









« The challenge of water availability in Burundi »

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Introduction of Burundi



A green small country

- Surface = 27,834 km²
- Population = 8 million (2008 census), but estimated at 11,845millin on 2018
- Located in the great lakes region and bordered by Rwanda in North, DR Congo in West and Tanzania in East
- Long-term average annual rainfall (30 years) = 1,277 mm

Water resources in Burundi

- Sufficient water resources to cover the drinking water need for all the population
- Traditionally, water supply through 40,000 natural springs identified in the country
- 90% of the population uses spring water, 10% groundwater through boreholes or surface water

<u>Challenges :</u>

- One of the most densely populated countries in Africa, 450 p/km² with a population growth of 3.23%
- Negative economic growth (poverty remains an issue)
- Natural springs, even if rehabilitated, are not sufficient to cover the entire rural population
- Natural springs are vulnerable to climate change and pollution, due to their subsurface catchment system



Comparison of renewable water resources of Burundi with some other countries

Source : Rapport hydrologique 2008/2009



Drinking water coverage in rural areas

2011: 63 % with < 1% from boreholes

- Since then **NO STATISTICS**
- In 2019 estimated at 63 % with 4% from boreholes (400 hand pumps and water supply network newly built)
- No major construction were made in recent years

Burundi is far behind concerning the SDG 6.1 target The « unfinished business » is huge !

Alternative sources to natural spring are required

→ Groundwater: a new concept in Burundi, is the safest (free of contamination) and most reliable source in terms of resource lasting as well as the cheapest





Contributing to SDG 6.1 with groundwater (1)

Our goal:

To promote the use of groundwater through borehole, where other options are limited or too expensive

Step 1: Identify areas where drinking water coverage is the lowest, but GW potential is high and easy to tap First tool: Map of GW potential, model based on :

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- Geology study
- Field study
- Morphology study
- Topography





Contributing to SDG 6.1 with groundwater (2)

Step 2 : Choose zones of intervention according to water needs and where GW is possible added value

- Consensus between the National Rural Water Agency (AHAMR), the National Urban Water Agency (REGIDESO), and our HR
- Estimation of required financial constraints

Challenges & limitations:

No statistics on water coverage since 2011

No national database on existing rural infrastructures & functionality rates

→ Finding the right sites to tackle the drinking water problem is extremely difficult



Contributing to SDG 6.1 with groundwater (3)

Step 3: Technical exploration and exploratory borehole sitting

- Remote sensing (to identify faults, lineaments....)
- Hydrogeological field studies COMPULSORY, require experts on hydrogeology
- Geophysical studies (where probabilities of getting exploitable resources are high. However, the thickness of the clay layers is a challenge for the method)

Challenges & limitations:

This step requires technical expertise Most of this expertise (except remote sensing) is now available in Burundi



Contributing to SDG 6.1 with groundwater (4)

Step 4: Drilling and water analyses

- Drilling exploratory wells
- Pump test
- Reliable professional water analysis

Challenges & limitations:

This step requires financing and technical expertise Because GW abstraction is relatively new in Burundi, this step is needed in those areas where data is not available



Contributing to SDG 6.1 with groundwater (5)

Step 5: Data analysis

- From local data to national understanding
- Includes the concepts of sustainable yield and protection
- Proposes GW potentials for zones of similar hydrogeology

Challenges & limitations: Large volume of data is required Needs time or change scale of intervention



Contributing to SDG 6.1 with groundwater (6)

Step 6: Capacity building & drilling regulations

- Elaboration of a national guide on good drilling practices
- Elaboration of technical reports & drilling recommendations
- Inform about the GW water quality at national level with the parameters that need imperious to check (uranium)
- Workshops and field training

Challenges & limitations :

Well drilling is still seen as a complex, expensive, and unreliable technique, due to the construction of unprofessional wells

Guide de Bonnes Pratiques pour la Réalisation des Forages d'Eau au Burundi

Annexe de l'Ordonnance N°770/1590 fixant les Modalités et les Prescriptions Techniques pour la Délivrance de l'Autorisation d'Exercices de Forages, de Creusement de Puits et de Sondage en Vue de la Recherche, du Captage ou de l'Exploitation des Eaux Souterraines









Workshop with GW actors

Contributing to SDG 6.1 GW infrastructure sustainability

In 2015 the Burundian government decentralized and transferred the rural water management to all the communes, where :

- Communes are the infrastructure owners
- Commune appointed an "independent" committee to manage all the water systems: Régie Communal de l'Eau (RCE)
- The RCE committee identified a private operator to run the systems
- The National Rural Water Agency plays a role of "advisor" and "regulator" by placing one agent in each commune

Challenges & limitations:

Roles and responsibilities of players are not yet clearly understood Knowledge at commune level is very low and some water systems are technically complex and management is event more complex! Needs time and training Needs a stable rural water policy



Two of our pilot projects with a water network supplied by GW through solar energy. Objective : professionalize the management system with a private operator including the support of Rural Water Agency

Conclusions and recommendations

- Lack of financial means and new projects to support water resources development and exploration in Burundi;
- Need to change the image of GW abstraction from unreliable and complex to reliable and safe;
- Need for more hydrogeological expertise in Burundi at all levels from researchers to public operators;
- Human resources not sufficiently qualified in water resources management;
- Need for proper implementation of the national policy in regards to GW abstraction and drilling;
- Lack of professional laboratory to analyze water quality in Burundi;
- Systematic statistics on rural water supply has to become a priority. It will help the investors and projects to implement efficiently their activities; and
- In terms of rural water system management, a national effort is required to professionalize the commune players and the private operators.







Thank you for your attention!

Merci de votre aimable écoute!