Water resource management in Burkina Faso

A case study on the potential of small dams

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Photo 1: A small dam in the village of Madyr
Photo 2: A small dam constructed at Pouni-Nord, May 2006

Summary

- According to the World Meteorological Organisation, annual demand on water resources in Burkina Faso exceeds available water resources by between 10% and 22%
- A significant amount of rain water is lost through leaching and run-off into major rivers
- The Government has a strategy and action plan for Integrated Water Resource Management (IWRM)
- WaterAid is contributing to this action plan through water quality assurance, water source pollution prevention and construction of small dams
- Together with a local non governmental organisation partner, Action Micro Barrages (AMB), and with support from Terre Nouvelle, two small dams have been constructed to help:
  - recharge ground water sources
  - reduce abstraction pressure on community wells for non-drinking purposes
  - boost agriculture and improve rural economy
- Though a full impact assessment has not yet been carried out, community testimonies and observation indicate that:
  - there is improved water retention in the wells
  - the dams have improved gardening and pastoral farming in the communities

The issue?

"Every year, Ouagadougou receives more rainfall than London."

Surprisingly, the above statement is true. Ouagadougou receives some 700mm rainfall per year on average whereas the figure for London is 585mm.

Yet due to local conditions, water scarcity is prevalent across Burkina Faso, as the hydro-geological conditions and flat topography lead to much of this rainfall becoming unavailable. As much as 16% infiltrates the soil, which contains few aquifers. A further 4% is 'lost' into the rivers which flow rapidly to Ghana and end up in the Gulf of Guinea.

This scarcity is magnified in WaterAid Burkina Faso's intervention areas. Total demand exceeds availability of water resources by between 10% and 22% depending on the rainfall received that year. Based on these figures and according to World Meteorological Organisation classification, water stress in Burkina Faso can be defined as moderate in years with average rainfall to medium in dry years. These conditions call for action, in particular for increased investment in water services.

According to a World Health Organisation/UNICEF joint monitoring report, only 51% of people in Burkina Faso had access to safe drinking water in 2005. How can IWRM address such a big issue?

Background

The Burkina Faso Government began to implement an IWRM strategy in 1998. First, it developed a strategic plan which followed a preliminary study on the water sector. These actions succeeded in providing a wide understanding of the needs and goals of IWRM in Burkina Faso. An 'orientation law' followed this study to define the various roles and responsibilities of sector actors involved in the process. Finally, in 2003, the PAGIRE (IWRM action plan) was adopted by districts, the State and users in a bid to jointly manage water resources.

WaterAid's contribution in Burkina Faso

This national policy framework has provided an opportunity for WaterAid to incorporate an IWRM component into its projects. To this effect, WaterAid has already taken several steps towards improving its water management understanding and approaches. Since 2005, WaterAid has carried out training on IWRM with all its partner organisations. It has also conducted a scoping study with a strategic focus on how IWRM could be better embedded into its activities. Following these activities, an action plan was drafted which is intended to act as a point of reference for WaterAid and its partners. This plan includes three major focus areas for WaterAid, as follows:

Water resource availability
The action plan supports the assessment of current water resources through examination of the potential sources. Such assessments are carried out through a combination of geophysical assessment and traditional knowledge from the community. In order to increase groundwater quantity, a strong emphasis is laid in project implementation on the building structures or establishing systems which would help to replenish the water table (for example, small dams, stone fences, tree planting).

Water resource pollution prevention
For the prevention of pollution of water resources, the Country Programme has developed and made systematic the testing of all new or rehabilitated waterpoints in order to ensure water quality.

When building latrines, a 'security' distance is observed between the sanitation facilities and the safe waterpoints. This distance, often around 30 meters, depends on the nature of the soil. In addition, a national law has defined a protection perimeter around each water point (potable or not) for the purpose of avoiding water source pollution. WaterAid is currently supporting its field partners to ensure they comply with this law.

Alternatives for community water supply
WaterAid has become involved in the pilot phase of a rainwater harvesting project in which concrete rainwater harvesting tanks with a capacity of 10 cubic meters are built in communities and institutions, usually schools. The water stored in these tanks can supply a household of six to eight people for two to three months.

AMB case study

AMB was established in 1987 to support community development efforts. This non governmental organisation works in Boulkiemdé, Sanguié and Passoré provinces. Since its creation, 68 rainwater collection facilities have been built. Most are used to support gardening activities or rice growing.

The AMB/WaterAid partnership started in 2004 as part of the Programme d'Appui aux Initiatives pour la Sécurité Alimentaire (PAISA) project co-funded by WaterAid and Terre Nouvelle. Two small dams were constructed in Madyr and Pouni-Gonré as part of this project. These facilities comprise two main parts: a compacted breakwater and a buttress in concrete which is the spillway.

Construction of these dams was made possible with the efforts of user communities who contribute a great amount in kind, mainly through compacting the breakwater and trench digging.

Depending on their size, the small dams are able to keep water for up to a full year. Those of Lapio and Madyr, for instance, which received the 2005 rain, dried in February 2006. However, the Sam-Nidaga and Pouni-Nord small dams are greater in size: their water reserve in the dry season is about 100 cubic metres each.

Links between small dams and the sustainability of underground water resources

No piezometric follow-ups have yet been made at the various sites to accurately establish the link between these small dams and the sustainability of underground water resources. However, some very useful and relevant observations were made by the infrastructure users. In all villages visited, it was proved that the existence of a dam slows down the rain water running off and allows for better seepage. Small dam construction has also brought about permanent availability of water in wells.


AMB/Mahama Savadogo

Testimony from Madyr
"The breakdown of the earth-made breakwater caused our gardening wells to dry up. But after it got rehabilitated using concrete, the well water level has increased so that we can meet our cattle and domestic needs."

Testimony from Pouni-Nord
"Wells that were dug before the small dam construction dried in February or March; after the dam construction, the AMB-constructed wells are sustainable and water is easily available from the hand-dug wells, thus allowing women and young people to carry out gardening activities. Pressure on and queuing up at waterpoints have lessened. Water from AMB constructed wells is also used for drinking needs."

In Madyr, it was reported that before the small dam was constructed, the village wells used to dry up in February. Now, however, they retain water until April.

The objective of small dam construction in the villages is to help replenish the water table and to contribute to increasing the well water level. Additionally, in some small dams, gardening areas can be defined. In some villages, it was recorded that the availability of water in wells and small dams leads communities to use this water for meeting the needs of cattle. This in turn means minimal use of boreholes, which prevents spare parts from wearing and increases the lifespan of pumps.

Way forward

- An assessment to develop a comprehensive understanding of:
  - the impact of the dams on users
  - the impact on the economic activities of users
  - the sustainability of water resources
- Identification of potential partners for such an initiative
- Identification of opportunities for advocacy and scaling up
- Treatment of the surface water with chlorine or hypochlorite sodium
- Adoption of minimum hygiene practices for water collection utensils
- Protection of wells with a flagstone
- Fitting wells with a rope pump
- Training of AMB staff in techniques for treating water and analysing water quality
- Providing partners with equipment to achieve these goals

For further information

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