

WATER QUALITY ANALYSIS IN THE MUNICIPALITIES OF ARBINDA AND GORGADJI IN THE SAHEL REGION

EXECUTIVE SUMMARY

The quality of drinking water is a matter of concern for human health worldwide. Water is referred to as potable water based on a set of bacteriological and physio-chemical characteristics. Based on these characteristics, the World Health Organization (WHO) established international guidelines for drinking water quality. In Burkina Faso, the 2006 National Water Supply and Sanitation Program (PN-AEPA) aims to halve the proportion of people without adequate access to drinking water and sanitation by 2015, in line with the Millennium Development Goals. The Program also defines the national regulations for drinking water.

The national regulations are informed by the WHO guidelines. The regulations include: (1) access to a minimum of 20 liters of water per person per day within a household; (2) location of improved water points within a radius of one kilometer with a maximum of 500 users per day; and (3) functionality of the water point all year round. These regulations guide the construction of new water points. However, once water points are constructed, no systematic water quality monitoring is carried out because of inadequate resources at the municipality level. In practice, the water quality of improved water points is checked at the time of construction, and then 15 years later during rehabilitation. This results in the lack of information on the changes of drinking water quality and sources of contamination in the water points.

The primary goal of the USAID West Africa Water Supply, Sanitation, and Hygiene (USAID WA-WASH) Program is to increase sustainable access to safe water and sanitation in the intervention countries including Burkina Faso. To achieve this goal, the Program strengthens the WASH sector capacity to improve water and sanitation service provision. The Program, through IRC, supported the municipalities of Arbinda and Gorgadji to monitor drinking water quality. In the rural areas of Burkina Faso, particularly in small towns, drinking water is supplied through a distribution network with private connections and public taps. In the villages of less than 3,500 inhabitants, drinking water is supplied through public water points. These water points are boreholes fitted with hand pumps and public taps through simplified piped water systems. In addition, the traditional water sources such as unprotected wells and surface water (rivers, ponds, dams) provide water in the villages where the improved water sources are not available.

The Program conducted a study to analyze the quality of drinking water in the municipalities of Arbinda and Gorgadji. The study analyzed the sources of contamination from the water collection point to the consumption at the household level in nine villages. The villages were selected based on water quality problems reported during the water quality evaluation by hand-pump managers and the users' satisfaction survey results. The study sampled sixty-one (61) boreholes, and eight traditional wells. In addition, the study conducted a survey of 109 households around the sampled hand-pumps. Two water samples were collected from each household; one from the container used to transport water from the water point, and the other from the storage container (preferably water stored for at least one day). In total, 218 samples were collected and analyzed in terms of the physical, chemical, and bacteriological characteristics. The water samples were analyzed at the central laboratory of the national water company (ONEA) and the data was processed using the Piper software to show the chemical characteristics of the water sample.

In addition to the water samples, the study gathered social data from the sampled households such as information on water transportation, water storage, hygiene practices, treatment of water before consumption, and the geographical location of households in relation to the water point.

The water samples from the 61 water points showed the presence of Calcium and Magnesium, indicating the deposition of salts of calcium and/or magnesium. This water profile is characteristic of Birimian basement rocks dominant in the Sahel region. From the study findings, 15 water points (25%) sampled were contaminated with nitrates and other bacteriological contaminants. This contamination may be either anthropogenic (human-fecal material) or of natural origin related to the ground chemical composition. All the eight traditional wells were contaminated with both fecal and natural contaminants. Further, the study findings showed that 29 % of the households alternated between improved and unimproved water points. The improved water points were located more than 1,000 meters from these households, partly explaining the use of the unimproved water points.

Based on the study findings, recommendations are made for the water users, for the water service providers (the municipalities), and for the water sector as a whole. For the users, the findings underscore household water treatment solutions such as use of chlorinated tablets. For the water service providers, the study findings emphasize regular water quality monitoring to ensure provision of potable water. The regional and national authorities need to improve access to water testing facilities, for example mobile laboratories, to reduce the costs of water testing.

The full report is available (in English) upon request via our website. For more details about our program activities and other reports please visit <http://wawash.fiu.edu/>

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