Proposal for setting-up of self Help Biological Sand Water filters in selected countries of Asia Pacific

Submitted by:

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INTRODUCTION:

Significant proportions of the population in the Asia Pacific region live in rural areas where they are frequently dependent on small scale systems for their daily water supply. Such systems have been shown to offer only a limited capacity to control environmental risks, and are associated with higher disease burdens in the resident population. Protection of the catchment area, particularly the creation of effective water protection zones, is often a cost-effective way to increase compliance with the WHO Guidelines on Drinking-water Quality, and a first essential step towards the creation of a water safety plan (WSP).

The present document is a proposal by Association for Humanitarian Development (AHD), a Pakistan based Civil Society Organisation (CSO) for setting-up of Self Help Biological Sand Filter (Nadi water filter) in selected countries of Asia Pacific. The proposed project would replicate the most successful model of Pakistan in providing water safety of small scale supplies, and negative health outcomes associated therewith. In particular it focuses on the creation and enforcement of water protection zones in selected countries of Asia Pacific with the aim of facilitating the introduction of Nadi water filters in the small scale water supply systems in this region thereby improving the health of the local population.

PROBLEM AND JUSTIFICATION:

Access to and availability of basic services (water, sanitation, energy and communication) at affordable cost is essential to human development. In particular, access to drinking water is still a major concern in the global south. Access to safe water can be measured by the number of people who have a reasonable means of getting sufficient water that is safe for drinking. Availability of safe drinking water is an indicator of the health of a country. A developed country will be more efficient in collecting, cleaning and distributing water to consumers. It is a sad fact but is true that ninety percent of urban sewage in the developing world is discharged into rivers and other water bodies. In the developing world, millions of residents lack a source of safe drinking water near their homes. People get safe drinking water from various sources such as household connection, borehole, protected dug well, public standpipe etc[1]. Across the world, unsafe water and poor sanitation have claimed more lives over the past century than any other cause - more than war, more than malnutrition, more than natural disasters. People continue to die from preventable illnesses like diarrheal diseases and dehydration. In terms of numbers, about four million people die each year from diseases associated with the lack of access to safe drinking water, inadequate sanitation and poor hygiene. Dirty water and poor sanitation are the second biggest killer of children worldwide. About 4,000 children under five die every day from those same associated diseases. Worldwide 2.7 billion people do not have adequate sanitation facilities. And about 880 million people do not have access to clean water.

[1] www.mapsofworld.com/thematic-maps/safe-drinking-water.htm

In Asia Pacific, many of the region's poor communities still live without running water - there are no taps, no showers, no flushing toilets, no nearby springs. Every day people who live in these communities must walk hours to the nearest water source, but very often that water is contaminated and those who use it end up sick. Usually it is the women and children who spend hours carrying buckets of water - used for daily drinking, cooking and washing - from remote mountainous streams many miles from their villages.[2]

To address this situation, Association for Humanitarian Development (AHD) is proposing to initiate pilot project for setting up of Nadi water filters for ensuring safe and clean drinking water and sanitation measures in selected countries of Asia Pacific. The process would enable access to safe drinking water and sanitation services in those countries. Pilot project would be undertaken in selected pockets of of Afghanistan, Bangladesh, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, Papua New Guinea and Sri Lanka at initial stage. In these countries, AHD would work with local CSOs in implementing the pilot project. It may be noted that in the selected countries, lack of clean drinking water is forcing millions of people to drink unsafe water. This leads to an increase in diseases like diarrhea, the second leading cause of death in children under five. Floods, droughts, pollution and climate change have created even more problems in these countries. The focus will be on vulnerable sections of the society in urban peripheries since this group of users is growing fast and faces the greatest problems, especially with regards to sanitation.

OBJECTIVES:

This project aims at initially set-up 250 Nadi water filters in each country to serve vulnerable communities. These filters could be used to effectively reduce incidence of waterborne diseases and enable the people to have access to clean water. The project could then be rolled out to ensure setting-up of more Nadi water filter units. There would also be training on water safety methods and water-sources maintenance.

General objective: Maximize health benefits of the people and improve access to potable water and sanitation facilities in countries of Afghanistan, Bangladesh, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, Papua New Guinea and Sri Lanka.

[2] http://www.redcross.org.au/a-lack-of-access-to-clean-water-and-sanitation-is-a-worldwide-killer-claiming-millions-of-lives.aspx

Specific Objectives:

1. To promote the safe use of potable water by setting-up Nadi water filter units within selected pockets within 12 months.
2. To build capacities of village community members through trainings and workshops on safe drinking water and health & hygiene and usage of Nadi water filter units
3. To form Water and Sanitation Committees (WATSAN committees) and increase level of awareness on personal hygiene and environmental cleanliness of project communities within 12 months.

Selection Criteria of WATSAN committee members:

- Should be married and above 20 years of age
- One members from one family
- Willing to abide rule & regulations of CBO
- Wiling to save monthly in CBO
- Wiling to participate project trainings and CBO meetings
- Willing to use and maintain model village latrines
- To keep village clean and neat
- To allow their women to attend the women committee meetings

METHODOLOGY:

This pilot project focuses on selected countries of Asia Pacific, which are more vulnerable to lack of clean drinking water and sanitation facilities. AHD will ensure the overall project management leading the process within each country. The work will be carried out in the sector related to the provision of water and sanitation services. The project is developed with possible replication in other countries and services in mind. It will be implemented in a phased approach, using lessons learned from AHD's experiences in Pakistan.

PROJECT INCEPTION:

Under the overall coordination of AHD Project Director, two international project coordinators will be responsible for ensuring the smooth implementation of the project at the national level. The Project Director will have the overall responsibility of the project's implementation supported by a team of AHD staff in finance, ICT, monitoring and evaluation (M&E) and research. AHD will undertake an inception workshop at the national level. At the beginning of the project, the M&E expert with input from AHD will define a monitoring framework for the project. This includes a set of indicators to measure project progress.

PROJECT EXPECTED RESULTS:

It is expected that the project would lead to:

- Improved quality life.
- Morbidity reduction.
- Less medical expenses of the people in the project communities.
- Reduced water and sanitation related diseases.
- Awareness of good hygiene practices increased.
- Effective and efficient hygiene promotion adopted.
- Adequate number of trained hygiene promoters available.
- Appropriate hygiene promotion materials developed.
- Adequate number of low cost water filters available for communities' use.
- Adequate source of portable water available to the communities.
- Poverty level of the people reduced.

PROJECT INDICATORS:

The following are indicators to be used to measure the results achieved by the activities of the project:

- Short Term goal indicators are: Presence of safe drinking water sources available in the various communities.
- Long Term goal are: Hospital attendance for water and sanitation related disease reduced, Healthy children seen in all communities,
- Objective (1) indicators are: Presence of at least 250 Nadi water filter units in each country for the communities in use
- Objective (2) indicators are: Increased level of knowledge and awareness among communities on safe drinking water facilities.
- Objective (3) indicators are: Presence of WATSAN Committees seen in communities.

The following shall be the sources of verifying the indicators mentioned above; they are visits to verify water points and presence of Nadi water filter units , verification of health records at health facilities e.g. clinics and hospitals, community visit observations, interviews, spot check counting, surveys and House to House visits.

DESCRIPTION OF PROPOSED PROJECT ACTIVITIES:

The following is a comprehensive description of the main project activities, which AHD would undertake in 18 months:

1. Identify project communities in selected countries
2. Assess communities for facilities under the project
3. Identify Local Artisans for construction of Nadi water filter units
4. Set-up Nadi water filter units
5. Providing training in each country for 250 poor villages where community suffering with water borne diseases and using unsafe drinking water
6. Publication of posters and broachers on safe water Nadi filter, health & Hygiene (2,000 poster on safe drinking water, 2,000 posters on health & hygiene and 2,000 posters and health of women and children)
7. 2 Monthly project meetings on regular basis to plan schedules for the proper implementation of the project
8. Community mobilization visits for the strengthening of the village household communities to use Nadi filter
9. Mobilization workshops will be conducted at village level to form WATSON committees
10. Organise Training programmes and orientation workshops for community members
11. Form WATSAN committees in the project communities
12. Train WATSAN Committees
13. Monitor the implementation of the activities
14. Draw monitoring and evaluation plan.

The successful implementation of the set activities for all the objectives will eventually achieve our short-term and long-term goals as stated above.

PROJECT MANAGEMENT & IMPLEMENTATION:

The project implementation shall involve a senior staff of AHD comprising of two international project coordinators and the Project Director, who have over 10 years of experience in community and project development.

LOGICAL FRAMEWORK

Narrative Summary	Measurable Indicators of Achievement	Means of Verification	Important Assumptions
Strategic Objective			
This project aims at initially set-up 250 Nadi water filters in each country to serve vulnerable communities. These filters could be used to effectively reduce incidence of waterborne diseases and enable the people to have access to clean water. The project could then be rolled out to ensure setting-up of more Nadi water filter units. There would also be training on water safety methods and water-sources maintenance.			Beneficiaries pledge for project sustainability for running and maintenance No security concern in the selected areas
Objective			
• To promote the safe use of potable water by setting-up Nadi water filter units within selected pockets within 12 months • To form Water and Sanitation Committees (WATSAN committees) and increase level of awareness on personal hygiene and environmental cleanliness of project communities within 12 months.	----------individuals were provided with safe and healthy drinking water	Research units. The post project follow up monitoring /evaluation report in office (record)	Diseases cases reduced waterborne disease prevented
Purpose			
Provision safe / healthy drinking water through Nadi Filter Model	Healthy water provided to the needy families Mortality rates reduced and waterborne diseases rates declined	Record at Basic Health center (Govt officer) Record at family based Interviews. Evaluation study findings. Progress and final report. Feedback from the relevant government office Feedback from beneficiaries Project activities record in office Live Interview and case study	High interest of beneficiaries and government in the project The pledge of further support from government to target beneficiaries in terms of hygienic promotion activities
Outputs			
Installation of nadi Filters for safe/healthy drinking water	Installation of 250 Nadi Filter at each country Community mobilization visits for the strengthening of the village household	Field visits. Periodic reports Feedback information from beneficiaries. Activities documentation (photos, case studies etc..) Progressive and final report. Interview and case study	Stability Beneficiaries authorities cooperation

	communities to use Nadi filter		
Activities Important	**Inputs**	**Means of Verification**	**Assumptions**
• Identify project communities in selected countries • Assess communities for facilities under the project • Identify Local Artisans for construction of Nadi water filter units • Set-up Nadi water filter units • Providing training in each country for 250 poor villages where community suffering with water borne diseases and using unsafe drinking water • Publication of posters and broachers on safe water Nadi filter, health & Hygiene (2,000 poster on safe drinking water, 2,000 posters on health & hygiene and 2,000 posters and health of women and children) • 2 Monthly project meetings on regular basis to plan schedules for the proper implementation of the project • Community mobilization visits for the strengthening of the village household communities to use Nadi filter • Mobilization workshops will be conducted at village level to form WATSON committees • Organize Training programmes and orientation workshops for community members • Form WATSAN committees in the project communities • Train WATSAN Committees • Monitor the implementation of the activities • Draw monitoring and evaluation plan	Staff Salaries Project Material Cost Monitoring: Grand Total	Financial report and record office Record at community base center (material stock record, material verification sheet, assets inventory record) Financial Record .	Previous experience of staff in the area and project nature. Availability of qualified Expert Delay of cash transfer from Donor. Natural disaster Availability of material required for the project Existence of Problematic individuals in community.

PROJECT SUSTAINABILITY:

The following are measures to be taken to ensure sustainability:

- WATSAN Committees would be formed in all the beneficiary communities to take absolute responsibility for the facilities to be provided.
- Capacity building training would be provided to the WATSAN Committees for proper management of the Nadi water filter units .
- Local caretakers from the communities will be trained to do routine maintenance on the water facilities to be provided.
- Other sources of funding shall vigorously be pursued by AHD to source funding to continue with the project activities in project communities and other communities in our project are.

Technical feasibility of the project activities shall be ensured through full participation of the project communities. Community animation would be carried out for the people to accept and own the Nadi water filter units that shall be provided. The people shall be thought that using Nadi water filter units for domestic purposes and maintaining good hygiene will improve their health and standards of living.

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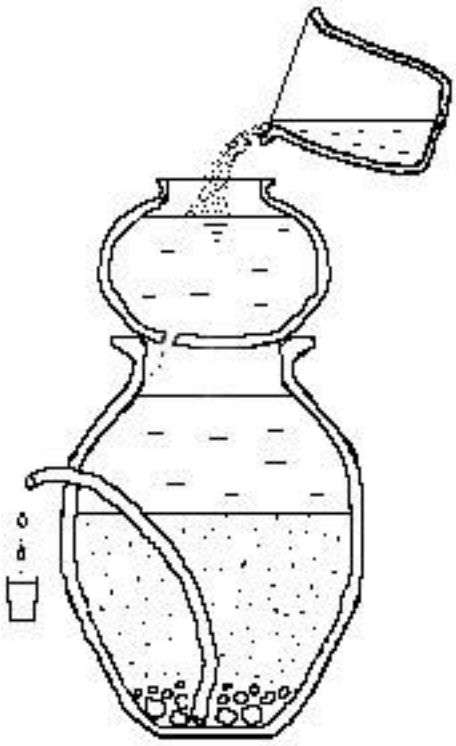
Annex 2:

Working of the Nadi Water Filter:

The filter is simply an optimised residence for the "good microbes" that eat up the microbes that cause diseases. The filter is designed to protect the good microbes in the sand which would be destroyed if the sand was allowed to be churned up or drained of water. They require a stable surface to live on with a constant supply of dirty water and oxygen to feed on. The sand in the filter provides an enormous surface area for them to live on and they multiply to fill this space. This takes two to three weeks to establish. In the mean time the water is far better than before even after a day or two.



Parallels of Bio sand filters

Good microbes capable of cleaning water are freely available to all as they occur naturally in dirty water. God mercifully created these organisms knowing that we would mess up our drinking water and need help to get it clean again. Sickness and poor quality of life, even death can result from not using these God given organisms. The filter was designed with this in mind.

The big difference is if people believe and accept God's gift of the filter their lives will be improved.

Nadi Filter Design Specifications

The Nadi used for the filter must be 32 to 34 inches tall.

1. A hole is made for the pipe in the side of the Nadi using a screwdriver and a suitable stone or hammer. The bottom of the hole must be 20 inches above the ground.

2. A single piece of stiff flexible pipe 30 inch long, 1 inch diameter and with no splits in it is fitted through the hole with one end inside the Nadi touching the bottom. It is put in place and the hole around the pipe made water tight with cement.

3. A water storage pot for the filtered water must be chosen. If it is a Nadi with a tap it should be put up high enough for jug to go under its tap. Put this clean water storage Nadi on enough bricks to make this possible. The filter Nadi can then be put in place on enough bricks for the protruding pipe to be just

above the top of the storage Nadi.

4. Potato size washed stones are placed in a single layer one stone deep at the bottom of the Nadi. The gaps between them form channels for the water to flow easily into the pipe.

5. Small washed stones are placed on top filling the gaps between the potato size stones. Enough should be placed to prevent the next layer of gravel from falling through and blocking the gaps under the potato size stones or clogging up the pipe.

6. A thin layer of washed, dhal size gravel is then spread to form a level surface over the small stones.

7. A thin layer of washed seed size gravel in then spread to form a level surface over the dhal size gravel.

8. These drainage layers must not exceed 4 inches in total thickness or there will not be enough room for the main material, the sand.

9. Washed sand is then added to a level 5 inches below the level where the bottom of the pipe goes through the side of the Nadi.

10. The Mutca is taken and a single hole is drilled in it using a 3 or 4 inch nail with a right angle bend in it to form a handle. At first this is difficult work but after a few minutes the hole is made without the need to hit it through with a hammer. Most screw drivers make holes that are a bit too large so a nail is better. The hole should be on the bottom of the Mutca about 4 inches to one side so as not to get blocked too frequently by debris settling in the Mutca.

11. The Mutca is then tied in place on top of the Nadi with the hole in the Mutca in line with the pipe coming out of the Nadi. A stone is wedged between the Mutca and Nadi so that the hole in the Mutca can be seen and it is easy to notice if the hole becomes blocked. String must be used to fix the Mutca in place in order to protect the good microbes in the Nadi from being disturbed.

12. A cloth is tied over the mouth of the clean water storage Nadi in such a way that the cloth is over the protruding pipe. The water should not be flowing onto the cloth at all, as this would re-contaminate the clean water.

13. Once dirty water has been given to the Nadi every day for two to three weeks the filter will function effectively so long as the sand is not disturbed. During this period the water will gradually improve. If the sand and stones were well washed, water can be improved a little by the filter even on the first day.

14. The Nadi for storing clean water should be emptied every three days during this initial period while water quality is rapidly improving.

Annex 3:

Proposed Financial Proposal:

S. No	Activity / Component	Unit. Value in US$	No. of Units	Total
1.	Project coordinators salary for 12 months	3500	12	42,000
2.	Subsistence costs for project staff in field area	200 per day	120 days	24,000
3.	Inception Workshop in each country	3,000	10	36,000
4.	Material procurement from local area	5,000	10	60,000
5.	Nadi filter units	40	2500	480
6.	TOT on Nadi filter trainings	500	10	6,000
7.	Publication of posters and brochures	4,000	10	48,000
8.	Distribution & setting-up of units	20	250	5,000
9.	Community mobilization visits	200	10	2,400
10.	Mobilization workshops and Trainings	2000	10	24,000
11.	Return Air Tickets per trip	850	12	10,200
12.	Domestic travel in each country	500	10	6,000
13.	Communication Costs (Phone, Fax and Postage)	500	10	6,000
14.	AHD Finance and Admin support	1000	12	12,000
			Grand Total in US $	**282,080**

For more please feel free to contact us:

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