“The role of water and sanitation in controlling and preventing infectious diseases in rural areas”

WATER AND SANITATION IN RURAL AREAS
CASE OF BISATE VILLAGE, RWANDA.

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ARTICLE FOR PRESENTATION

Water and sanitation – Case of Bisate Village, Rwanda.

1. KEY WORDS

1.1 Providing water quality

Water accessibility is being compromised by lack of water quality.

1.2 Sanitation improvements versus poor sanitary conditions

Lack of appropriate sanitary engineering methods for our rural areas is contributing to the increase of waterborne and infectious diseases expansion in our communities.

1.3 Personal and general Hygiene

Unhygienic behaviors are contributing to water contamination especially in rural areas leading to the spreading of infectious diseases.

1.4 Infectious diseases

Implementing, in each rural area, appropriate methods focusing on sanitation and water quality supply and accessibility; and community involvement in all water and sanitation initiatives will lead to infectious diseases control.

1.5 Community awareness

Lack of community awareness regarding water and sanitation is leading to uncontrolled infectious waterborne diseases spreading.
2. KEY POINTS

1. **Sharing experience** on different methods of providing safe drinking water exploiting the existing potential in rural areas.

2. **Importance of safe drinking water accessibility** in controlling infectious diseases especially waterborne diseases in rural areas of Rwanda in particular and of East Africa in general.

3. **Importance of rainwater harvesting systems** in providing safe drinking water for communities facing water scarcity problems.

4. **Learning from typical experience accounted in rural village** where water and sanitation related issues are being addressed and improved in order to reinforce the control of cross-transmission diseases between endangered species gorillas and humans.

3. ABSTRACT

Everybody has a right to safe drinking water and adequate sanitation to live longer. Infectious diseases are spread by simple means that can be addressed and controlled reducing the morbidity they are linked to in rural communities.

An example of infectious diseases control by improving water and sanitation is being implemented in one of the rural areas of Rwanda. It is in Bisate Village located in Kinigi Sector of Musanze District, Northern Province of Rwanda. It is among the rural areas that surround Volcanoes National Park of Rwanda with a population of 25,000 people. Dian Fossey Gorilla Fund international, a non-governmental organization, has been working in and around Volcanoes National Park for the last forty years with the mission of protecting mountain gorillas and their ecosystem. As part of this, ecosystem health program is improving health of communities around the protected area and ensuring a
minimal level of humans to primates cross-transmission diseases. According to its survey of 2005, the area has high rate of intestinal parasite estimated in-between 95-99% and the infectious diseases that were prevalent in that area among both Gorillas and Humans are: Ankylostome, Ascaris, Ameobias, balantidium coli, Taenia, etc. The contributing factors to that situation are lack of safe drinking water; poor sanitary conditions at households’ levels; and local people tracking water inside Volcanoes National Park of Rwanda leading to cross-transmission diseases between animals and humans surrounding it.

Community interventions are being implemented to address that situation and establish adequate control and prevention methods to this burden. Hygiene education; de-worming program; providing safe drinking water and rehabilitating health center towards quality services are the major activities implemented in the rural area surrounding Volcanoes National Park of Rwanda. Providing safe drinking water and sanitation have been the priority of 2007 whereby twenty five toilets were installed at the primary school and reduced the number of toilets distribution from 285 pupils per stance/toilet up to 55 per stance/toilet. New water systems installed are helping directly more than 5,000 people in Bisate village.

It is the time to call upon all environmental health officers and others medical personnel interested in improving the public health to contribute towards the prevention and control of infectious diseases and keep the records of the different methods, approaches and technologies used. An East African network of environmental health officers must be established to serve as a communication core for better solutions in the region. These solutions will serve as examples of environmental health improvements that help with the eradication of infectious diseases in the region. Then we will all be proud of preventing and controlling infectious diseases by simple methods of improving water and sanitation in our communities.
4. INTRODUCTION

4.1 BACKGROUND

The 2007 World Health Organization annual report states: The need to provide both safe drinking-water and adequate sanitation remains a huge challenge today in developing countries. Currently 1.1 billion people lack access to safe water and 2.6 billion people lack access to proper sanitation. As a result, more than 4500 children under five years of age die every day from easily preventable diseases such as diarrhea. Many others, including older children and adults, especially women, suffer from poor health, diminished productivity and missed opportunities for education.

4.2 WATER AND SANITATION IN RWANDA

In Rwanda the distribution of drinkable water is still inadequate and the rate of access in the country is estimated at 54% but does not exceed 44% in the rural areas compared to 60% of the urban population. Regarding the sanitation, even though over 80% of the country’s population has access to latrines, only 8% of these meet hygienic standards (MINITERRE 2004). More than half of Rwanda population obtained water from unprotected sources, 85% of which were believed to be contaminated. Further, water consumption in rural areas was estimated at only 8 liters/person/day, far below the national recommendation of 20 liters. Consequently, Diarrhea and other water related disease conditions remained a major cause of morbidity.
and mortality in Rwanda (GOR/New Partnership for African Development 2004). A study carried out in 2007 by UNICEF/MINITERRE revealed that accessibility to clean and safe drinking in urban areas of Rwanda reached 72%.

Rwanda has several different NGOs (non-governmental organizations) which are helping to solve water and sanitation related problems. Dian Fossey Gorilla Fund International (DFGFI) has been working in and around Volcanoes National Park for the last 40 years. Its mission statement is to protect mountain gorillas and their ecosystem. As part of this, we have the ecosystem health program, which by improving health of the communities around the protected area ensures a minimal level of human to primates cross-transmission diseases. Last year in 2007, Ecosystem health program under its water accessibility program; provided safe drinking water to more than 5,000 people living in Bisate village (DFGFI – Water accessibility annual report 2007). After the assessment carried out in 2005 which showed that 95-99% of the 1,000 population tested and living in that area, are suffering from intestinal parasite (e.g. giardia, entamoeba hystorityca). The main causes to that situation were luck of drinking clean water and adequate sanitation (DFGFI 2005).

5. Water and Sanitation interventions

According to the Parc National des Volcans – Plan de Zonage (ORTPN 2004), within the region surrounding the park only 41.3% of households have access to clean water, while 42.8% have access to alternative water sources. Half of the population living near the park has significant difficulties in fetching water. The three main concerns about accessing water are: the time spent to

Figure 3: Volcanoes Nation Park (DFGFI Archives, 2003)

Figure 4: Bisate Village in red, where DFGFI activities are based (DFGFI Archives, 2006)
reach the water source, the effort to transport the water, and the threat to the gorillas and their habitat from the high human interaction.

DFGFI – Ecosystem health program has a commitment of contributing for establishing adequate living environment for both humans and endanger species Mountain Gorilla. Through its water accessibility program, it is implementing water and sanitation projects in the rural areas surrounding Volcanoes National Park of Rwanda.

Third main challenges accounted in that area where: (1) local people who used to track water inside the volcanoes forest to satisfy their daily water demand; (2) spread of infectious diseases between animals and humans; and (3) the geological conditions characterized by high percolation preventing the area from spring water. DFGFI initiative is providing a steep by steep solution, after carrying out different assessments on intestinal parasite; it is providing safe drinking water by exploiting the existing potentialities in the region.

Together with Massachusetts Institute of Technology, department of civil engineering, an effective study was done on the status of water resources in Bisate Village and the villages around Volcanoes National Park. The information received from that research is being used effectively to help those communities. Rainwater harvesting systems used to provide drinking water have been developed in order to attend the main goal of providing safe drinking
water in order to reduce the burden of waterborne diseases of the parasites persistent in the area. Foul flush stem was designed to reduce roof water contaminants and it is about to be tasted for the first time next April 2008. Water and sanitation activities carried out during 2007 are helping more than 20,000 people. The systems installed include rainwater harvesting and spring water supply systems.

One of the exiting interventions we carried out was regarding toilet issues at the Primary school. Bisate primary school was attended by one thousand seven hundred pupils (1,700) between ages of six (6) and fourteen (14) years. Two hundred eighty four pupils were sharing one stance (squat hole) and after the intervention we carried out fifty five pupils (55) are sharing one stance (DFGFI 2007).

6. CONCLUSION

Bisate Village provides an example of how water and sanitation can play a role in controlling and preventing infectious diseases in rural areas. It can serve as a model for future projects at regional level.

Environmental Health Workers/Officers have always to continue to work towards improvements of Environmental Health Situation in Rwanda. Through different working area they lead, posts or positions they occupy, they will keep extending the community interventions and initiatives in order to help Rwandese to reduce health hazards from environmental factors that are inadequately managed. Sanitation-related problems, water contamination, wastes (solid, liquid and excreta), housing problems, environmental pollution, food contamination, disasters, will be technically and strongly handled. The Dian Fossey Gorilla Fund International and other NGOs will keep increasing its interventions in that area and around other Rwanda national parks in order to save the lives of millions threatened by water and sanitation related diseases.
An East African network of environmental health officers must be established to serve as a communication core for better solutions in the region. These solutions will serve as examples of environmental health improvements that help with the eradication of infectious diseases in the region.
7. REFERENCES


