and/or on the List of World Heritage in Danger. Document at http://whc.unesco.org/archive/2008 and http://whc.unesco.org/en/sessions/32COM/documents/. Decisions based on report WH Document WHC-08/32 COM/7B.Add http://whc.unesco.org/pg.cfm?cid=186&l=en&id=32COM&documents& (Access limited) as cited in UNESCO WH Document WHC-08/32.COM/7B.

BAKKER, KA & VAN OERS, R. 2009. Joint ICOMOS/UNESCO (WHC) expert Mission Report: *REPORT ON THE REACTIVE MONITORING MISSION TO KILWA KISIWANI AND SONGO MNARA, UNITED REPUBLIC OF TANZANIA*.

Invited inputs in Planning or Urban conservation

1997: Participate in a series of city-wide public community workshops to establish the needs and strategies for an Integrated Development Plan (IDP) for Pretoria city centre.

1998 - 2001: Ongoing involvement with the IDP process of Pretoria through the Pretoria Inner City Partnership Management Committee.

2000/1: Elected to the Board of Directors, Pretoria Inner City Partnership.

2006: Invited speaker at the Short course in *Heritage Planning and Management for Built Environment Practitioners*, presented by the CE@UP of the University of Pretoria in collaboration with the Dept Public Works, at the Postgraduate School for Business Administration and Management University of Pretoria 27-8 February 2006, and the Nelson Mandela Gateway Building. Cape Town, 2-3 March 2006.

2004: Invited expert in the ICOMOS Scientific Committee on Shared Heritage Forum, Melakka, Indonesia, 13-9 February 2004, to workshop solutions for the conservation of the 17th Cent Dutch VOC trade town Melakka.

2005: Invited participant in the forum on Heritage Impact Assessment, held by the World Bank at the ICOMOS International Scientific Symposium, Xi'an, China, October 2005.

2006: Invited Participant in the Richtersveld Cultural and Botanical Landscape ICOMOS and World Heritage Evaluation Mission, Richtersveld Community Conservancy, 2-8 October 2006.

2006+: Invited member of the Mpumalanga Heritage Resources Authority Permit Committee.

2007: Heritage Workshop for the Leeu-Gamka local municipality, on request of the Dept Environment and Tourism.

2007: Invited Expert to lead the compilation of Urban Planning Policy Guidelines for the Aapravasi Ghat World Heritage Site Buffer Zone, Port Louis, for the Aapravasi Ghat Heritage Trust, Port Louis, Ministry of Arts & Culture, Mauritius – March 2007.

2008: Invited to perform a Reactive Mission for UNESCO World Heritage Centre on the State of Conservation at Stone Town Zanzibar, Tanzania, between 5-10 May 2008.

2008: Invited participant in the 5th Destination Stewardship survey on historic destinations, of the National geographic Center for Sustainable Destinations. June 2008.

Adjudication and specialist services regarding relevant urban projects

1999: Invited member of the evaluation committee of the Urban Design Division Pretoria City Council, for revision of the *Integrated Spatial Design Framework (ISDF) for the Inner City of Pretoria*, by Capital Consortium. This revised multimillion rand contract has since been accepted by the City Council of Pretoria (now Tshwane) as planning guide for the Inner City.

1999: Adjudication of a detail design for the Apies River Redevelopment, Hospital Precinct, Pretoria, on invitation from the Urban Design Division, Pretoria City Council.

2000: Adjudication of various tenders for an Integrated Development Strategy for the establishment of two Urban Markets (Arts and Crafts Flea Market and African Informal Trade market) in the Pretoria Inner City, on invitation from the Urban Design Division, Pretoria City Council, February 2000.

2000: *Award of Recognition*, for services to the City of Pretoria, by the Mayor Councillor Daniel Mampuru, March 2000. This award acknowledges work done in giving form to the decisions of the Inner City Forum participative planning process, and ongoing involvement in private-public partnership structures in the Integrated Development Plan structure for Pretoria.

2004: Invited reviewer of the 2004 ICOMOS *Ename Charter on Interpretation of Heritage Sites*. (Charter since accepted).

2005: Member of the Adjudicating Committee to identify the architectural Awards of Merit for the Mpumalange Institute of Architects.

2006: Member of the Adjudicating Committee South African Institute of Architects National Awards of Excellence. (http://www.saia.org.za/awards_program.php). Citations published on the Web: http://www.saia.org.za/awards_merit_2006_citations.php; http://www.saia.org.za/_afm_2006_housemillar.php; http://www.saia.org.za/_afm_2006_singita.php; These citations were published *sine nomine* in the Architecture SA, vol.xx, p.xx.

2006: Invited specialist in the legal review of the design of the Gauteng Government precinct in Johannesburg, by Cliffe & Dekker for the South African institute of Architects.

2006: Adjudication of designs for new structures on the campus of the Univ Pta, for the Directorate Facilities and Management.

2006: SA National Parks – refereeing of suitable architects to participate in work for SANPARKS. Held in Pretoria, SANPARKS HQ, September 2006.

2007-8: Adjudication of designs for new structures on the campus of the Univ Pta, for the Directorate Facilities and Management.

2007-8: Ongoing consultation for UP regarding environmental impact of the Gautrain RRS.

2008: Invited as Heritage expert by the Vice Chancellor's Office of the University of Cape Town to review the proposed Development Framework for the larger UCT Campus. The Review has lead to proposals for the campus design, which has since been formally accepted by the Planning Unit.

2008: Invited specialist in a disposition on behalf of SACAP to the CBE re specialist activity, in particular heritage impact assessment.

2008: Invited to write specialist report for SAIA regarding the demolition of the Rand Steam Laundries, Jhb. Subsequently appointed on a Review Panel to vet the reinstatement of the heritage buildings and site.

2009: Invited adjudicator for SANRAL Bus Rapid Transport design for Pretoria.

Selected academic papers and conferences

BAKKER, K.A (Principal author), with Le Roux S.W and Young G. 2003. Urban design education as an integral aspect of real time urban revitalization processes: Salvokop, Pretoria. *Urban Design International,* Vol.8, September, p.161-78. (UDI is and ISI listed accredited Journal)

Electronic copy at http://www.palgrave-journals.com/udi/journal/v8/n3/abs/9000099a.html and at http://www.ingentaconnect.com/content/pal/13575317/2003/00000008/00000003/art00006?crawler=true

BAKKER, K.A. 2007. South African heritage places – Expanding current interpretation and presentation. *South African Journal for Art History,* Vol.22, No.2: 14-23.

(http://0-search.sabinet.co.za.innopac.up.ac.za/WebZ/images/ejour/images/ejour/sajah/sajah_v22_n2_a3.pdf?sessionid=01-42015-1385927670&format=F;

http://hdl.handle.net/2263/5684;
http://www.up.ac.za/dspace/bitstream/2263/5684/1/Bakker_South(2007).pdf)

BAKKER, K.A. 1998. *Conservation for Sustainability*. Proceedings of the *Sustainability in the built Environment - A practical approach* Congress, 26-8 August, Northgate, Johannesburg.

BAKKER, K.A. 2002. Co-constructing a centre: Pretoria Inner City. In MILLS-TETTEY, R. & KORANTEMA, A-D (Eds). 2002. *Visions of the city. Accra in the 21st Century.* Accredited papers of the International Seminar on the future of the city, Ghoete-Institute and the Ghana Institute of Architects, 4-5 October, 2000, Accra. Accra: Woeli Publishing Services, p.119-28.

BAKKER, K.A. 2004. *Conserving intangible heritage resources: Examples from South Africa.* Proceedings of the International Scientific Symposium "Place, memory, meaning: preserving intangible values in monuments and sites" at the ICOMOS 14TH GENERAL ASSEMBLY AND SCIENTIFIC SYMPOSIUM, 27-30 October 2003, Victoria Falls, Zimabawe. Only refereed, accredited publications published on the ICOMOS Website. Publication URL location at http://www.international.icomos.org/victoriafalls2003/papers.htm

BAKKER, KA & ODENDAAL, F. 2008. "*Le Morne Cultural Landscape: Protecting the intangible heritage*", Proceedings of the ICOMOS 16th International Scientific Symposium, September 29th to October 4th 2008, Quebec City, Canada.

BAKKER, KA. 2001. *Introduction of 500 RDP houses in the Pilgrim's Rest heritage area – An HIA case study*. Heritage Impact Assessment workshop (bi-annual National Schools of Architecture History Symposium), Department of Architecture, University of Pretoria, 2 October 2001.

2003: Invited main speaker at the International Association of Impact Assessors SA (Vaal): *Heritage Impact Assessment: Lessons from practice.* 26 November 2003, Development Bank of South Africa, Midrand.

2005: Invited speaker at the ICOMOS-SA / Association of heritage Assessment Practioners joint meeting on challenges in heritage management, 30 Sept and 1 Oct, 2005, Gateway Centre, V&A Waterfront, Cape Town

CURRICULUM VITAE

1.0 PERSONAL INFORMATION

Name: Mwanahija Salehe Shalli

Date of birth: May 02, 1970

Place of birth: Tanga, Tanzania

Nationality: Tanzanian

Sex: Female

Full address: Institute of Marine Sciences
University of Dar Es Salaam
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Zanzibar, Tanzania
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2. 0 EDUCATION BACKGROUND

2.1 University

- Msc. in Management of Natural Resources, 2001-2003, Sokoine University of agriculture (SUA), Morogoro, Tanzania.
- Bsc. in Food science and Technology, 1992-1996, Sokoine University of Agriculture (SUA), Morogoro, Tanzania.

2.2 Advanced Secondary School Education

- Advanced Certificate of Secondary Education, 1989-1991, Kilakala Secondary School, Morogoro, Tanzania.
- Certificate of Secondary Education, 1985-1988, Usagara Secondary School, Tanga, Tanzania

3. 0 POST HELD AT THE UNIVERSITY

3.1 Academia

- Assistant Lecturer – **Aug 2008 to date**
- Assistant Research Fellow – **Dec. 2004-Jul. 2008**
- PhD student – **2006 to date**

3.2 Administration

- None

4.0 PREVIOUS WORK EXPERIENCE

- Researcher – Sustainable Utilization of Natural Resources (SUNARE) Ltd. (2002-2004)

5.0 RESEARCH AND TEACHING EXPERIENCE

5.1 Research

5.1.1 Mangora, M.M., **Shalli, M.S.** and Msangameno, D.J. (2007). An assessment of the efficacy of pro-poor conservation in Mnazi Bay-Ruvuma Estuary Marine Park, Tanzania. Research on Poverty Alleviation (REPOA) Research Grant. In progress.

5.1.2 Crawford, B., and **M.S. Shalli,** (2007), A Comparative Analysis of the Socio-Economics of Seaweed Farming in Two Villages along the Mainland Coast of Tanzania. Final report submitted.

5.1.3 Crawford B., Torell, E., Sullivan, K., **Shalli, M.S.**, Munubi, R., and Kalangahe, B. (2007). Assessment of micro enterprise beneficiaries under SUCCESS project in Bagamoyo, Mkuranga, Pangani (districts), and Fumba Penninsular, Tanzania. Final report submitted.

5.1.4 Msuya. F.E., **Shalli, M.S.**, Sullivan, K., Crawford, B., Tobey, J. and Mmochi, A.J. (2006). Economic Assessment of seaweed farming at Mlingotini, Bagamoyo, Tanzania. Under SUCCESS project, Final report submitted.

5.1.5 Torell, E., **Shalli, M.S.**, Francis, J., Kalangahe, B. and Munubi, R. (2006). Biodiversity threat assessment in Tanzania coastal areas – Under SUCCESS project. Final report submitted.

5.1.6 **Shalli M.S**. (2006). The importance of crustaceans and molluscs to the household socio-economic welfare in Mafia Island, Tanzania WIOMSA- MARG-1 grant. Final report submitted.

5.1.7 Masalu D.C.P**., Shalli M.S.** and Kitula R.A. (2005). Indigenous knowledge on coral reefs management and information dissemination - Coral Reef Targeted Research project (CRTR). Final report submitted.

5.1.8 Shaghude, Y., **Shalli M.S.** and Mangora M.M. (2005). Mapping and characterization of coral reefs and associated threats - Coral Reef Targeted Research project (CRTR). Final report submitted

5.1.9 Jiddawi.N.S, Shunula J.P, Abdulla S and **Shalli M.S.** (2005). Synthesis of existing documents along the coastal area of Mtwara. TRANSMAP project.

5.1.10 Muhando, C.A., **Shalli, M.S.,** Kitula, R.A.and Dubi, A.M. (2005). Mapping habitats and ecological zones in the KICAMP project area, Kinondoni , Dar-es-Salaam. Final report submitted.

5.2 Consultancy

5.2.1 Kyewalyanga, M., Mtolera, M., Muzuka, A.N.N., Said, S., Dubi, A., Msuya, F. and **Shalli, M.** (2009). A proposal to undertake detailed investigations and assessment of impacts of vibrations from the processing plant to seaweed production at the Songo Songo Island and their mitigation measures. Ministry of Energy and Minerals, URT.

5.2.2 Shaghude, Y.W., Dubi, A.M., Nyandwi, N., Muzuka, A.N.N, **Shalli, M**. and Sanga, I. (2007). Report on the training course on shoreline changes, mitigation and monitoring to the DoE staff, Zanzibar. 62p. Report submitted to SMOLE, March, 2007.

6.0 MEMBERSHIP

- Full and active member - Western Indian Ocean Marine Science Association (WIOMSA)
- Full and active member - Sustainable Utilization of Natural Resources (SUNARE) Ltd.

7.0 TRAINING, WORKSHOPS AND CONFERENCES ATTENDED

- 24-29th August, 2009: Sixth WIOMSA Scientific Symposium, St Denis, La Reunion
- 20th – 29th July, 2009: Training course on Participatory Research Methods. Kibaha, Coast, Tanzania.
- 1st – 2nd April, 2009: Research on Poverty Alleviation (REPOA), 14th Annual Research Workshop, Dar es Salaam, Tanzania
- 1st – 2nd April, 2008: Research on Poverty Alleviation (REPOA), 13th Annual Research Workshop, Dar es Salaam, Tanzania
- 22nd to 26th October, 2007: Fifth WIOMSA Scientific Symposium, Durban, South Africa.
- 7th – 13th October, 2007: Training course on MS-access for socio-economic data on the Western Indian Ocean region, Mombasa, Kenya.
- 28th to 30th May 2007: Coral Reef Task Force (CRTF) Strategic Action Plan Workshop, Zanzibar sponsored by UNEP (Nairobi and Abidjan Conventions Secretariat) and organized by WCS (Western Indian Ocean Project) and the Institute of Marine Sciences, Zanzibar.
- 28th – 30th May, 2007: Coral Reef Task Force (CRTF) Strategic Action Plan Workshop, Zanzibar, Tanzania.
- 11 – 15th Dec, 2006: Training workshop on project planning and evaluation of biomedical research, Zanzibar, Tanzania.
- 10th – 16th Sept, 2006: 7th International Seagrass Biology Workshop (ISBW7), Zanzibar, Tanzania.
- 7th -8 September 2006: Stakeholders workshop on postgraduate training programmes in marine sciences, Bwawani hotel, Zanzibar, Tanzania.
- 3rd – 7th April 2006: A regional workshop on coral disease, Zanzibar, Tanzania.
- 23rd Jan. – 2nd Feb 2006: Transboundary Network of Marine Protected areas for integrated conservation and sustainable development annual meeting, Zanzibar and Mtwara, Tanzania.
- 5th - 11th Dec 2005: East Africa Mariculture Extension training workshop #2, Zanzibar & Bagamoyo, Tanzania.
- 21st Nov – 2nd Dec 2005: Aquatic Ecology and Risk Assessment of Agrochemical Pollution in WIO Coastal-Marine Ecosystem Training workshop, Zanzibar, Tanzania.
- 27th June - 2nd July 2005: East Africa Mariculture Extension training workshop #1, Zanzibar, Tanzania
- 8 - 9th March 2005: GEF-Coral Reef Targeted Research and Capacity Building for Management Project Planning Workshop, ZANZIBAR, TANZANIA.
- Certificate of fellowship in Advanced Training and Research in Biodiversity, 2003- 2004, United Nations University at Ghent University, Belgium

8.0 PUBLICATIONS

8.1 Papers in conference

8.1.1 **Shalli, M.S.,** Wagner G. and Mwaipopo R. (2009). Fishers' knowledge and its application to marine fisheries management in Tanzania. Presented at the Sixth WIOMSA Scientific Symposium held in St. Denis, La Reunion.

8.1.2 **Shalli M.S**. (2007). The importance of crustaceans and molluscs to the household socio-economic welfare in Mafia Island, Tanzania. Presented at the Fifth WIOMSA Scientific Symposium held in Durban, South Africa.

8.2 Papers retrievable from websites

8.2.1 Crawford, B., and **M.S. Shalli,** (2007), A Comparative Analysis of the Socio-Economics of Seaweed Farming in Two Villages along the Mainland Coast of Tanzania, Coastal Resources Center, University of Rhode Island, Narragansett, RI USA, 13 pp. **www.crc.uri.edu**

8.2.2 Msuya, F.E., **Shalli**, **M.S.** Sullivan, K., Crawford, B., Tobey J. and Mmochi, A.J. (2007). A Comparative Economic Analysis of Two Seaweed Farming Methods in Tanzania. Coastal Resources Center, University of Rhode Island, Narragansett, RI USA, 31 pp. **www.crc.uri.edu**

8.2.3 Torell, Elin, Baraka Kalangahe, Renalda Munubi, **Shalli Mwanahija** and Brian Crawford, (2007), Integrated Coastal Management, Livelihood Development and Micro-Loan Strategies: The Case of the TCMP-FINCA Partnership**,** Coastal Resources Center, University of Rhode Island, Narragansett, RI USA, 15 pp.. **www.crc.uri.edu**

8.2.4 Torell, Elin, **Shalli**, **M.S**., Julius Francis, Baraka Kalangahe, Renalda Munubi, (2007). Tanzania Biodiversity Threats Assessment: Biodiversity Threats and Management Opportunities for Fumba, Bagamoyo, and Mkuranga, Coastal Resources Center, University of Rhode Island, Narragansett. **www.crc.uri.edu**

CURRICULUM VITAE

PERSONAL DETAILS

Full Name: Mwita Marwa Mangora

Date of Birth: March 04th, 1969

Place of Birth: Tarime, Tanzania

Nationality: Tanzanian

Permanent Address: Institute of Marine Sciences P.O. Box 668 Zanzibar, Tanzania Tel: 255 24 2230741; Fax: 255 24 2233050

Email: mangora@ims.udsm.ac.tz; mmangora@yahoo.com

ACADEMIC QUALIFICATION

MSc (Natural Resources Management), Sokoine University of Agriculture. 2002.

BSc (Forestry), Sokoine University of Agriculture. 1996.

CURRENT OCCUPATION

PhD student since April 2007 – University of Dar es Salaam.

Assistant Lecturer Aug 2008 – to date - University of Dar es Salaam.

Assistant Research Fellow since Oct 2004 – Jul 2008 - University of Dar es Salaam.

PREVIOUS WORK EXPERIENCE

Program Manager: UK Voluntary Services Overseas (Tanzania). Apr 2003 – Oct 2004

Field Officer, CARE International in Tanzania (Kigoma Environmental Management Project). Dec 2002 – Mar 2003.

Sub-centre Facilitator, Danida Programme on Natural Resources Management and Land Use Planning/HIMA, Njombe, Aug 1998 – Jul 2000.

Research Assistant, Department of Forest Biology, Sokoine University of Agriculture, Jul 1996 – Jul 1998.

RECENT RESEARCH AND TRAINING EXPERIENCE

Research

Mangora, M.M. Stress ecophysiology of mangrove seedlings, PhD research project.

Mangora, M.M., Shalli, M.S. and Msangameno, D.J. 2007. The impact of marine protected areas on the livelihoods of coastal communities: a case study of Mnazi Bay-Ruvuma Estuary Marine Park. Research on Poverty Alleviation (REPOA) Research Grant. Msangameno, D.J. and

Mangora, M.M. 2007. The impact of seasonal variations in fisheries output on the livelihoods and poverty levels of fishing communities in the Kilombero River Basin, Tanzania. Research on Poverty Alleviation (REPOA) Research Grant.

Shaghude, Y.W., Muhando, C.A., Shalli, M. and **Mangora, M.M.** 2006. Mapping and characterisation of coral reefs and associated threats. Coral Reef Targeted Research of GEF/World Bank. Page 2 of 2

Teaching at University of Dar es Salaam MR 603 – Applied Marine and Coastal Ecology – Mangroves ecology, utilization and management for MSc Marine Sciences. MR 608 – Marine Conservation Science – Community based conservation for MSc Marine Sciences. AV 300 - Field Course on Mangrove Ecosystems for BSc Aquatic Environmental Sciences and Conservation.

SELECTED PUBLICATIONS

Mangora, M.M. 2010. Poverty and institutional management stand-off: a restoration and conservation dilemma for mangrove forests of Tanzania. Proceedings of the 18th Commonwealth Forestry Conference, Edinburgh, Scotland, 28th June – 02nd July 2010.

Muhando, C.A., Shalli, M.S., Kitula, R.A., Dubi, A.M. and Mangora, M.M. 2009. Mapping Habitats and Ecological Zones in the KICAMP Area. Institute of Marine Sciences, Zanzibar and Kinondoni Municipal Council, Dar es Salaam. 46pp.

Mangora, M.M. 2007. Living on mangroves: a re-look on Ruvu Estuary mangrove forest, Tanzania. World Wildlife Fund, Education for Nature (EFN) News, April 2007. Washington D.C. pp 6-7.

Mangora, M.M. and Nsolomo, V.R. 2006. Tobacco farming: a dilemma in rehabilitation of degraded woodlands in Tanzania. In: Nikundiwe, A.M. and Kabigumila, D.L. (eds.). *Dryland Ecosystems: Challenges and Opportunities for Sustainable Natural Resource Management*. Proceedings of the Regional Workshop held at Hotel Impala, 7-9 June 2006, Arusha, Tanzania.

Mangora, M.M. 2005. Ecological impact of tobacco farming in miombo woodlands of Urambo District, Tanzania. *African Journal of Ecology* 43(4):385-391.

RELEVANT PROFESSIONAL TRAINING

Advanced Course in Plant Physiology. 22nd January to 23rd March 2007, Department of Botany, Stockholm University, Sweden. Designing Research: Practical Skills for Researchers, 5th – 9th December 2005.

Research on Poverty Alleviation (REPOA), Dar es Salaam, Tanzania.

International Postgraduate Training Programme in Limnology: Wetland and River Floodplain Ecology, 11 – 29 July 2005, Trebon, Czech Republic and Vienna, Austria.

Methodology Training Course in Participatory Research, 17 – 22 February 2003, Research on Poverty Alleviation (REPOA) of Dar es Salaam, Tanzania.