

IMPROVING THE ECOLOGICAL HEALTH OF THE DENSU BASIN OF GHANA

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Introduction

Since 2002, the Ghana Water Resources Commission has pursued a conscious and coordinated Integrated Water Resources Management (IWRM) program in the Densu Basin with the view to recover the basin's deteriorated ecology.

The Densu Basin, which covers an area of about 2,600 km², has a high population density of about 387 persons/km², five times that of the national average of 77 persons/km². It is recognised as one of the most urbanised basins in the country. Apart from supplying water from its Weija reservoir to the over 400,000 people living in the western parts of Accra, it is a major source of water supply to the urban settlements of Koforidua, Suhum, and Nsawam with a combined population of about 140,000. Excess flow from the Weija reservoir discharges into the Densu delta (Sakumo) lagoon and salt pans complex, which constitutes one of Ghana's internationally recognised protected areas (Ramsar sites).

Despite its socioeconomic and environmental importance, results of studies conducted showed that the Densu basin was extensively polluted and noted for its water quality deterioration. It served as a receptacle for the dumping and discharges of untreated urban domestic and industrial wastes, and leachates from agro-chemicals used by commercial farms.

The basin was also characterised by accelerating land degradation. The original ecology of the Densu basin was moist semi-deciduous forest with thick undergrowth featuring rich flora and fauna. The human activities through time, however, have greatly modified this forest ecology – and at an alarming rate. For instance, in the ten-year period between 1990 and 2000 the area of dense forest cover in the basin had reduced from 40 percent to 20 percent. On the other hand, the area covered by semi-forest, scattered trees and scrubs had increased from 50 percent to 65 percent and that of settlements and build-up or bare areas from 10 percent to 15 percent. The results were increased erosion leading to siltation of the river channel and consequently flooding. It further developed into a situation of occasional water shortages in an otherwise perennial river system.

Therefore, there was the need to develop a water management strategy which would improve the quantity and quality of water resources and also enhance the wetland's habitat. The Commission subsequently introduced an IWRM programme for capacity building, participation and public awareness strategies, regulations, and water resources planning within a decentralized IWRM institutional framework.

The Enabling Environment

To actualise the aims of the programme a series of actions were planned and executed. First was the establishment of an appropriate enabling environment at the national level that was devolved to the basin level. In that direction, the following conclusive actions were taken:

- A national institutional framework for IWRM was developed for coordinating water resources activities.
- A Legislative Instrument on Water Use Regulations was adopted for the grant and regulation of water use.

- A public awareness and education campaign plan with different components according to the segments of the public to be addressed was developed and implemented. This was to sensitise the general public on the need for water resources management.
- A database, built from national and basin specific baseline studies, was established to give indications of required solutions and provide information services.

Creation of Institutional Management Structure

A key element to the successful introduction and implementation of the IWRM programme was to establish an appropriate management institutional framework through the participation of all relevant stakeholders in the basin. Thus, a Densu Basin Board (DBB) was set up and made functional as the coordinating institution for the management of water resources in the basin. The agreed membership of the DBB is made up of a representative each of:

- Five key District Assemblies (out of the eight administrative districts that make up the basin)
- Six ministries and agencies – Ghana Water Company, Environmental Protection Agency, Ministry of Food and Agriculture, Ministry of Health, Forestry Commission, and Regional Coordinating Council.
- Religious bodies
- Non-governmental organisations
- Regional house of chiefs
- The National Council for Women and Development, and
- Water Resources Commission (WRC).

The process was also facilitated through the establishment of a WRC basin office (Densu Basin Secretariat) according to needs and agreed procedures in the Densu basin.

Awareness Creation and Education

One fundamental solution that was identified to improve the ecological health of the Densu was effective public awareness and education campaign. During the relatively short implementation period, the Densu Basin Secretariat has organised targeted public awareness activities such as publication and dissemination of IWRM messages and educational materials, and supporting local stakeholders, particularly NGOs and Community Based Organisations, to organise catchment fora and other awareness activities in the basin. To date, the Secretariat has been involved in the education of seventeen (17) key communities within the Basin.

Additionally, seminars and workshops have been organized for all the eight District Assemblies within the Basin. These interactions have gradually led to the established of a strong link between the DBB and the districts towards adapting joint solutions in tackling water resources management issues.

Regulation of Water Users

Part of the Commission's mandate is to regulate water use through the issuance of water use permits or granting of water rights. In this regard, activities in the Densu Basin has also

focused on identifying sixteen (16) major raw water users, out of which eleven (11) have been registered.

A significant benefit of this activity is that it is being used as a financial resource base to ensure sustainability of the IWRM process, which currently depends on external financial support. Indeed, proceeds so far generated from the issuance of the water use permit are being disbursed to support other micro programmes relating to awareness creation and education, waste management, and catchment rehabilitation works in the basin.

Collaboration with Stakeholders on Land Use Issues

There has been diverse collaboration between the DBB and the Secretariat on one hand and some key stakeholder organizations such as the Environmental Protection Agency, District Assemblies, Forest Services Division of the Forestry Commission, Lands Commission, Survey Department, Land Valuation Board, Town and Country Planning Department, Ghana Water Company Limited and the Media to deal with specific issues and cases that came up as 'hot spots'. Such cases that were dealt with related to:

- pollution activities from District Assemblies, communities, farms and industries;
- illegal and indiscriminate mining activities within and around the Basin;
- illegal fishing practices or the use of wrong fishing gear; and
- encroachment into buffer zones by residential developers, farms and factories.

For instance, Figure 1 shows a clear case of indiscriminate dumping of solid and liquid waste into the Densu river by a District Assembly. Figure 2 illustrates the result after due consultations and collaboration with all stakeholders and action taken on the issue.



Figure 1: Previous Downstream Situation of Massive Indiscriminate Disposal of Solid and Liquid Waste in the Densu Basin



Figure 2: Current Improved Situation at the Same Downstream Spot as in Above

Achievements and Impacts

As a result of the concrete activities so far undertaken in the Densu Basin, favourable and significant ecological and environmental changes have been realised, but which needs to be followed up. Such realised ecological changes include:

- Slight general improvement in the raw water quality especially at the down stream of the Basin. Ghana Water Company has indicated the reduction in the cost of treating water to the population, especially the western parts of Accra.
- Some degraded parts of the river catchment that were left fallow are gradually gaining their vegetative cover (natural re-growth). Figure 3 shows the Jei River which drains into the Weija Lake and is gradually recovering its lost vegetative cover.
- Linked to the above is significant impact of tree growing that has been undertaken at several parts of the Basin especially at the mid-stream. One of such positive impacts of tree growing is recorded at Nsawam and shown in Figure 4.
- A number of clean-up exercises and the phasing out of outmoded technologies for managing faecal matter/ liquids and solid waste.
- More communities are becoming aware of the consequence of the degradation of the river basin, pollution of water bodies and the attendant diseases, high cost of treatment of the diseases, poverty, and loss of livelihood. In Nsawam, for instance, a youth award scheme on activities for the protection and conservation of water resources has been instituted by an NGO, which is increasing the enthusiasm of youth organisations in the basin. Some District Assemblies and communities are also working hard at instituting better waste management and land use schemes to conserve the basin.



Figure 3: *View of the Jei River Draining into the Weija Lake gradually recovering its lost vegetative cover*



Figure 4: *Mid-stream communities growing trees along the bank of the Densu River*

Conclusions

The problems of the Densu Basin – pollution, increasing pressure on water, and shortcomings in the management of water and land resources – have called for appropriate solutions to address these natural and human systems in the basin.

The approach and process adopted has so far been to build on appropriate national legislation and regulations. It has also involved the integration of stakeholders in the planning and decision process and the establishment of organisational integration by setting up an effective coordination mechanism. These processes so far illustrate a clear IWRM planning approach for the Densu Basin.

It must be emphasised that the vision to achieve an efficient and effective IWRM system to improve the ecological condition of the Densu Basin is however still some way off. However, given the efforts being put in by the DBB, WRC and stakeholders there is no gainsaying the fact that some level of success is attainable in the Densu Basin.