2011

BiDBook Business Cases and Program Ideas "5 Years Drive for Sanitation"

Netherlands Water Partnership

NUTRIENT PLATFORM NL

BiDBook business cases and program ideas

'Five-years drive for sanitation'

Symposium 'Sanitatie, nieuwe impulsen',

September 30th, 2011

FOREWORD

We are glad to present to you, a collection of programmatic ideas which we received from different players in the Dutch Water Sector, on our request to come with innovative ideas, green and ripe, to contribute to the 'Five Years-Drive for Sanitation' towards 2015. This campaign was recently launched internationally by the UNSGAB, under the inspiring leadership of His Royal Higness Willem Alexander, Prince of Orange, and the Dutch water sector decided to join the effort. The Ministry of Foreign Affairs, Women in Europe for a Common Future, Leaf/WUR, Waterschap Groot Salland, Netherlands Water Partnership, Nutrient Platform and Aqua for All organized a Symposium on September 30th, to discuss the 'state of the art', to analyze experiences of the Dutch Watersector with International Cooperation to contribute to the sanitation sector in developing countries, and to welcome new ideas.

The aim of this initiative is to have a brainstorm session on how we, as Dutch water sector, can contribute to a clean and healthy environment in developing countries. The Dutch water sector has a rich tradition in the treatment of waste water and fecal sludge, and at the same time, invests in innovation and research. An interesting opportunity lies in the high potential value of nutrient recovery from waste.

This 'Business in Development' Book contains programmatic ideas from Water Boards, consultants, companies, nongovernmental organizations and individual persons. Aqua for All, Netherlands Water Partnership and the Nutrient Platform will be glad to contribute within our possibilities, to help develop this richness of ideas, into fundable business proposals and ready-to-implement programs. Let's join efforts to contribute for a clean water and sustainable sanitation services for all.

Aqua for All, Netherlands Water Partnership, Nutrient Platform
The Hague, September 2011

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Promoting Health and Business! Upscaling the promotion of safe sanitation and hygiene in Kibera, Nairobi

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Who holds the initiative:*The comprehensive concept is 'Safi Sana' that is initiated by Aqua for All and partners. The initiatives on health promotion and sanitation within the 'Safi Sana' concept will be implemented by AMREF in Kenya, in cooperation with the community of Kibera.*
Eventually, other partner: *For the development of a business related to our proposed activities of health promotion and sanitation other partners have to embark on the 'Safi Sana' concept.*

1 Objective of the business case / program idea

Our main goal is to improve the health of Kibera residents through safe sanitation and hygiene promotion. In specific, the program will lead to:

1. Improved health knowledge, sanitation and hygiene promotion practices among children and the community;
2. Increased access to sanitation and hygiene facilities;
3. Increased awareness in the control and prevention of communicable diseases;
4. Build capacity of community structures to coordinate the activities of the program;
5. An opening or link to a comprehensive sanitation and hygiene business model.

2 Description of the business case / program idea:

Since the late 90's AMREF implements an integrated health program in Kibera in order to improve the health status of the 97,000 residents of Laini Saba and Mashimoni, two of the 10 'villages' of Kibera. In 1998 AMREF's Kibera Community Health Centre was established. This clinic provides various medical services which include: preventative, diagnostic and limited curative health care, as well as immunization, nutrition, reproductive health, HIV/AIDS and TB support.

In 2007, AMREF added a school health intervention to its Kibera programme. This intervention is called Personal Hygiene and Sanitation Education (PHASE). PHASE, a school based approach uses simple innovative, participatory approach that promotes health by educating children on the importance of hand washing with soap, personal hygiene and environmental sanitation, thus contributing to reduced water, sanitation and hygiene related diseases. Currently, the school health project has added other components of health including sexual reproductive health, nutrition education, child rights and drugs and substance abuse in order to address the health concerns of Kibera residents.

AMREF proposes to scale up sanitation and hygiene promotion in Kibera in order to reduce diarrhea diseases, upper respiratory infections and skin infections and ultimately to improve the quality of life of Kibera residents. The proposed program will leverage resources from other actors. On the one hand we have our links to other health promotion work (such as HIV education, adolescence and sexual reproductive health promotion and maternal child health). On the other hand, this project is part of the supply chain towards the 'safi sana' business model and in that sense links to other 'non health' actors and leverages their resources). The mandate of AMREF could reach into:

- Realisation of sanitation and hygiene blocks with facilities for a small 'centre of commerce'
- Increase the availability of sanitation and hygiene promotion activities, and behavior change

The management of the business case around the sanitation blocks will not be within AMREF's mandate and needs partners for that.

Ultimately AMREF in a concerted effort with public and private partners will contribute to improved quality of life of Kibera residents. AMREF's added value lies within past experiences in a successful implementation of comprehensive health promotion programs through existing community networks

(community health workers, trained teachers on hygiene and sanitation, trained parents on hygiene and sanitation and the relevant government ministries which we are already working with).

3 Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?

A sustainable sanitation service will include the following services into the multifunctional service blocks: 1) Sanitation and hygiene services; 2) Water points, 3) the sales of fertilizer and biogas; 4) Shops/kiosks; 5)Shoe shine stands; 6) Shower rooms; 7) Other innovative facilities/services that shall be deemed appropriate in the setup

- The design of the sanitation facility aims to achieve effective and safe disposal of excreta, privacy, convenience of use, clean with acceptable level of foul smell.
- Investment costs is proposed to be received from donors, private investors and community contribution
- There will be service charge imposed on use of the sanitation facilities, shower and water.
- The revenues generated from shop, shoe shine, sanitation, water and the rest of the facilities shall be used to meet operation and maintenance costs with the balances used to upscale the initiative

4. In case of program: duration: 3- 5 years

5 Country : Kenya, Nairobi, Kibera informal settlement

6 Estimated budget: to be defined

7 In case of a business case: **what is your revenue system**:

still to be defined by other partners who will join this initiative.

8 How many people/households will benefit from this program ?

The intervention will cover 2 villages in Kibera; Laini Saba and Mashimoni and will benefit 13,000 children and 19,740 community adults.

9 In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

The program idea could easily be adapted to the ongoing program activities of AMREF and thus would lead to a scale up of our current activities.

10 What does the program lack, what is still needed to make it 'ready for implementation'?

The program is ready for implementation as AMREF is already working on hygiene promotion and sanitation in Kibera.

11 Risks you foresee and measures to be taken:

Risks	Mitigation measure
Limited involvement of local government since Kibera is an informal settlement	Capitalize on AMREF´s reputation as a leading health organization in Africa and Kibera
Our activities might not lead to a viable business, due to low demand of products and services of sanitation facilities	Select knowledgeable and capable partners who conduct a thorough business feasibility study and network with all actors within the ´business chain´.
Land tenure issues. The sanitation blocks will have to be constructed on land that is scarce and that is situated in an informal settlement.	Involve land owners in the programme.

12 Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

The management of the business case around the sanitation blocks will not be within AMREF's mandate and needs partners for the development of this business case.

A DREAM LATRINE: DESIGNS JUST LIKE THE USERS WANT TO BUY THEM!

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Who holds the initiative:*The initiative has been developed by Annemarieke Mooijman (coordination) in cooperation with the Tamil Nadu (India) based NGO: Gramalaya (partners for training and implementation), IRC Water and Sanitation Resource Centre (mainly for the knowledge exchange and dissemination component) and the Industrial Product Design department of the Hague University (Haagse Hogeschool) (for market research and design).*

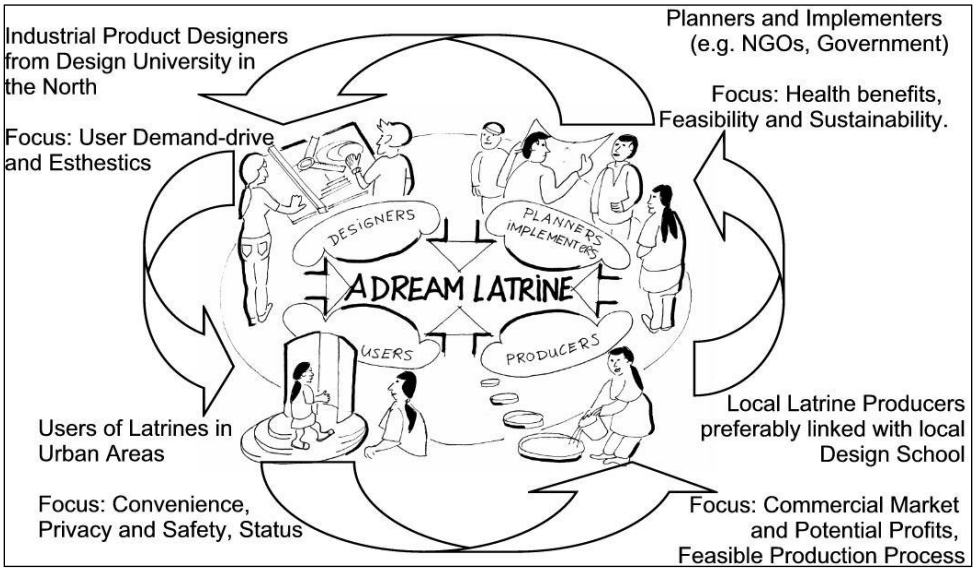
1 Objective of the business case / program idea:

Designing latrines using users' motivation as a starting point: a joint effort by industrial product designers, local producers, users and planners/ implementers to develop the DREAM LATRINE for large-scale, commercial application…. Designs just like the users want to buy them…

2 Description of the business case / program idea:

Traditionally the design of latrines in (urban) sanitation programmes in developing countries is based on designs by technical engineers focussing on the *health benefits* for the users and taking into consideration the available financial resources, physical condition of the soil, the available space and socio/economic circumstances. While driven from an idea to improve health and living conditions of the users, many of those programmes suffer from the fact that many of those users are *not motivated* to use the latrines that are provided to them for free or at a subsidised rate.

Already in 2004 the World Bank-WSP-paper on "*the Case for Marketing Sanitation"* mentioned that in addition to health benefits the main motivators are: (1) Convenience and comfort, (2) Privacy and safety, (3) For women and girls, avoidance of sexual harassment and assault (4) Less embarrassment with visitors and (5) Dignity and social status. And that because of those 5 motivators a large number of people (even very poor people) are willing to invest in basic sanitation (which is the only way to go to scale). Although this information is widely being used in hygiene promotion programs and school sanitation programs, so far it has not been used for the design of household latrines. Listening to the people and producing what they want (including water saving measures), will accelerate the global access to appropriate sanitation.



Participatory design: the development of the DREAM LATRINE is a joint effort between the four key partners: (1) the designers, (2) the users, (3) the producers/local designers, and (4) the planners/ implementers.

At the start-up, all groups undertake organize separate events (with support from the DREAM LATRINE initiators) to prepare for a joint participatory design workshop: (1) The *industrial product designers (from the Hague University)* learn about latrines in urban communities in developing countries and investigate the local conditions. (2) The *users* (women, men, older people, adolescents, children)

formulate their motivations to use or not use latrines and identify bottlenecks and opportunities. (3) The *latrine producers/ designers* investigate the availability/prices of local materials, craftsmen and techniques (beyond the ones they are already using). (4) The *planners and implementers* look into the policy and legal issues, measuring future impacts and challenges for sustainability.

Subsequently, in the **joint workshop** all four groups work together, using participatory planning techniques, towards joint criteria/solutions for design and a preliminary design.

As a result of the outcomes of the workshop, the producers and designers construct real-scale models of the 2-4 most appropriate designs. Those designs are being field-tested by at least 30 users/familes for at least 6 months. Upon completion of the field-test ing period, in a joint gathering, the most appropriate design is being elected by the designers, users, producers, planners/implementers. The elected design will be marketed/promoted by the planners/implementers and producers will be trained by them with support from the designers.

Knowledge exchange and dissemination: the participatory "open" design process will be documented through video/ photo stories, a website and a manual on the process. All information will be made available online for global replication in other settings, cultures and/or conditions.

Although not of this plan, **a potential follow-up Phase** would be on global replication adapting to other culturally-determined sanitation habits e.g. sitting vs. squatting, wet anal cleansing vs. drey anal cleansing or socio-economic and physical conditions as well as the development and implementation of a global communication and communication strategy.

3 Expected results

a) The DREAM LATRINE will be designed and developed for large-scale, commercial production and are latrines people are willing to buy and pay for because it meets their demands.
b) Through the thorough documentation of the design process, the proces can be duplicated in others settings and adapted to local physical and cultural-social-economic conditions.

4 Program timing and duration:

The program has started in September 2011 and the design phase will be finalized by February 2012.

The complete finalization of this phase will be in August 2012.

If additional financing would be made available similar initiatives will be developed for other countries/continents, the program would continue in 2 other continents in 2012-2013.

5 Country/Countries:

Initially in Tamil Nadu, India. Through documentation and knowledge dissemination, potential for duplication in other settings.

6 Estimated budget:

BUDGET	Amnt	Unit costs	Total
Travel, Visa and Lodging Product Designing Students and Teacher	6	€ 1.500,00	€ 9.000,00
Key **Partner** Events (logistic support, average costs)	4	€ 800,00	€ 3.200,00
Joint Workshop for participatory design (logistics and facilitation for 3 days)	1	€ 5.000,00	€ 5.000,00
Development of scale models	1	€ 1.500,00	€ 1.500,00
Construction of field-test latrines	30	€ 200,00	€ 6.000,00
Monitoring during field-testing (including external support)	1	€ 8.000,00	€ 8.000,00
Gathering for selection of best design (1 day)	1	€ 800,00	€ 800,00
Promotion and marketing of design in pilot area (activities and promotional materials)	1	€ 7.000,00	€ 7.000,00
Training of 25 latrine producers	25	€ 280,00	€ 7.000,00
Technical Support and Coordination	1	€ 7.500,00	€ 7.500,00
Dissemination (including website, video, pictures and printed guidelines)	1	€ 20.000,00	€ 20.000,00
TOTAL			€ 75.000,00

7 In case of a business case: what is your revenue stream?:

Direct revenue will be with 25 individual latrine producers. Those producers can cover as much as 25,000 households. Beyond the project lifespan, more latrine producers can be trained by the first group of trained producers.

Because of the online availability of the documentation of the design process the methodology can be easily replicated in other regions.

8 How many people/households will benefit from this program?:

As mentioned under 7 there will be a direct benefit for 25,000 households who have access to latrines on the commercial market and are affordable and meet their demands.

9 Implementation phase

The project started on September 1st 2011 with a group of students of the Hague University starting on the design phase. Field and market investigation is planned for November 2011 (depending on the availability of financing).

10 What does the program lack, what is still needed to make it 'ready for implementation'?

Financing and certainly start-up budget is needed for the field and market investigation in India.

11 Risks you foresee and measures to be taken:

If no financing would be available, it would be difficult to do the market research as well as to develop the test-models. Documentation of the design process will be done by the students as part of their work plan.

12 Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

A partnership will be developed with a local design school in Tamil Nadu (potential partners have been identified) as well local latrine producers and interested pilot communities.

Feasibility Study African Finance Facility

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Who holds the initiative: *Aqua for All & Waste*
Eventually, other partner: *Partners for Water, ICCO KerkinActie, TRIODOS FACET, Micro Water Facility*

1. Objective of the business case / program idea:

The deliverable of the feasibility study is a package of information to entice parties to 'bid' on the implementation and management of an African Finance Facility. The package should demonstrate a) the need for such a facility and b) ideas for services of the African Finance Facility, and c) ideas for a set-up of the African Finance Facility.

2. Description of the business case / program idea:

a) The need for such a facility, can be demonstrated by examples derived from current practice, in a selection of countries. At the same time, there is a need to describe the potential for specific Product Market Combinations. For example, for sanitation, the construction of latrines, emptying services, public toilets. And for water, pump maintenance may be an interesting subject for a product market combination study (between others).

b) Services to be offered by an African Finance Facility, may include:
   - Technical Assistance entrepreneurs, market & sector development tools, training, etc.
   - Support of local financiers with financial services – whatever is needed: guarantees, loans, (…)
   - Knowledge development.

c) As for the set-up of an African Finance Facility, there are different possibilities. AFF could be part of an existing organization, or set-up as a separate vehicle managed by a consortium.

3. Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for)?

For local sustainable sanitation services, financing is one of the bottlenecks to overcome. The assumption behind this study is that African banks in general, have a good liquidity position, but are hesitant to invest in the sanitation sector. This hesitance is understandable: currently there is no developed market in the water, sanitation and hygiene (WASH) sector. There are many informal entrepreneurs, and financiers are not familiar with the market because of the perceived risks. However, with the WASTE Venture Fund (WVF) it is proven that support can help financiers to 'give it a try' and explore new markets. One of the roles of the new African Finance Facility will be to involve local financiers and help them to offer adequate financial products to overcome financing bottlenecks.
The clients for the product market combinations to be studied in the feasibility study, will be entrepreneurs in the first place, in order to enable them to deliver good sanitation services to different client groups, including the poor. At the same time, the AFF could help local financiers to develop financial products for costumers, like landlords and households that need a micro credit to build or improve their own toilet facility. Environmental sustainability will be enhanced by encouraging the entrepreneurship in the treatment of waste water and fecal sludge.

4. In case of program: duration:

In January 2012, the feasibility study will be ready to present to potential bidders: e.g. African banks, but possibly, also other financial institutions, donors.

5. Country/Countries:

Kenya, Malawi, Ghana, Benin, Uganda will be subject for the feasibility study. The concept will best be developed is countries that meet the following criteria:
-legal framework in place, enabling environment for entrepreneurship, market demand, developed financial- and construction sector.

6. Estimated budget (cost structure):

n.a.

7. In case of a business case: what is your revenue stream?:

n.a.

8. How many people/households will benefit from this program?:

n.a.

9. In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

In January 2012, the concept will be presented to potential bidders.

10. What does the program lack, what is still needed to make it 'ready for implementation'?

The assumption behind the feasibility study is that there are potential interested financial institutions on the African continent. This assumption still needs to be proven.

11. Risks you foresee and measures to be taken:

The feasibility study in itself does not entail many risks; the risk will be that bidders will not be convinced that the WASH sector is potentially profitable.

12. Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

We will need to convince potential bidders of the feasibility of an African Finance Facility. Dutch entrepreneurs, donors and others might help, at a certain stage, to stimulate and create demand for WASH products in African countries (for example, hygiene campaigns).

Cook & SOAPI (Sanitation for All People in India)
"A Customized Sanitation System for the Rural and Peri-urban Areas of India"

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Who hold(s) the initiative: *J. Aapkes, P. van Essen, P. Hummel, A. Pool, L. Nijk, D. Schaap*

Eventually, other partners: *WASTE, advisers on urban environment and development.*

1. Objective of the business case / program idea:

Cook & SOAPI provides the rural and peri-urban areas of India with a customizable sanitation system.

2. Description of the business case / program idea:

Cook & SOAPI provides an integrated concept that meets the need for Sanitation fOr All People (SOAP) in rural and peri-urban India. A modular and expandable system has been designed which fits both individual and communal needs. At World Water Day 2011 it was announced in New Delhi that *Cook & SOAPI* got the first prize in the category of superstructures at the FINISH (Financial INclusion Improves Sanitation and Health) Contest which was organized by ideaken.com and WASTE. At the moment we are writing the business case and fine-tuning the design.

3. Results: how will this program contribute to sustainable sanitation services, both environmentally and financially?

Cook & SOAPI is designed to be both cheap and sustainable. The system is based on the principles of Cradle to Cradle. Coated cardboard is being used as building material which makes the construction light weight and consequently cheap in relation to mass production and low transportation costs. Additionally the sanitation system has multiple functions: rainwater harvesting; a separated sanitation system; producing biogas from faeces for cooking; and use of nutrients of urine for growing crops. In this sense *Cook & SOAPI* fits in perfectly within the theme of World Water Day 2012: Water and Food Security.

N.B. At the moment we are writing the business case including a description of the investment and maintenance costs.

4. In case of program: duration:

Not known yet: At the moment we are writing the business case and fine-tuning the design.

5. Country/Countries:

Currently we are focusing on India. But we have the ambition to go international. From *"Sanitation fOr All People in India"* to *"Sanitation fOr All People International"*.

6. Estimated budget (cost structure):

Not known yet: At the moment we are writing the business case and fine-tuning the design.

7. In case of a business case: what is your revenue stream?:

Not known yet: At the moment we are writing the business case. Our current vision is that *Cook & SOAPI* profits from selling the system. In addtion revenues can be made by printing advertisements on the cardboard walls. The challenge for the business case is the fact that after installing the system should be financially self-sustainable.

8. How many people/households will benefit from this program?:

Depending on partners and business case.

9. In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

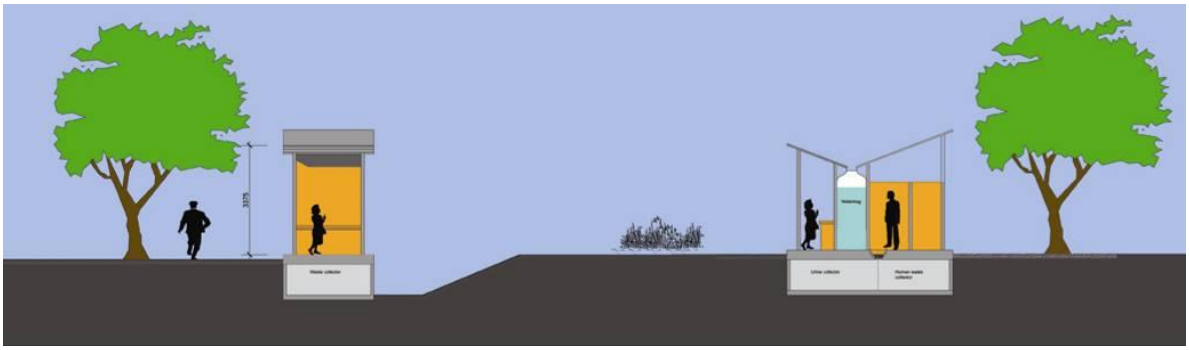
At the moment a pilot version of the *Cook & SOAPI* is build in Musiri, India. This pilot is planned to be finished on World Toilet Day 2011 (November 19th). From this pilot we will learn and draw conclusions concerning the feasibility of the *Cook & SOAPI* design in the context of rural and peri-urban India.

10. What does the program lack, what is still needed to make it 'ready for implementation'?

At the moment we are writing the business case. We need more information and partners for input, especially on making the system financially sustainable.

11. Risks you foresee and measures to be taken:

At the moment *Cook & SOAPI* is a concept in progress. The techniques used in the design are proven. However, often programs lack communication and financial expertise. Therefore we are looking for additional partners and information.



12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**
    - DeSah/Landustrie
    - TU-Delft
    - Akzo Nobel
    - RAIN
    - Aqua for All
    - NWP
    - Nutrient Platform NL
    - Microfinance companies
    - *Everybody else who can contribute to the business case and the design!*

Jan Spit CS Delft

Santerprise O&M STPs: ensure proper operation and maintenance of existing SewageTreatment Plants

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Who hold(s) the initiative: Jan Spit
Other partners: Vitens Evides international (VEI) / Knowledge Institute (TBN) / Training Institute (TBN) / Water Board (TBN)

1. Objective of the business case / program idea:

• The objective is to provide services for rehabilitation and O&M of malfunctioning STPs, to train operators and to transfer the O&M to a dedicated STP operator.

2. Description of the business case / program idea:

• The majority of STPs in the world, such as UASBs, do not function properly. Examples are the UASB in Medan (Indonesia), the waste stabilization ponds in Bogor (Indonesia) and the Santerprise O&M STPsProgram idea v2.docx / Jan Spit Pagina 2 26/9/11
oxidation ditch in Surabaya (Indonesia). Sometimes they have been constructed poorly; often the responsible operator does a poor job. This results in environmental pollution and a bad press for the organization that invented/designed/ constructed the STP;
• The idea is to assist/guide a local operator in rehabilitating, operating and maintaining STPs;
• One important improvement can be to increase the BOD loading by inviting the vacuum truck and other septage collection vehicles to transport the septage to the STPs;
• To develop a learning program to support STP staff to do better jobs;
• This experience gives Dutch organizations like VEI a good position in Public Private Partnerships to acquire STP BOT and STP OT projects in future.

3. Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially

• Efficient and effective use of investments of the past;
• Improved effluent quality;
• More trust in future STPs.

4. In case of program: duration:

Not relevant

5. Country/Countries:

All major towns with STPs.

6. Estimated budget (cost structure):

For a scoping study:
• Inventory of the magnitude of the problem: € 25,000;
• Acquisition and execution of a pilot: € 75,000;
• Dissemination of results.
For future 'regular' cases: € 50,000 per STP.

7. ***In case of a business case: what is your revenue stream?:***

• O&M of 100 STPs: 25 * € 50,000 = € 1.25 mln. in 5 years time.

8. ***How many people/households will benefit from this program?:***

• 25 * 50,000 = 1.25 mln. People

9. ***In what phase of development is the program idea***

• Rough idea

10. What does the program lack, what is still needed to make it 'ready for implementation'?

• Committed partners;

• Scoping study: € 100,000

11. Risks you foresee and measures to be taken

Santerprise O&M STPsProgram idea v2.docx / Jan Spit Pagina 3 26/9/11

• Few people really care whether the STP works properly a approach through agencies who contributed to the financing (ADB, WB, etc.).

• € 50,000 is a rather high investment if it has to come from local budgets a approach embassies.

12. Who else do you need to involve turning your idea into a successful program?

• STP expertise a Knowledge Institute (TBN, To Be Named)

• O&M expertise a VEI, Water Board (TBN).

Defunct oxidation ditch

Defunct sludge drying

Jan Spit CS Delft

Santerprise Twin Bag (STB) : Easy and smell-free storage and removal of faeces by means of twin biodegradable filter bags.

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Who hold(s) the initiative: *Jan Spit*
Other partners: *Water Board TBN (To Be Named) / NGO (TBN) / Producer of Filter Bags (TBN*)

1 Objective of the business case / program idea:

- To facilitate easy removal of feces in urban areas;
- To enhance acceptability of EcoSan;
- Prevent handling of fresh excreta in EcoSan systems;
- Production of fertilizer/soil conditioner;
- Income generation through sales of strong biodegradable plastic filter bags and soil Conditioner.

2 Description of the business case / program idea:

In high-density urban areas, space for on-site sanitation is a major restriction in the application of on-site sanitation. EcoSan could be a solution but there is no garden nearby to use it;

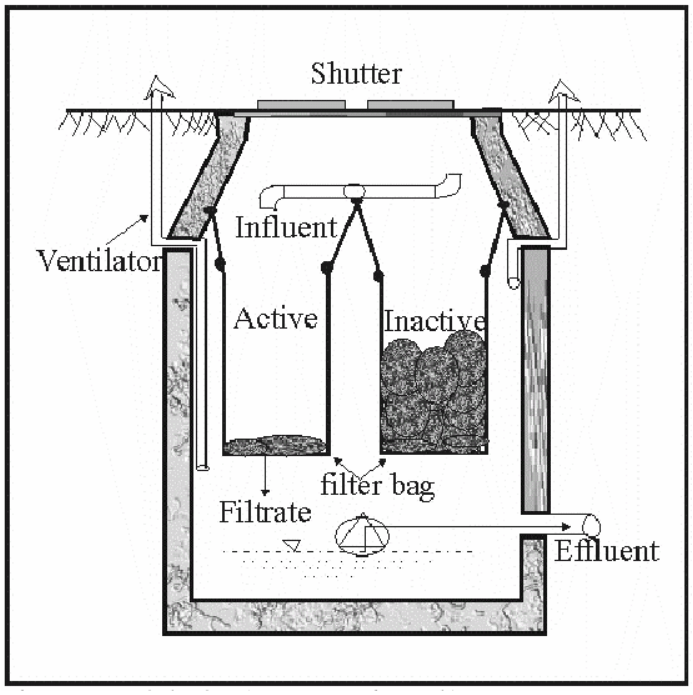
Emptying of on-site systems is a major problem;

santerprisetwinbag-Program idea.doc / Jan Spit Pagina 2 26/9/11

Handling of fresh excreta when emptying on-site sanitation system is a health hazard;

This can be overcome by the application of twin filter bags in a glass fiber reinforced or concrete vault containing two biodegradable filter bags. While one bag is being filled the contents of the other bag matures. For a family of 5 persons, 1 bag has to be 5 * 10 liter = 50 liter for the storage during 3 months;

The system is in Germany known as a 'Rottebehaelter' and introduced in South Africa by Groot Salland. See drawing below:



3 Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially

- The STB facilitates easy pit emptying;
- Households pay for investment costs/ probably with the help of a credit scheme;
- Services are paid by sales of the bags and use of manure;
- Collection of bags and Maintenance by 'social enterprise'.

4 In case of program: duration:

Not relevant

5 Country/Countries:

All areas where there is a shortage of water: East Indonesia, Africa
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6 Estimated budget (cost structure):

- Developing and testing the system: € 100,000;
- Introduction in the slipstream of sanitation improvement projects (SHAW, WASH Alliance, Unicef, WSP, PLAN, etc.)

7 In case of a business case: what is your revenue stream?:

Sales of bags: 50 eurocent/bag.

8 How many people/households will benefit from this program?:

Unlimited

9 ***In what phase of development is the program idea***

Rough idea

10 What does the program lack, what is still needed to make it 'ready for implementation'?

Committed partners, € 100,000

11 Risks you foresee and measures to be taken

Technical failure: too wet, smell, etc. a good research needed first

.

12 Who else do you need to involve turning your idea into a successful program?

- Launching customers: NGO WASH programs;
- Laboratory setting in Asia/Africa.

Peneleh Small Bore / Shallow Sewerage – Intermediate Urban Sanitation

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Who hold(s) the initiative: Jan Spit
Other partners: Municipality of Surabaya (or Bogor, Makassar), NGO, Water Board X

1. Objective of the business case / program idea:

Collection and treatment of wastewater in high-density urban areas through a social enterprise

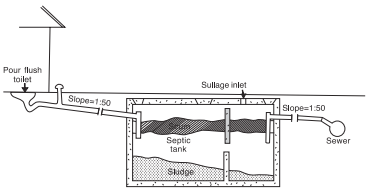
2. Description of the business case / program idea:

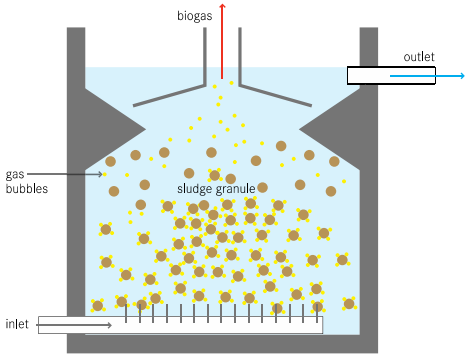
- In high-density urban areas on-site systems are not appropriate (ground water pollution, high ground water level) and/or not feasible (impermeable soils, lack of space);
- In many large urban centers such as Surabaya (3 mln. people) or Bogor (1 mln people) there is no city-wide wastewater collection system;
- Hence, 'intermediate' systems such as Small Bore Sewerage (SBS) and/or Shallow Sewerage (SS) are the most appropriate options;
- In this case wastewater is collected on a neighborhood scale and treated in neighborhood wastewater treatment plant (e.g. UASB);
- A pre-design, costing and a feasibility for such a system has been prepared for Peneleh in Surabaya;
- For funding agencies like Asian Development Bank, these kind of systems are 'too small';
- The systems are relatively simple and can be constructed by the community and operated by a social enterprise.

Figure.1: Aerial view of Peneleh

Source: Google Earth

Figure.2: Street view of Peneleh





3. *Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially*

50% of the world population lives in urban areas, often at high-density. This system does not require large quantities of water to flush and is much cheaper (50%) than conventional sewerage. It will provide local employment.

4. *In case of program: duration:*

- Preparation (surveys, creating enabling environment, designs, funding through credit schemes): 12 months;
- Construction: 3 months;
- Start-up, O&M training: 3 months;
- Monitoring: 12 months;
- Dissemination.

5. *Country/Countries:*

Any large urban center, example: Surabaya, Bogor, Makassar (Indonesia)

6. *Estimated budget (cost structure):*

- Investment: Rp 7 mln./connection (€ 500/connection or € 50 per person) * 3000 = € 1.5 mln (credit: 75% = € 1.125 mln).
- One time pilot Project costs: 15%: € 225,000.

7. In case of a business case: what is your revenue stream?:

O&M for social enterprise: 2% investment costs.

8. How many people/households will benefit from this program?:

Immediately: 30,000 people.

9. In what phase of development is the program idea?

FS ready, looking for funding.

10. What does the program lack, what is still needed to make it 'ready for implementation'?

- O&M training party like water board;
- Credit: € 1.125;
- Grant for project costs: € 225,000

11. Risks you foresee and measures to be taken?

- Sanitation is not priority number 1 → motivational and capacitating activities

12. Who else do you need to involve turning your idea into a successful program?

- Commitment local government to contribute land for wastewater treatment plant;
- Capacity to organize the community (NGO?);
- Local bank for credit;
- Collateral for local bank.

Roll –out of the "Integrated Algae Ponding System (IAPS)" world wide. IAPS: " A viable business model for new sanitation and wastewater re-use in energy and agricultural markets"

DHV BV
PO Box 1132
3800 BC, AMERSFOORT,
The Netherlands

Authors: Bob Bakker & Frans Horjus
Tel.: +31 (0)33 468 2511
Tel.: +31 (0)33 468 2201

Who hold(s) the initiative: *The project is an initiative of DHV.*

Eventually, other partners:

DHV, together with partners, currently implements an IAPS demonstration plant in South Africa. These partners are:

- *Waterboard Hollands Noorderkwartier (start-up, operations),*
- *EBRU (Research Unit of Rhodes University (knowledge provider, supporting training and operations),*
- *Genap (Supplier of foil for the algae basins of the IAPS),*
- *SSI (management, preparation tender documents, procurement of the works, marketing)*

In other countries – other parties could become part of the IAPS consortium.

1. Objective of the business case / program idea:

Many countries are, just like South African areas, dealing with:

- Elimination of the basic sanitation infrastructure backlog;
- Malfunctioning of already existing wastewater treatment facilities.

DHV recognizes the substantial market potential concerned with these challenges. DHV (and partners) wish to further demonstrate and implement algae based wastewater treatment systems that are robust, require low investments, have energy consumption and offer excellent opportunities for re-use of treated wastewater as well as algae fertilizer.

2. Description of the business case / program idea:

Improving the quality of the (water) environment and financial incentives are key drivers for sustainable solutions in the broadest sense. Within our IAPS, the sale of energy and fertilizer as end products becomes a driver for good wastewater treatment practices, improved sanitation services to the public financial sustainability and economic viability.

Description of the IAPS

After screening and de-gritting wastewater will flow into the IAPS, which consists of the following treatment steps.

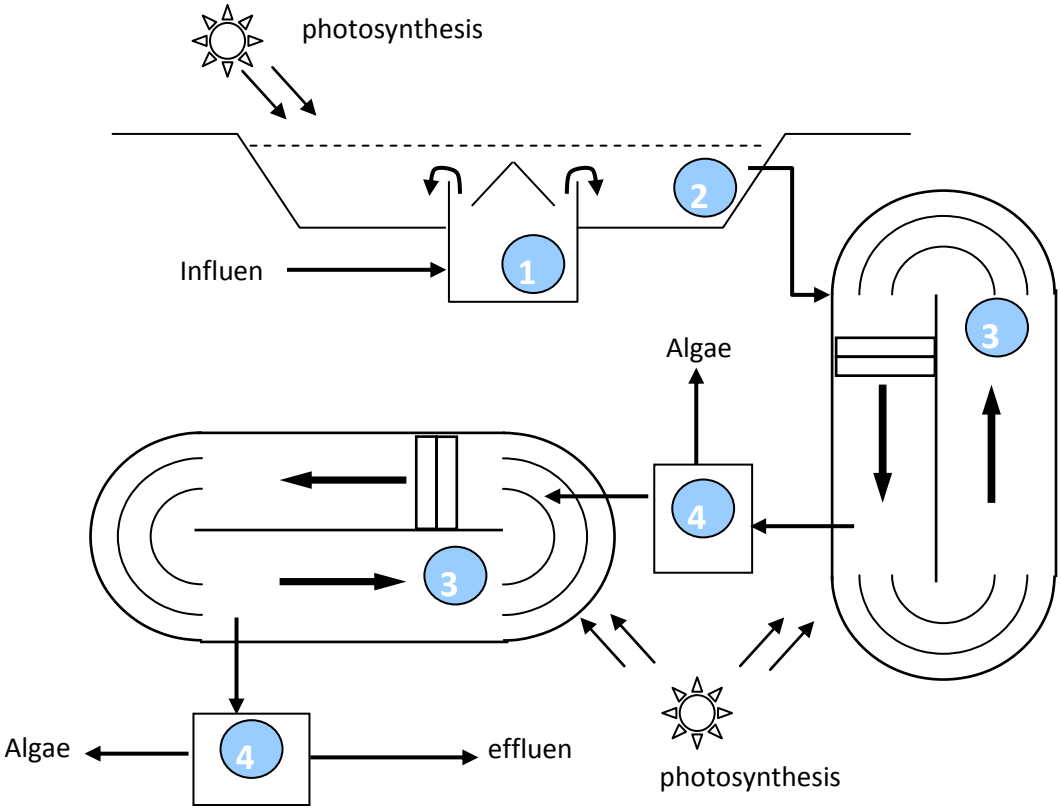
1. Deep fermentation pit (DFP)
2. Primary facultative ponds (PFP)
3. High Rate Algae Ponds (HRAP)
4. Drum filters

Below these steps are elaborated upon:

Deep fermentation pit (DFP)

The DFP is placed at the base of the primary facultative pond. Raw waste is introduced near the bottom of the pit, where the solids are allowed to settle. Due to the absence of oxygen anaerobic processes will take place that result in the hydrolysis of complex molecules into easily biodegradable matter as well as digestion processes, resulting in production of biogas, consisting of methane (typically 60-75%), which is energy source and CO2 (25-40%) . These gas bubbles attach to incoming suspended solids, which are then lifted. However, as they rise the bubbles expand and break away; leaving the solids to settle again. Solids accumulate in the pit; creating an anaerobic sludge blanket. For this process to be effective, the pit needs to be deep (5 m to 6 m). In this way, the wastewater flows through a volume of totally inoxic activity, and soluble and insoluble organic matter is converted to carbon dioxide and methane. A submerged gas collector, made of plastic material, enables collection of the biogas (methane) from the top of the PFP.

Fig 1 IAPS Process Flow Diagram



Primary facultative ponds (PFP)

From the DPF the pre-treated wastewater flows through the surrounding primary facultative ponds. In this pond three microbial layers can be distinguished. Deep anaerobic strata, overlain by a deep facultative layer, are at the bottom. This anaerobic bottom zone is in turn covered by surface aerobic waters, thus creating three functionally separate compartments. The hydraulic retention time in the PFP is between three and four days. CO2 in the produced biogas from the DFP supports algal growth in the upper layers of the subsequent PFP and the generation of photosynthetic oxygen provides, partly, for the aerobic function of this compartment, which is also particularly effective at entrapment and oxidation of odour-causing compounds; affording construction of these systems close to urban developments. The demonstration plants envisages one DFP with a total area of 5-10.000 m2.

High Rate Algae Ponds (HRAP)

The effluent of the PFP is then introduced in the High Rate Algae Ponds (HRAP), where symbiosis between microalgae and aerobic bacteria occurs. Organic compounds are oxidized by aerobic bacteria using photosynthetic oxygen produced by algae. These algae then use CO2 and other nutrients produced by bacterial oxidation. This all takes place in a paddle-mixed raceway, which requires a retention time of three to five days and produces more dissolved oxygen than a conventional secondary facultative pond. Algae in these ponds form stable flocks, which can be removed easily in the subsequent drumfilters. This biomass has a low respiration rate and may remain concentrated for long periods without releasing nutrients. Algal photosynthesis in the HRAP raises the pH of the treated

waters to as high as 10 or even peaks of 12 ; ensuring an effective kill of E.coli and most other pathogenic micro-organisms. In addition the high pH results in an effective removal of phosphorous from the water phase as (Ca)3(PO4)2, thus minimizing the need for addition of iron salts. For optimal performance, a constant linear velocity is required along the raceway. To accomplish this, the stream is divided into four semi-circular pathways (raceways) before the beginning of the dividing wall. Failure to do this results in backward movement of water, quiescent zones and large volumes of algae settling at the bottom. The demonstration plants envisages the use of two in series placed HRAP, with a total area of approximately 10.000m2, each provided with a drum filter to recover the algae.

Drum filters

The produced algae form an ideal product for application in agriculture, as it contains both organic compounds which act as soil improver and high level of nutrients allowing substitution of chemical fertilizers. Algae are removed from the HRAP by means of drum filters. In the drum filter water is introduced over a rotating filter, which allow only small particles to pass, thus removing the produced stabilized algae flocs.

The recovered algae matter will be thickened and dewatered after which it can be used for agriculture.

3. Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?

DHV (and partners) will always work with local partners both public and private, both in the provision of sanitation services and waste collection and treatment.

(Waste)water that can be re-used and is used as a nutrient for growing algae becomes an asset instead of a nuisance offering opportunities for sustainable sanitation services.

Public parties have to invest in building the IAPS. Costs will be recovered by re-use of treated effluent water for water supply purposes, biogas and algae that can be sold as a bio-fertilizer.

Private participation in operating and maintaining the IAPS is foreseen

4. In case of program: duration:

Not applicable

5. Country/Countries:

Application of the IAPS technology should be in areas or countries with similar climatic conditions and similar needs for sanitation and waste water treatment.

We are aiming for a world-wide roll-out of the IAPS technology in other countries in Africa, Asia and South/Middle America.

6. Estimated budget (cost structure):

A. Assessment of market potential at 3 continents selection of key demonstration sites : €100,000
B. Implementation of 3 pilot demonstration projects : €750,000
C. Up-scaling, large scale use of IAPS ponding systems: €1,650,000
Total: €2,500,000*

7. In case of a business case: what is your revenue stream?:

The revenue stream in the waste re-use business unit will come from the sale (business to business) of energy products (biogas) , disinfected and treated water for irrigation and produced algae which benefits organic fertilizer in the local market.

8. How many people/households will benefit from this program?:

There are more ways that the IAPS program will benefit the people/households, both direct and indirect:

- The collection and treatment of waste water. The focus on the application of the IAPS is mainly on relatively small communities of 1,000 -10,000 people;
- Low cost technology. A major problem in the identified challenges is the availability of funding. The IAPS technology is characterized by low investment and low operational costs. Because the driving force of the treatment technology is solar energy, the system can be applied in areas that have no or only limited connection to the power grit. Because of biogas production, energy can be produced via methane conversion. Possibly this result in an energy producing system instead of an energy consuming system.
- Production of algae based fertilizer. Besides a net income for owner of treatment (IAPS) facility, this will lead to better net income for end-user (the farmer) in terms of yield/cost share: higher yield per hectare at similar or even less cost (e.g. less use of pesticides).

Other benefits (not quanitfied):

- Social impact: increased level of services for public sanitation;
- Economic impact: Job creation: With a facilitated construction and operation of WWTP there is positive contribution to employment;
- Environmental impact: Improving water quality environment, waste water management on site including recycling of waste water at central treatment plant;
- Health impact: prevention of ‘waste borne’ diseases due to controlled waste collection and treatment (eg cholera, malaria).

9. In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

With other partners DHV is now starting up a demonstration a pilot in Makana Municipality South Africa. The project objective is to demonstrate the robustness and sustainable characteristics of the IAPS wastewater treatment system and whether the effluent requirements in South Africa can be reached. Measurable objects are:

- Increase of wastewater treatment capacity of Makana Municipallity with 2500 P.E.(population equivalents)
- Production of 4,5 billion m3 water a year available for irrigation or infiltration.
- Prove that energy consumption of IAPS is less then 10 kWh/year for each P.E. compared to 25 kWh/year for each P.E which is needed for activated sludge.
- Prove that construction costs for a 2 MLD IAPS is 30% less then the construction cost of a 2MLD activated sludge plant
- Production of 5000-7500 kg algae based fertilizer before 24 march 2013.
- Site visit for promotion of at least 50 municipalities in 1e year of operation.

The next phase will be a roll-out of the IAPS demonstration project to other countries, worldwide

10. What does the program lack, what is still needed to make it 'ready for implementation'?

As described before, currently there is a demonstration project for the IAPS 'under construction' in South Africa. It is expected that the first result showing the effectiveness and robustness of this technology will be obtained in 2012.
The implementation in other areas and/or countries will be dependant of the success of the demonstration plant. However to speed up the implementation after good results of the South African project, the market assessment for new areas and countries, as well as the preparation of a roll out should be carried out**.**

11. Risks you foresee and measures to be taken:

R: No good climatic circumstances (sunlight, temperature)
M: Good selection of area of country

R: Land issuing for treatment can be problematic.
M. Good selection of area. Establish good relationship with local authorities.

R: low tariff for electricity / gas
M. Make good arrangements with (local) authorities

R. Discharge of (algae) fertilizer mot possible or not competitive with traditional fertilizer (practices)
M. elaboration of market study (selection of right crop, arrangement of trials etc.)

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**
    - Technical experts both international background and experts with local experience;
    - Local partners for construction works and operational roll out;
    - Involvement/responsibility for project management and supervision in our own hands but work with local assistant(s);
    - Both local and international funding for project – local involvement and feeling of responsibility is crucial for success.

KWR
Watercycle Research Institute

Saline sanitation system

KWR watercycle research institute
Groningenhaven 7
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Authors: Tessa van den Brand, Kees Roest en Mark van Loosdrecht

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Who hold(s) the initiative: *KWR watercycle research institute*
Eventually, other partners: *TU-Delft, UNESCO-IHE, Hong Kong University of science and technology*

1. **The idea is to use seawater directly as alternative water source in (urban) delta areas as toilet flushwater (and for example as cooling water), saving approximately a third of freshwater usage.**

Furthermore, the sulphate in seawater can be used beneficially in the saline wastewater treatment. Eventual problems with cross-connections can be detected without any advanced sensor technology.

2. **Description of the business case / program idea:**

A significant amount of municipal water uses do not require high quality fresh drinking water. Secondary quality water could be used for e.g. flushing the toilet, as water has only a transportation function in this case. Introduction of secondary quality water would require a dual distribution system to supply both fresh water and seawater.

Advantages of seawater as secondary quality water

- Population density is highest in coastal areas
- Seawater is an almost infinite water resource
- Potential cross connections can be easily detected without advanced sensor technology
- Sulphate in saline water has certain advantages (e.g. reduced sludge production and reduced oxygen (energy) demand) for wastewater treatment (Figure 1)
- Saves high quantities of potable fresh water

Hong Kong has already more than 50 years experience in operating a dual water supply system and using seawater as secondary quality water for toilet flushing. It has been proven to be cheaper in investment and supply than complete use of freshwater for all goals.

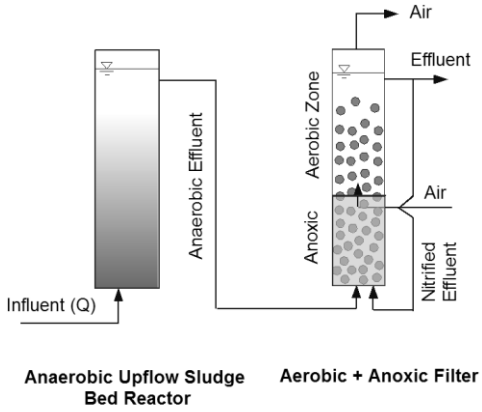

Figure 1: Schematic overview of the SANI process (Sulphate reduction and Autrotrophic denitrification and Nitrfication Integrated-process). Sulphate reduction for COD removal occurs in the first reactor leading to the production of sulphide, while nitrogen removal occurs in the second reactor based on the produced sulphide (Roest et al. 2010).

3. **Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?)**

Advantages of seawater as secondary quality water

- A third of fresh water is saved
- Reduced sludge production
- Reduced oxygen demand during treatment → energy saving
- Applicable in (dense populated) coastal regions
- As seawater is salty, cross connections are detected more easily
- Cheaper in investments and supply (in Hong Kong)

4. **In case of program: duration:**

-

5. **Country/Countries:**

The contributory partners are from the Netherlands and Hong Kong, but this saline sanitation concept can be applied worldwide, especially in (dense populated) coastal areas with fresh water shortage.

6. **Estimated budget (cost structure):**

-

7. **In case of a business case: what is your revenue stream?:**

-

8. **How many people/households will benefit from this program?:**

In fact it can be applied in all coastal areas, which contributes to 70% of the world population.

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

In Hong Kong the direct use of seawater for toilet flushing was introduced more than 50 years ago, and cooling with seawater is applied as well. Saline wastewater treatment in the innovative and advantageous SANI-concept was successfully tested on pilot scale in Hong Kong as well. Current research is focused on saline wastewater treatment with the SANI-process in moderate climates. Of course state-of-the-art aerobic wastewater treatment can still be applied as well for the treatment of more salty wastewater streams when seawater is directly used as alternative water source.

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**

The idea of direct seawater use for e.g. toilet flushing can be readily applied. Technically and technologically the treatment of saline wastewater is no problem. For wider application (e.g. in moderate climates) of the sustainable and advantageous SANI-process (e.g. low sludge production and low oxygen (energy) demand) more research is desired.

More ‘show cases’ of direct seawater use could demonstrate the applicability and improve the knowledge and acquaintance of this sustainable fresh water saving technology.

11. Risks you foresee and measures to be taken?

Total investment costs for a dual water distribution system are higher, but the demands and sensitivities for a seawater system are actually lower compared to a potable water system and because of reduced fresh water demand, total costs could be lower.

12. Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

n.b.

From 200.000 people served to 2 million

Max Foundation
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1042 AZ Amsterdam
The Netherlands

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Tel.: +31 (0) 6 21813007
E-mail: steven@maxfoundation.nl

Who hold(s) the initiative: *Max Foundation*
Eventually, other partners: *7 local partners execute the WASH programs (Aloshikha, SPACE, Aungkur, SLOPB, BDS, GUS, ESDO), anticipated to increase to 20.*

1. Objective of the business case / program idea:
To extend our proven child mortality/morbidity prevention approach of the integrated combination of (deep-tube) Wells, Latrines and (hygiene) Training (WLT) to 2 million people in rural Bangladesh.

2 Description of the business case / program idea:
The first objective is to scale up the now proven and tested innovative and ¡§productized¡¨ WLT to reach 9,000 villages (1.8 million people). The second objective is to continue to enhance our already very cost effective methods of spending developmental funds through upgrading of the current online monitoring and evaluation system continuing our drive to measure our ultimate target of how many children¡¦s lives are saved through our approach: ¡§Max value for money¡¨. The third objective is to expand our leadership with initially the Dutch development funding community to ensure return-oriented approach and to adopt our ¡¥productized¡¦ approach on a large scale.

3 Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?)
The local commitment and ownership with the villagers is translated to a maintenance committee, collection of 200 signatures and contribution of £á50-100,-- for the well and an oath to implement an household latrine;

3 In case of program:
duration1: 5 years

5. Country/Countries:
Bangladesh

6 Estimated budget (cost structure):
To enable our scaling to reach 2 Million target by 2016 MF seeks in total £á16M from Dutch Ministry of Foreign Affairs, ¡§Nationale Postcode Loterij¡¨ and ¡§The Bill & Melinda Gates 1 Less relevant in case your idea is a business case Foundation¡¨. Also other funding organizations and companies are interested to scale up their support to us next phase.

7 In case of a business case: what is your revenue stream?:
Local population contributes roughly 10% of program. No other revenue streams.

8 How many people/households will benefit from this program?
1.8 Million

9 In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

Max Foundation (MF) has extensive experience in WASH programs in Bangladesh „h Provided 230.000 people in 1150 villages with wells, latrines and hygiene training. „h Founded in ¡¦04 by parents of deceased Max to ensure a positive legacy in his name, run by a professionals and entrepreneurs, all volunteering; „h Developed and fine-tuned a proven cost effective and efficient approach to reduce child mortality in rural Bangladesh by providing a combination of wells, latrines and hygiene training, leading to a highly innovative productized and scalable approach that results in sustainable sanitation services, socially, environmentally and financially. „h Improves the access to clean drinking water and sanitation, being essential elements in sustainable development, economical growth and self support; „h Took a central role between donors and partners by screening projects, fundraising, transferring knowledge between partners, providing feedback and promoting approach; „h Works in Bangladesh with local NGO¡¦s and villagers to enhance commitment and ownership. The local NGO¡¦s also have a close relationship and cooperation with the local government during the implementation of their projects. „h The wells and latrines are simple and sustainable and the needed maintenance is covered by the formation of an maintenance committee in each village and training and equipe these villagers. The hygiene communication and training program focus on change of the social behaviour; „h Driven by 3 principles: maximizing impact per euro spent (max value for money), providing fast and transparent feedback to donors (pictures of the wells), sending 100% of the donations to Bangladesh (our overhead in the Netherlands is sponsored by companies or covered by board or covered by specific fundings). „h All the project proposals of the local NGO¡¦s are benchmarked on costs before approval, increasing the transparency of our approach; „h Demonstrated 70% reduction in child mortality from 1 year before to 3 years after our program in 50 villages (source: independent survey); „h Developed bottom-up impact monitoring tool (GPS) / measurement system of the impact of our program after implementation (for example the decrease of child morality and social behaviour), which prepares us for further cost effectiveness improvement; „h Raised £á2M in funding which allowed us to reach ¡Ó230.000 people in 1.150 villages so far with many in process; A4a/NWP/NP/bidbook/september2011 „h Inspired French Business School INSEAD to write a case about our social business innovation approach; „h Mobilized Dutch Prince Royal Willem Alexander, chairman of the UN Advisory Board on water and sanitation, to declare our approach as THE way forward in WASH.

10 What does the program lack, what is still

needed to make it ¡¥ready for implementation¡¦?

Funding and infrastructure (see below)

11 Risks you foresee and measures to be taken:

In order to control next phase (a foreseen risk), part of the funding will be used to enforce our organization in the Netherlands as well as in Bangladesh. This includes an office of Max Foundation in Bangladesh in order to control the implementation and monitoring of the program and the monitoring tool to measure the impact of our program. It will take us 6 month to build up the new organization, being ready for implementation. In order to enlarge the capacity of MF (another foreseen risk) we already started to scale up the number of local Bangladeshi partners (NGOi¦s) and their project size. When our office in Bangladesh is operational this i§scaling up processi¨ can be continued in a controlled way.

12 Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

MF worked together with other Dutch NGOi¦s (Cordaid, Simavi, Wilde Ganzen, NCDO, Oxfam Novib) and seeks to combine their experience and network with MF focus. MF also works with companies (ABN AMRO, ING, Rabobank, Crucell, Johnson & Johnson) which enabled us to expand. We will support cooperation with other partners (of NWP) who can have a positive influence on the program and make it more successful. These local or Dutch partners (government or companies) can add specific knowledge on topics of our program (measurement of impact, well drilling), help us extending our organization (for example with an office in Bangladesh), or execute the measurement program to monitor the impact of our program (local government or a knowledge institute).

Multi Purpose Industries

it starts with water

MPI Sustainable Sanitation: Toilets, Showers, Washing bowls and Awareness Program Hygiene for Less Developed Areas

MPI Clean Water

Author: Michèl Evers
E-mail: m.evers@mpi-group.eu

Who hold(s) the initiative: *MPI Clean Water, Oldenzaal, The Netherlands*

1 Objectives of the business case / program idea

To provide toilets and showers to people who don't have the facility at home or in the village/town or not have any access to a facility. Sanitation solution for urban and rural areas.
To improve hygiene circumstances, health of people and indirect local economy.

2 Description of the business case / program idea:

The sustainable sanitation facility is a business approach by establishing a company where local people exploit their sanitation facility. A local entrepreneur can become owner of the facility. The facility consist of 8 toilets, 6 showers and several washing bowls, mounted in a 20 ft sea container. The provision of (clean) water is being serviced by the MPI Water Treatment Plant or a separate water facility. The waste water out of the facility is purified by the water treatment system for re-use by the facility. The flush water of the water treatment system is used for cleaning the toilets and showers with a high pressure system. The sanitation facility has two applications: a stand-alone application and an application in combination with a MPI Drinking Water Production company. The electricity for the sanitation facility is provided by the Water Treatment Plant or by solar panels.
The facility is open from 06.00 – 24.00 hr. Per sanitation facility some 600 – 1000 people or more can be serviced. Potentially a market share of 30 – 50% can be achieved. The running costs of the company are determined by the costs for the supervisors, the cleaners, the guards and the cleaning material. The costs are covered by revenues for showering ('a penny') and potentially fertilizers as an upgraded waste product. Local knowledge will provide solutions for the handling of the sludge/ human solid waste.
Due to its size the sustainable sanitation facility is based on a more industrial approach and design. A comparison with a pit latrine is hardly to make.

3 Results:

The investment for the sustainable sanitation facility can be provided, donated, by a social investor or any other institution. And it fits perfectly in the community development program of every MPI Drinking Water Production company (MWC). In the second year of operation every MWC makes enough profit to set up one or more sustainable sanitation facilities.
The sustainability aspect of the solution is based on a robust design by using a sea container, the re-use of the water after purifying it and is a standalone application with jobs for local people. The cleaning of the system is done by high water pressure and hardly any chemicals are used. The facility can use solar energy. Basically it is a zero discharge solution. Maintenance of the facility will be serviced by the MWC.
The introduction of a sanitation facility is combined with an awareness program for hygiene: after being aware people life the advantage of using the facility, even while they have to pay very less to use it.
Local people will be less ill and can be more productive.

4 In case of program: duration:

The implementation of a sanitation facility will take a few months production, some weeks transportation, 2 – 4 weeks technical implementation depending on the solution for solid human waste and 2 weeks training of local people.
Lifetime of the facility will be at least 5 years. With proper maintenance and repair even some 10-15

years.

5 Country/Countries:

The sustainable solution facility can be implemented in countries in Africa, Asia and Latin America. The facility works well in urban and in rural areas.

6 Estimated budget (cost structure):

The costs of the facility depends on the variant: a variant connected to a MWC costs some € 17.500,-.A standalone variant costs some € 20.000,-. All costs excluding transportation, installation and costs for local solutions. A sanitation facility can be managed based on operational income, without depreciation of the equipment. Potentially a facility is open for the franchise formula and micro-credit facilities.

7 In case of a business case: what is your revenue stream?

The revenues of the Sustainable Sanitation Facility are related to the use of the showers and toilets. Also the sales of compost will contribute to the revenues.

8 How many people/households will benefit from this program?

In general at least some 600 – 1000 people / 250 households will benefit from every sanitation facility.

9 In what phase of development is the program idea?

The program is in the phase of the implementation of the first facilities and preparations have been taken place for other countries.

10 What does the program lack, what is still needed to make it 'ready for implementation'?

Based on the concept MPI Clean Water seeks cooperation on two issues:
- NGOs who are able to provide hygiene awareness programs,
- companies which can provide solutions for handling of solid human waste.

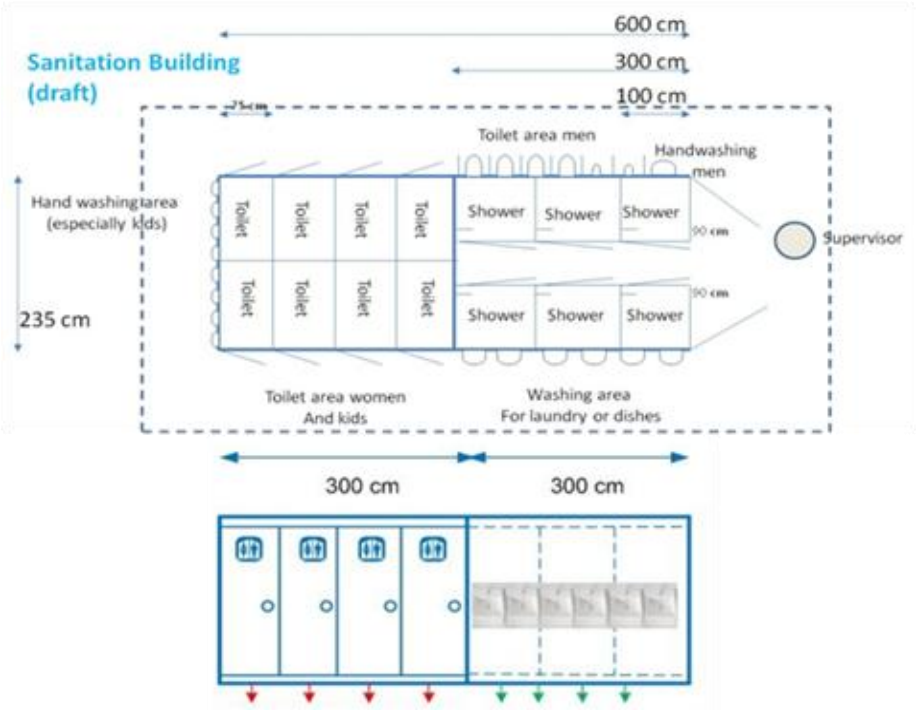
11 Risks you foresee and measures to be taken:

Every set up as a business will face risks. Entrepreneurship will go along with risks.
Risks which are foreseen for this solution are:
- people after having been trained, will not use the facility
- people will try to molest the facility
- the presence of cash money might create irregular situations.

12 Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

To implement the sanitation facilities, cooperation of local communities is a must.
Donors of the capital expenditures are welcome; the price of the use of the facility is based on a 'break even +'- policy for operational expenditure.
Promoters of this kind of solutions are more than welcome. The target is to solve the worldwide problem of sanitation for 2,6 billion people!

Sustainable Sanitation:
a contribution to human dignity



Expanding and looking beyond Community Led Total Sanitation

Plan Nederland
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Authors: Mascha Singeling & Sharon Roose

Who hold(s) the initiative: *Plan Nederland*
Eventually, other partners: *Yet to be decided on.*

1. Objective of the business case / program ideas:

Expand and build upon the experience that Plan has with the Community Led Total Sanitation Approach in rural areas and also look at the newly started activities on Urban Community Led Total Sanitation.

2. Description of the business case / program idea:

Plan was among the first organisations in 2007 to introduce the Community Led Total Sanitation (CLTS) approach in Africa. The CLTS approach particularly aims to raise awareness on the sanitation and hygiene practices in rural communities, and trigger the population into collective action to improve the situation by itself. A major principle of CLTS is no toilet subsidy and no financial reward when the community reaches 100% Open Defecation Free (ODF). The principle works, as many experiences by Plan, Unicef, World Bank and WaterAid have demonstrated. In Januari 2010 Plan launched the Pan African CLTS program within 8 African countries (Ethiopia, Kenya, Uganda, Malawi, Zambia, Ghana, Sierra Leone and Niger).

The general objectives of Pan African CLTS program are to reduce infant and child morbidity and mortality in 8 African countries and empower rural and peri-urban communities through the use of Community Led Total Sanitation (CLTS)/ School Led Total Sanitation (SLTS) and Urban Community Led Total Sanitation (UCLTS). Besides this general objective the program also aims to improve the CLTS approach by sharing experiences through learning alliances and action learning and promote the CLTS approach internationally in order to scale up the approach through more organisations and in more countries.

The program will run until December 2014 and Plan is already looking at ways to:

- ***Expand the existing program in the same and in other countries.***

The current CLTS program is being implemented in 8 countries and Plan will expand this program in Mali in 2012 and is looking for ways to expand to CLTS program within more areas and countries.

- ***Expand more into urban areas using the Urban Community Led Total Sanitation (UCLTS) Strategy (UCLTS).***

Within the current CLTS Program Plan has piloted UCLTS in Kenya (Mathare) and is starting in Uganda. Plan would like to expand these experiences in other urban areas and gain more knowledge on urban sanitation.

- ***Expand the Sanitation Marketing approach into other countries.***

Within the current CLTS program Plan has piloted UCLTS and sanitation marketing in Uganda and Malawi. Plan would like to expand these experiences in other countries and gain more knowledge on sanitation marketing.

- ***Develop new CLTS programs which have an integrated water and food component.***

Within the current program in Zambia, the CLTS approach is integrated with the improving access to water for drinking and water for food production (multiple use systems). Plan believes that this approach is very useful and wants to include an multiple use component in all the already existing CLTS programmes and develop new integrated CLTS programs.

3. **Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?)**

The CLTS, SLTS, UCLTS will contribute to sustainable sanitation services because communities are mobilized to solve their own sanitation situation without subsidies and receive technical training on how to build and maintain their own toilet.

4. **In case of program: duration:**

The current Pan African CLTS program has a duration of 5 years (started in January 2010 and will end in December 2014). The duration of any future CLTS/ SLTS/ UCLTS and sanitation marketing programs will depend on the scale of the programs that are being implemented.

5. **Country/Countries:**

Plan would like to increase their sanitation activities in Ethiopia, Ghana, Malawi, Kenya, Niger, Zambia, Uganda, Sierra Leone, Mozambique, Benin, Nepal, Bangladesh, Indonesia and India.

6. **Estimated budget (cost structure):**

Depending on the scale of the projects. On average a 5 year CLTS program within the Pan African program costs around 650.000 Euro.

7. **In case of a business case: what is your revenue stream?:**

N/A

8. **How many people/households will benefit from this program?:**

Depends on the scale of the project. In Ethiopia the CLTS program costs around 850.000 and will benefit 1.2 million people.

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

The CLTS program is being implemented since January 2010, but we are currently looking at scaling up the ideas mentioned above, and these are rough ideas.

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**

Plan is still looking for implementing and financial partners that are interested to work with Plan within a rural and urban setting or co-finance CLTS/ SLTS/ UCLTS and sanitation marketing projects.

11. **Risks you foresee and measures to be taken:**

UCLTS is being piloted in urban areas by Plan. The approach has already shown promising results but many lessons still need to be learned and integrated in the approach. In the project design of new projects, we need to anticipate extra time needs to harvest and learn these lessons.

The same goes for sanitation marketing, as this fairly new approach is being adopted by Plan and implemented in rural and urban areas. The combination of CLTS and sanitation marketing shows promising results, but further exploration and implementation is needed in order for lessons to be learned, next steps to be taken and for it to be implemented in a broader spectrum.

12. Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

We are still looking for implementing partners that have experience in working with sanitation entrepreneurs in urban areas and we are looking for financial partners that are interested to co-fund sanitation programs together with Plan and/or apply for funding together.

“Scalable business model for new sanitation and waste re-use in energy and agricultural markets”

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Who hold(s) the initiative: *The project is an initiative of Safi Sana Foundation – owner of Safi Sana Holding Ltd. The Safi Sana Foundation is founded by Rabobank Netherlands, DHV, Shell, Waterboard Regge en Dinkel and Aqua for All.*
Eventually, other partners: *Currently we are running a test pilot in Accra (Ghana) with the objective to have a proof of principle of the business case by mid 2012. The pilot project is done in collaboration with the following partners:*

- *International Fertilizer Development Centre (IFDC)*
- *Rural Water Development Programme of Church of Christ (RWDP-COC)*
- *Waste & Fertilizer Development Consultant, Dr. Noah Adamtey*
- *Biotechnology and Nuclear Agriculture Research Institute (BNARI)*
- *Kwame Nkrumah University of Science & Technology (Agric Engineering Dept) / Biogas Engineering Limited, Dr. Elias Aklaku*
- *University of Wageningen (WUR/LEAF), The Netherlands*
- *Safi Sana (Ghana) Ltd*

1. **Objective of the business case / program idea:**

The Safi Sana business case aims to develop a market fit product portfolio of energy and agricultural (fertilizer) products. Fecal sludge and other organic waste resources become valuable raw materials for our production process and will stimulate improved sanitation services to the public. In addition, with our active involvement in the provision of sanitation services, we will have better control over the resourcing of our waste streams both in terms of quality and constant supply.

2. **Description of the business case / program idea:**

Safi Sana is a scalable business model for the production and sale of energy and organic fertilizer products by using a mix of fecal sludge and various solid organic waste resources as the raw material. **Safi Sana** is involved in the provision of high quality sanitary services in urban slums to guarantee a stable and good quality supply of waste resources (e.g. **Safi Sana** Communal Service Blocks).

Safi Sana will use a centralized treatment plant to produce and sell a portfolio of competitive energy and fertilizer products for the local business to business market. The product portfolio consists of both energy and organic fertilizer and is a designed on the basis of market demand. For example: if the market has a good potential for electricity and works with a feed-in tariff we may in first instance focus on turning biogas to energy and get a good revenue from that. Secondly, if the market for fertilizer is well developed and it shows that there is a demand for our product, we make focus more on the fertilizer as end-product. A mix is likely to be the case however the right mix (energy%/fertilizer%) will vary per market.

Both liquid and solid organic waste are the raw materials for the production process and require high quality collection at the source, partly being sanitation service blocks. Safi Sana has a stake in the provision of improved sanitation services to enable stable supply and good quality waste supply.

Safi Sana will always work with local partners both public and private, both in the provision of sanitation services and waste collection and treatment.

Financial incentives are key drivers for sustainable solutions in the broadest sense. Within the value chain of our model, the sale of energy and fertilizer as end products, becomes a driver for good waste treatment practices and improved sanitation services to the public.

3. **Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?**

The Safi Sana program will contribute to the sustainable sanitation services in more ways and from two angles: 1) through the 'back door', by providing waste re-use on a commercial basis and 2) through the involvement in improved sanitation services. From each angle there are more ways of contributing to sustainability of services:

Ad 1) through waste re-use on a commercial basis:

- By making the fecal sludge a valuable resource and designing the right treatment process, we are continuously collecting and treating the waste in a environmental friendly way. Fecal sludge in traditional practices, is one of the biggest problems for ensuring sustainable sanitation solutions (environmental impact);
- Since waste is a valuable resource for our production process in making energy and fertilizer, we are able to make a financial contribution to the collection of the waste since it is our main raw material. That will result in a lower fee for fecal sludge desludging for the sanitation operators and in first instance will enable more frequent collection (in our model) and in second instance will also improve profitability of sanitation service provision. It will be a drive for (local) authorities and the private sector to promote sanitation and solve local water problems.

Ad 2) Through the involvement of improved sanitation services:
Already there are examples of private entrepreneurs that successfully operate sanitary services. Some of the key words for success in providing sustainable sanitation service are 'access to market', 'private entrepreneurship', 'quality of service' and 'waste control'. With the Safi Sana model we want to have influence on these critical success factors to have control over the product chain. How we do that:

- We initially aim to work with successful organizations that have access to the local market for sanitation and have build proven cases that match our 'sustainability criteria'.
- If those organizations are not present we will roll out our own commercial sanitary services (currently in pilot phase) in which we cooperate with the local authorities to find access points for establishing and mapping potential locations (access), selecting Operators through tenders (private entrepreneurship) and providing training support and quality control (quality of service);

4. In case of program: duration:

Not applicable

5. Country/Countries:

Ghana

6. Estimated budget (cost structure):

D. Market assessment new markets: €50,000 (quick scan) plus (if necessary) €200,000 (in depth market studies)
E. Preperation phase new markets and product development: €500,000
F. Commercial phase: €1,250,000
Total: €2,000,000*

*Note: This cost structure is made for one project only. Each project will contribute to the overhead of the national management company

7. In case of a business case: what is your revenue stream?:

The revenue stream in the waste re-use business unit will come from the sale (business to business) of energy products and organic fertilizer in the local market. In the start-up phase there will be small revenue coming from the waste desludging companies who pay for dumping the waste at the Safi Sana treatment plant.

8. How many people/households will benefit from this program?:

There are more ways that this program will benefit the people/households in the project area, both direct and indirect:

- The collection of faecal sludge of 15,000 people per day;
- Production of 500 ton of (dry) fertilizer per day / servicing 750 hectares per year. This will lead to better net income for the end-user (the farmer) in terms of yield/cost share: higher yield per hectare at similar or even less cost (e.g. less use of pesticides).
- Producing 15,000 kWh per day / equal to the energy consumption of 1,500 people (NL!). The provision of renewable energy will lead to more stable consumer prices. Since we are in the business to business segment Safi Sana has no direct influence on these consumer prices.

The benefits (not quanitfied):

- Social impact: increased level of services for public sanitation, more value for money and more dignity for men and women;
- Economic impact: increase in e.g. sanitation services, desludging services, waste treatment and agricultural activity;
- Environmental impact: waste management on site (slums) and recycling of waste water at central treatment plant;
- Health impact: prevention of 'waste borne' deseases in slums, and controlled waste collection and treatment (eg cholera, malaria).

9. In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

Safi Sana is now doing a pilot in Accra, Ghana. That includes the commercial start-up of two public water and toilet facilities in two separate slums. The pilot plant in which we are testing both energy and fertilizer production, we will be able to start a small scale commercial venture in 2012.

10. What does the program lack, what is still needed to make it 'ready for implementation'?

Safi Sana has done a lot of preparation work related to market assessment studies, setting up (local) partnerships and building a pilot sites for preparing a final market entry (both sanitation and waste treatment). However, we are still in the research and product

development stage in which we have to make the final end product ready for implementation. That will be done in the coming 18 months until end of 2012. In short:

a. Final products for market entry (tested in the market);
b. Get 'interested customers' into 'buying customers';
c. Local partners for operation;
d. Bankable business plan;
e. Funding for product development stage and market preparation (app. €400k) in 2012.

11. Risks you foresee and measures to be taken:

Risk		Measures
1	Feed-in tariff for electricity to the grid may be too low	Make good arrangements with the authorities (ministery of Energy); work on alternative energy application in case feed-in tariff is too low.
2	Final market price (BtoB) of organic fertilizer could not be competitive due to subsidy schemes for inorganic fertilizers.	Select the right crop niche (staple versus quality crops), good marketing strategy
3	The market could be too small due to lack of willingess to buy an organic fertilizer as compared to traditional inorganic fertilizer or other fertilizer practices (eg poultry droppings, manure)	Good market study with user surveys and arrange trials with farmer cooperatives with fertilizer buying options.
4	Good local partner for roll out may be hard to find.	Long term partner assessment and tendering
5	Land issueing for treatment can be (unexpectately) problematic	Have good relationship with responsible authority or make good arrangements with the owner. Always think: "what's in it for them?"
6	Waste supply may not be stable and quality can be inconsistent	Make sure that we are present in the product chain and have good financial incentives for players in the chain that lead to Safi Sana. The quality of waste should be assessed and constantly checked.

12. Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

- Technical experts both international background and experts with local experience (!);
- Local partners for operational roll out;
- Involvement/responsibility for project management and supervision in our own hands but work with local assistant(s);
- Both local and international funding for project – local involvement and feeling of responsibility is curcial for success.

An evolving microfinance model for sustainable CLTS (Community Led Total Sanitation)

Simavi
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2012 JG Haarlem
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Who hold(s) the initiative: *INTAGRAD (Simavi partner in Ghana)*
Eventually, other partners: *in cooperation with Simavi*

1. **Objective of the business case / program idea:**
   Upscale and further develop a microfinance model which strengthens CLTS.

2. **Description of the business case / program idea:**
   The programme idea is twofold 1) to develop a solid business plan to microfinance CLTS, basing study on current pilot project and 2) to implement the business plan
   Background:
   Community Led Total Sanitation (CLTS) is an approach for achieving 100% sanitation coverage in targeted communities. Critical elements of the CLTS approach are behavioral change and a ban on hardware subsidies, both of which aim to foster ownership and sustainability. CLTS triggers people to invest in the construction of a latrine on household level at their own costs. Despite of the initial success of this approach, questions arise about the sustainability of the results obtained. Examples show that when too little attention is paid to the quality and maintenance of the sanitation facility, people may return to the practice of open defecation. The lack of quality then undermines the success of the approach.
   Pilot Project:
   Simavi's local partner, INTAGRAD, has therefore experimented with the provision of a microloan for latrines, which allowed clients to purchase the components (slab + rings) for a basic latrine. INTAGRAD soon discovered that even though clients were aware of the importance of using a latrine, people were reluctant to take on a €23 loan (Gh.Cds 50) for its construction, as there were no immediate financial gains that could be used to repay the loan. INTAGRAD therefore decided to expand the loan per client and included an extra €46 (Gh. Cds. 100) for income generating activities, creating a total amount per loan of €69 (Gh. Cds. 150).
   The results of the pilot project are clear and successful. This approach appealed to many of the inhabitants of the targeted community: within 1 year 134 latrines were constructed and a repayment rate of 98% was acheived.The established community credit group members mutually guarantee repayment by all, increasing the social control component. They meet bi-monthly and then also receive training in health issues. Loans are individual and based on a small business plan, which each client presents. The repayment does not only include the total sum of the loan €69 (Gh.Cds. 150), but also an additional amount €14 (Gh.Cds 30), 17% of the total loan, which covers the majority of INTAGRAD's overhead costs of the microfinance provision service .
   Simavi supported the pilot project between 2008 and 2011. As of March 2011, INTAGRAD has succeeded to continue with a non-subsidized microfinance scheme, covering basic overhead costs. However, the Project Officers receive minimum salary, and no depreciation costs are taken into consideration on previously donated motor bikes and other equipment. In this sense, the undertaking is not sustainable yet.
   Current restrictions:
   The current size of the credit fund is €13.980 (Gh. Cds. 30.000) is available to clients in 9 villages, but is too small to enhance the pace of progress. A sub-optimal number of communities and a limited number of credit takers in each community limit the efficacy and roll-out of the programme. Interest gains leave no room for (re)investments in necessary equipment and salaries for the 2 project

officers who organise and visit the credit groups, provide hygiene and health promotion activities, provide training on Operation and Maintenance, and advise on profitable income generating activities.

It is envisaged that in terms of occupation INTAGRAD, using 2 officers involved, can cover an estimated 20-25 villages simultaneously with an enlarged credit facility, and provide more credit takers simultaneously per community.

Therefore Simavi and INTAGRAD are searching for opportunities to further improve and upscale the current approach, in order to make it self-sustainable.

3. **Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?)**

The programme aims at developing a microfinance model that allows the credit provider, INTAGRAD to recover the running costs, and preferably also the investment and equipment costs. Through this microfinance model, the programme aims to facilitate targeted households with the construction of good quality sanitary facilities at their own costs. They will be provided access to a microloan which enables them to purchase latrine components and which includes a loan for income generating activities which enables them to repay the total loan.

4. **In case of program: duration:**

It entails a 3 year investment

5. **Country/Countries:**

Ghana

6. **Estimated budget (cost structure):**

Budget elements include:

- Consultancy costs for study;
- Microfinance fund
- Personnel costs
- Equipment

7. **In case of a business case: what is your revenue stream?:**

Not applicable

8. **How many people/households will benefit from this program?:**
   Between 20000 and 25000 people from 20-25 villages. We aim at developing a self-sustaining model which can be rolled out to other villages.

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**
   Pilot project has been successfully implemented. The formulation and implementation of the upscaling stage is the next stage which is entailed in this current programme idea.

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**
    - The programme needs a study and advice of a Micro Credit expert, in order to develop together with INTAGRAD a more solid financial framework and business plan for the credit scheme, including calculations of several scenarios for upscaling, using variables such as (optimal) number of villages; (optimal) staff number involved; (optimal) size of working capital for credit; (optimal) number of credit takers per village, (optimal) duration of credit, (optimal) amount of each credit, optimal procedures, and finally rates of return versus costs involved for these different scenario's.
    - The programme needs a study on potential stakeholders that are willing and able to provide the financial resources to raise the size of the credit funds (either by a development fund, a local bank, a foundation or…)

      Based on these studies, an upscaling scenario will be chosen, a business plan developed, and funding for upscaling will be sourced.
      - (action) research on financial costs & benefits of latrine construction on household level (when introducing eco-sanitation this also includes the revenues from reuse of nutrients)
      - Technical advice on optimizing safety ad quality of latrines/ offering a portfolio of latrine options.

11. **Risks you foresee and measures to be taken:**
    Possibly, the costs involved to set up and run such a microfinance scheme cannot be entirely recovered from interest payments by clients. Simavi will invest in a second phase to gain lessons learned how to make such a latrine fund self-sustainable and to roll it out. We could possibly provide a loan guarantee to a local bank.

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**
    - Micro-credit advisors
    - Local banks, preferably with a social development fund
    - Foundations
    - Local artisans
    - Technical advisors

Sanitation, Health and Water Programme (SHAW) in Indonesia

Simavi
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2012 JG Haarlem

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Who hold(s) the initiative: *Simavi coordinates the SHAW programme*

Eventually, other partners:

Direct implementers:

- *CD-Bethesda*
- *Plan Indonesia*
- *Rumsram*
- *Yayasan Dian Desa*

Supporting organisations:

- *Working group on Drinking water and Sanitation (Pokja AMPL) both at national and district level chaired by Ministry of Planning (Bappenas)*
- *UNICEF*
- *EKN – Royal Dutch Embassy*
- *IRC*
- *WASTE*
- *Water Board Zuiderzeeland (WZL)*

1. **Objective of the business case / program idea:**

Goal:

Reduce poverty by improving the health status of rural communities in Indonesia in a sustainable way.

Overall programme objective:

By 2014, an enabling environment exists for communities in 9 selected districts in East Indonesia, the Nusa Tenggara Timur (NTT) and Papua Provinces, to realise a sustainable healthy living environment through coordinated action to promote sanitation and hygiene and to increase access to safe drinking water and school sanitation. This will be monitored and shared at district, provincial and national level to reinforce sector management and for replication.

2. **Description of the business case / program idea:**

The SHAW programme will:

- Improve sanitation and hygiene and water supply. It will cover all 5 pillars of STBM[1] (Sanitasi Total Berbasis Masyarakat). The strategy resembles Community-Led Total Sanitation (CLTS) but goes further as it focuses on more aspects than sanitation alone.
- Work with a holistic approach (WASH + communication + life style).
- Support national/district coordination bodies (Pokja's).
- Scale up STBM approach.

In order to realise sustainable sanitation at scale for rural households, the programme works on the principle that household sanitation is not subsidised. Two key strategies are being used to increase sanitation coverage. They closely interlink and can reinforce each other:

1. STBM aims at open defecation free villages and hygienic behaviour of the community. STBM uses awareness raising, collective action, behaviour change and peer pressure to mobilise communities to sanitise their own villages. The STBM approach involves 4 key actions for hygiene promotion as part of the sanitation strategy: hand washing with soap, household water treatment, solid waste management and waste water management. SHAW will pay special attention to make STBM equitable for the poor and for men and women alike.
2. Social marketing of sanitation, simply called: sanitation marketing. The strategy includes a combination of three efforts: (1) strengthening the private sector to provide adequate sanitation services, in combination with (2) demand creation through a marketing strategy and (3) creating access to finance mechanisms for households and for entrepreneurs to invest in sanitation and small businesses (e.g. micro-finance, revolving funds, village loan funds).

Core Values of the SHAW Programme:

- Community based demand-driven non-subsidised interventions, based on informed choice and supported by access to materials and equipment;
- Stimulation of community empowerment through CLTS approach;

[1] The STBM of the Government of Indonesia, approved in 2008, promotes water, sanitation and hygiene along five pillars: 1) whole community ODF, 2) hand washing with soap, 3) household water treatment, 4) solid waste management and 5) liquid waste management.

- Private and community ownership, based on a mechanism ensuring equity, gender equality, and transparency and accountability;
- Focus on vulnerable groups in the communities, especially women, young girls and children, and the poorest community households;
- Promotion of sustainable facilities and services based on the acceptability by and capacity of the stakeholders;
- Clear roles and responsibilities for all stakeholders based on close collaboration and recognition of rights and duties by each stakeholder.

3. **Results: how will this program contribute to sustainable sanitation services, socially, environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?)**

In 9 districts, 750,000 persons with STBM and 90 schools as well as an enabling environment for sustainability in the SHAW area and scale-up the approach elsewhere.
In principle, the families themselves will bare all investment costs for sanitation supplies at household level. Partners will develop several financial options.
The programme however subsidises the soft components, i.e. capacity building, sanitation marketing, linking & learning, etc. The programme partially funds drinking water supplies/school sanitation as they have a public function. Hence, additional support is looked by government of Indonesia, national programmes or other donors.

4. **In case of program: duration:**

2010 – 2014

5. **Country/Countries:**

Indonesia: East Indonesia, the Nusa Tenggara Timur (NTT) and Papua Province

6. **Estimated budget (cost structure):**

The total costs of the programme are € 19.3 million.
€ 18 million has been covered by contributions from many different partners, incl. Royal Netherlands Embassy and local partners.

7. **In case of a business case: what is your revenue stream?:**

n/a

8. **How many people/households will benefit from this program?:**

Simavi works with a large network of local and international partners to reach more than 750,000 people directly and many more indirectly. It targets some of the hardest to reach and underserved rural poor in East Indonesia (Nusa Tenggara Timur (NTT) and Papua). The programme focuses on all people in 9 districts.

At this moment, only 52% of the total Indonesian population has access to sanitation. In rural areas this is only 36%.[2] SHAW aims to reach at least 80% of the population in the targeted areas. This exceeds Millennium Development Goal 7.C, which aims by 2015 to half the proportion of the population without sustainable access to safe drinking water and basic sanitation.

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

The programme started in 2010 and after strengthening capacity at district level, the programme is currently in the implementation stage. All stakeholders expect that in the coming years, the programme will develop strategies that will lead to further scaling up of STBM from 2014 onwards.

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**

- In order to reach out to more beneficiaries, Simavi searches for €1.3 million support.
- It also looks for expertise on sanitation marketing:

How to approach the population for health education to increase awareness as well as increase demand? How to approach the private sector in order to create services and supplies that meet the created demand for sanitation and hygiene facilities? How to use mass media?

11. **Risks you foresee and measures to be taken:**

Looking at the STBM enabling environment, 5 concerns have been identified:

- Role and responsibilities of the Pokja
- Sanitation marketing
- Lack of financing options
- Sustainability of STBM
- Follow-up after triggering mainly limited to monitoring

The Pokja AMPL at district and provincial level do not function well enough yet to enable and support STBM activities and achievements. Major reasons mentioned concern the absence of task description and mandate, which has led to a lack of ownership as well as reduced support from their own department to decide on joint actions. The government departments are used to work from a vertical budget rather than a horizontal one and this requires a different view on how to manage programmes and budgets.

The sanitation marketing is still not very well developed. Only one of the partners is active through stimulating the private sector to step into the sanitation (STBM) sector. It has developed and tested a modular toilet for areas which are flooded and is now offering the model to its target population as well as to the private sector. It also is discussing with a financial institute to offer loans to interested customers. The financial sector needs much persuasion to get interest in small loans for sanitation facilities.

[2] WHO/UNICEF Joint Monitoring Program; July 2008

The other partners are looking for small scale businesses, like masons. The experiences by UNICEF and TSSM (ed. WB programme) are however not very positive so far: often the trained persons leave the district and head for urban setting where their increased expertise is likely to result in a higher income. An alternative needs to be found to train and retain small business approach. WASTE will guide partners to identify and develop alternatives. In general, it remains a challenge to find and keep human resource capacity at rural level.
The sustainability issue looks to the situation over a 10-20 year period after the STBM declaration. It demands a good monitoring system as well as actively involved structures to monitor, analyse and give follow-up to sustain the achieved behaviour change and increased awareness regarding the healthy living environment through STBM (and maybe beyond STBM). These structures are principally government services at sub-district and district level, but potentially also others like *dusun* cadres, CBOs, NGOs and even local private sector. In short, any structure is possible. The current situation in the *dusun* up to district level gives that many efforts are needed by SHAW to assure sustainability.
The fifth priority issue which came from the review workshop, concerns a common conflict within projects all over the world, between the palpable hardware and non-palpable social targets. Many projects look primarily to attain the palpable targets within the project period in order to satisfy the donor or the superior who can see the realisations. The non-palpable social targets (e.g. change in behaviour or a functioning management committee) rank lower on the priority scale although that is where the lasting benefits come from. The follow-up should not be limited to monitoring only but has to include continuous/regular support to the *dusun* population on its way to behaviour change in sanitation and hygiene.
The Dutch Water Board Zuiderzeeland is looking how to support YDD by technical assistance on own funding. At the moment (Sept. 11) the ideas are evolving towards monitoring water quality and the institutional structure around it. Surface water and groundwater quality monitoring and pollution prevention is one of the primary functions of a water board in the Netherlands.

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**

The Dutch Water Board Zuiderzeeland is looking how to support YDD by technical assistance. At the moment (September 2011), the ideas are evolving towards monitoring water quality and the institutional structure around it. Surface water and groundwater quality monitoring and pollution prevention is one of the primary functions of a water board in the Netherlands.
WASTE will focus on development of sanitation options. Focus is to look at environmental challenges on the different islands and look at socially acceptable options. In addition, preference is given to make use of local available materials to the greatest possible extent. Furthermore, in collaboration with Simavi and the local partners, financial sustainability of the business approach remains a challenge. Different financial institutions will be consulted and look into local micro-finance possibilities as well. Simavi in addition will liaise with large entrepreneurs in Indonesia, e.g. Unilever, who might be interested to focus on STBM efforts as part of their CSR policy.

IRC is assisting the programme in terms of PME. More specifically, the SHAW programme will develop a monitoring toolkit that can be applied by local government, NGOs and even communities themselves to monitor STBM progress at district level. Ideal, such toolkit would serve as a national STBM monitoring standard.
Simavi manages the overall programme. More specifically, it strengthens the organisational capacity of the Indonesian partners as well as provides technical assistance on issues related to STBM.
As pointed out earlier, more expertise is sought in the area of sanitation marketing and strengthening sustainable financial options at district level that will allow consumers as well as entrepreneurs to have access to financial loans to realize sanitation supplies.

Tjebok, a message in a bottle…
Saving water & improving sanitation and hygiene

Tjebok Health Care
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Who hold(s) the initiative: Dirk de Roos , founder and driving force behind Tjebok Health Care
Eventually, other partners: Development agencies (like the World Bank), state and central governments, investors, NGO's and local entrepeneurs.

1 Objective of the business case / program idea:

THC has developed a business concept, which is originally based on an Eastern tradition, to clean your lower body hygienically. The TJEBBI is a specially designed device to improve better sanitation & hygiene for at least 100 million people worldwide. The TJEBBI has a water reservoir which can be filled with (tap)water and/or other aqueous preparations. It has an elegant design and is integrated with an easy to use spray pump. The use of the TJEBBI is environmental friendly.

2 Description of the business case / program idea:

Tjebok Health Care would now like to find cooperation in Indian partners to introduce the TJEBBI into the Indian market, either in license or through distributor(s). The first aim is to start on the middle class market, and for this THC seeks collaboration with strategic partners and companies of personal hygiene/wellness/ (feminine)care for which the device could be a merchandising/customer specific solution. A survey by WaterAid(international NGO)has ranked India second on the list of the 'WORLDS WORST PLACE FOR SANITATION' even in a country where more than 50% of the population is forced to defecate in the open every single day because of lack of sanitation facilities. These statistic figures certainly indicate huge potential for clean, hygiene, portable sanitation solutions. Reaction from the market scan done via Agentschap NL/EVD by the CG in Mumbai and the NBSO in Ahemabad and Chennai: 'There is potential for Tjebok Health Care to be a brand leader in the near future, but, of course, keep it affordable and flood the market (make it available everywhere at one go).

3 Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?

The TJEBBI definitely is a solution for a major sustainability issue, because it improves the propaganda for water, sanitation & hygiene which gives the opportunity to save lives. Better sanitation is vital in the fight against diseases, and is the starting point for improving the quality of people's live. 2.3 billion people suffer from diseases linked to water. Tjebok Health Care will be represented by NexusNovus/Bangalore/India. NexusNovus is experienced and has network in retail and distribution channels related to the sales of high end (consumer) products. As such, has an interest in marketing the product to the middle class market. Marketing the TJEBBI to BOP-markets should be the responsibility of another party, potentially in cooperation with NexusNovus. Finance: Crowdfunding via Symbid (www.symbid.nl). Grants: Prepare2Start and Package4Growth. Netherlands Development Finance Company (FMO) the Entrepreneurial Development Bank. It supports entrepeneurs by providing capital to them and through sharing of knowledge. They needed to know what investors and potential donors or funding organizations do take in account before assisting ventures in BOP markets given that Tjebok Health Care is in need of financial resources.

4 In case of program: duration:

A two month 'Quickscan' market research + pilot phase of six months during which the cooperation, the product introduction and other aspects of launching the TJEBBI in India can be tested and evaluated. After evaluation, a strategy and agreements can be made for a longer time period. As such, investments

ae kept to a minimum while the introduction of the TJEBBI is done in small, clearly defined steps in order to ensure an optimal approach. The start of the Quickscan and pilot phase depends on financial and other resources available with Tjebok Health Care and NexusNovus.

5 Country/Countries:

First India because it is one of the fastest growing economies in the world. However, less than 20% of Indians have access to sanitation. In general my focus is on two interesting markets: developing countries and western markets.

6 Estimated budget (cost structure):

65.000€ for prototyping, implementation plan, pilot, sundries.

7 In case of a business case: what is your revenue stream?

By selling the device to utility companies or other companies who eventually supply them. By introducing the TJEBBI in one state and then gradual scale up depending on the success. Through partnerships.

8 How many people/households will benefit from this program?

The TJEBBI portable washer has as a consequence a global signification and can be used worldwide under all those 2.3 billion people who suffer from diseases linked to water, sanitation & hygiene. On a population in India (of over 1.1 billion people) the middle/upper class population - being the primary outlet of the company - is estimated to be about 250 million people. The introduction of the TJEBBI portable washer on the Indian market will be developed along gradual lines and estimated sales in the first year are about 250.000 pieces.

9 In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

Tjebok Health Care is a start up, proactive in embracing partnerships.

10 What does the program lack, what is still needed to make it 'ready for implementation'?

Production and partner/distributor search. We're working fulltime on this issues. Also financial aid is needed.

11 Risks you foresee and measures to be taken:

Bureaucratic delays. The whole of India is not a homogenous market. Each state is to be considered as a market by itself. You need to adopt a regional focus while having a national agenda. Language & social customs differ as well among states. Measures to be taken: Keep the relevant local Dutch trade network office informed whenever crucial steps towards doing business in India is made.

12 Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

At this stage, given Tjebok's financial limitations and lack of knowledge on the Indian (BOP) market, it should enter India via partnerships. NGO's will be willing to embrace the TJEBBI's in their campaigns of

improving hygiene and sanitation across the Indian BOP. Moreover, some NGO's are often globally active, which means that there is a big possibility of extending the target market. High production volumes are needed if Tjebok has to operate profitebaly in India, given that the profitmargins are usually low in BOP markets. This can be solved by a number of options; operating with a Business t Business model that sells to local entrepeneurs, selling the business concept to third parties who will handle the production and distribution of the TJEBBI's or by enlisting companies who use the TJEBBI's for their marketing or social corporate responsibility purposes.

UNESCO-IHE
Institute for Water Education

Innovation in Urban Pro-poor Sanitation Through Education and Research

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Author: Prof. Brdjanovic Damir, PhD

Who hold(s) the initiative: *UNESCO-IHE Institute for Water Education, The Netherlands*
Eventually, other partners:

- *Asian Institute of Technology (AIT), Thailand*
- *Kwame Nkrumah University of Science and Technology (KNUST), Ghana*
- *Universidad de Valle (UNIVALLE), Colombia*

1. Objective of the business case / program idea:

The program idea "Innovation in pro-poor urban sanitation through education and research" is developed under the recently acquired project largerly funded by the Bill & Melinda Gates Foundation (BMGF) entitled 'Stimulating local innovation on sanitation for the urban poor in sub-Saharan Africa and South-East Asia'. The project has two principal objectives: (*i*) to stimulate local innovation on sanitation for the urban poor through research, and (*ii*) to strengthen the sanitation sector in developing countries through education and training. The direct beneficiaries of the project are individuals and organizations from developing countries involved in the project that are instrumental in stimulating local innovation on sanitation for the ultimate recipients of the project outcomes - the urban poor in sub-Saharan Africa and South-East Asia.

The 5-year project (2011-2016) will be executed in cooperation with the UNESCO-IHE's global partnership, particularly with eight distinguished partners from developing countries in sub-Saharan Africa, South-East Asia and South America involved in the past (and present) capacity-building and research activities implemented by the Institute, and who have a sound track record in education and research on pro-poor sanitation.

The project contains 6 components: (*i*) the Doctoral program and PhD scholarships; (*ii*) Masters education and MSc scholarships; (*iii*) New online Masters in Sanitary Engineering and scholarships; (*iv*) Two new online training courses; (*v*) New Professional Diploma and scholarships; and (*vi*) Online courses and scholarships, and it targets more than 600 direct individual beneficiaries.

Outcomes of the project can be summarized as: (*i*) Research capacity and facilities of partner institutions enhanced; (*ii*) International academic network on pro-poor sanitation established; (*iii*) Practical applications of innovation on sanitation for the urban poor in place; (*iv*) Proposal for the business spin-offs developed; (*v*) Human resources capacity increased in the sanitation sector; and (*vi*) Increased access of professionals from developing countries to education and training.

A substantial part of the project is devoted to research (20 fully financed PhD scholarships at 8 project locations at 4 continents, and 60 partially financed (50%) MSc scholarships for studying at AIT, KNUST, UNIVALLE and UNESCO-IHE. The research part of the project is clustered around 5 thematic areas on the pro-urban poor sanitation: (*i*) Smart sanitation provision for slums and informal settlements; (*ii*) Emergency sanitation following natural and anthropologic disasters; (*iii*) Resource-oriented decentralized sanitation; (*iv*) Low-cost wastewater collection and treatment; and (*v*) Faecal sludge management. It is planned that majority of 60 MSc students will carry out their thesis in relation to these research themes and majority of them will be supporting 20 fully funded PhD research projects.

The objective of the program idea is to secure (part of) necessary matching funds for 60 partially financed MSc fellowships by the BMGF and enable professional development of up to 60 modern "all-round" sanitary engineers. By this the program idea will align with most of the objectives of the project and will substantially contribute to achievements of its outcomes.

It is important to note that rather than classical 'input funding' the project is partially based on 'output funding' that is as closely aligned as possible with the impact pursued. This means that the already secured funds for 60 MSc fellowships allocated by the BMGF will be accessible only when the matching funds are secured. Otherwise the funds (USD 1.500.000, see later) will not be released.

2. Description of the business case / program idea:

This program idea aims in supporting one of the components of the recently started large project that supports MDG and the most vulnerable part of population in developing countries – the urban poor.

Up to 60 MSc scholarships will be co-funded by the project and hopefully by matching funds secured through this program idea application. These scholars will enroll in the existing double-degree programs jointly offered by UNESCO-IHE and its partners, namely Masters in Sanitary Engineering with Univalle, Cali, Masters in Sanitary Engineering with KNUST, Kumasi, and Masters in Urban Water Engineering and Management with AIT, Bangkok. At UNESCO-IHE, scholars will be enrolled in the Sanitary Engineering specialization and Urban Water Engineering and Management specialization, both being a part of the International Masters Program in Municipal Water and Infrastructure (MWI), which is an 18-month program. It is planned that the students are equally distributed over 3 double-degree programs and the MWI program at UNESCO-IHE (each programs should receive 15 students). In all the above mentioned programs, during the first year students take basic and specialized modules (the taught part of the program) followed by a 6-month period during which participants conduct individual research and then complete and defend an MSc thesis (the research part of the program). The taught part of the joint dual degree program takes place partly at the partner institution, and partly at UNESCO-IHE. All MSc students enrolled in the three joint double-degree programs will carry out their research (6 months) at the partner premises. In all such cases the joint supervision is provided by both parties on equal terms. During the research phase, scholars will embark on sanitation topics carefully selected from the five thematic areas listed earlier in this program idea proposal, all in consultation with the partners. It is planned to have 4 intakes of MSc students starting with the academic year 2011-2013 which will commence as early as in October 2011. In case necessary co-funding is secured we can decrease number of intakes e.g. shorten the program duration from 4 to 3, 2 or 1 academic cycles of 18 months. For these 60 students the BMGF will provide approximately half of the scholarship funds (USD 25,000), which will only become accessible when the two conditions are fulfilled, namely: (1) UNESCO-IHE and partners secure the matching funds, and (2) the Sanitary Engineering and Urban Water Engineering and Management specializations at UNESCO-IHE have secured on a yearly basis not less than 10 MSc scholarships (yearly average in the period 2005-2010) outside of this project. In addition, following the usual practice at UNESCO-IHE and partner institutions, we shall link MSc and PhD research wherever possible.

3. **Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?**

The research part of the project is focused on local and mainly technological innovations for the urban poor sanitation. However, experience clearly shows that the application of technological advances in isolation does not often lead to sustainable and self-reliant solutions. In recognition of this fact, the project approach integrates multidisciplinary aspects that will complement and address non-technical issues such as (micro) financing, governance, social and institutional aspects, spatial planning, etc. The educational/training part of the program is focused on strengthening the human resources capacity in the sanitation sector by developing and implementing innovative, more efficient and cheaper ways to extend the reach and impact of postgraduate education. By contributing to closing the gap in education in the sanitary engineering field and educating a new generation of professionals who will challenge the conventional solutions, and also develop and implement new technologies and approaches, this project contributes to a degree to which the results achieved, particularly outcomes and impacts, can continue over time, especially after the Foundation funding ends.

The project is structured in such a way so as to stimulate local innovations and to apply them. A substantial proportion of the BMGF project budget is dedicated to constructing experimental lab-scale and pilot-scale installations aiming at developing and testing prototypes of technologies to be applied in practice at full-scale in the future. Therefore, there is definitely a genuine intention to increase the scale of this project after the grant period has ended. This will be further facilitated by placing the technological innovation in a multidisciplinary context and by encouraging staff involved in the development of innovation to think about the follow-up in an entrepreneurial fashion. As the MSc component of the project (and proposed program idea) is part of the ongoing larger project, it will directly contribute to sustainability of the project outcomes and provision of sustainable sanitation services in developing word.

4. **In case of program: duration:**

Program duration is flexible and depends on the availability of (matching) funds and desired implementation schedule. Minimum duration is 18 months (one academic year) up to 5 years (4 academic years).

5. **Country/Countries:**

The Netherlands, Ghana, Thailand, Columbia

6. **Estimated budget (cost structure):**

USD 25.000 per MSc student up to 60 students (max total USD 1.500.000).
Base co-funding is already secured by BMGF of USD 1.500.000.

7. **In case of a business case: what is your revenue stream?:**

N.A.

8. **How many people/households will benefit from this program?:**

Maximum 60 professionals from developing countries will be direct beneficiaries of the program. Indirect impact will be much broader but impossible to judge at this moment.

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

The program is ready for implementation.

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**

It lacks matching funds as described above.

11. **Risks you foresee and measures to be taken:**

No risks applicable.

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**

Beside institutional partners involved, the program is open for the contribution (joint supervision, sharing research resources, formulation of MSc research ideas etc) for other Dutch partners including NWP members, nutrient platform members and Aqua for All.

Developing a Sanitation Value Chain for 300,000 People Living in the Informal Settlements of Kisumu, Kenya

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Wouter van Tongeren, Evert van Walsem, Cordaid Urban Matters

Michiel Anten, Maarten Boersen, Jannes van Hoven, Hoogheemraadschap de Stichtse Rijnlanden

Who hold(s) the initiative: *VEI, HDSR and Cordaid Urban Matters*
Eventually, other partners: *Kisumu Municipality, Kisumu Water and Sewerage Company, Pamoja Trust, SANA, private sector partners from Kenya and The Netherlands*

1. Objective of the business case / program idea:

Large scale collection, processing, valorization and commercialization of human and other waste waste, providing a solution to sanitation problems in Kisumu's slums while making a profitable business case.

2. Description of the business case / program idea:

Kisumu is the third largest city in Kenya, with an estimated population of 500,000. The city is located in Western Kenya on the shores of Lake Victoria and covers a total area of 417 km^2 of which 297 km^2 is land and 120km^2 is water mass. Kisumu is a regional trade and transportation hub that is undergoing an economic resurgence. It is anticipated that improvements in railway, air and ferry services, along with foreign direct investments in agriculture, agro-processing and aquaculture, will transform the city into the leading commercial, industrial, and administrative centre in the Lake Victoria Basin.

Overall water and sanitation coverage in Kisumu is assessed at 48% and 29%, respectively. Kisumu Municipality, Kisumu Water and Sewerage Company (KIWASCO) is responsible for water and sewerage services, while the municipality is in charge of waste collection and on site sanitation.

Kisumu has three crowded slums located within town. Over three hundred thousand people live closely packed together in miserable conditions, lacking the basic necessities of life. In general, access to basic water and sanitation services is low although there are many private actors and NGOs that are active to fulfil the needs that are obviously there.

Many of the slum dwellers in the informal settlements are using pit latrines. The state of pit latrines is poor since they are not clean and in many cases, one pit latrine could be used by at least 20 people or more and when filled up, it's either emptied manually or a new one is dug. This is a huge health risk among the people considering these facilities are also used by children. The majority of households use pit latrines, in a few more formal housing units flush toilets exist, however the challenge there is non-availability of water.

Through its partner network, Cordaid has been working in the informal settlement Manyatta for almost 5 years, especially in the field of water and sanitation. The community is relatively well organized and thoroughly involved in development efforts. Cordaid has recently executed an enumeration in Manyatta in cooperation with Pamoja Trust. This enumeration maps out the existing basic services, as well as housing facilities and thus provides a baseline for all interventions in Manyatta.

Vitens Evides International and Hoogheemraadschap de Stichtse Rijnlanden have embarked on a program to support Urban Matters, the municipality and KIWASCO to develop an overall strategy and action plan to improve the situation. This project is funded by the Nederlandse Waterschaps Bank and started off in August 2011. In addition, partners have managed to get funding from the ACP-EU Water Facility for a partnership program to support KIWASCO to improve its water operations and to develop a pro-poor investment water and sanitation programme for the period 2012-2015. VEI and HDSR are working in this program with local partners like SANA and SNV.

The project aims to develop a sanitation value chain for people living in the informal settlements of Kisumu consisting of large scale collection, processing, valorization and commercialization of human and other waste waste. The ultimate goal is to provide a solution to sanitation problems in Kisumu's slums while making a profitable business case.

In short the following activities are part of the foreseen project:

- Hygiene awareness program
- Marketization and construction of Eco San latrines – separation of urine and faeces at the source
- Collection system for faeces and urine from the household to a processing plant
- Achieving scale in processing of the raw material,
- Commercialisation of the fertiliser product

As part of the project a processing plant will be constructed at the premises of KIWASCO.

3. **Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?**

The aim is to set-up a sanitation value chain that is self financing. Revenues will be generated by payments of people for (shared) toilets facilities, payments for emptying services for ecosan toilets / pit latrines and marketing of the final product.
However, investments will be necessary to finance initial infrastructure investment cost.

4. **In case of program: duration:**

Program duration: 4 years

5. **Country/Countries:**

Kenya

6. **Estimated budget (cost structure):**

As for the first phase of the program (demonstration project), we foresee a budget requirement of € 1 million, to set-up a demonstration plant for waste processing (€ 0.5 million), buy a collection vehicle (€ 100,000), hygiene awareness program (€ 25,000), marketing and subsidy program for toilets and marketing of final products (€ 200,000) and set-up the organization for the sanitation value chain (€ 175,000)

7. **In case of a business case: what is your revenue stream?:**

Revenues will be generated by payments of people for (shared) toilets facilities, payments for emptying services for ecosan toilets / pit latrines and marketing of the final product.

8. **How many people/households will benefit from this program?:**

Approximately 300,000 people

9. In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

The program idea is in the development phase. A proposal to conduct an economic feasibility study has been submitted to Partners for Water in September

10. What does the program lack, what is still needed to make it 'ready for implementation'?

At this point, the program lacks (co-) financing for investments in the necessary infrastructure (collection vehicles, processing plant for the collected wastes) and for setting up the required organization (marketing of toilets, setting up collection infrastructure, operation & maintenance of processing plants, sales of final products).

11. Risks you foresee and measures to be taken:

Commercial viability (i.e. value and market for final product) will be crucial to make (operation of) the sanitation value chain sustainable. Commercial viability is largely dependent on the market development for the final product(s).

12. Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

Except for a (co-) financing party, we think we have all required partners on board to initiate a demonstration project

Integrated urban waste management operator

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the Netherlands

Author: Gert de Bruijne
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Who hold(s) the initiative: *WASTE*
Eventually, other partners: *To be determined*

1 Objective of the business case / program idea:

To develop a integrated urban waste-to-resource operating model to organize, improve, legalize and scale-up existing sanitation and solid waste business based on which our business partners can offer sustainable waste management services to municipalities.

2 Description of the business case / program idea:

WASTE will develop and test in less than three years a sanitation and solid waste operator model, establish a company based on this model and built up a modest network of local operating partners. The operating operating partners will sign contracts with municipalities to acquire the concession to operate the solid waste and sludge central collection site to process the bio waste into new products. The operator will maintain contractual relations with various small businesses, finance institutions, health and environmental authorities, as well as right based NGO's and knowledge institutions for the purpose to develop and maintain a sustainable service delivery and production process.

3 Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?

WASTE will develop this business case as part of its ongoing programs and approach companies that provide synergy to become partners in this venture.
The model will operators based on service fees from households and institutions, sales of products, contributions from the municipality and investors (in the development phase also external donors)

4 In case of program: duration:

Development phase: four years

5 Country/Countries:

Cities that will meet the criteria and provide ample concrete commitment and participation. (likely: Blantyre and Mzuzu, Malawi; and other cities WASTE selected in its ongoing programs.

6 Estimated budget (cost structure):

To be determined in the next eight months based on ongoing work in mentioned cities.

7 In case of a business case: what is your revenue stream?:

service fees and sales from agriculture inputs

8 How many people/households will benefit from this program?:

Potentially, hundreds of thousand

9 In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

Formulation/start-up

10 What does the program lack, what is still needed to make it 'ready for implementation'?

If it would be so simple.....

11 Risks you foresee and measures to be taken:

Too much ambition to be mitigated by having critical partners and investors

12 Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

To be determined, though likely: solid waste company, bio-waste plant operator, logistic experience

World Water Academy Concept as a Tool for the Dutch Water Sector to Improve Their Capacity Building Projects and Sustain Long Term Relations With Local Partners Around the World.

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Authors: Agnes Maenhout & Johan Oost

Who hold(s) the initiative: *Wateropleidingen (SWO)*
Eventually, other partners: *Aqua4All, water companies*

1. **Objective of the business case / program idea:**

Sustainable capacity building in focus areas of the water sector

2. **Description of the business case / program idea:**

Setting-up and/or strengthening water training centres with the concept of Wateropleidingen to reach a sustainable capacity building

3. **Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?**

In most of the large water projects, capacity building is the last part, the afterthought. Water companies and water boards have twinning projects all over the world, always with a capacity building element. Unfortunately the experience exchanged is not always sustainable, because a Dutch investment is the driving force. Together with some parties in the water sector we would like to strengthen institutional capacity building on practical level for the water sector. Aim is to strengthen or even set-up new training centres. The training centres will be look a likes of the Wateropleidingen-concept; the succesfactors will be used to create a sustainable self-supportive institute.
The big picture is a network of World Water Academies to exchange practical knowledge on training the water sector. The Dutch water sector is able to have close connections with this network and can have the profits of it.

4. **In case of program: duration:**

Several years (at least 4-5 years)

5. **Country/Countries:**

Focus countries are: South Africa, Vietnam, Indonesia, Egypt and Eastern Europe

6. **Estimated budget (cost structure):**

About 500,000 euros

7. **In case of a business case: what is your revenue stream?:**

Sustainable capacity building with strong relations to the Dutch water sector
Not spilling money! but working together to reach a sustainable form of capacity building and keeping strong relations with a network of training centers, driven by Dutch knowledge.

8. **How many people/households will benefit from this program?:**

Many, hard to say

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

- Formulation with some startups of our ideas. In some projects element of the World Water Academy is elaborated and brought into practice.
- Looking for partners and regions/local institutes to cooperate with

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**

- Financial part, for the investment
- vision on sustainable capacity building,
- cooperation within the Dutch water sector, together with the cooperation between the Netherlands and a region/country

11. **Risks you foresee and measures to be taken:**

- Financial: investments on long term (measure: long term relationships)
- Capacity building is not very sexy, more a soft product.
- Fear of capacity building as an 'empty well' (measure: sustainable institute with strong relations to the Dutch water sector)
- Not a focus area, all parties do a bit (measure: point focus areas for training activities around the world & cooperate)

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**

- Local partners: training institutes not-for-profit organizations which organize training
- Dutch partners: contact with local parties and long term relationships and with certain expertise + willingness to cooperate

Sustainable Water Management and Sanitation on Small Tropical Islands; Pilot Great Corn Island, Nicaragua

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Who hold(s) the initiative:*Municipality of the Corn Islands, Nicaragua, Waterboard De Dommel, the Netherlands, in cooperation with other Dutch water boards and eventually drinking water company Brabant Water*
Eventually, other partners: *World Bank, Washington; FISE, Managua*

1. Objective of the business case / program idea:

The major goal is to establish the conditions for a more sustainable water and sanitation management on the Great Corn Island and to develop a methodology that can be applied on other small (tropical) islands.

- Sustainable water management on the Great Corn Island
  To establish a professional water management department at the Municipality of the Corn Islands, Nicaragua in order to provide a sustainable management of the (fresh) water resources and appropriate sanitation conditions on the island.
- Small islands concept
  To develop a program (blue print) for capacity development on water and sanitation issues for local governments, which also can be applied at other small tropical islands (which are confronted with comparable problems in water management and sanitation)

2. Description of the program idea:

The mayor activity will be capacity development by training on the job. An extensive training program will be developed in near cooperation with the local government and local organizations.

Capacity development:

- Institutional development: on the job training and providing professional support to local experts
  - Management training of employees of the Municipality (management skills, development of business plans, management and maintenance systems, self supportive finance systems, administration, law enforcement, communication, education etc.)
  - Technical training of employees of the Municipality (hydro(geo)logy, engineering, water quantity and quality management, maintenance of infrastructure, quality control, principals of drinking water and sanitation, coastal management etc.)
- Community level:
  - Development of active community water committees with strong involvement of woman
  - Training of community water committees (health aspects, awareness, organization, maintenance of water infrastructure, communication and involvement etc.)

Methods will be evaluated extensively and discussed with other experts in order to adapt them and develop a ‘blue print’ for a capacity building program for other small tropical islands.

3. **Results:** *how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?*

This program will be developed to establish sustainable sanitation services, methods for cost recovery and the sustainable maintenance of the water resources and sanitation infrastructure. The program will focus on (on the job) capacity development in order to establish a professional water management department at the Municipality of the Corn Islands.
The program can be considered as a pilot for other small tropical islands with comparable conditions. A 'blue print' for a capacity building program for other small tropical islands will be developed

4. **Program duration:**

Program duration: 3 years

5. **Country/Countries:**

Corn Islands (Islas de Maiz), Nicaragua
If the program is successful it can be extended to other small tropical islands with the same challenges in water and sanitation (which are a lot!)

6. **Estimated budget (cost structure):**

Two scenarios can be followed:

- Scenario A, which can be considered as a minimum scenario. The program will be carried out by missions of Dutch experts and a part time local representative.
- In scenario B a senior Dutch project leader will be stationed full time on the island, guaranteeing more focus on the progress of the program.

<u>Scenario A:</u>

Pilot study:

- Missions: 3 years, 2 persons, 3 missions, 1 weeks stay = 3x2x3x7 = 126 days
- Preparation & coordination: 3 years, 1 person, 15 working days = 3x1x15 = 45 days

Needed budget pilot study:

- Travel costs: 3 years, 2 persons, 3 missions = 3x2x3 = 18 x 1.300 euro = 23.400 euro
- DSA = 105 US/day = 100 euro/day x 126 days = 12.600 euro
- Local contractors = 10.000 euro
- Materials = 1.000/year = 3.000 euro
- Various costs = 2.000/year = 6.000 euro
- Investment Dutch water boards: 57 days/year = 456 hours/year for free

Needed budget extension pilot study

- Travel costs: 3 visits, 2 persons = 3x2 = 6 x 1.500 euro = 9.000 euro
- DSA = 105 US/day = 100 euro/day x (6 persons x 7 days) = 4.200 euro

- Materials = 1.000 euro
- Various costs (i.e. for sharing experiences) = 5.000 euro
- Investment Dutch water boards: 42 days = 336 hours for free

Total needed budget scenario A (approx.): 100.000 euro
Total investment Dutch water boards: 213 labour days for free
Total investment Municipality Corn Islands: 2 labour years for free

Scenario B:

Full time senior water manager on the spot:

- 75% salary costs, travel and stay (3 years) approx. = 320.000 euro
- 25% salary costs (3 years) investment Dutch water boards for free

Total needed budget scenario B (approx.): 320.000 euro
Total investment Dutch water boards: 260 labour days for free
Total investment Municipality Corn Islands: 2,5 labour years for free

7. In case of a business case: what is your revenue stream?:

-

8. How many people/households will benefit from this program?:

It is expected that the whole population of the Corn Islands (approx. 9.000 inhabitants) will benefit from the program study.

By extending the pilot study to other small tropical islands a multiply of people will benefit from this program.

9. In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

In 2009 a project identification mission was carried out by three Dutch water boards. January 2010 a project proposal was published which was focused on local capacity building and investments in the drinking water and sanitation systems of the island.

However, it pointed out that the World Bank and the Nicaraguan Social Investment Fund already had budget for studies and investments in the drinking water and sanitations systems as part of a development plan for tourism on the island. The project initiative was temporary stopped in order to avoid ineffective activities. At this moment the studies are almost finished and decisions are taken about the investments in the drinking water and sanitation systems. It is expected that these activities wil be executed in the near future.

The Municipality of the Corn Islands is overwhelmed by this developments and lacks the capacity to influence the decision making. There are great concerns that the Municipality will not be able to manage the new infrastructure properly. Because of this, the Mayor of the Corn

Islands has asked the Dutch water boards to reconsider their previous project proposal in such a way that there will be more focus on organization and management support as well as capacity development in the wide field of the discipline of integrated water and sanitation management.

10. What does the program lack, what is still needed to make it 'ready for implementation'?

Most important are the necessary financial resources to carry out the program. Once there is a positive perspective to obtain these resources an adjusted project proposal will be written to describe more in detail the program goals, activities and determine the necessary budget.

11. Risks you foresee and measures to be taken:

Because of the temporarily 'break' of this project initiative it probably is necessary to 'renew' the support of the different Dutch institutions and involved people.

12. Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

-

MYSWEPS: My School, Water, Energy, Perma Culture and Sanitation.

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Who hold(s) the initiative: *Inkomati Catchment Management Agency and Waterschap Groot Salland.*
Eventually, other partners: *Food and Trees for Africa; Peoples Power Africa; Neochem cc; Antonie Overbeek; Mpumalanga Department of Education and Training.*

1 Objective of the business case / program idea:

To implement a business concept for water and sanitation based on reuse of water, nutrients and energy on 10 schools in Mpumalanga, to incorporate the activities of this concept in the schools curriculum and to roll out the project as a social franchise enterprise.

2 Description of the business case / program idea:

The project is a follow up of two pilot projects (Sincobile School in Mpumalanga and Three Crowns School in Eastern Cape) in which the results of both projects are consolidated. The idea is an holistic approach of rain water, grey water and sanitation with direct reuse in a Perma Culture garden (PC). The concept consists of: 1. Rainwater harvesting for greening of the area and the PC garden. 2. Conversing of pit latrines into dry UD toilets with reuse of urine in the PC garden and the solids for planting trees. 3. Treatment of toilet water of other toilets in a biogas reactor with use of the gas in the school kitchen. 4.Treatment of the effluent of the biogas reactor in an algae reactor with use of the algae for fish breeding and the effluent in the PC garden. 5. Fish breeding pond with reuse of the water in the PC garden.

The food products from the PC garden and the fish breeding is used in the school feeding program and sold on the local market. The department of Education wants to include the activities in the school curriculum and (a.o. agricultural) schools in Zwolle are involved.

To roll this concept in a business approach a project proposal for a feasibility study for the development of franchise concepts has been submitted to PfW, together with Grontmij and WASTE, for which a project proposal has been submitted. A consultation of Dutch companies that can deliver products or services in the franchise business concepts will be part of this.

3 Results: how will this program contribute to sustainable sanitation services?

Sustainability: the concept is based on direct use of water, nutrients and energy in a Perma Culture garden, implemented with simple techniques and local materials by the school community itself. The value of the reuse helps the system to be sustainable.

Socially: The project is implemented on schools, with support of the Department of Education and the school community. The project will be incorporated in the school curriculum for life skills and business development

Environmentally: Reuse of nutrients, energy and water. No discharge of waste water to the environment. The project can and will be combined with solid waste collection and reuse. For this reason the project works together with the EU funded project of TSB Sugar and the Mpumalanga Sugar Cane Growers Association to utilize sugar cane biomass of the farms for energy through a process of pyrolysis.

Financially: for the pilot phase we are looking for donors/investors. In the next phases the concept should be paid by a mix of own contribution, value of reuse, governmental subsidies and international subsidies. Cost recovery models will be described in the Social Franchise business model. Maintenance can be taken care of by the social franchise organization with local franchisees to take up contracts of operations and maintenance. Maintenance of the school toilet systems should be paid for by the Department of Education and/or Department of Water.

4 In case of program: duration:

Duration of the 10 schools pilot project: 1-2 years

5 Country/Countries:

South Africa. Implemented in the Inkomati catchment area on the borders of Mozambique and Swaziland and in consultation with water Authorities in Mozambique and Swaziland.

6 Estimated budget (cost structure):

Draft estimation of costs for the SWEPS 10 schools project: 1.200.000 euro

7 In case of a business case: what is your revenue stream?:

For the social franchise business case:

a. contributions of beneficiaries and pollutants
b. value of reuse
c. contributions/subsidies of (local) government
d. subsidies or loans of international donors.

8 How many people/households will benefit from this program?:

For the SWEPS 10- schools program: 10 schools with 9.200 learners.

9 In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)

The program is piloted on the Sincobile School in Mpumalanga and the Three Crown's School in the Eastern Cape. The SWEPS project to scale up to 10 schools is formulated in a draft project proposal. For the business development for a social franchise enterprise a proposal for a feasibility study has been formulated.

10 What does the program lack, what is still needed to make it 'ready for implementation'?

The SWEPS project still lacks the money for implementation. Sources of funding have been discussed with Department of Education, Department of Water Affairs and Province Mpumalanga. To support the implementation and the roll out of the program in a social franchise enterprise the projects lacks professional expertise for product development, business development and financial engineering.

11 Risks you foresee and measures to be taken:

Lack of ownership of the beneficiaries (i.c. the schools). Measures: involve the Department of Education as a project partner and partnering with Dutch schools. Direct revenues of reuse will enhance ownership of the schools

Lack of funding from local and national government. Measures: involve relevant authorities and show advantages of co-financing and business development in these initiatives, instead of 100 % government investments.

Cultural barriers in using human excreta for food production. Measures: Communication, awareness raising, promote ownership.

12 Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

Local partners: aforementioned project partners and Department of Education, schools, Water for All program province Mpumalanga, Department of Water Affairs, CSIR, WRC, WISA.
Furthermore the local Sugar company TSB and the Mpumalanga Cane Growers Association is involved with a feasibility study for waste to energy with biomass of sugar cane through a pyrolyse process.
Dutch partners: Municipalities and Schools, Aqua for All, STOWA, Dutch companies with innovative, simple and cost effective techniques for sanitation based on reuse, biogas reactors, algae production, waste disposal, organizations for micro finance.


Semi centralised logistic system for the collection of urine and faeces from ecosan (UDDT), pit latrine content and other organic waste in the village and production of terra preta

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Who hold(s) the initiative? *WECF – Women in Europe for a Common Future, the Netherlands, RCDA - Rural Communities Development Agency, Georgia*
Eventually, other partners: *SEMA – farmers NGO Georgia*

1. **Objective of the business case / program idea:**
   Up scaling ecosan technology by providing the o&m of the toilets
   Selling terra preta and compost made of toilet products and other organic waste

2. **Description of the business case / program idea:**
   Background: Ecosan or Urine Diverting Dry (UDD)Toilets are a sustainable sanitation option in areas without functioning water supply. Ecosan toilets have been introduced in Georgia by WECF and Georgian partners on household and school level (more than 200 sanitation facilities up to now, and the number of people who want to construct UDDT is increasing in every part of the country) in Georgia in the last years. A UDD toilet has two outlets and two collection systems; one for urine and one for the faeces. Urine and faeces are collected in separate containers, stored or treated, and finally used in crop production according to WHO guidelines (2006). People are very much satisfied with the comfortable and hygienic use of the toilets which can be built indoor or attached, a great advantage in cold winters. However, there is a challenge to safely treat and use the toilet products during the year round so that the people do not come again into the circle of decease. The safe re-use of especially feacal matter and to some extent urine is a barrier for acceptance and up-scaling. Composting or any other recycling of organic waste is widely unknown in this region.
   Method: Terra Preta is a treatment similar to composting which is an anaerobic lacto-fermenting process. It requires the addition of charcoal and shreddered wood and can be done on low tech level. It produces a high qualtiy humus rich dark soil which is a long-lasting nutrient donor in agriculture, leading to an increased crop production.

The service center to be set up will

- Produce terra preta
- Provide support people to construct their ecosan toilet (e.g. providing toilet seats, information, consultation, constructing the toilets for new clients)
- O&M for the toilets: Semi centralised logistic system for the collection of urine and faeces from UDDT, pit latrine content and other organic waste in the village and
- Process the urine
- Sell the products

3. **Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?**
   The ecosan sanitation technology is environmentally sustainable if proper O&M is guaranteed. After the first investments the service centre should work at least cost covering by providing services to the communities and by selling the processed ecosan and other organic waste products. The already functioning demonstration centre on sustainable technologies is managed by RCDA and local staff .
   Revenues of the first investments will be obtained by
   - Selling Terra Preta- compost products

- Selling liquid and safe fertilizer (stored urine)
- Income from delivered services to communities, schools and individual households

As investment for the service center are needed:

- vehicle to collect the faecal matter, urine and other organic waste
- shredder for wood and bushes
- simple biochar production
- reservoir and pump for the collected urine

Enough space is available at RCDA

4. In case of program: duration:

Springtime – February 2012 – December 2013
The program could start asap

5. Country/Countries:

Georgia and can be expanded to other countries in the Caucasus and Central Asia

6. Estimated budget (cost structure):

- 10 000 €: vehicle to collect faecal matter and other organic waste
- 2 500 €: urine reservoir and pump
- 2 000 €: shredder for wood
- 5 000 €: simple biochar production
- 500 €: preparation of the location for terra preta composting
- Sub total materials: 20.000 €

- 6 000 €: (12 months x 500 €) local human resources (local coordinator, drivers, workers)
- 6 000 €: WECF coordination&reporting
- 800 €: travel costs
- 2 000 €: developing marketing strategies and materials
- 1 000 €: logistics of packaging
- Sub total: 15 800 €

- Total 35 800 €
- + 10% overhead costs = 3 580 €

- Total budget: 39 380 €

7. **In case of a business case: what is your revenue stream?:**

   Customers pay for o&m service: the collection of the toilet products, renovating the toilet
   Terra preta, urine and compost is sold to farmers
   Customers buy toilet seats and other devices for the UDDT

8. **How many people/households will benefit from this program?**

   At the initial stage where the service center will start up, the beneficiaries will be over second phase 1500 small farmer/households after the expansion of the project
   third phase 5000 small farmers will benefit

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

   The program idea is formulated, the demand of the people who have now already an ecosan toilet is created. There is the demand of people who like to have such a hygienic toilet but are skeptical or not able to use the toilet products on their own.
   On municipal level there is the demand, beside the safe management of the human waste, to manage the other organic wastes.

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**

    Awareness about ecosan as sustainable sanitation on all levels can be improved and that all types of organic waste are valuable resource for increasing the income for local farmers. In particular the financial resources for investments are lacking.

11. **Risks you foresee and measures to be taken:**

    So far no risks are foreseen as the people who operate and maintain the UDDT are already aware about the nutrient value of faeces and urine
    The risks of selling to broad public the product due weak marketing capacities of RCDA and SEMA at the initial stage

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**

    Besides the local partners are RCDA (responsible for the demonstration – resource centre and SEMA (farmers organization and networking with Georgian farmers and communities). It would be good to have a Dutch partner experienced in marketing.

Sustainable public sanitation support in urban Monrovia, Liberia

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Who hold(s) the initiative: *ZOA Refugee Care - Liberia*
Eventually, other partners: *ZOA Business Ambassadors – Dutch Business support group*
Evangelical Children's Rehabilitation Program – Local NGO WASH partner
Liberia Study Group & Community Empowerment – LNGO partner in hygiene promotion

1. Objective of the business case / program idea:

To reduce morbidity from water borne diseases in the peri-urban districts of Monrovia, Liberia through regular human waste collection and processing, coupled with extensive on-site hygiene training.

2. Description of the business case / program idea:

The health situation in Liberia is poor: Liberia's health sector is transitioning from an emergency to a development phase. A large percentage of the population – especially the urban poor – continue to have limited access to health and social welfare services. Inadequate hygiene practices, poor drinking water quality, largely under-utilised or non-existent sanitary structures are at the basis of outbreaks of diarrhoea, cholera and other water-borne diseases and of endemic occurrence of WASH-related infections. Water and sanitation-related illnesses put a severe burden on health services, keep children out of school, and undermine investment in agriculture and other economic sectors.

Needs of the population: the heavy burden of conflict in Monrovia is reflected in the state of the WASH services of communities. Cholera is endemic in Liberia and the potential for a large-scale outbreak is ever present. Also endemic occurrence of skin infections indicates the need to address the WASH situation in the target peri-urban communities.

Experience and networks of the implementing agencies in the area covered: ZOA has wide experience of working in peri-urban areas of Monrovia, having completed a project in 2009-2010, partly funded by Aqua For All in the manual drilling 04 40 wells, the provision of 20 community latrines and the hygiene training of some 20,000 persons. ZOA is currently engaged in a similar project funded by ECHO in the provision of 50 manually drilled tube wells, 20 large scale community latrines and hygiene promotion training for 26,000 beneficiaries.

The planned project: The project will enhance the operation of community latrines in Monrovia, essential for the maintenance of public health due to many residents of the peri-urban areas being squatters and thus not influenced to develop their own family latrine. Currently the Liberian Water & Sewerage Corporation charge between US $70-100 for each tanker load collected and discharged on a waste site in central Monrovia, such charges often being beyond the capacity of local communities to meet, resulting in the closure of many public latrines. The effect is to promote open defecation.

The project will achieve the following outputs:

1) *Small scale collection of septic tank contents in densely populated communities by small mobile vacuum suction tankers.*
2) *Disposal of human waste in large covered reservoirs which will dry out and, later the contents when inert, will be bagged and sold in both urban and rural areas as a plant fertilizer.*
3) *Training of latrine attendants in hygiene and collection of user fees.*
4) *Mobilising of communities in user fee collection for use of latrine facilities through the formation of WASH facility management committees.*
5) *On site hygiene promotion at each latrine site.*
6) *Linkage of the project into the County Health Team of the Ministry of Health to monitor morbidity rates.*

Expected Results:

1) *Health and hygiene practices have beneficially impacted morbidity in 130 vulnerable peri-urban communities and 20 schools, 10 institutions (clinics, markets) for the vulnerable by the end of the project'*.

2) *130 Fully functional, economically viable and adequately community-managed commercial sanitation systems are operational in vulnerable peri-urban communities through WASH facility management committees, with equal representation, by the end the project*'.

3) *Human waste from 130 communities is turned into a commercially viable fertiliser production/ sales enterprise*

3. Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?

Ground pollution of water supplies, due to open defecation, is a major threat to health in peri-urban Monrovia. The full use of all available communal and private latrines through skilled commercial management will substantially reduce surface pollution by human waste. Communities will be trained, through community mobilization and the formation of local WASH management committees, to accept user fees collection which will pay for the collection costs and thus maintains a sustainable system. In ZOA's experience 1/4 of the user fee goes to paying latrine attendants, ¼ for cleaning materials for the latrines, ¼ towards maintenance costs, including emptying and ¼ is returned to the community for social projects. It is calculated that the collection costs by tanker and discharge into the settling tanks will cover its costs of operation, while the main profit from the enterprise to pay off the capital loan for machinery purchases, the construction of sewage lagoons and roof cover over and running costs of the business will come from the sale of fertilisers.

4. In case of program: duration:

It is estimated that the business will enter profitability in year 3 of operation.

5. Country/Countries:

Liberia

6. Estimated budget (cost structure) for a 3 year project until fully sustainable:

Capital costs:	*US $*
Machinery	*50,000*
Lagoon Structures	*100,000*
Capital costs - Total	***150,000***
Running costs per annum:	

Depreciation @ 25%		*37,500*
Training costs		*150,000*
Machinery running		*30,000*
Sales costs for fertilisers		*20,000*
Labour	*42,000*	
Overheads @ 10%		*28,000*
Annual running costs say		***310,000***

7. **In case of a business case: what is your revenue stream?:**
   This is not yet calculated but se above methodology for the collection of latrine user fees and the concept of the sales from fertiliser sales deferred by some 18 months after the commencement of the project.

8. **How many people/households will benefit from this program?:**
   Estimated at 30,000 persons on the basis of 1,000 latrine cubicles coming into the project at a user rate of 30 persons per cubicle.

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**
   Formulation at this stage

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**
    The concept needs to be more fully explored with both local government in Monrovia and with partners for possible co-funding.

11. **Risks you foresee and measures to be taken:**
    a) *Peace prevails in Monrovia*
    b) *Local government and the main water corporation, namely Liberia Water and Sewer Corporation, do not object to the proposal.*
    c) *Government health regulations do not preclude the sale of dried and inert human waste as a fertilser for agriculture in both urban and rural areas.*
    d) *Funding becomes available to develop the concept.*

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**

Dutch business partners existing as ZOA Business Ambassadors with a current close interest in small scale business opportunities, together with technical advice from a Dutch WASH/ Civil engineer partner to assist in design.The simple construction of the lagoon settling tanks envisaged will be left to a proven reliable construction contractor known to ZOA

Participatory Sanitation Strategy for Internally Displaced Populations, Returnees and their Host Communities in Gambella Regional State and Somali Regional State, Ethiopia: A Message of Hope

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Who hold(s) the initiative: *ZOA, Ethiopia*
Eventually, other partners: *Partnerships require a commitment to mutual understanding and accountability: Government of the Federal Democratic Republic of Ethiopia, UNHCR, ARRA, UNICEF, Plan International Ethiopia*

1. **Objective of the business case / program idea:**

Internally Displaced People (IDPs) in Ethiopia engage themselves actively in re-engineering their own sanitation facilities and hygiene practices, resulting in 60% increase in ODF groups in targeted areas and recognizable spin-off of these practices to local communities.

To initiate a Community Led Total Sanitation process in the Gambella Regional State and Somali Regional State, Ethiopia, generating sanitation demand at scale and increasing the supply of sanitation products and services in two regions of Ethiopia

2. **Description of the business case / program idea:**

Background

The Federal Democratic Republic of Ethiopia, located in the landlocked region of the Horn of Africa, is a land with rich culture, tradition, natural beauty and resources. However, ranked 160th out of 172 countries on UNDP 2010 Human Development Index, Ethiopia remains one of the world's most underdeveloped countries. With a population of 85 million Ethiopia is the second most populous country in Africa, and one in which chronic poverty and food insecurity are widespread. Ethiopia has the 16th highest infant mortality rate in the world, at 77 deaths per 1,000 live births - nearly half of which occur in the first month of life. Life expectancy is 55 years old and 1 in 4 women die due to pregnancy or childbirth complications. Ethiopia's per capita income is $350, one of the lowest in the world, and nearly 40% of Ethiopia's population lives below the poverty line.

Ethiopia is divided into 9 administrative regions. Somali Regional State is the eastern-most of these regions, bordering Kenya, the Ethiopian regions of Oromia, Afar and Dire Dawa, Djibouti and Somalia. Chronic food insecurity is particularly severe here. Largest ethnic group are Somalis (96.23%); 98.7% of the population are Muslim and Somali is the predominate language in the region. Adult literacy for men is 22% and for women 9.8%. Gambella Regional State borders with the regions of Benishangul Gumuz and Oromiya, SNNPRS and Sudan. Conflict and floods have led to numerous population displacements. The population is dependent on recession riverside subsistence farming, some livestock and fishing, and regularly experiences high levels of food insecurity.

According to government figures over half the population of these two regional states have access to proper sanitation. However, access to sanitation is highly variable and international organization estimates are much lower. Ethiopia is in process of a nationwide survey that will catalogue community, school, health facility and household sanitation statistics; the results will be available shortly. It is widely observed that the poor sanitation conditions in the rural areas are causing widespread suffering from malaria, typhoid, dysentery and many other diseases.

Ethiopia is has large numbers of IDP's in Gambella Regional State due to internal conflict, forced displacement due to cross border incursions, and natural disasters (primarily flooding). Somali Regional State also contains a large number of people internally displaced, primarily due to drought. The

dynamics of these groups require a creative approach to ensure sanitation and hygiene becomes a community and household priority.

Project

This project will implement a Group Led Total Sanitation process designed to ignite a change in sanitation behavior through a participatory process of social awakening stimulated by facilitators from within and outside the group. Through a hands-on approach that makes use of empathy and humor, facilitators will encourage the group to analyze their own sanitation and hygiene conditions, internalize the harmful impacts of open defecation, and collectively decide to become an Open Defecation Free environment. The process furthermore aims at an internalized pattern, so that after returning to the home area the people will continue with the ODP-approach. Therefore it is important to have a long term approach that also considers the situation in the home area.

Within the project three key issues are identified:

1) The groups decide themselves that participating in the ODF-process is useful and they commit themselves. Initial drama's and challenging comical acts will be done to increase awareness on impact sanitation & hygiene. The way forward is designed and based on desires of the groups (expert input will be used to ensure design is feasible and has no negative consequences).
2) The implementation of the sanitation facilities and hygiene standards is done by the groups, whereby they can acquire the needed materials through 'work for materials', since finances are likely to be minimally available. The work can be focused on work inside the camp, but also outside the camp and benefit the host communities.

Statistics and shows of progress are made available at central places and groups can see their status compared to others. The statistics will also include health figures, so that through the years people will be able to monitor directly the benefits of having improved sanitation and hygiene. This information sharing will be done in a motivational way, whereby groups are positively challenged to perform better.

Start Up Activities

Discovery: Community

- Community preparation: Begin the dialogue and identify:
    - Primary methods of excreta disposal currently in use
    - Primary reasons why community members don't have a household latrine
    - Illnesses common to the community related to poor hygiene and sanitation
    - Whether the community participated in government or NOG latrine initiate; outcome
    - Whether the community makes use of local loan mechanisms

Discovery: Local and Regional Government

- Institutional preparation: Initiate discussions with local & regional authorities to identify:
    - Knowledge and understanding of CLTS
    - Their interest in participation with a cost-sharing commitment

Discovery: Private sector

- Explore sources of local loan mechanisms
- Explore local sanitation hardware businesses in nearby markets and identify:
    - Types of household latrines produced or available locally
    - Cost of the common latrine construction packages
    - Other low cost appropriate technologies

Direct Assistance Activities

Generate stakeholder buy-in and create an enabling environment though the following:

- Bring together community leaders,government officials, media, and sanitation suppliers.
    - Present the facts on the economic impact of poor sanitation and on the social and economic returns from investing in sanitation improvements
    - Explain project goals, vision, and interventions, gather stakeholder views
- Spread community awareness of the impact of poor sanitation
    - Social messaging through plays, puppet performances, circus acts
- Spread community awareness of CLTS
    - Initiate community-wide gatherings to explain project goals, vision, and interventions
- Invite local providers of sanitation hardware to village meetings to interact with the community, understand their requirements, and appreciate the potential market
- Arrange a community exhibition and mart of sanitary hardware
- Through an integrated campaign of sanitation-related posters, stickers, mobile display units, and other formal and informal materials, provide information on improved latrine options
- Establish a School Total Sanitation campaign with poster competitions.
- Establish a friendly competition between villages for achieving ODF status: The first village in each Woreda to achieve ODF status will receive goats for a celebration
- All ODF villages provided ODF t-shirts and encouraged to spread the word.

3. **Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?**

There is growing awareness that top-down supply-oriented latrine construction does not guarantee their use or result in improved community sanitation and hygiene. In one village in which ZOA works in Gambella, an NGO provided latrines a year ago that, once full, were simply boarded up and now act as prime breeding ground for mosquitoes. Some earlier approaches created a culture of dependence.

Community Led Total Sanitation (CLTS) is an innovative methodology mobilizing communities to eliminate open defecation. Pioneered by Kamal Kar in Bangladesh (1999), CLTS spread to 30+ countries.

CLTS creates a culture of good sanitation through a structured, participatory campaign that empowers communities to make informed choices. It focuses on raising awareness that open defecation places everyone in the community at risk of disease. It is a sanitation approach that includes behavior change,

a requirement of sustainable improvement, and community action. This is a demand-driven and market-based approach; a shift from toilet construction for individual households to the creation of Open Defecation Free (OFD) villages.

4. **In case of program: duration[3]:**

2 months for organizational preparation including recruitment and baseline surveys. Each area of focus requires: 1 month: Start up, 10 months: Direct assistance, 3 months: Limited follow-up support. November 1, 2011 onwards.

5. **Country/Countries:**

Ethiopia

6. **Estimated budget (cost structure):**

Tbd

7. **In case of a business case: what is your revenue stream?**

-

8. **How many people/households will benefit from this program?**

Gambella Regional State
4,535 Households Wantho Matar (IDPs and Hosts), 5,252 Households Nib Nib Village (Returnees)
Somali Regional State North and South
1,000 Households Babile (Returnees and Hosts), 6,295 Households Hartisheik (IDPs and Hosts)
Xxx Households Dollo Ado

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

ZOA has been active in Ethiopia for many years and in these communities for varying lengths of time (see below). ZOA works closely with community members, local and regional governments, and other concerned parties such as international and national NGOs.

- Since 2006 ZOA worked with communities in Wantho Matar, and undertook two studies of the Nib Nib Village earlier this year
- ZOA implemented a Return and Reintegration Project earlier this year in which 57 internally displaced households were successfully reintegrated back to Babile
- ZOA has been active in the refugee camps in Dollo Ado for many years and is currently expanding operations to include the hosting community

10. **What does the program lack, what is still needed to make it 'ready for implementation'?**

Funding and recruitment of a CLTS expert

[3] Less relevant in case your idea is a business case

11. **Risks you foresee and measures to be taken:**

Time constraints: It takes time to understand why people behave as they do, as well as constraints to and motivations for behavior change.
The project would begin interventions at the community level only after the government requests this intervention and agrees to assist facilitate stakeholder buy-in, and the villages request this intervention.
There are potential ecological risks involved in a CLTS scheme such as when switching from open defecation to site-specific latrines may prove a risk of groundwater contamination.
Challenges involved in building low-cost latrines in technically difficult conditions or "second generation" problems with low-cost latrines such as shallow pits that fill too quickly or collapse during rainy season.

12. **Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?**

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Water and Sanitation for Paoh Self Administered Zone (PSAZ) in Shan State, Myanmar

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Who hold(s) the initiative: *CDN (Consortium of Dutch NGO's)*

Eventually, other partners:

- *ZOA Apeldoorn, Netherlands (Co-financing)*
- *MHDO, Local partner and implementing LNGO*
- *Cherry Youth Initiated Network, Local implementing NGO*
- *WRUD, Water Resources Utilization Department functioning under the:*
- *Ministry of Agriculture and Irrigation*

1. **Objective of the business case / program idea:**

To improve the access to improved school sanitation to contribute to the development of the newly formed autonomic region of the Paoh people (Paoh Self Administered Zone) in Southern Shan State in Myanmar.

2. **Description of the business case / program idea:**

Myanmar has lived under military rule for over 60 years that lead to the fact that it is one of the poorest countries in the world. Due to the political and economic sanctions imposed by the EU and the USA, very little oversee development aid has found its way to Myanmar.

In December 2010 elections were held that are part of the roadmap to a new political system. Quick dramatic changes are not to be expected. However, there are things in motion that are very positive signals. Some of the power of the central government has been transferred to State or Division level. And the direct involvement of the military in political and administrative issues has significantly decreased. Another development is the creation of autonomic regions for areas where specific ethnic groups are the lion share of the population. Many of these areas used to live in conflict with the central Myanmar Government for many years that resulted in a total lack of support and development for these areas.

A good example of such an area is the Paoh Self Administerd Zone (PSAZ) in Southern Shan State. This newly formed autonomic area finally has a stable basis from which development of the area can be targeted. The central government will endorse and support development initiatives.

This is a total new situation to the region. INGO's never had access to this region and development of the area basically never started. People still live like they used to do for hundreds of years. The millennium goals are still very far away. Considering the mandate of CDN in Myanmar and given the sensitivity of new areas in Myanmar, we would like to start our presence in this new area with a Sanitation program. The local population emphasizes this area as one of the main challenges of daily life.

CDN implements since 2 years Water and Sanitation projects with local partner MHDO in Southern State. Based on our experience we will focus on providing adequate sanitation facilities at village schools, as well as sanitation and hygiene training for all scholars and teachers. These scholars and teachers will function as ambassadors to the community. In our experience this is the most successful way of bringing change about in relation to sound sanitation practices in the rural Shan communities.

3. **Results: how will this program contribute to sustainable sanitation services, both environmentally and financially (who pays for the investment costs, how will costs be recovered, how will services be paid for, how will maintenance be taken care of and paid for?**

The program will be carried out in cooperation with a local NGO's that experience in implementing water and sanitation programs in Southern Shan State. On top of that the local Paoh networks will be involved to be able to interact well with the communities.

The community plays a key-role in the way we implement sanitation projects. As much as possible they will be involved in relation to unskilled labor, transport of materials shelter of staff etc. The actual construction will be executed with local skilled labor from the private sector. Trainings for communities and development committees will be provided in relation to sanitation hygiene and operational maintenance of facilities.

In case water provision is essential WRUD (water resources utilization department) is willing to provide technical assistance.

4. **In case of program: duration:**

Two years

5. **Country/Countries:**

Myanmar

6. **Estimated budget (cost structure):**

Overall Project Budget					
Budget	**# of unit**	**unit**	**Unit USD**	**USD**	**EURO**
School Sanitation facilities	30	school	6,500	195,000	150,000
San. & Hygiene awareness training	30	school	1,000	30,000	23,077
Local transport materials & equipment	24	month	625	15,000	11,538
Total staff cost	24	month	4,500	108,000	83,077
External international advisor	24	week	2,200	52,800	40,615
Monitoring and evaluation	4	times	5,500	22,000	16,923
Cap. building local partners (training)	4	times	2,500	10,000	7,692
Sub total 1				**432,800**	**332,923**
Local overhead (5%)				21,640	16,646
Overhead HQ (3%)				12,984	9,988
Sub total 2				**467,424**	**359,557**
Water component (Provisional Sum)				100,000	76,923
Total Budget				***567,424***	***436,480***
Co-financing ZOA 10%					***43,648***
Requested amount					***392,832***

In the budget a water component has been added as a provisional sum. The reason is that proper sanitation cannot do without the availability of water. Therefore at some places some water components might have to be considered outside the original budget estimations.

7. **In case of a business case: what is your revenue stream?:**

NA

8. **How many people/households will benefit from this program?:**

- 6000 beneficiaries in relation to school sanitation on 30 schools.
  (The proposal is based on 1 school per village with an average of 200 scholars/teachers)

9. **In what phase of development is the program idea (rough idea, formulation, start up, implementation, ready to scale up..?)**

The project is in formulation and is ready to start end of 2011.

10. What does the program lack, what is still needed to make it 'ready for implementation'?

Access to the area is secured and cooperation of local partners and WRUD has been agreed. The program can start as soon as finances are secured.

11. Risks you foresee and measures to be taken:

- The structure of authorities is very new and might be a bumpy road. A lot of emphasis has to be given in maintaining our good relationships with all parties.
- Rainy season can be severe and transportation difficult to near impossible. Program has to be well planned considering the seasonal calendar
- US dollar devaluation in relation to the Myanmar Kyat has caused an exchange loss of over 25% last year. This is a risk that is very difficult to mitigate.

12. Who else do you need to involve (local partners, Dutch partners) to turn your idea into a successful program?

The idea of improving school sanitation is quite basic and straight forward but fits situation of access into a new area. In Myanmar and Myanmar local NGO's and private sector, enough knowledge exists to execute the proposed construction of the latrines. Training programs are known as well since many UN agencies have emphasized on facilitation.

The main constrain for these kind of projects is money so any link with the private sector will most likely have a strong financial interest.

ZOA Apeldoorn, Netherlands (Co-financing)
MHDO, Local partner and implementing LNGO in Myanmar
Cherry Youth Initiated Network, Local implementing NGO in Paoh SAZ
WRUD, Water Resources Utilization Department