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### **Investigating Institutional Arrangements for Integrated Water Resource Management in Developing Countries: The Case of White Volta Basin, Ghana**

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## **Executive Summary**

### **Problem Definition**

Water has become a critical resource for most developing countries. These countries are increasingly exposed to a range of water related challenges. These include the problems of fresh water scarcity, seasonal flooding, pollution of the resource base and challenges with respect to their navigational uses, all of which affect the ecosystem services offered by these water bodies. The exposure to these problems is due to different domestic and international factors, and the effects of these different factors are diverse within different country conditions.

Many scholars have described the water challenge as a crisis of governance. Thus, part of the problem is attributed to shortcomings in the institutions for water management. Although societies have developed rules for managing water since ancient times, the evolving approaches have been both path dependent and sectoral and have been unable to keep up with the rapid developments in society, especially in this century. In order to deal with these governance challenges, the international scientific and policy communities have been suggesting new models of water management. One dominant model is the concept of Integrated Water Resources Management (IWRM). Can the complex tasks associated with IWRM be effectively implemented by developing countries like Ghana that are moving away from sectoral approaches and adopting the IWRM concept? This thesis aims to improve the understanding of institutional arrangements in the management of water resources in an integrated manner in the White Volta basin of Ghana.

### **Research Questions**

The overarching research questions are: (1) How has the IWRM philosophy been interpreted and implemented by developing and developed countries in general? (2) How do the institutional arrangements and the interactions among the institutions in Ghana influence IWRM interpretation and implementation? The three sub-questions are:

- (i) To what extent can the problems in the use and protection of water resources be attributed to institutions in Ghana?
- (ii) How do the different socio-economic factors in the White Volta basin influence the practice of IWRM?; and
- (iii) How can the IWRM model be improved based on a general literature survey and the lessons learnt from water institutions in the White Volta Basin of Ghana?

### **Methodology**

The study is based on extensive literature analysis, content analysis of policy documents, and an analytical layered case study that examined the national level through the White Volta Basin level to local level. Ten communities were selected from different sections of the basin for the study of local institutions. Actors at the different levels include water user associations, traditional authorities, water and sanitation boards/WATSANS, households, youth groups, women's groups, the district assemblies (DAs), an irrigation company (ICOUR), and industries. The key data collection method included interviews, focus group discussions, observations, and document reviews. Those interviewed include government organisations (sector-specific and regulatory), international organisations and non-governmental organisations involved in water resources management, industry, water research bodies, and universities.

### **Literature Survey**

Chapter 2 presents a literature survey on IWRM. The review shows, first, that the evolution of the IWRM concept is a reaction to the perceived failure of the fragmented, sectoral approaches of the past. The idea of recognising the multi-sectoral nature of water resources and the need for its management in a holistic manner initiated a series of international debates at various forums, conferences and symposia which culminated in the adoption of the IWRM concept by epistemic and policy communities. The concept is still evolving and is also linked with other evolving concepts such as sustainable development and ecosystem services.

Second, IWRM recognises water as a social and economic good and gives room for exploring ways of achieving equitable access to water resources and obtaining maximum economic and social welfare out of it. It aims at the coordinated development and sustainable use of water resources. Third, at the conceptual level the views about what IWRM actually means vary widely. The most widely quoted definition of the concept is: 'IWRM is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems' (GWP, 2000: 22). But there is no consensus about its interpretation in the literature. Some of its proponents see it as a systems concept. Others see the concept as being fashionable rather than a radical new approach. Still others regard it as adaptive management. However, no matter how it is defined by its proponents, there is a general theme of coordination, sustainability, holistic approach and maximum utility implied.

Fourth, the strength of IWRM approaches over the sectoral approach is in the emphasis placed on the interdependence of the many different uses of water resources and the need to take the different aspects into account. The inclusion of elements of good water governance in its operationalisation adds to its strength and makes it more appealing to policy makers. Fifth, despite the attractiveness of IWRM to policy makers, critics argue that: (a) identifying the essential elements for IWRM is not easy; (b) the operational aspect of IWRM, integration, is complex; (c) managing water and other resources in an integrated and holistic manner may result in dealing with elaborate institutions which may not be easy to manage; and (d) the interface between water and law, as well as the many complex social aspects involved in water management, may pose a major governance challenge. For these reasons, it is important to ascertain the relevance of the concept by examining how the concept is being currently implemented in developing countries, and in particular in Ghana.

Chapter 3 assesses how the IWRM concept has been interpreted and applied in different developed and developing countries. The literature shows that (i) countries have applied the concept to different water development problems and have also interpreted IWRM differently. (ii) IWRM interventions have concentrated on modifying the legal and regulatory systems, but have not successfully engaged the people and social movements nor resulted in changing social institutions (e.g. South Africa and Tanzania). (iii) The few IWRM success stories are in countries where the structure of the economy and the governance processes are fairly well developed (e.g. New Zealand and Canada). (iv) In the absence of proper incentive structures, participants' actions tend to work against the change process. (v) Each country's experience has shown that both internal and external factors contribute in unique ways to institutional change.

Chapter 4 analyzes how institutions change or evolve. It shows, first, that institutions are a set of regularised practices. They may range from formal regulations backed by laws or organisational procedures to informal rules, norms and practices that have a conventional character. Without institutions and institutional arrangements there can be no organised water governance. Second, institutions do not function in a vacuum; they are closely linked both horizontally and vertically. Water governance involves introducing and developing changes to existing institutional arrangements to manage water in a sustainable manner. Third, a combination of the various theories on institutional change (evolutionary, market based, and bargaining theories) offer a viable way of explaining what changes might have occurred within the basin and of exploring how the existing institutions interact with the new institutions created as a result of the introduction of IWRM at national or basin level.

These are applied in explaining the use of market-oriented approaches (for example, through cost-recovery, less state interference) in water supply and the use of democratic means (through decentralisation, user participation) to enhance efficiency.

Chapter 5 explains the institutional framework in Ghana for water management. The developments of water management regimes are traced from pre-colonial times to the present attempt at IWRM. Until 1996, there was no single ministry or department responsible for water management when by an Act of Parliament (Act 522 Water Resource Commission Act, 1996) the Water Resources Commission (WRC) was established. The Act entrusted the regulation and management of the utilization of water resources and coordination of any policy in relation to them to the Commission. The new institutions operate alongside the existing ones. The only exception is the *tindanas* (owners of the land resource in the study area) who are not recognised at the regional or district administration levels. Community crafted institutions that are perceived to be fulfilling the felt needs of the community, are respected and legitimised. Potable water supply was the sole responsibility of the Ghana Water and Sewerage Corporation (GWSC), which became the Ghana Water Company Limited (GWCL) in 1999. In line with the government's decentralization policy, the Community Water and Sanitation Agency (CWSA) was carved out of the then GWSC with the mandate to facilitate the provision of safe drinking water and related sanitation services to rural communities and small towns in Ghana. Water management was placed under one ministry (Ministry of Water Resources Works and Housing) in 2001. A national water policy came into operation in 2007.

The need to coordinate Ghana's water resources in a more holistic way was precipitated by findings from a Water Resources Management Study in 1998. The paradigm shifts from sectoral approaches to an integrated one in Ghana resulted in the acceptance of IWRM to mean: (a) managing surface and underground water with attention being given to the environment from a multidisciplinary and participatory perspective; (b) a process change involving the devolution of power and competencies to the local level to organise and implement executive functions; and (c) managing water based on hydrological boundaries. The implementation processes show that Ghana's experience with IWRM is still evolving, and that the interpretation of the concept and application of the principles in practice are being introduced in various sector-related policies, plans and programmes

Chapter 6 assesses the institutions and organisations at the river basin level for water resources management. It reveals that the bodies involved are government agencies, non-governmental organisations, research bodies, an irrigation company, water user associations, traditional authorities, and international organisations. The assessment shows that (a) some of the river basin institutions and organisations exist in form but not in reality; and that (b) there is a gap between the mandate and the tasks and the actual execution by these organisations. (c) There are very strong vertical links with organisations at the local to the basin level and to the national level. This is because the links with the national level are regulated by hierarchical power relationships. These relationships have a political and legal basis since the organisations involved are in the public sector. No formal horizontal linkages exist at the basin level among these organisations/agencies. At the local level, they rely on cooperative types of coordination mechanisms. The horizontal linkages are weak because each line department concerns itself with its own activities and nothing more. This has not performed well in harmonizing decisions that are taken independently by different stakeholders. The changes in some of the basin institutions have resulted from the decentralisation and devolution of decision-making to the lower administrative levels (endogenous factors). This shift has put more responsibility at the local levels. However, some of the changes are based on 'induced institutional innovation' that results from exogenous factors such as the marketing of the IWRM philosophy by the western world and are not always locally understood, supported or implemented.

Chapter 7 identifies the institutions and organisations involved in the provision of potable water and their implications for water resource management. The Ghana Water Company Limited (GWCL) is responsible for urban water supply. The Community Water and Sanitation Agency (CWSA) works, in conjunction with the assemblies, for the provision of rural water supply and there are a number of

NGOs also involved in the rural water supply. The GWCL treats water as an economic good in urban water provision. In the process the concept of private-public partnership comes into play, with cost recovery as the key philosophy behind the operations. This has been met with public resistance with civil societies arguing that this philosophy leads to exclusion of the urban poor from the use of the resource.

The operation of CWSA is based on the concept of community ownership of and responsibility for potable water management. The concept seems to generate good group actions for the management of the resource but there is a problem of institutional fit /interplay here. The CWSA is under the Ministry of Water Resources Works and Housing, which is decentralised only to the regional level. At the district and community levels, the CWSA functions under the Ministry of Local Government, and Rural Development. This leads to operational difficulties. Under the existing arrangements the district assembly (DA) is mandated to implement and monitor community water delivery programmes while the CWSA serves as the coordinating body. But the supervising DAs do not have the technical capabilities to perform the implementation and monitoring functions.

Chapter 8 looks at water management for livelihoods in the basin. The economic activities at the basin are basically crop production, fishing and animal rearing. The crop production is either rain fed or irrigated. Furthermore, there is one agro-industry concern, and there are women's groups involved in pottery, small scale miners, and local traditional breweries. The agencies involved in managing these activities are the Ministry of Food and Agriculture, the Irrigation Development Authority, the Environmental Protection Agency, the Minerals Commission, the Ministry of Fisheries, the Irrigation Company of the Upper East Region and the water user associations (WUAs). The WUAs way of managing water for their common good demonstrates the existence of collective interest and how it brings about group action. The WUAs have their own practices, norms and rules that have evolved over the years to help manage water resources for their livelihoods.

Chapter 9 examines the interactions among water institutions and agencies for transboundary water management. It examines the extent to which these arrangements facilitate sustainable management of water resources in the basin and explores how the different levels interlock in these arrangements. The results show that transboundary coordination of management of the Volta River Basin has evolved rapidly. The sub-committee of WRC in charge of international negotiations on water has had good consultations and bilateral agreements that have the potential for efficient use of the resources for the benefit of the riparian countries. The Project for Improving Water Governance in the Volta Basin (PAGEV) constitutes an innovative tool for the integrated management of water resources of the Volta Basin but the scope (in terms of area) of the pilot interventions is too limited. Up scaling the project to cover a broader scope may reveal the challenges that are inherent in the IWRM principles and methods in managing international waters. The changes in water institutions are as a result of an intentional design approach to institutional development. Notwithstanding, there are changes due to 'induced institutional innovation' which is as a result of exogenous factors such as the IWRM philosophy from the international community.

## **Conclusions**

Chapter 10 recalls the major purpose of the thesis and aims to provide an overview of the key overall messages. Four paradigms in water management have been marketed worldwide. These are the shift from government to governance, from centralization to decentralization, from water as a gift of God to water as an economic good and from sectoral to integrated water resource management. From the existing literature it is concluded that there is ineffectiveness in the sectoral organisation of water management in solving the water crises in the face of the multifunctional nature of water. This general picture applies well to the Ghanaian water sector, where fragmentation of water management functions coupled with the absence of a common coordination mechanism resulted in the pollution of water bodies and drying up of water bodies due to uncontrolled clearing of vegetation along riverbanks, thus hampering the supply of potable water to both urban and rural communities. To address the problem the government introduced institutional reforms in the 1990s which eventually

resulted in moving away from the centralised management system of the GWSC. This was followed by the decentralisation process and the subsequent adoption of the IWRM concept for the management of Ghanaian water resources.

The IWRM philosophy and methods seem to present highly challenging and complex implementation tasks. However, there are opportunities emerging from the implementation process. Historical experiences and policy legacy of the fragmented approach regime still dictates present actions to a very large extent. There is interaction of the existing institutional elements and that of the new concept, giving rise to new cooperation among the basin organisations involved in water management. These outcomes are neither dictated wholly by rational choice nor the path dependency of historical institutionalism. They are as a result of a kind of selection among the various logics that the IWRM ideas present to the actors.

There may be no universal instruments for IWRM implementation. Different implementation factors operate differently at different locations and a generic template of “best practices” may not work for others. The interconnectivity view of management also may not work for developing countries. The cultural context of the country is a critical issue in determining the extent to which IWRM could be beneficial. Without an understanding of existing informal collaboration, customs and networks, a formal IWRM framework may face great challenges and institutional mis-matches are a serious drawback to IWRM implementation. The greater the link of IWRM initiatives with the political and legal/institutional framework the better chances of success. Policies geared towards the promotion of ownership of programmes stand a better chance of acceptance and success.

Based on the literature survey, the content analysis of policy documents and interviews with stakeholders, this thesis concludes that developing countries like Ghana often adopt paradigm shifts because of exogenous pressures (e.g. aid agencies and international trends) but that (a) lack of domestic ownership of and leadership in implementing the concept, (b) limited resources, and (c) institutional mismatches, often results in implementation of the ideas on paper rather than practice with an ever widening gap between mandates and resources. This may ultimately have counter-productive impacts! Furthermore, the July 2010 United Nations General Assembly adoption of the Human Right to Water and Sanitation which has been supported by Ghana along with 121 other countries raises new questions. Will Ghana now discard the cost-recovery principle in favour of the human rights principle, is it going to blend the two principles, or is it going to ignore its commitment to progressively implement the human rights principle at national level? If it decides to implement the human rights principle it may have no resources left for IWRM.

## **Recommendations**

The following recommendations aim at assisting the Water Resources Commission (WRC), White Volta Basin Board (WVBB), District Assemblies and the communities to address, in a practical way, pertinent problems on the ground and to fashion out further arrangements that will meet the needs of the time for sustainable management for the benefit of all.

Ghana could manage its water resources better if essential elements for IWRM are well identified within each basin. Attention is then given to the key components and relationships in order to reduce the complexity and uncertainty problems associated with the operationalisation of the concept. Given the fluid nature of the IWRM concept and the limited resources of Ghana on the other hand, it is such a focused integrated interpretation that is likely to lead to the most appropriate utilisation of the limited resources. It can result in spending less time in planning because there will be a smaller set of more relevant and prioritised recommendations to concentrate on and work with. It is recommended that the sub-committees of the basin board be reorganised along livelihood objectives or goals instead of the present subcommittees of the Basin Boards which are organised around topical issues like environment, land use, Research, Education and Public Awareness, etc. There can be, for example, a sub-committee on managing water for agriculture. This is more likely to bring about the proper coordination of agricultural sector agencies of the Ministry of Food and Agriculture (MOFA). The

number of the sub-committees should depend on the key elements identified. These will help reduce the problem of “horizontal fragmentation” and facilitate effective coordination and cooperation. These could then be effectively integrated and coordinated by the basin board for better water management in Ghana.

There is the need to undertake a general review of the local government structure and put in place appropriate legislation that may enhance better coordination by the RCC at that level so as to make it more functional. Considering the vibrant nature of traditional and local institutions, a policy in the direction of legalising community crafted institutions and applying those institutions for water resources management is likely to enhance implementation. The assemblies, for example, can adopt the methods that communities have used to effectively mobilise for sustainable community collective initiatives and apply them in water resources management where applicable. Other recommendations include enhancing linkages, strengthening the technical support system in potable water delivery and properly defining and structuring the roles of NGOs and the donor community in water resources management at the local levels. All these are to be done in the light of the selected goals in the basin to bring about focused efforts.

For developing countries like Ghana the lessons from the Ghanaian situation may be relevant because there are common conditions in their economies. These are: too many issues to be considered giving rise to elaborate organisations and institutional interactions that developing countries do not have the capacities to manage; large informal sectors and therefore their economies may not respond positively to the economic incentives for water reallocations; the bottom-up approaches involve too much participation that may eventually lead to lost focus. It is therefore recommended that “limited water resource management” which focuses more on prioritization, rather than holism; indigenising exogenous ideas; and working within existing cultural practices with a history of success and slowly moving towards second order learning that may challenge past path dependencies should attract the attention of developing nations like Ghana. These will give room for reconciling the values, interests and needs that exist within the basin.