

# Water, Sanitation and Hygiene (WASH) project

Proyecto de Higiene, Agua Segura y Saneamiento (HASS)



## **Estero de Plátano**

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Fundación Yanapuma  
E8-125 Veintimilla y 6 de Diciembre  
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## Table of Contents

Executive summary -----	3
Resumen ejecutivo -----	5
 Section 1: Background	
Health -----	7
Education -----	7
Water -----	8
Sanitation-----	8
 Section 2: Needs assessment	
Public health survey -----	8
Focus group meetings -----	9
Water system analysis & water quality testing -----	10
 Section 3: Project description	
Project goal -----	12
Project objectives -----	12
Justification -----	12
Priority of HHWT, SWS and hygiene promotion -----	13
Changing habits -----	15
Challenges -----	16
Actors -----	17
 Section 4: Implementation	
Targeting key groups -----	17
Scaling up -----	18
General promotion -----	18
Project monitoring and evaluation -----	19
Suggested extensions for HASS project -----	19
 Section 5: Annexes	
Annex 1: Water test results -----	20
Annex 2: Planificación para los talleres de capacitación HASS -----	24
Annex 3: Contact details -----	25
Annex 4: Taller San Enrique -----	26
Annex 5: Evaluation workshop San Enrique -----	31
Annex 6: Clases de HASS -----	33
Annex 7: Promotion examples -----	40
Annex 8: Folleto de información del Junta del Agua -----	42
Annex 9: Basic design for grey water pit (sumidero) -----	43

## Executive summary

Estero de Plátano is a community composed of approximately 600 people located in Cabo de San Francisco in the province of Esmeraldas. Fundación Yanapuma has been working with this community for approximately one year and would now like to start a WASH project with the aim of improving the standard of living by promoting health through hygiene education, water and sanitation facilities, environmental and waste management issues.

During the last year information on the community has been collected by Yanapuma staff, interns and volunteers. Through a public health survey, focus group meetings and water quality testing, Yanapuma has concluded that a WASH project could address many of the main concerns in the community.

Some of these concerns include:

- Lack of O&M of the piped water system
- Cases of diarrhoeal disease.
- A lack of HHWT and SWS leading to the consumption of contaminated water
- A high transmission rate of influenza
- Lack of hygiene
- A lack of a diverse diet, which may lead to obesity and other health problems
- Large families and young mothers causing a strain on limited family resources and impeding young girls from continuing their education.
- A problem with the disposal of trash leading to contamination of the environment and water sources.
- A lack of knowledge as to available medications and services in the clinic
- A desire for community based tourism as a means to generate income.

Many aspects of the project depend on the changing of local habits, which is why Yanapuma would like to conduct an integrated health promotion project. This project will include diffusing information on:

- Water
  - o Household water treatment (HHWT)
  - o Safe water storage (SWS)
- Hygiene

The project will later be extended to include:

- Health
  - o Nutrition and diet
  - o Alcoholism and its consequences
  - o Family planning: reproductive education and prevention methods
- Waste management

Insufficient knowledge is the basis for many of the topics covered and many of the issues Yanapuma is trying to undertake are interrelated. For this reason, this project will be based on simple, but multifaceted educational workshops that seek to improve community awareness and decision making skills. To achieve maximum impact, the workshops are designed to be fun, to keep the group from becoming discouraged and short, to allow for reflection. They will be conducted in small groups so that they can be

geared to each group specifically. Finally, the workshops are intended to be conducted as a continuous series to keep the community stimulated.

In order to make this a community-based and most importantly, a sustainable, project, Yanapuma would like to work closely with the community Directiva so as to stay inline with the community needs and desires. Also, as we are dealing with a health programme, Yanapuma feels it would need to support from the MSP and cooperate with the local doctor, to increase the credibility and efficacy of the foundation in this project.

The implementation of the project will start with targeting key groups, such as school children, women, potential health promoters and the high risk group. Once these groups have been successfully included in the project we can scale up to include all the members in the community. The project will be monitored and evaluated through observation during household visits as well as the continuation of water testing.

## Resumen ejecutivo

Estero de Plátano es una comunidad con aproximadamente 600 personas situado en el Cabo de San Francisco, en la provincia de Esmeraldas. La Fundación Yanapuma ha estado trabajando con esta comunidad por aproximadamente un año y ahora quisiéramos empezar con un proyecto de agua, saneamiento e higiene con el fin de mejorar el nivel de vida mediante la promoción de la salud a través de educación en materia de higiene, instalaciones de agua y saneamiento, el medio ambiente y la gestión de residuos.

Durante el último año, información sobre la comunidad ha sido recopilada por Yanapuma personal, pasantes y voluntarios. A través de una encuesta de salud pública, reuniones de grupos y pruebas de la calidad del agua, Yanapuma ha llegado a la conclusión de que un proyecto de agua, saneamiento e higiene podrían abordar muchas de las principales preocupaciones en la comunidad.

Algunos de estos problemas incluyen:

- La falta de operación y mantenimiento del sistema de agua
- Los casos de enfermedades diarreicas.
- La falta de tratamiento domiciliar y almacenamiento seguro y, en consecuencia, el consumo de agua contaminada
- Un alto índice de transmisión de la gripe
- La falta de higiene
- La falta de una dieta variada, que pueden conducir a la obesidad y otros problemas de salud
- Familias numerosas y las madres jóvenes que causa una presión sobre los limitados recursos de la familia y obstaculiza que las niñas continúen su educación.
- Un problema con la eliminación de la basura y, en consecuencia, la contaminación del medio ambiente y las fuentes de agua.
- La falta de conocimiento como a la disponibilidad de medicamentos y servicios en la clínica
- Un deseo para el turismo basado en la comunidad como un medio para generar ingresos.

Muchos aspectos del proyecto dependerá de la evolución de las costumbres locales, y eso es la razón por la cual Yanapuma gustaría llevar a cabo un proyecto integrado de promoción de la salud. Este proyecto incluirá la difusión de información sobre:

- Agua
  - o Tratamiento domiciliar
  - o Almacenamiento seguro
- Higiene

El proyecto luego se amplió para incluir:

- Salud
  - o Nutrición y dieta
  - o El alcoholismo y sus consecuencias
  - o La planificación de la familia: la educación reproductiva y métodos de prevención
- Gestión de basura

La insuficiencia de conocimientos es la base para muchos de los temas tratados y además muchas de las cuestiones Yanapuma está intentando llevar a cabo están relacionadas entre sí. Por esta razón, este proyecto se basa en talleres simples, pero multifacéticos y educativos que buscan mejorar la sensibilización de la comunidad y la toma de decisiones técnicas. Para lograr el máximo impacto, los talleres están diseñados para que se diviertan, para que el grupo se convierta en desalentado, y corto, para permitir la reflexión. Que se llevará a cabo en grupos pequeños para que puedan ser orientados específicamente a cada grupo. Por último, los talleres están destinados a ser llevado a cabo como una serie continua para mantener la comunidad estimulado.

Con el fin de hacer de esto una base en la comunidad y lo más importante, la sostenibilidad del proyecto, Yanapuma gustaría trabajar estrechamente con la Directiva de la comunidad a fin de permanecer en línea con los deseos y las necesidades de la comunidad. Además, como se trata de un programa de salud, Yanapuma considera que tendría que el apoyo del MSP y cooperar con el médico local, para aumentar la credibilidad y la eficacia de la fundación en este proyecto.

La ejecución del proyecto se iniciará con la orientación grupos clave, como los niños en edad escolar, las mujeres, los posibles promotores de la salud y el grupo de alto riesgo. Una vez que estos grupos han sido incluidos en el proyecto se puede ampliar para incluir a todos los miembros de la comunidad. El proyecto será supervisado y evaluado a través de la observación durante visitas domiciliarias, así como la continuación de las pruebas de agua.

## Background

Estero de Plátano is a small community located in Cabo de San Francisco in the province of Esmeraldas. It can be reached easily by a paved road from Atacames (1.5 hours) and Esmeraldas (2 hours). From Galera onwards (4 km) it becomes a dirt road, but this is in the process of being paved.

Estero de Plátano lies in a beautiful bay surrounded by rocky cliffs and green forest. It is an area of great biological importance due to unique phenomena that occur here. Nearby three ocean currents come together causing Estero de Plátano to experience the confluence of two bio-geographical regions (Choco Andean and Tumbesian). It is also one of the last remaining areas where the original rainforest reaches the ocean. Therefore the area offshore has recently been created to be a marine reserve.<sup>1</sup>

Estero de Plátano is composed of approximately 600 people, 125 households with an average of five children per family. A large part of the community is under the age of twenty years (47%), with 13.8% being under five years of age.<sup>2</sup> The community lives off agriculture and fishing. Mainly yucca, maize, plantains, cacao and coffee are cultivated in small plots in the jungle.

**Note:** Information on the community has been collected by Yanapuma staff, interns and volunteers as there has been little or no official documentation on the area. Community members have mentioned being approached by several organisations to start projects, but none have been completed because the organisations backed out.

### *Health*

Estero de Plátano falls under the jurisdiction of area 4 of the Ministerio de Salud Pública (MSP) located in Atacames. There is a small health subcenter staffed by a resident doctor and a nurse who comes down daily. In Ecuador doctors must complete at least one year of work in a rural area, such Estero de Plátano, therefore the doctor tending to the subcenter changes every year. The subcenter has been operating for seven years and is currently undergoing expansion.

Main health problems reported by the doctor include diarrhoeal disease and the flu. There have also been reports of hypertension, diabetes mellitus and high cholesterol in adults, as well as malnutrition (especially anaemia) in adults and children. This can be largely attributed to the traditional diet in the community, which consists of large amounts of carbohydrates (rice, plantains) and some protein (seafood, chicken). Small amounts of fruit are consumed, but vegetables are a rarity. Another probable cause, at least in the male population, is the excessive use of alcohol.

### *Education*

There is a community school, "Escuela Mixta Viña del Mar", with grades 1 through 7, which around 120 children attend. The education available mostly consists of the standard curriculum implemented by the Ministry of Education and Culture and the Provincial Council of Pichincha. Children continuing their education do so in Galera, which is approximately 40 minutes from Estero de Plátano.

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<sup>1</sup> Goldstein, S. (December 30, 2008). Ecuador: Marine Treasures. Retrieved from Conservation Internacional. Website: [http://www.conservation.org/FMG/Articles/Pages/ecuador\\_marine\\_treasures.aspx](http://www.conservation.org/FMG/Articles/Pages/ecuador_marine_treasures.aspx)

<sup>2</sup> Julmisse, M. (2009). Community Assessment Estero de Plátano. Quito: Fundación Yanapuma

### *Water*

In 2005 the Ministry of Environment and the European Union collaborated to put in a water system in Estero de Plátano which supplies most of the town (with the exception of San Enrique). The system consists of well water which is pumped to two 30,000 L tanks on top of a hill from which the water is distributed through a gravity fed system.

Families that have access to piped water tend to use it for cooking and drinking, but many still use river water for use within the household. Several households also harvest rain water from their roofs (especially in San Enrique). People are aware that they should conduct some type of Household Water Treatment (HHWT) such as boiling the water before consumption, but this has rarely been observed. Three different packets of chlorine are available in the local stores, but only one has information regarding its contents and instructions for household chlorination. People are also not informed about Safe Water Storage (SWS) or the risk of recontamination after boiling.

### *Sanitation*

In 2006 the Ministry of Environment and the European Union (EU) also built latrines in the most accessible areas of the community. Six bathrooms were built by the school, two for the boys, three for the girls and one for teachers. On one side of the girls' bathroom a large sink was built, which is low enough for young children to use also. However, the bathrooms located at the school have often been found locked, even during school hours.

There are three sets of public latrines, two of which are located right above the river and another down by the beach. The latrines located near the river have been newly constructed, however, no one has ever mentioned using of these public facilities, and they do not seem to be functional. The latrines by the beach are used by community member occasionally, as well as by tourists. However, there is no latrine attendant to look after the facilities and there is now a significant sum of money owed because there is no agreement as to who should pay for the water used. (Another problem being that there is no designated person to collect the money owed.)

The majority of the latrines are located near homes and are used by one family only. Locations for latrine placement were chosen by the community, and the distribution of latrines therefore also reflects the influence of certain parts of the community. Parts of the town received less coverage. San Enrique and those families further removed from the main road only have a few latrines. Some of these households have constructed their own latrines, some of which have septic tanks but usually consist of a basic hole in the ground.

## **Needs Assessment**

### *Public health survey*

In early 2009 a general public health survey was conducted and further data was collected through observation and focus group meetings. Contact with the MSP has revealed little more than dated demographic information as there has been no prior community assessment. The health survey disclosed information similar to that given by the doctor.

- Cases of giardia and other diarrhoeal disease.

- A high transmission rate of influenza, (which the community believes is due to a frequent change in temperature).
- A lack of a diverse diet, which may lead to obesity, high cholesterol levels, high blood pressure and coronary disease.
- Many families consist of five or more children and many girls begin having children at a very young age. This causes a strain on limited family resources and also impedes young girls from continuing their education.

#### *Focus group meetings*

In meetings, focus groups and the Directiva have communicated a desire for:

- Organization of the community
  - o Over the last few months progress has been made in forming committees to focus on different issues within the community. The need for these groups was communicated by many of the adults in the community. However, with a few exceptions, the committees have not yet been independent or functional, which has been mainly due to a lack of community interest.
  - o Yanapuma's strategy in Estero de Plátano is based on having community action groups. We intend to meet with these groups regularly working on activities that will help improve organization, planning and motivation. These groups will be responsible for the advocacy of community interests, especially concerning access to basic services such as water, electricity and waste collection. However, volunteers and Yanapuma staff have found difficulty in getting the inhabitants to participate in community projects. One group that does appear to be functional is the Grupo de Saneamiento Ambiental.
  - o An additional challenge to community organisation is that there are tensions between different groups within the community. Most people divide the town up into three sections: pueblo, arriba and adentro. Also, there are social conflicts between individual families which makes bringing people together difficult.
- Education
  - o In the field of education the need for better-prepared and more knowledgeable teachers was mentioned. The Ministry of Education and Culture has been conducting teacher training to improve the qualification of rural teachers. This unfortunately also meant that the school was missing teachers for a period of time.
  - o The men stated they would like have computers at the school. Yanapuma is in the process of reprogramming a computer that is to be donated to the school.
  - o Another concern was that the director of the school, despite having been in this function for the last fifteen years, has not been living up to his duties.
  - o Yanapuma is currently sponsoring seven children to continue their studies at secondary level (for the school year 2008-2009), as well as searching for additional funding to increase the number of participants and make this a permanent programme.

- In June 2009, a group of LEAP volunteers helped the community build a kitchen/dining room (comedor) in the school.
- Environment
  - The main problem mentioned with regard to the environment was littering. Trash is being dumped in the river and on the beach. The main concern with regard to rubbish in the community was that it might impede the development of tourism.
  - Another concern is that the trash problem might be affecting the water sources. Women in the community have frequently noticed a strange odour in the water from the piped system.
- Health
  - There is a common belief that the health centre does not have medication available for adults, and people do not seem to be aware of the services provided. According to the doctor there are medications available for the basic needs of all community members. Only chronic and special cases must seek medication elsewhere.
- Tourism
  - In several focus groups meetings the desire for community based tourism was mentioned as a means to generate income. The community is especially focused on the need for a boardwalk along the beach area.

#### *Water system analysis & water quality testing*

Thus far it has been difficult to find someone who was involved in the construction of the system and as far as Yanapuma is aware some guidance was given with regard to operation of the system but little attention was paid to maintenance instructions. There is no map of the system available in the community and it is unknown when the well or the tanks have last been cleaned. Also, there have been frequent reports of ruptured pipes within the system and the community is not satisfied with the quality of water received.

Chlorination has been executed at the level of the distribution tanks but has been insufficient to maintain an acceptable level of free residual chlorine. The chlorine solution used to perform the batch chlorination has been acquired from a machine in Galera, but the strength and quality of the solution is unknown.

In addition to, and partially due to, technical difficulties, there is also a problem with receiving payments from the community for the water services provided. Several households have no proper way of shutting off the water so the tubes are folded double (which leads to further leakage and ruptured tubing). Furthermore many of the water meters that determine the amount of money owed by each household are broken. Some users are have been refusing to pay because the bills are inaccurate and because they are generally dissatisfied with the services provided. However, even if those who would like to pay the bills do so with much difficulty, as there is no designated person to collect the money. To exacerbate the situation, the workings of the Junta del Agua, including handling of finances, are not transparent. There is little user information on the functioning of the system or the organisation of the Junta del Agua, which has led to overall user distrust.

Yanapuma started doing water quality tests in March and April 2009 using the Coliscan Easygels. Several households were sampled and multiple locations along the rivers were tested also. Almost all the results were positive for faecal coliforms, only the distribution tank sample was found to be clean. (See annex 1) However, there were several problems with the use of the Coliscan testkits which means that the results are not completely reliable.

Starting in May 2009 the foundation has been allowed two tests (bacteriological and chemical) by the Empresa de Agua Potable y Alcantarillado (EAPA) in San Mateo, Esmeraldas. Results from river samples thus far have been positive for faecal coliforms, fungi and aerogenous (gas-producing) bacteria. One sample, taken halfway into the distribution system, tested negative for faecal coliforms, but contained fungi and aerogenous bacteria. (See annex 1) The presence of aerogenous bacteria and fungi in the piped system may explain the reported unpleasant smell of the water.

### **Project description**

To address several of the needs expressed in the section above, Yanapuma is planning an integrated health promotion project. This project will include diffusing information on:

- Water
  - o HHWT
    - Boiling
    - Chlorination
    - SODIS
  - o SWS
- Hygiene
  - o The faecal-oral cycle
  - o Germ theory
  - o Hand washing

The project will later be extended to include:

- Health
  - o Nutrition and diet
  - o Alcoholism and its consequences
  - o Family planning: reproductive education and prevention methods
- Waste
  - o Waste management
  - o Recycling

## **Project goal**

To improve the standard of living by promoting health through hygiene education, water and sanitation facilities, environmental, and waste management issues.

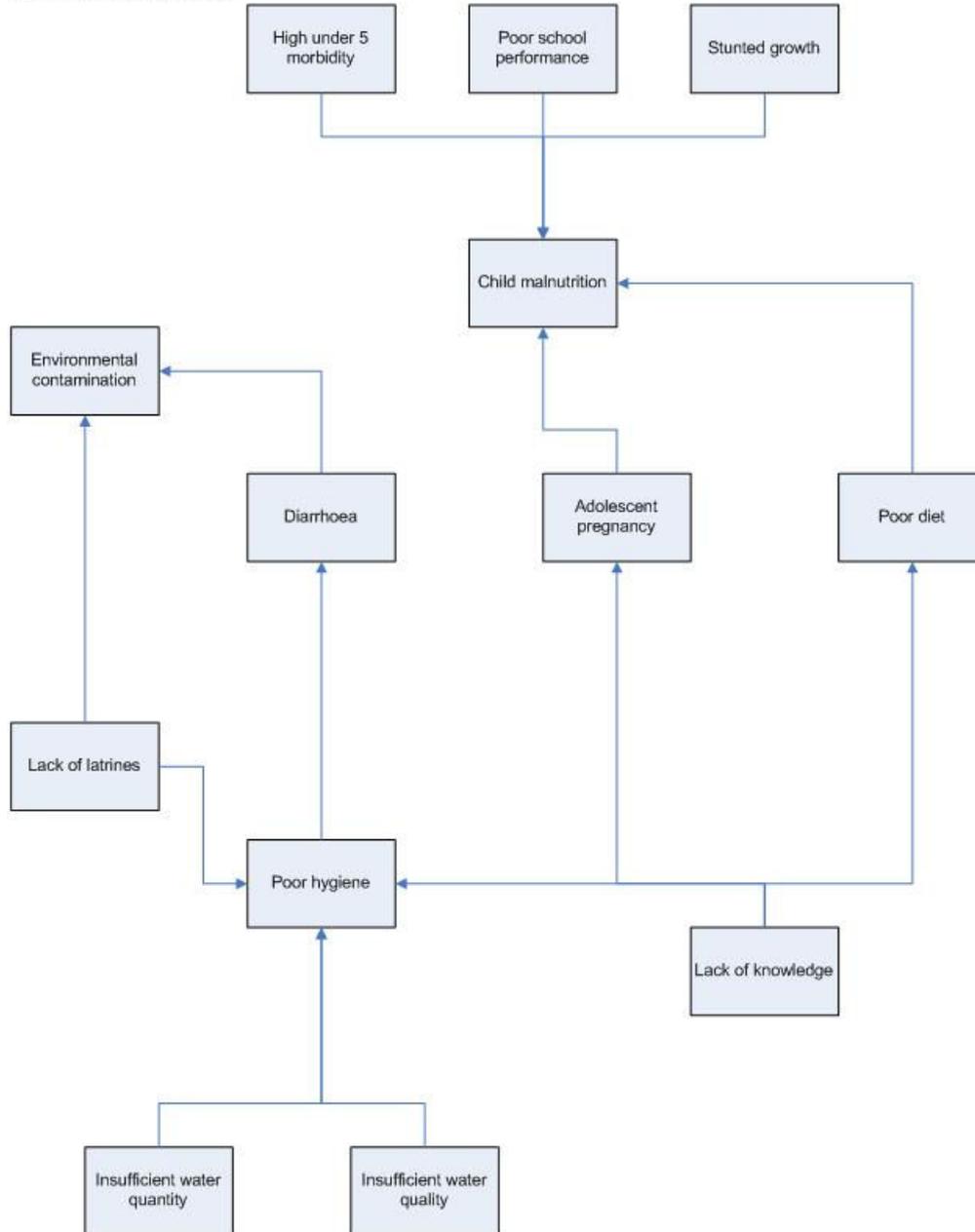
### *Project objectives*

- To promote hygiene through community participatory approaches
- To rehabilitate the water piping system from the water mains to the delivery point.
- To improve water quality through HHWT
- To strengthen community management and institutional capacity in order to run and manage installed facilities.
- To improve the cleanliness of the environment through organised garbage collection in the community.

## **Justification**

Diagram 1 shows an overview of the challenges present in the community of Estero de Plátano. As can be seen in the diagram, insufficient amount knowledge is the basis for many of the topics covered and many of the issues Yanapuma is trying to undertake are interrelated. For this reason, this project will be based on simple, but multifaceted educational workshops that seek to improve community awareness and decision making skills.

Figure 1: Main factors involved



*Priority of HHWT, SWS and Hygiene Promotion*

There is a significant amount of hardware (latrines, a functional water system, soap) already present in the community. Increasing the understanding of safe water and hygiene will not only improve the use of these facilities, but knowledge regarding water treatment will also improve the health situation while necessary funding and materials to improve the hardware are lacking.

The public health survey and discussions with the local doctor have confirmed that the main health concerns in the community are influenza and diarrhoeal disease. The frequency of these diseases could be reduced by simple activities, such as hand washing (see diagram 2&3) and treating water to make it safe (see diagram 4&5).

Figure 2: Hygiene problem tree

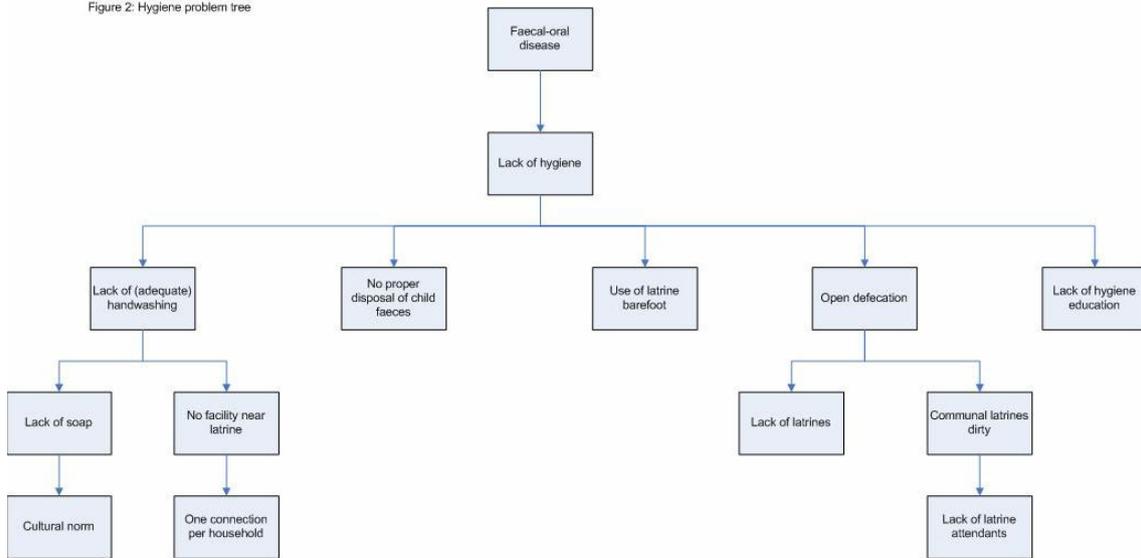


Figure 3: Hygiene objectives tree

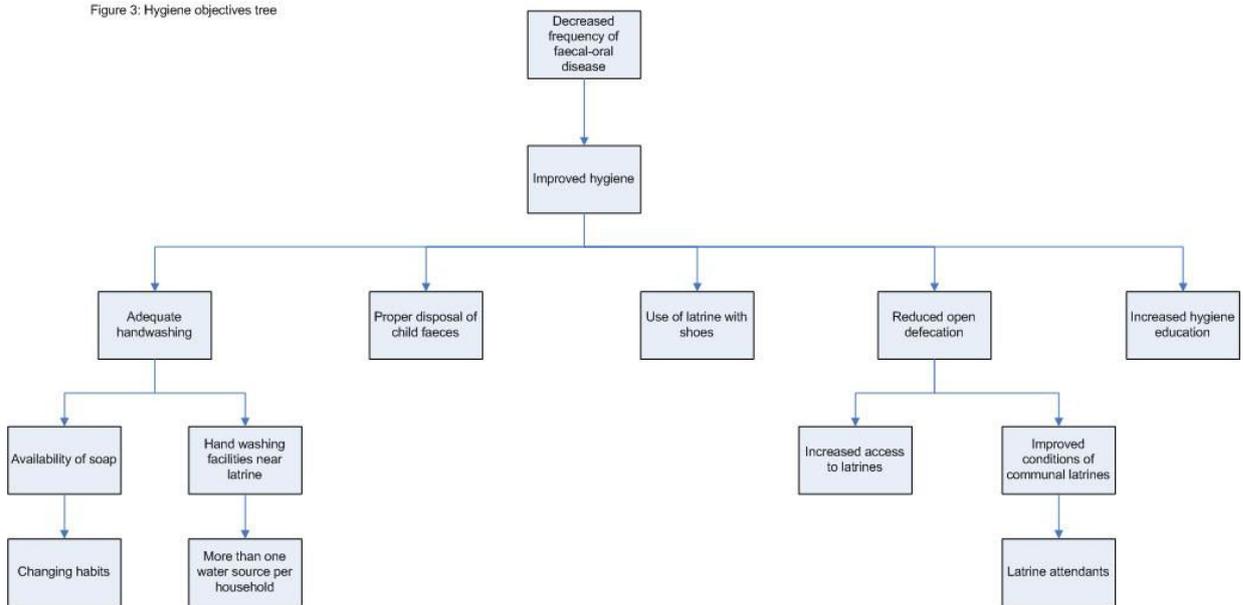


Figure 4: Drinking water problem tree

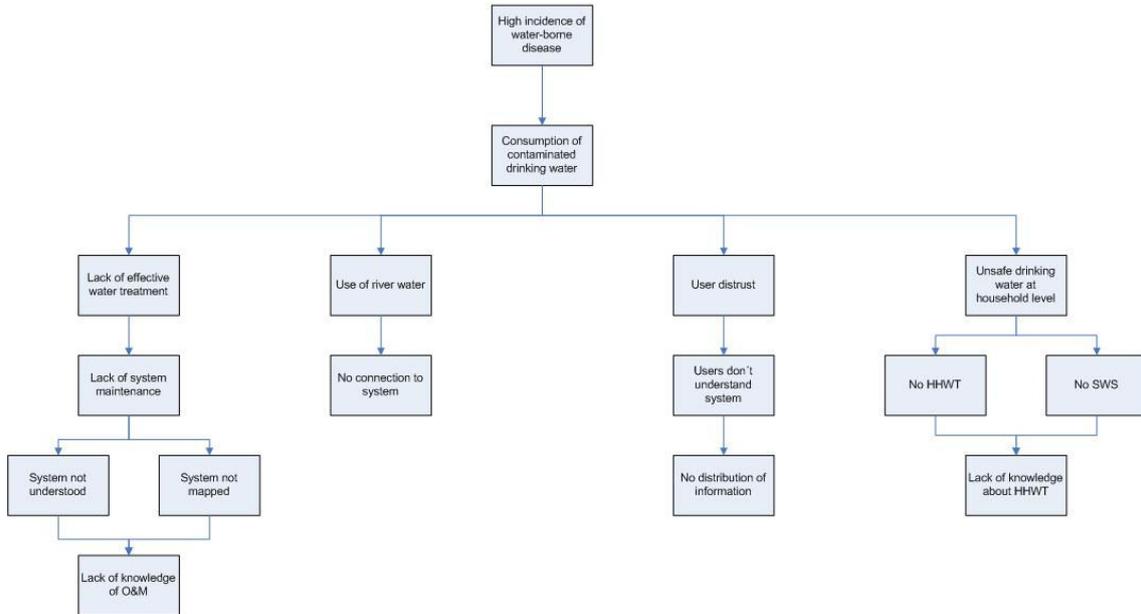
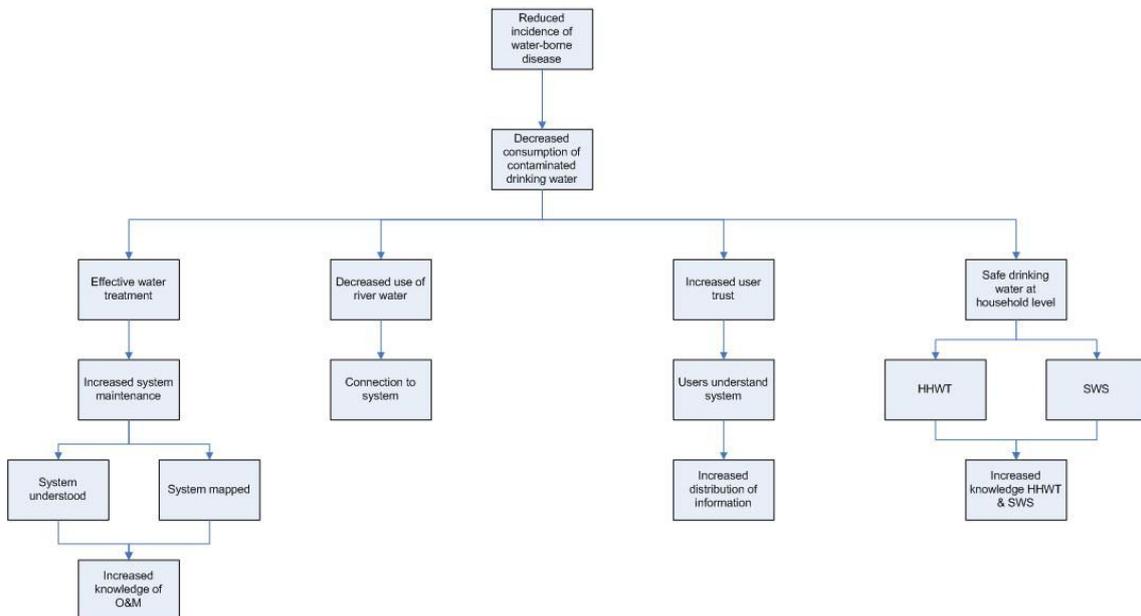


Figure 5: Drinking water objectives tree



### Changing habits

Instead of conducting educational workshops, Yanapuma could also, for example, raise funds to improve the water system and sanitation situation. However, we believe that giving the community the tools it needs to improve their own standard of living would be far more beneficial. Improving the water system may better the situation for a number of years, but changing the habits to include a healthier lifestyle would last much longer.

For this reason many aspects of the project depend on the changing of local, unhealthy habits. To do this in a sustainable, community based manner Yanapuma believes constant stimulation of the community will be most effective. Yanapuma intends to be present in the community constantly to aid them in the steps illustrated below:

Information distribution/learning => understanding => acceptance => execution/practice => change of habits

### *Challenges*

- Motivation
  - o Since one of the major challenges reported by inhabitants and outsiders has been the lack of motivation and interest, the method of transferring this knowledge would be to conduct a series of workshops with dynamic and interactive exercises. To achieve maximum impact, the workshops are designed to be fun, to keep the group from becoming discouraged and short, to allow for reflection. They will be conducted in small groups so that they can be geared to each group specifically. Another reason to keep the groups small is to invite everyone attending to participate in the activities involved and to try and work together despite possible existing social conflicts. Finally, the workshops are intended to be conducted as a continuous series to keep the community stimulated.
  - o Certificates could be handed out to those who attend all, or the majority of the workshops.
  - o See annex 2 for the outline of the series of workshops
- Yanapuma resources
  - o An important factor in the successful implementation of the project is the presence of capable Yanapuma staff members or interns. As these workshops are designed to be a series of short events, there will need to be a workshop leader present for a longer period of time to provide constant stimulation. In addition, since most of the tools for monitoring and evaluation include observation, human resources will be required for these stages also.
  - o Another issue could be the availability of financial resources, although these workshops are designed to be simple and low-cost. The only anticipated financial costs would include workshop materials, such as paper, tape and markers, and possibly an incentive for those attending in the form of chlorine or small pieces of soap. Posters required can be reused and bottles used for demonstration can be acquired from the community itself.

## **Actors**

In order to increase the credibility of the WASH project and strengthen the enabling environment Yanapuma would like to work together with several actors within the community:

- Directiva
  - In order to make this a community-based and most importantly, a sustainable, project, Yanapuma would like to work closely with the community Directiva so as to stay inline with the community needs and desires.
- Local medical staff
  - Given the history of the community with other organisations and that we are dealing with a health programme, Yanapuma feels it would need to support from existing institutions to increase the credibility of the foundation in this project. Cooperation with the medical doctor present in the health subcenter is critical since the doctor functions as the main source of medical information for the community.
- MSP
  - Yanapuma would like the support of the Ministry of Public Health (MSP) in Atacames as sharing of information and materials would be beneficial to both parties. Collaboration would also facilitate the collection of more baseline data on health, education, income and other factors.
- See annex 3 for contact details of these actors

## **Implementation**

While implementing the WASH project Yanapuma would like to focus on the positive aspects of WASH. We would like to encourage people to participate because they feel that cleanliness is attractive and not because they are scared of the consequences of unhealthy habits.

### *Targeting key groups*

Once Yanapuma has credibility as a health promoter we can begin the workshops with several key groups:

- High risk
  - The group with the highest risk of contracting a water-borne disease is located in San Enrique, as they have no connection to the water system and have the least number of latrines. For these reasons, we believe that they should be the first to be informed of WASH. Also, San Enrique consists of around fifteen households and would therefore be an appropriate workshop size.
  - Once we have conducted the first workshop with this group we will evaluate the workshop so as to improve it and make it more accessible for the community.
  - See outline for the San Enrique workshop in annex 4
- School children
  - Another group we would like to start working with is the community school. Instead of having workshops with children, Yanapuma has

designed some hygiene and safe water lessons to be included in the current curriculum. (See annex 6) Estero de Plátano has a large young population and integrating these lessons will ensure that the information is disseminated to a large part of the community every year. Also, young people are not yet set in their ways and therefore it would be easier to teach them healthy habits, such as hand washing. Also, now that the school has a comedor, teachers can enforce hygiene practices such as hand washing before the children sit down to eat.

- To encourage the children and have them be involved in the project we would like to make mural depicting hand washing at the hand washing station.
- Women
  - Health education in the school would target a large population, however, we would like to do the majority of these classes while also working with the women. The lessons learned in school should be reinforced in the home, or the efficacy will be greatly reduced. Mothers tend to be the enforcers of hygiene and other habits within the household and by increasing their knowledge they will be able to improve the situation within their own families.
- Health promoters
  - Seeing as the Grupo de Saneamiento Ambiental is one of the few functioning community groups, we would like to work with this group to select community member who will function as health promoters. Ideally we would train interested members of the community so that they could, with the aid of Yanapuma, conduct the workshops themselves.
  - Another group we anticipate will be interested in the workshops and possibly even aid Yanapuma in the dissemination of this information would be the Grupo de Jovenes. This group of teenagers could encourage the younger children in developing healthier habits.

### *Scaling up*

Once these groups have been successfully included in the project we can scale up to include all the members in the community. In theory, starting with these key groups would already cause the spread of information through social mobilization. Yanapuma would transmit the knowledge to leaders within the community, who would then continue the dissemination to their families, neighbours and friends.

### *General promotion*

In addition to the spread of information through workshops we would like to promote WASH through posters around the community and a mural at the school. Flyers with simple pictures of how to conduct different HHWT methods and other health related information, such as the medications and services available at the centro de salud will be given to each household. Also, we would like to promote the manufacture of a simple hand washing station that can be placed inside the latrine and the possible use of SWS containers (see annex 7).

## Project Monitoring and evaluation

<b>Indicator</b>	<b>Means of monitoring</b>
Safe Drinking Water	<ul style="list-style-type: none"><li>- Water testing at source and household level</li><li>- Household visits to look at water storage containers for signs of possible contamination e.g. not covered, open necked, hands come in contact with water etc.</li></ul>
Hygiene practices	<ul style="list-style-type: none"><li>- Observation of soap at household level</li><li>- Observation of hand washing at school</li><li>- Self reported increase in hand washing by affected community</li></ul>
Community participation	<ul style="list-style-type: none"><li>- Observation and discussion with community committees</li></ul>

### Suggested extensions for HASS project

- Proper health analysis
- GIS mapping to locate regions of contamination
- Work with Junta del Agua to increase their capacity and transparency, possibly through the creation of an informational flyer for the water users (see annex 8).
- Make sumideros (grey water pits; see annex 9) at the school comedor and in the rest of the community