

# Healthy Hospital

## Phase 2 Kolandoto Hospital

### Version 3

## TABLE OF CONTENT

INTRODUCTION

DIRECTORATE

PARTNERS

BACKGROUND

DESCRIPTIONS OF PROBLEMS AND NEEDS

TARGET GROUP

PROJECT GOALS

LOGFRAME

TIMEFRAME

BUDGET

RISK ANALYSIS/MITIGATION

PROJECT FOLLOW UP



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## PROJECT SUMMARY

In 2013 the Kolandoto hospital raised the issue of problems with water and electricity supply for critical medical activities. The Healthy Hospital project was started to address these problems. In phase 1 of the project water supply was doubled by the installation of a new submersible pump. In phase 2 electricity will be the main focus. To avert the most critical dangers and to create resilience Uninterrupted Power Supply (UPS) systems with solar cells will be installed for facilities that conduct open surgery and deliveries.

In phase 1 the bacteriological water analysis found the presence of Ecoli in the ground water source of the Kolandoto hospital. The installation of a dosatron for chlorination is therefore foreseen in phase 2 of the project.

In phase 1 the need of governmental funding also became part of the project. The Kolandoto hospital have been applying to become a Council Designated Hospital (CDH) without any success so far. Becoming a CDH would increase the economic resilience of the Kolandoto hospital and it is within the long term vision of IAA of becoming not needed.

## INTRODUCTION

The project is developed by the non-profit Non-Governmental Organization (NGO) I Aid Africa the spring of 2014 in cooperation with AICT Kolandoto Hospital, Engineers without borders and Architects without borders.

Phase one of the project has been conducted as a field study, resulting in a survey report, which will function as a basis for implementations during phase two. Infrastructural issues regarding water, electricity and buildings are a main concern for the hospital in Kolandoto. In order to secure sufficient and safe health care for patients, improvements in those areas are vital.

## DIRECTORATE

Name	Function
Dr Elimeleki Katani	Hospital Director Kolandoto Hospital, contact person and initiator
Jon Gunnarsson Ruthman	Project coordinator I Aid Africa
Jan Burenus	Project coordinator Engineers without borders



Emilio Brandao	Project coordinator Architects without borders
Mikael Mangold	Technical advisor and coordinator
Zachalia Ndalaha	Hospital Patron and contact person
Methuselah Nkaka	Electricity responsible Kolandoto Hospital
Julius Omango	Water and waste responsible Kolandoto Hospital
Annika Danielsson	Project coordinator Architects without borders, Architect and member of survey team
Andreas Berg	Water Engineer and member of survey team
Daniel Kallus	Water Engineer and member of survey team

## PARTNERS

### African Inland Church Tanzania (AICT)

The AICT is a Faith Based Organisation (FBO) whose goal is to support individuals, families and communities, both physically and spiritually. The organization is working to try to achieve quality health care for all individuals, regardless of economic status. AICT has several medical facilities and also conducts field activities. The organizations headquarter are based in Mwanza, Tanzania.

AICT Kolandoto hospital is located in the north-western region of Shinyanga. The hospital has cooperated with IAA since 2008.

**I Aid Africa (IAA)** is a Swedish NGO that has been working with Kolandoto Hospital and in the region since 2008. A small-scale organisation that aims to support individuals and communities to create a better life for themselves.

**Engineers without borders (EWB)** is a Swedish NGO and they are a part of an international network which supports development projects based on engineering, often in cooperation with local organizations and their goal is to find technical solutions adapted to and with respect to local capacity, culture and values.

**Architects without borders (ASF-Sweden)** are a NGO, which is a part of the network ASF-International that works for sustainable and socially equitable architecture. They aim to create better opportunities for people in difficult living situations and disasters as well as solve financial and knowledge based obstacles in the way of a safe, fair and sustainable environment. Their projects are in cooperation with local organizations and seek to involve the community.

## BACKGROUND

During the spring of 2014 a request of support came from Kolandoto Hospital. Contacts were made with EWB and ASF-Sweden through Mikael Mangold during the spring and summer. The survey team was identified during the autumn. Phase 1 and the survey started in February of 2015 and lasted until end of April 2015. This project will be implemented through many phases with basis in the survey report.

See the survey report in appendix 1 and project report in appendix 2.

## DESCRIPTION OF NEEDS AND PROBLEMS

### Needs based part

Water supplied from the existing borehole is insufficient to meet the current requirements. During phase one, a new pump was purchased and installed, allowing more water to be extracted. However, an increase of patients, staff, students and villagers will require a higher water demand and a new additional source is therefore recommended.

The municipal water utility of Shinyanga, SHUWASA, is planning the construction of a new water pipeline, from Shinyanga to Kolandoto. However, the start of the construction has been postponed for many years and the progress needs to be monitored during phase two. If the construction of the pipeline is further postponed, drilling a new borehole is recommended. Full tender sheets are presented in the survey report.

Analyses made on the groundwater during phase one indicates both a high fluoride and coliform content. Using groundwater contaminated with fluoride for drinking purposes results in dental fluorosis, a common problem in the region. Removal of fluoride is a costly process and only considered as a cosmetic issue and therefore not a priority in phase two. Coliforms in the water can cause different diseases and the recommendation is to install a chlorine-based disinfection process.

The hospital receives power from the city grid, provided by TANESCO. The power supply is unreliable and considered a health risk since malfunctions during surgeries has occurred. A solar powered back-up system is recommended to secure the supply, using a sustainable source. However, the recommended back-up system is only covering the most



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vital parts of the hospital, such as theatres and the maternity ward, due to high investment costs. In the long term perspective installing a UPS system creates economic dependence for Kolandoto. The most expensive part of a UPS system are the batteries which currently have a service life of 5 years. Batteries with a longer service life exist but they require regular maintenance. However the current development in the battery efficiency makes it likely that better batteries can be installed after the 5 year service life.

With the goal of creating an architectural masterplan for the development of building infrastructure at Kolandoto Hospital during the next ten years, three site and building assessments were made: an assessment of the logistics and flows through the hospital site, an assessment of the medical zoning, and an assessment of the needs for renovation, extensions and new constructions.

Site circulation and flows of patients, staff, materials and visitors across the hospital area plays an important part in making sure the hospital is an environment which does not cause illnesses or poor health. Appropriately designed flows will decrease the risk of medical errors and nosocomial infections or diseases. Among other things the analysis shows an unnecessary flow of students, an inefficient emergency flow, a spread out outpatient flow and a visitor flow that is unnecessarily long and causing congestion.

In a hospital site layout, one should strive to not overlap different medical zones in order create a comfortable healing environment for patients, to decrease the risk of transmission of communicable diseases and nosocomial infections, and to create an environment that minimizes room for errors among other things. The analysis shows that there currently are unnecessary public function inside the hospital, that the goods and material functions are spread out, that the outpatient areas are spread out and overlapping with inpatient areas, and that the diagnostics and treatment areas (excluding the lab) are a bit too public.

The assessment of the needs concerning building structures was done through a participatory process involving the hospital staff and management. A comprehensive list of needs for renovations, extensions and new construction was created. Priorities were made in terms of what Kolandoto Hospital consider to be an appropriate order of the identified building projects in order to develop the hospital step by step to provide appropriate health care services to the surrounding communities.



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During phase two it is recommended to start planning more in detail for some of the larger building projects with highest priority: a casualty unit including a observation ward, a new private ward and an extended maternity ward. In addition, some smaller building interventions could be implemented, such as building a new public path that decreases the congestion and movement of visitors through the diagnostics and treatment areas, reorganization of the imaging department to facilitate for easier access for bedridden patients, to create social areas for patients and relatives to meet outside the general ward, to extend the waiting areas at the outpatient department, and to finish the construction of the maternity theatre extension.

See the full survey report in appendix one for further details

### **Human rights based**

Kolandoto Hospital is forced to take user fees from their patients to be able to provide assistance to people in need. These fees is a barrier to health for many people in difficult financial situation hence they seek care in a later stage at greater risk of disability and mortality. Kolandoto hospital's financial situation prohibits them from providing high quality health care at the standard they want because of lack of drugs, equipment and access to safe water and electricity. This also violates the human right of being equal in dignity and rights (article 1) and the right to life (article 3) when it is a person's financial situation deciding if and what quality of health care they are receiving.

On a provincial scale the regional hospital in Shinyanga is overburden by patients they could refer to Kolandoto if they were a CDH and hence lessen the burden on them and increase the quality of the patients they see.

The two most vulnerable groups are women and children. The child mortality has decreased in the world since the 1990s but in sub-Saharan Africa the change has been slowest and still half of the world children under 5 year are dying which is 16 times higher than in the "developed" world, approximately 1 in 5 children will not see their fifth birthday due to easily preventable and curable infectious diseases. What is needed is access to vaccinations and early treatment. Studies show that child mortality has decreased amongst both the poor and the rich households except in Sub-Saharan Africa even though countries like Tanzania have done great improvements.

Maternal mortality has also decreased but there is big difference between the urban and rural areas of the world. In the year 2012 40 million births were done without the presence of trained medical staff and of these 32 million were in rural areas in developing countries. And overwhelming majority and it is also here we see the highest maternal death rates.

Easy access to quality antenatal, perinatal and postnatal care is essential in combination with family planning. A user fee prohibits this access for many women and increases the risk of mortality for both them and their child but also for the already living children.

There is a need of political will transformed into an active support, adequate resources combined with healthy strategies for mother and child health care.

Source: *The Millennium Development Goals Report 2010, 2011, 2013, 2014*

## TARGET/RECEIVER

- AICT Kolandoto Hospital
- Patients of the Hospital
- Kolandoto Village
- Students at Kolandoto college

## PROJECT GOALS

- Improve and implement sustainable infrastructure at Kolandoto Hospital to improve patient access, security as well as quality of care and minimize environmental consequences
- Support Kolandoto Hospital in the process of becoming a Council Designated Hospital

## LOGFRAME

Specific Objective	Activity	Indicator	Assumptions
SO1 Improve access to quality water source and improve waste water system	<p>A2 Chlorination of groundwater or municipal water</p> <p>A3 Provide hatches on septic tanks</p>	<p>I2 Groundwater chlorinated and appropriate levels of residual chlorine found.</p> <p>I3 New metal hatches have been installed</p>	
SO2 Implement UPS system for life saving		I1 The hospital have 3 UPS	



activities in the first the General OT, then the Eye theatre and the maternity.	A1 UPS system of 17,7 kW for 15 minutes with solar cells	systems for the most life saving activities with solar cells.	
SO3 Improve waste management system	A1 Construct a new roof over waste area  A2 Provide proper PPE to waste manger	I1 New roof over waste area has been constructed and a more effective waste management is possible  I2 The waste manager have PPE before the end of 2015	
SO4 Plan for a new buildings	A1 Plan for a Casualty Unit  A2 Plan for a observation ward  A3 Plan for an extension of the general theatre  A4 Plan for a new private ward  A5 Plan for a new extended maternity ward	I1 Blueprint and plan for the mentioned building exists before June 2016	That either a new architect Master student or other qualified staff can be identified
SO5 Increase knowledge at Kolandoto Hospital regarding Water, Sustainable energy, Waste management, Emergency care and flows	A1 Conduct a Water workshop in combination with on site training  A2 Conduct a Sustainable energy workshop in combination with on site training	I1 Feedback from Workshop attendants  I2 Feedback from Facilitator  13 A Environmental	That Funding from Forum Syd will be granted.  That facilitators can be identified and be present at Kolandoto during phase 2.



	<p><b>A3 Conduct a waste management workshop in combination with on site training</b></p> <p><b>A4 Conduct a series of Emergency care workshop in combination with on site training</b></p> <p><b>A5 Support in creating a Kolandoto Hospital Environmental policy</b></p>	<p><b>policy has been created before the end of 2016</b></p>	
<p><b>SO6 Support and advocate for Kolandoto Hospital becoming a CDH</b></p>	<p><b>A1 Email contact and meetings with Regional Medical Team in Shinyanga and possibly other actors</b></p>	<p><b>I1 in project report give a review over communication had with RMT and other actors and evaluate impact</b></p>	

## TIMEFRAME

- Spring 2015 planning Phase 2
- Summer 2015
  - Fundraising activities
  - Follow up with SHUWASA
  - Finish minor activities like hatches and roof over waste area
  - Identify possible candidates for Architectural design activity
- Autumn 2015
  - SIDA application 1 September
  - Finishing chlorination of ground water
- Winter 2015/2016
  - Send out team for design and electricity activity
- Spring 2016
  - Finish design proposal
  - Finishing the Uninterrupted Power Supply system with solar\_cells for the maternity OT, General OT and the Eye OT.
  - Plan for phase 3
  - Project visit by members from coordination team



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- Summer 2016
  - Project evaluation
  - Project plan for phase 3 finished

## BUDGET

See appendix 3

## RISK ANALYSIS/MITIGATION

See framework for overall risk assessment

- Risk: That the SIDA application is denied  
Mitigation: Either see if the partners can increase their support or possible prolong phase 2.
- Risk: That suitable candidates are not found for SO4  
Mitigation: IAA and the partners will do our best to find suitable candidates, if not possible it might be necessary to push the activity until good candidates have been found
- Risk: That SHUWASA fails to fulfil its promise of providing Kolandoto with water during 2015  
Mitigation: **Suitable locations for new borehole identified in phase 3 of the project and construction of borehole is conducted in phase 4.**

## PROJECT FOLLOW UP

- Continuous communication between the different partners
- After phase two is finished it will be evaluated by all partners involved. See appendix 4 for template