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The Transboundary Water Resources Management Regime of the Volta Basin

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Ben Y. Ampomah, Bernadette A. Adjei, Eva Youkhana

Preface

The underlying study of the working paper has been conducted in the Framework of the GLOWA Volta Project (GVP), led by the Centre for Development Research at the University of Bonn, Germany. The GVP, divided in three phases (2000 – 2003, 2003 – 2006, 2006 - 2009) and financed by the German Ministry for Research and Education and the State North-Rhine-Westphalia, is an interdisciplinary and international research project, which aims at improving water allocation in the Volta Basin of the West African savannah zone under climate change conditions. One of the main objectives of the project is the development of a scientifically sound and user-friendly decision support system (DSS) to be used by water management actors at different societal levels.

One potential user for a DSS operating at trans-boundary level is the Volta Basin Authority, created in 2006 by the water Ministers of all six riparian countries (Ghana, Burkina Faso, Ivory Coast, Benin, Togo and Mali) in order to balance vested interests of upstream and downstream parties claiming the unrestricted right to make use of the water resources in their part of the basin. An institutional framework which integrates the interests of diverse user groups, and reflects the legal-pluralistic governance context of the water sector, had not been developed. In the context of the GLOWA Volta subproject (C2) 'Trans-boundary water management', the project partners and researchers therefore examined the implementation process emerging from multiple trans-boundary institutions and the legal aspects of trans-boundary water management. One aim of the report was to determine why previous cooperation processes have rarely been effective, and what the major legal and institutional constraints to cooperation between the main riparian states Burkina Faso and Ghana, were, given the background of legal and institutional pluralism.

While an historical assessment of customary laws and practices of water management and legal and institutional set-ups of mainly Burkina Faso and Ghana has adequately been handled in previous publications (FAO 1998, Opoku-Aygemang 2004, Opoku-Ankomah et al 2006, Lautze et al, 2006), no comparable initiative has been taken to systematically describe the history of the Volta basin trans-boundary process, including pre-existing forms of trans-boundary cooperation and pressing issues in the past and today. The main objectives of the report on trans-boundary water management in the Volta basin are therefore to give a historical overview and an account of the status quo of trans-boundary water management in the Volta basin. The idea is to compile relevant background information about the process that has led to the formulation of trans-boundary water management arrangements. A focus lies on the role and interests of different actors (governments, donor agencies, water bureaucracies, water user agencies, civil society and/or the private sector) and the way they influenced the negotiation processes that surrounded the development of a framework for trans-boundary water management. It is shown how the interaction between different actors has led to the formulation of the existing institutional framework (laws, treaties, contracts, legal arrangements). Furthermore, it is described at which stage the trans-boundary water management policy has arrived till now. The report includes a chronological table that highlights important dates and steps in the development of trans-boundary water management policies and a table with major actors involved in the policy process. The named institutional representatives are specifically evolved in the negotiations and could be valuable partners for further research activities.

1. The report is one product of long lasting and successful cooperation between the GVP and the Water Resources Commission, whose important role for the Volta basins trans-boundary cooperation process can not sufficiently be emphasized. By making the results publicly available we also hope that we could bridge the knowledge gap that still exists about historical consistencies of international policy processes.

2.
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Keywords

trans-boundary water management, Volta Basin Authority, Ghana, Burkina Faso, Hydro-political history of the Volta basin

1. Introduction

Transboundary water resource management and collaboration among riparian states is based on the international law principle that although every state is sovereign and has the right to exploit its own natural resources, the use of such resources should be in such a manner as not to cause harm to its neighbours or hinder the use of their part of those natural resources (Stockholm Declaration, 1973; Rio Declaration, 1992). The customary international water law principles on shared water resources (Caponera, 1992) are as follows:

- a) the duty to cooperate and to negotiate with a genuine intention of reaching an agreement;
- b) the prohibition of management practices likely to cause substantial and lasting injury to other states;
- c) the duty of prior consultations; and
- d) the equitable utilization of shared water resources.

These principles have guided the relationship of many riparian states and have led to the codification of a number of international conventions and multilateral agreements between such states.

The Volta Basin is an international water body comprising the Black Volta, Red Volta, White Volta, and Oti Rivers and is shared by six (6) countries namely Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali and Togo. Ghana and Burkina Faso share between them 85% of the basin with 67% of Burkina Faso and 64% of Ghana being drained by the Volta Basin (Caponera, 1992). Thus, between these two countries, the Volta Basin is an important shared water resource.

Unfortunately, however, until the past year (2006) the Volta Basin remained one of the few transboundary river basins in Africa with no formal institutional arrangements for managing its water resources. There were also no legal provisions for co-operation among the riparian countries for integrated multipurpose development and management of the shared water resources.

Various attempts and processes have been initiated and accelerated, especially from the beginning of the twenty-first century that have culminated into the establishment of the Volta Basin Authority (VBA) as the formal transboundary water management institution for the six riparian states. These processes as well as their historical antecedents as to why the transboundary management processes for the Volta have been a recent event in relation to other transboundary waters in Africa have not been well documented and appreciated. This report is, therefore, an attempt to document and update knowledge on the development of transboundary water resources management processes and policies in the Volta Basin.

Objective of the Study

The main objective of this study on transboundary water management in the Volta basin is to give an historical overview and an in-depth account of the transboundary water management processes in the Volta basin.

Methodology and Scope of the Study

The report is mainly a desktop study based on a review of literature, contacts with key professionals that have been involved in the transboundary water management (TWM) process for the Volta basin and to some extent previous knowledge and experience of the research team.

The report chronicles and examines the historical developments of transboundary cooperation among the riparian countries especially between Ghana and Burkina Faso. Within this context, the late start of the transboundary process in the Volta basin is examined in comparison to other African river basins.

The next stage of the report is the identification of the important actors and institutions involved at regional and international levels (governments, donor agencies, water bureaucracies, water user agencies, civil society and/or the private sector), their roles, interests, and influence on the transboundary process. It also includes an analysis of the multiple transboundary institutions and legal pluralism (laws, treaties, contracts, and legal arrangements), and the level of effectiveness of negotiation processes between Burkina Faso and Ghana.

Recent institutional developments which have led to the formation of the Volta Basin Authority would also be examined and this examination will be followed by the way forward for the process. The report also includes a chronological table of events highlighting important dates and steps in the development of TWM processes, the policies evolved and the major actors involved in this process.

2. HISTORICAL DEVELOPMENTS

History of transboundary cooperation: the legal and institutional setting of the Volta Basin

During the colonial era in Africa, Ghana and Burkina Faso (then known as Upper Volta) were governed by the English and French, respectively with each instituting its system of governance and legislation. The English common law was used to govern Ghana and the French system of codification of laws was used to govern the then Upper Volta. These two systems of law although different sought to do similar things: the pre-colonial system of community ownership and governance of natural resources including water resources was set aside in favour of state ownership and control of these resources (Opoku-Ankomah et al., 2006).

Thus in Ghana, the River's Ordinance of 1903, Cap 226, and Forest Ordinance of 1949, Cap 157 were enacted putting control of water under the Minister and certain uses other than domestic were to be authorized by the competent Minister. However, although formally natural resources were controlled by the State, at the community level land and thus the water resources located on them were under the control of local traditional rulers. Where no conflict occurred, the role of local traditional authorities was not questioned. However under the 1992 Ghanaian Republican Constitution, all natural resources were put under State control with agencies being set up to manage such natural resources for the State for and on behalf of the people (Ministry of Works and Housing, 1998).

Similarly in Burkina Faso, "the colonial legislation had a defined public domain (State management), which included waters but in practice, daily management and control was left with traditional rulers" (Opoku-Ankomah et al., 2006). The Decrees of March 5, 1921, November 25, 1930 and August 23, 1933 related to water administration and exploitation with the ad-hoc institutional administration of water resources that pertained in Ghana also existing in Burkina Faso.

In Ghana, many State institutions were given the mandate to use water resources in their operations but had no clear management obligations. The duties and responsibilities of these organizations often overlapped; as happened often between 1957 and 1996 - the milestone of the setting up of the Water Resources Commission (WRC). For example, the Volta River Development Act 46 of 1961 set up the Volta River Authority which was given the mandate to create the Akosombo Dam on the Volta River to generate hydro electric power and to develop the lakeside area of the Volta Lake for improved health of the people and enhancement of its natural ecology - but their mandate did not extend to transboundary water resources management (WRC, 1999).

This kind of arrangement gave room to a fragmented approach to the management of the resource as these agencies dealt with single purpose water use to serve sectoral interests. There were no linkages of each other's functions and roles and this lack of coordination of activities in the water sector increasingly led to conflicts in the functions of the various institutions. It thus became paramount to reform the water sector and in the early 1990s this process was commenced (Opoku-Ankomah et al., 2006).

A significant step was taken to address the diffused state of functions and authority in the water resources sector by the establishment of the Water Resources Commission (WRC), which was created through an Act of Parliament (Act 522 of 1996). WRC then became the overall body responsible for coordination, regulation and management of Ghana's water resources. Part of its mandate is to undertake activities for the protection of catchments and thus included collaboration on transboundary catchments (WRC Act, 1996). Thus, with the establishment of the WRC a state institution had the mandate to take initiatives and represent Ghana on the international scene to collaborate with its riparian neighbours to protect and manage transboundary waters.

After Burkina Faso gained independence in 1960, it also had several State institutions at one time or the other in charge of water resources management. Until 1965, due to the predominate considerations for water supply, the Department of Civil Engineering under the Ministry of Economy and Planning was in charge of water but clearly not for management and conservation but for utilization. The Ministries of Development and Tourism and Agriculture and Livestock between 1967 and 1984 managed water utilization until the establishment in 1984 of the Ministry of Water. After several years of uncoordinated water use and management a water policy and strategy was adopted in 1998 that took into consideration the principles of Integrated Water Resources Management (IWRM) and set the stage for collaboration and transboundary water cooperation (Opoku-Ankomah, et al., 2006).

Indeed subsequent developments in the water sector in Burkina Faso have only reemphasised the need for cooperation in water resources management, a fact which has amply been demonstrated.

Initial Cooperation Efforts – the Permanent Joint Commission for Cooperation

The first governmental cooperative relationship/effort between Ghana and Burkina Faso was initiated with the inauguration of the Permanent Joint Commission for Co-operation between Ghana and Burkina Faso in 1971. The purpose of this collaboration was to have a basis and framework for mutual cooperation in political, economic, commercial, industrial, cultural, transportation and other fields (Permanent Joint Commission Report, 1971). A copy of the report on the Permanent Joint Commission is presented as Annex 1.

This was not a matter of purely water resources management collaboration but rather a general political and socio-economic collaboration. However, the expectation was that all sectors of the economy including water would be developed. This general collaborative effort was not pursued until July 1998 when a Permanent Technical Committee to focus on the study of power generation, irrigation, water transport, and the control of water-borne diseases, especially in the Volta Basin was formed by the two countries. This effort at collaboration on water may also be attributed to the general international awareness on environmental protection that had arisen in the late 1980 through to the 1990s.

The other relatively early bilateral cooperation between Ghana and Burkina Faso was at the institutional level between the Ministry of Energy of Ghana and its counterpart Ministry in Burkina Faso that focused mainly on issues of power supply from the Akosombo Dam. In this relationship, the Volta River Authority (VRA) of Ghana was the lead institution for collaboration with its partner institution in Burkina Faso for the exchange of data and information on hydro-meteorology, flood alert and warning systems in the event of spilling, dam break or extreme storm events.

Presently, hydro-meteorological data continues to be exchanged but it is basically to assist in dam operations for the generation of power at Akosombo, Ghana. In the case of possible spilling, information is transmitted from SONABEL in Burkina Faso to VRA which in turn relays the information its regional offices in the affected areas. The regional administration offices are also informed for relevant

action to be taken at the local level. However, it is on record that in some instances VRA is informed at rather short notices therefore affecting information flow to the affected areas. Discussions are currently ongoing by the Ghana-Burkina Joint Technical Committee for IWRM on the possibility of opening other channels of communications such as through transboundary local committees and the Regional and Provincial Administration structures in the two countries for quicker exchange of information and response in cases of spilling and possible flooding.

External Influences and Interests in Promoting Transboundary Cooperation between Ghana and Burkina Faso

The transboundary relation between Ghana and Burkina Faso has been fueled to a large extent by international agencies and donors on project basis. Notable initiatives were among others, the 1988 initiative by UNESCO in the form of provision of assistance within the framework of the International Hydrological Programme (IHP). This was by way of initiating a process of dialogue at the technical level to promote data exchange among the riparian countries of the Volta Basin (WRC, 2002).

The processes was not followed through and stopped after about two years. The data exchange process fell through due to the countries inability to sustain the exchange following the financial crisis of UNESCO, which was supporting the process. It was not until fourteen (14) years later that the IHP National Committee of Ghana organized a consultative workshop on Integrated Water Resources Management of the Volta Basin which meeting was attended by representatives of five out of six riparian countries of the basin (WRC, 2002).

Other cooperation efforts on the Volta's water resources were largely initiated and driven by international donors, especially the World Bank, to satisfy lending conditions. In this vein, it was the request in 1996, from Burkina Faso to Ghana for a 'no objection' for a water supply scheme on the Ziga Dam on the White Volta in Burkina Faso – a World Bank sponsored project - that brought about the first existing 'formal agreement' on water use on the Volta. As a matter of fact, the request was made to satisfy the financiers' requirements and not really a realization by Burkina Faso of the need to coordinate the use of the shared water resources (Ministry of Works and Housing 1998). However, the event produced discussions about more coordination and collaboration between Ghana and Burkina Faso on the management of the Volta Basin. A Volta Basin Water Management Initiative was therefore launched with the assistance of national and international donors (including French World Environment Fund and Caisse Francaise de Developpment) to serve as a medium for communication and dialogue on water-related issues; the initiative was short-lived without any assigned reasons.

It took a natural disaster of the drastic reduction of the water levels of the Akosombo Dam and energy crisis in Ghana in 1998 to wake governmental interest in riparian cooperation on the management of the water resources of the Volta Basin. This had been preceded in 1994 by destructive flooding of parts of upper Ghana, bringing home the realization that there was the need for countries that shared the water resources of the Volta Basin to cooperate in the management of the Basin. This was especially so with the claims that such events were attributed to preventable events in Burkina Faso and the calls for an urgent need to deepen existing cooperation and ultimately to establish formal transboundary agreements on the development and management of the Volta (Ministry of Works and Housing 1998).

Another milestone in Ghana Burkina-Faso cooperation on transboundary water resources cooperation was the initiation of the GLOWA Volta projects, funded by the German Federal Ministry of Education and Research. The GLOWA-Volta initiative began the process of developing a scientifically sound Decision Support System (DSS) for the assessment, sustainable use, and development of the Volta basin's water resources (WRC, 2002). This project was run as a collaborative effort with established State institutions, such as the WRC of Ghana, within the White Volta Basin, during the period 2004 – 2006. The project was particularly seen as a way of generating and disseminating scientific information

between Ghana and Burkina Faso, to facilitate decision making on the management of the shared water resources (Van Edig et al., 2001).

A UNEP/GEF supported project on the Volta basin started in 1999 to promote IWRM in the basin. At the first meeting of the six riparian countries of the basin in Accra, the Ministers of environment and water or their representatives agreed to join forces and collaborate on an integrated management of the basin. A project for 'Addressing Transboundary Concerns in the Volta Basin and its Downstream Coastal Area' was prepared and endorsed by all the countries with the broad objectives of building capacity and creating a regional institutional framework for the effective management of the Volta Basin. The project was also geared towards development of regional policy, legal and regulatory framework for addressing transboundary concerns in the Volta basin (UNEP/GEF, 2002).

An important milestone in the efforts to promote cooperation between Ghana and Burkina Faso on the use of the resources of the Volta Basin was the institution of the Water Governance Project (PAGEV) from 2004-2006. PAGEV, which was sponsored by IUCN in collaboration with Global Water Partnership (GWP), was designed to improve water governance in the White Volta basin with particular focus on Ghana and Burkina Faso. This Project, which was completed in October 2007, acted as a complement of the GEF supported Volta Basin Land and Water Management Programme, involving all the six riparian countries, to ensure coordinated efforts in the eventual management framework for the Volta River Basin (IUCN, 2003; WRC, 2004).

Another transboundary cooperative effort that has helped the transboundary collaborative effort was the pilot trans-border Burkina Faso and Ghana project that took off in 2004 encompassing 30 communities (15 communities each) and was supported by FAO and ECOWAS to improve socio-economic development of the Onchocerciasis freed zone in the White Volta sub-basin. The project focused on strengthening trans-border cooperation on transhumance and shared watersheds through the introduction of village level land water resources management arrangements (Opoku-Ankomah, et al, 2006).

However, it should be noted that these initiatives were project specific and donor driven to address particular problems. Unfortunately, these problems did not include the establishment of a body or institution to take charge of the management of the entire basin for the riparian countries. Secondly, most of these initiatives were undertaken and driven by specific institutions within the countries, and therefore did not easily translate into active and all embracing governmental participation. Thus, in spite of the various initiatives and cooperation on the Volta, it remained until 2007 one of the few major transboundary river basins in Africa with no formal legal and institutional arrangements among the riparian countries for managing its shared water resources.

The intent and interests of the donors in the Volta basin are informed mainly from available documentations. For instance, the involvement of French World Environment Fund (FFEM) justified its intervention in the Project on the Integrated Management of the White Volta Basin between Ghana and Burkina Faso that the project meets its eligibility criteria of introducing concerted management of a common transboundary basin linked to the development of the two countries. It is also to complement the efforts of other donors, especially those providing 'French aid'.

The riparian countries cannot on their own self finance the development of major water resources projects and invariably approach international or external sources for financial support. As stated earlier, it is the lending conditions of donor institutions such as the World Bank that compel riparian countries to negotiate transboundary rights to ensure environmental sustainability.

Socio-Economic and Political Concerns and Interests

In spite of the domineering external agency and project based influence on the transboundary management process of the Volta, the governments of riparian countries have in recent times demonstrated an appreciable level of political and socio-economic concern and the will to develop and realize the optimum utilization and management of their water resources by partaking in international cooperation and bilateral arrangements with other riparian neighbours.

In Ghana, for instance one of the ways that the WRC is seeking to achieve its mission of “regulating and managing the sustainable utilization of water resources and to coordinate related policies by combining our core competencies and hard work through effective participation, monitoring and awareness creation for the socio-economic development of Ghana” is to “cooperate with riparian countries and international organizations...” (WRC, 2006; WRC website).

The transboundary process is also formally recognized in Ghana’s National Water Policy. Specifically, in addition to the national and global development objectives, Ghana is also a signatory to a number of international laws, protocols, agreements and declarations that place obligations on the government in the management of water resources and the environment. These laws, protocols and agreements also place obligations on the government in the use of water resources particularly with the cooperation of other riparian states (Ministry of Water Resources Works and Housing, 2007).

In addition to these protocols and agreements within the framework of international cooperation on water resources, the government of Ghana has as a policy measure to systematically pursue strategic initiatives to develop and conclude bilateral and multilateral protocols and agreements (eventually resulting in establishment of formal River Basin Organisations where appropriate) between Ghana and other riparian countries including any associated aquifers (Ministry of Water Resources Works and Housing, 2007). The overall concern and aim of such transboundary initiatives is to ensure the reasonable and equitable benefit of all countries that share these basins through the efficient basin-wide planning and use of water resources as well as promotion of mutually beneficial economic cooperation.

Two areas of key interest to Ghana (and most probably to the other riparian of the Volta) that has enhanced the socioeconomic and political seal for cooperation on transboundary management are the need for;

- 1) standardisation of data collection and exchange of data and information, and their use with respect to transboundary issues; and

sharing of benefits of water resources of shared basins and aquifers, for example, by extending hydropower, potable water and water transport to the other co-riparian countries, where feasible.

Burkina Faso has a similar mission for transboundary water resources management and is reflected in the Action Plan for Integrated Water Resources Management (PAGIRE) of March 2003. The objective of the Action Plan is to contribute to the implementation of integrated water resources management in the country by respecting and adopting the principles acknowledged at the international level in relation to the sustainable and ecologically rational management of water resources. The Action Plan, further states that Burkina Faso should strive towards international cooperation in water resources management and that the State in undertaking this responsibility will have central structures to ensure implementation through, among others, monitoring and supporting the development of international cooperation in the area of water (Ministry of Agriculture, Hydraulics and Fishery Resources (MAHRH), 2003).

This commitment on the part of the governments of Ghana and Burkina Faso who share the greater part of the Volta to international cooperation is especially important as water as a natural resource is the property of and responsibility of the State and that the ultimate action for its conservation and management rests largely on the State.

It is interesting to note that such bilateral interests on the Volta River and its resources have not rested only between Ghana and Burkina Faso. There has been a good record of economic co-operation over several years based on sharing of the outputs of the hydro electric power generated at Akosombo in Ghana with the other riparian states for mutual benefit. Ghana has since 1975 supplied power to Togo and Benin, and another such arrangement exists with Cote d’Ivoire. Another potential opportunity for beneficial cooperation has been the identified and discussed inter-basin water transfer from the lower sections of the Volta, at Sogakope in Ghana, to Lome, the capital of Togo (Ministry of Works and Housing, 1998).

The Republics of Benin and Togo also maintain a bilateral cooperative agreement that aims at the development and management of hydropower, irrigation and fisheries. The thrust of this protocol

involves joint management of the hydro-electric power dam at Nangbeto in Benin and the joint financial agreement over an irrigation project covering over 2.000 hectares of land (Ministry of Works and Housing, 1998).

Clearly then, it would seem that the political, socio-economic and environmental interest of these countries were initially geared very much towards bilateral arrangements for the effective management of the water resources of the Volta Basin.

Civil society and the private sector actors' involvement in the Volta Basin transboundary water resources management process.

Initiatives solely sponsored by and run by local communities or the private sector to promote transboundary cooperation on the Volta are not notable or well documented, although commercial trade between the borders has been well established over many decades. A recent study by the Water Resources Coordinating Unit of ECOWAS (2006) shows that one of the major institutional constraints to the development of national as well as transboundary water resources management is the absence of clearly defined intervention frameworks for water resources projects by the private sector and the civil society without recourse to the appropriate authorities for legal authorizations, the over representation of the State and marginalisation of other actors, and the low capacity of local communities in the management of water.

However, a few instances can be cited to show that the civil society and private sector have or are, to a certain extent, playing a role in the transboundary management process of the Volta. The recent PAGEV project has brought together communities, civil society organizations and NGOs to collaborate on bank restoration and economic agricultural ventures to enrich the livelihood of the local communities. Notably, is the formulation of fora at transboundary, national, and local levels that have clearly defined linkages to manage projects and initiatives at the sub-catchment level. This cooperation structure is depicted in Figure 1. The structure seeks to bring together governmental agencies, local district assemblies, civil society, and local community members (especially those living and working on the river banks) whilst ensuring the participation of women at the local level.

The riparian countries have also been addressing the issue of civil society and private sector involvement in the transboundary process. Ghana's National Water Policy recognizes the importance of creating the enabling environment for the private sector and civil society while at the same time building the capacity of the general public through information dissemination and involving them in decision making process towards the attainment of the water resources management goals and the MDGs (Ministry of Water Resources Works and Housing, 2007).

The Burkina Faso IWRM Action Plan encourages the reinforcement of the intervention of building the capacities of local communities, the private sector, and civil society in water resources management. Indeed by law, the right to manage water resources has been vested in local communities (MAHRH, 2003; Law no. 041/98/AN) and thus the Action Plan reiterates that the capacities of local communities and private sector and civil society in the water sector be built to enable them better participate in water resources management actions and programmes.

At the transboundary organisation level, the consultative processes leading to the establishment of the VBA have recognized the importance of local communities and civil society in water resources management. Accordingly, the establishment of a 'Forum of the Parties involved in the Volta Basin Development' (known as the 'Forum') is recognised in the VBA Statutes as one of the permanent administrative organs of the Authority (VBA, 2006).

The Forum is composed of the representatives of:

- Various categories of water users of the member States;
- Civil Society involved in the management of water resources;
- Decentralized local authorities in each portion of the basin of the State parties;
- Representatives of the National Focal Structures,

- Representatives of the neighboring transboundary basin organizations;
- Representatives of research centres in the water and environment sector

In particular, the Forum is supposed to be an advisory organ of the Council of Ministers by submitting the opinions and proposals of the stakeholders involved in the development of the basin and likewise inform stakeholders on the activities and achievements of the Authority. It is also to support the activities of the Authority through the promotion of education and sensitization to joint issues relating to integrated water resources management.

Late Start of the Transboundary Process in the Volta Basin

A number of reasons could be adduced for the late start of the transboundary process for the Volta basin. First and foremost, the natural resource development and management was dictated by the economic development agenda of the immediate post independence governments of the six riparian countries. The main thrust was economic emancipation of the people by harnessing available natural resources and not on the sustainable development or management of these resources, including water.

Thus, in Ghana, the first water development and management institution, Volta River Authority (VRA), was set up for the generation of electric power from all sources, including the development and operation of hydroelectric generation plants. In the case of Burkina Faso, water sector activities were implemented with the view to supplying drinking water for rural areas and developing water for livestock and to the extent that the water sector was integrated into the Ministry of Economy and Planning from independence in 1960 to 1967. For the other four riparian countries there were no developmental activities identified and undertaken on their portions of the basin.

Secondly, it seems that the apparent the lack of threats to the use of resources of the Volta Basin since independence and the abundance of the resource could have attributed to the lack of an early and expedited action on transboundary cooperation. The sovereignty of the six riparian countries of the Volta basin as regards their use and control over the resources of the basin has been undisputed. Thus, each country has over the years used the resources to its benefit and therefore the need to cooperate was not an immediate felt need.

Ghana did not experience any reduction in the levels of the Volta Lake for power generation until the early 1980s. It took another ten years before another crisis was experienced. During these periods, the disasters were attributed to natural and human causes that were mainly national and internal in essence and not to the activities of the other riparian countries, particularly Burkina Faso since it had not by then undertaken any significant infrastructural development on the Volta. The riparian countries are now linked by a common need for the valuable land and water resources of the Volta Basin since the basin is now facing transboundary threats, which include land degradation, water quality degradation, water scarcity, biodiversity loss, and flooding.

Another significant reason for the late start of the transboundary management process on the Volta was the fact that with the exception of Ghana and Togo, the other remaining countries were involved and focused on their membership and role in the Niger Basin Authority (NBA) (Mali was in addition involved in the Convention on the Status of Senegal River of 1972). The NBA (originally known as Niger Basin Commission until 1980) was formed in 1964 to promote cooperation among the member countries in the fields of water, energy, agriculture, livestock, fishing, forestry, transport, trade and industry. Unlike the Volta, the Niger experienced initial crisis and conflicts. For instance, Burkina Faso and Mali had an 11-year dispute (1974-1985) over the Beli River which drains into the main Niger River partly because of its rich dry rich and large pastures. In such circumstances a transboundary arrangement for cooperation and conflict resolution is paramount.

The first African agreement on the conservation of nature and natural resources was signed in Algiers, Algeria on September 15, 1968. Article 2 of the agreement underlined the commitment of the States to take necessary measures to ensure the conservation, use and development of lands, waters, flora, and fauna resources. Article 5 of the agreement, which concerned international waters, stipulate that "When groundwater and surface water resources interest two or several contracting States, they will

consult each other and if need be, establish inter-state commissions to study and to resolve problems arising from the common use of these resources and to insure collective development and conservation of these resource " (African Convention on the Conservation of Nature and Natural Resources Algiers, 1968).

Côte d'Ivoire, Ghana, Burkina Faso, and Mali, where among the twenty (20) countries that signed the agreement, which came into effect on October 09, 1969. Interestingly, no effort was made to effect the signed agreement among these countries, at least on the Volta. It can be assumed, as indicated earlier in this report that there were no critical transboundary management issues relating to the Volta and these countries took initiatives and measures that would guarantee sufficient and continuous drinking water to the population, irrigation for food, water for livestock and water for power generation (African Convention on the Conservation of Nature and Natural Resources Algiers, 1968).

Lastly, it could be argued that the institutional development for water resources management in the various riparian countries may have negatively affected the process of transboundary cooperation. For instance, the exploitation of water resources of Benin continues to be carried out by different sectors with varied objectives but without adequate coordination. Looking at the late stage at which Ghana – which is the downstream country and holds a significant portion of the Volta River - established a single and comprehensive body in charge of water resources management, i.e. the WRC and also declaring international interest in the transboundary process (in Ghana's Water Policy document), it is quite understandable that as compared to other basins in Africa, the Volta Basin was a very late starter in the institutional development of the transboundary process.

3. RECENT INSTITUTIONAL DEVELOPMENTS

Recent Triggers for establishing an Institutional framework for transboundary management of the Volta

The efforts of the governments of Ghana and Burkina Faso in particular and other actors in the transboundary water resources management process have yielded results and recent developments have led to the constitution of the Volta Basin Authority (VBA).

An important trigger for transboundary cooperation on the Volta was the EU Water Initiative, launched at the Johannesburg World Summit on Sustainable Development in 2002, under which the Volta and Niger Basins were selected as the West African co-beneficiaries to be supported under a transboundary water resources management programme (EU, 2004). The selection of the Volta as a co-beneficiary basin was spearheaded by Burkina Faso, which also followed up with the initiation of consultative meetings with Ghana, aimed at creating a path for the establishment of a transboundary water management institution. The process having started was pushed by the national focal points of Ghana (WRC) and Burkina Faso (DGIRH, now known as DGRE). Finally in April of 2004, the Ministers in charge of water resources of Ghana and Burkina Faso after deliberations, signed the Ghana-Burkina Joint Declaration (Ghana Burkina Joint Declaration, 2004).

The Ghana-Burkina Joint Declaration document acknowledged the common water and environmental issues for cooperation and stated the desire to collaborate on management of shared water resources. In order to encourage cooperation among the six riparian countries a Volta Basin Technical Committee (VBTC) was to be formed, the membership of which was to comprise all riparian countries of the Volta Basin. A follow up meeting was held in Ouagadougou in July 2004 and was attended by representatives from Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali, and Togo. The result of this meeting was the recognition, development and acceptance of a statute of the VBTC by all six riparian countries. They acknowledged the need for a transboundary management institution and a timeline for its establishment (VBTC, 2004).

Further progress was made when at a ministerial meeting, an endorsement was made of the processes and an agreement to form the Volta Basin Technical Committee (VBTC) was signed in

November of 2004 (WRC, 2004). On December 6, 2005, in Ouagadougou, the Ministers in charge of water from Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali and Togo signed a Memorandum of Understanding to establish the Volta Basin Authority (VBA).

Convention on the Status of the Volta River and setting up of the Volta Basin Authority

At the fourth (4th) Session of the VBTC and the second (2nd) Ministerial Meeting of Ministers in charge of Water Resources from the six countries sharing the Volta Basin, held in Lomé from July 14 and 15, 2006, the Ministers adopted a resolution for the signing and subsequent ratification of the Convention and Statutes of the VBA. At the same meeting, another resolution was adopted on the transitional provisions for the establishment of the VBA and for funding the process of establishing the VBA and start up of its activities. Also, an acting Executive Director and the Deputy were appointed for the VBA to quick start activities. Finally, the meeting accepted the location of the Headquarters of the VBA at Ouagadougou, Burkina Faso.

The Convention on the status of the Volta River and setting up of the VBA was signed by the Heads of States and Governments of the six (6) riparian on January 19, 2007 at Ouagadougou, Burkina Faso. The Convention is however not yet in force as the requisite number of at least four of the countries have not ratified the Convention. It is understood that each of these countries have its own internal procedures and process for the ratification. As at the end of October 2007, only Burkina Faso had ratified the Convention. Mali followed up at the end of February 2008, while the other four countries were putting in efforts for their respective governments to ratify the document. In the case of Ghana, the Convention and Statutes must be ratified together, and it was therefore only after the Statute was signed by the Ministers during their ministerial meeting in November, 2007 that the ratification process started.

The Convention has a dual purpose, declaring the Volta River as an international watercourse and setting up a basin organization, the Volta Basin Authority, charged with the responsibility to implement an international co-operation agreement for rational and sustainable management of water resources of the Volta river basin and for a better sub-regional socio-economic integration (VBA Convention, 2007).

The VBA's functions and roles are set out in article 6 of the Convention as follows: "to promote permanent advisory tools between stakeholders of the basin development; to promote the implementation of integrated water resources management and equitable sharing of the benefit rising from their various uses; to authorize the creation of works and projects under consideration by the Party States and likely to have a significant impact on the water resources of the river; to carry out joint projects and works; and to contribute to poverty reduction, sustainable development of the Party States and better sub-regional socio-economic integration". These functions clearly create good framework and institutional basis for transboundary water resources management and utilization among the riparian countries.

The Convention is to ensure that the all the countries that share the resources of the Volta Basin work in an atmosphere of cooperation and trust. It provides a disputes settlement mechanism within the framework where parties are encouraged to seek amicable settlement within the Authority at the first instant. Upon failure of this approach, the parties must then resort to conciliation and mediation. A further option is referral to the competent authorities of ECOWAS or the African Union. The last resort is referral to the International Court of Justice (ICJ). Clearly then, as part of the legal settlement, diplomacy is much advocated.

The Code of Conduct for Sustainable and Equitable Management of the Volta Basin

Another recent transboundary collaborative effort on the Volta is the development of a Code of Conduct for Sustainable and Equitable Water Resources Management of the Volta Basin between Burkina Faso and Ghana. This is a non-conventional international collaborative instrument – a rarity in shared water resources management in West Africa (Amidou Garane, 2006). The Code of Conduct was drafted from June 2005 to June 2006 as part of the PAGEV program. It contains the two substantive rules of equitable use (article 11) and no significant harm (article 7). It is also the same for the rules of procedures and principles of co-operation (article 10), pollution prevention (article 12), environmental evaluation (article 19), mutual information (article 20), notification (article 21), consultation and negotiation (article 22), which bring into focus the satisfaction of essential human needs in the event of conflicts between competitive uses (article 25), prevention of detrimental situations (article 28), controlled introduction of new alien aquatic species (article 29), and priority conservation of aquatic ecosystems (article 30) (Amidou Garane, 2006). The Code of Conduct has not been operationalized yet, since it has not been signed by the Ministers in charge of water of the two countries. However, it is hoped that it will be adopted by the VBA and scaled up for the use of other riparian states of the Volta Basin.

The efforts of PAGEV have also led to deliberations on the formation of a Transboundary Committee between Ghana and Burkina Faso spanning four communities in the Nakambé in Burkina Faso and the White Volta basin in Ghana. The purpose of this Committee is to coordinate the activities of these transboundary communities along the banks of the White Volta. The membership of the Transboundary Committee is to be fed by National Committees which would be made up of the Districts and Provinces in the White Volta basin in Ghana and Burkina Faso, respectively. The members and executives of the two local National Committees and the Transboundary Committee have been selected but are yet to start work. Figure 1 presents the framework for cooperation.

The Way Forward

The setting of the VBA has created a legal and institutional framework into which all the riparian countries can fit their national legal and policy frameworks as regards water resources management into the international transboundary framework. The VBA process also has the backing of ECOWAS and the establishment of the Water Resources Coordination Unit (WRCU) of ECOWAS has been a big boost in the transboundary cooperation process on the Volta Basin. This is typified with the process of bringing together the Ministers in charge of water of the six riparian countries to get the VBA process up and running. The WRCU is to continue acting as a buffer and facilitator to ensure the smooth implementation of actions of the VBA.

Additionally, the Convention establishing the VBA has provided its working principles and established its institutional frame work. It is anticipated that the Statutes will then flesh out the administrative processes for the running of the Authority and with the signing and ratification of the Statutes the VBA can then start full operation.

In 2005, further to the collaboration between Ghana and Burkina-Faso on the management of the Volta Basin and its resources, the Ministry of Water Resources, Works and Housing of the Republic of Ghana and the Ministry of Agriculture, Hydraulics and Fisheries of Burkina Faso signed a Memorandum of Understanding on the setting up of a Joint Technical Committee on Integrated Water Resources Management (JTC-IWRM). The MOU was entered into “conscious that co-operation between their two countries on joint development and management of water resources projects will contribute to the prosperity and welfare of their populations as well as to the achievement of the Millennium Development Goals.” There have been three meetings so far of the Ghana - Burkina Faso JTC-IWRM and at the 3rd meeting which was held in June 2007, it was agreed that the two parties should work towards operationalising the MOU on the JTC-IWRM.

It is also hoped that the PAGEV project, which ends in October 2007, will be granted a second phase to enable it push forward the process of establishing a collaborative institutional framework from the local to international level. Additionally, it is expected that the work of the Transboundary and National Committees will be guided by the general objectives and work of the VBA and the Code of Conduct when validated and in force. Indeed, efforts are already being made to publicize and operationalise the Code of Conduct.

4. CONCLUSION

This study has looked at the transboundary water resources regime on the Volta Basin focusing on the history of cooperation among the riparian states particularly Ghana and Burkina Faso. The initial efforts of cooperation that led to the formation of the Permanent Joint Commission on cooperation was a good start but did not sustain the momentum for cooperation. Over the years, external influences in the form of international actors and non-governmental organizations through several projects formed a basis of cooperation on the management of the resources of the Volta Basin as between Ghana and Burkina Faso. These efforts were however mainly outside the realm of the governments.

Several socio-economic and political interests and concerns in transboundary water resources management between Ghana and Burkina Faso have come into play over the years and some level of participation of civil society and private sector actors have been noticed with their involvement in the management process. However, the involvement of civil society in the form of NGO participation has been more pronounced than that of the private sector.

The late start in the transboundary cooperation process among the riparian governments could be partially attributed to the lack of conflicts among the countries' in the use of the resources of the Volta Basin and also the absence of clear institutional structures in these countries with the clear mandate to manage water resources and pursue transboundary cooperation agendas. With Ghana and Burkina Faso recently having state institutions mandated to represent their countries on water resources management, the stage was set for cooperation and this has been an important trigger for the formulation of the institutional framework for the management of the natural resources Volta and this has greatly contributed to the formation of the VBA. Furthermore, a normative Code of Conduct for the Sustainable and Equitable Management of the Natural Resources of the Volta Basin has been formulated and indications from Ghana and Burkina Faso are that it will be pursued to cover the relationship among all the six riparian countries of the Volta Basin.

The challenges of the process which were mainly lack of governmental action and funding seem likely to be overcome with the formation of the VBA and the willingness of all riparian states to come up with workable solutions for the management of the resources of the Volta Basin. It is hoped that with the stage set all the six riparian countries of the Volta will forge ahead the stage of cooperate so far attained for the sustainable and equitable management of the natural resources of the Volta Basin.

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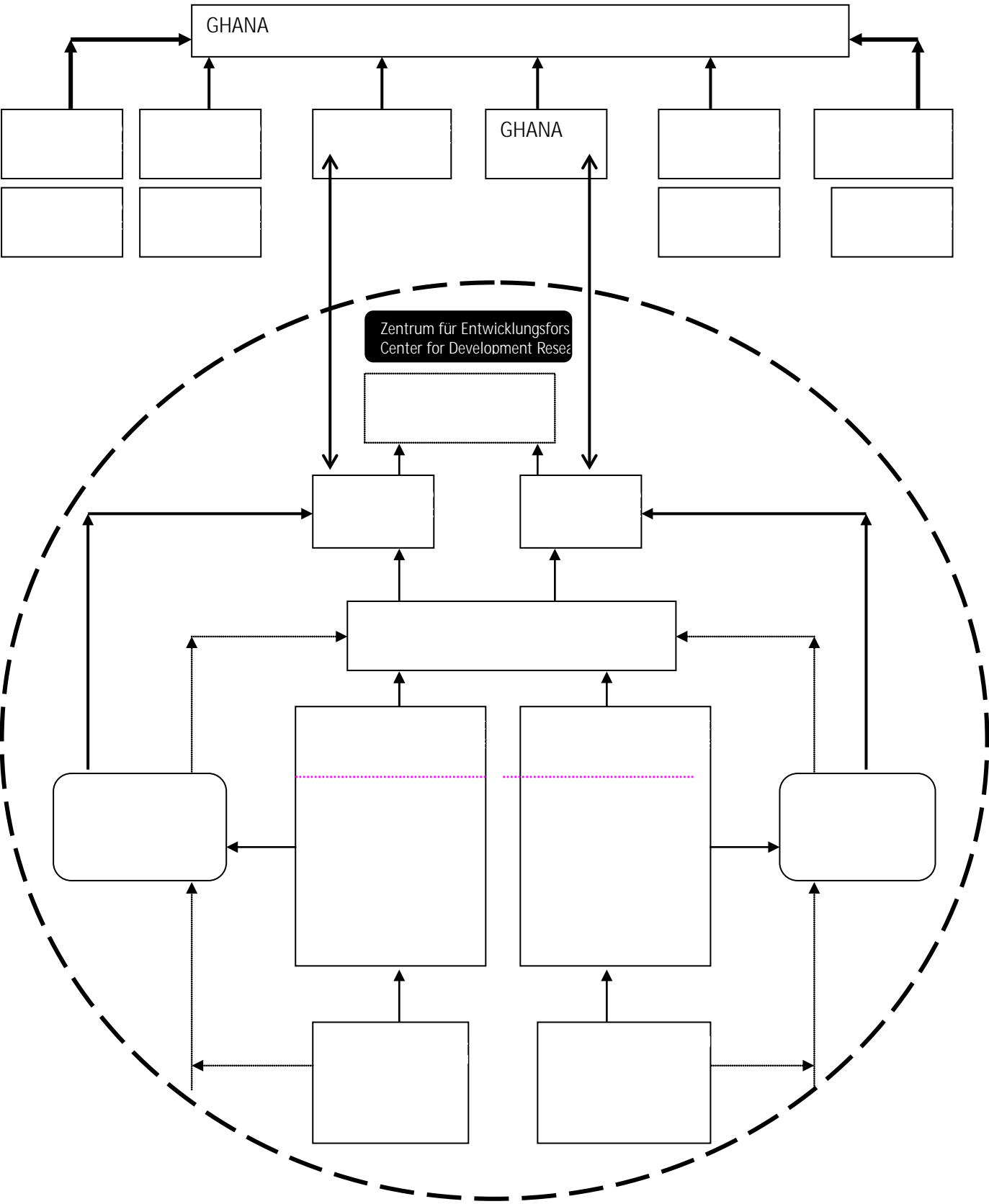
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Figure 1: Chart of the Transboundary and National Committee for the Management of the White Volta Basin and the Nakambé



Annex 1: Permanent Joint Commission Report, 1971

DRAFT JOINT COMMUNIQUE: MEETING OF EXPERTS OF THE
GHANA/UPPER VOLTA PERMENT JOINT
COMMISSION FOR CO-OPERATION

Pursuant upon the decision taken in August by the Government of Ghana and the Government of the Upper Volta to set up a Permanent Joint Commission for Co-operation, an official Upper Volta delegation led by Mr. Aisse Mensah, Director of Internal Affairs at the Upper Volta Ministry of the Interior, arrived at Accra on Sunday the 28th of November, 1971 for the inaugural meeting of the Joint Commission and the first meeting of experts of the Joint Commission. The delegation was met at the Kotoka International Airport by an official welcoming party headed by the leader of the Ghana delegation, Mr. C.O.C. Amate, Director of the Africa, Middle East and Asia Department of the Ministry of Foreign Affairs, Accra.

The Ghana/Upper Volta Permanent Joint Commission for Co-operation was officially inaugurated at the State House on Monday, the 29th of November, 1971 by the Honourable William Ofori-Atta, Minister of Foreign Affairs, who was accompanied by the Honourable ^{S. P. Donko,} ~~Jatoo Kadee,~~ Minister of ~~Transport and Communications~~ ^{Health} and the Honourable Adam Amandi, Ministerial Secretary, Ministry of Trade, Industries and Tourism.

The Ghana/Upper Volta Permanent Joint Commission for Co-operation set up five Committees, namely:

- (1) The Legal and Political Committee;
- (2) The Trade, Economic and Finance Committee;
- (3) The Cultural Affairs Committee;
- (4) The Health Committee; and
- (5) The Transport and Communications Committee.

The experts jointly examined the various areas of co-operation between the two countries and made proposals and recommendations which will be placed before the first

Ministerial Conference for their consideration and approval.

THE INSTRUMENT

The meeting of experts prepared an "Instrument for the Establishment of the Ghana/Upper Volta Permanent Joint Commission for Co-operation, which would permit Ghana and the Upper Volta to organise and develop, on a continuous basis, mutual co-operation in the political, economic, commercial, industrial, cultural, transportation and other fields.

LEGAL AND POLITICAL MATTERS

i. The Joint Commission adopted two conventions to be submitted to the two Governments for signature — a convention on the demarcation of the Ghana-Upper Volta Border and an Instrument on the establishment of a Permanent Joint Commission for Co-operation between Ghana and Upper Volta.

ii. At the request of the Upper Volta delegation, the Joint Commission decided to postpone discussion on a draft treaty concerning the status and conditions of employment of migrant workers, submitted by the Ghana delegation. This draft convention is to be studied at a later Joint Commission Meeting.

iii. The Joint Commission also agreed that a Joint Legal Committee should meet at Ouagadougou in order to work out a common text of a draft legal convention for the two countries.

iv. Lastly the Joint Commission welcomed, with interest, the Upper Volta delegation's wish that the time when the border was closed on the Ghana side should be extended.

TRADE, FINANCIAL AND ECONOMIC ISSUES

i. The meeting agreed and recommended that particular attention should be given to the improvement of communications on both sides of the border with a view to ameliorating trade between the two sister countries and that other existing obstacles in the way of efficacious trade should be eliminated as soon as practicable.

ii. It took...../3

ii. It took particular note of the fact that the current Banking Agreement and Payments Agreement were functioning satisfactorily and in accordance with international Banking practice.

iii. The meeting also recommended that the two Governments should harmonize their agricultural policies as far as possible. It proposed for the consideration of the Ministerial Conference that, in this respect, the two countries should co-operate in the study and research required for the development of agriculture in Ghana and the Upper Volta.

iv. Discussions were also held on the subject of the meat and cattle trade and the Joint Commission decided that companies designated by the two Governments should meet at an early date to negotiate and conclude an agreement on cattle and meat.

CULTURAL AFFAIRS

1. As regards co-operation between the two countries in the fields of Education, Culture, Information, Science, Technology and Sports, the meeting agreed

- i. that Conventions providing for details of the projects to be carried out within the framework of the Agreement should be prepared annually;
- ii. that Exchange scholarships, bursaries and training awards should be given to deserving students for training in both countries and
- iii. that an exchange programme should be organised to cover research workers, youth leaders, sporting and artistic personnel, teachers and university lecturers as well as the overall field of Information.

HEALTH MATTERS

The Joint Commission agreed on co-operation in health matters in the following fields:-

- i. Establishment of a programme of systematic vaccinations for frontier inhabitants against measles, small pox, yellow fever and any other communicable diseases of international significance.
- ii. Exchange of information on notifiable communicable diseases and other diseases of epidemic ^{or} social importance,
- iii. Exchange of professional, sub-professional and auxiliary health personnel.
- iv. Exchange of information on medical research and laboratory facilities; and
- v. Co-ordination of pharmaceutical policies and sanitary matters arising along the border.

TRANSPORT AND COMMUNICATIONS

The Joint Commission proposed that there should be:-

- i. Exchange of information on projects and the establishment of a permanent technical committee to study power generation, irrigation, water transport and the control of water-borne diseases especially in the Volta basin, and
- ii. Improvement in telecommunications; establishment of mail services by road; operation of Air Volta service to Ghana and development in road construction.

CONCLUSION...../5

CONCLUSION

The meeting was held in the most fraternal and cordial atmosphere. Discussions were frank and all delegates showed eagerness that co-operation as conceived under the Joint Commission should materialize.

This first meeting of experts of the Ghana-Upper Volta Permanent Joint Commission was formally closed on 2nd December, 1971 by the Honourable J.H. Mensah, Minister of Finance.

Annex 2: Chronological table highlighting important dates and steps in the development of TWM policies and major actors involved in the TWM policy process in the Volta basin the and the stages of involvement.

Country/Actor	Activity	Period
Ghana and Burkina Faso	The inauguration of the Permanent Joint Commission for Co-operation between Ghana and Burkina Faso	1971
UNESCO	The provision of assistance with the framework of the International Hydrological Programme (IHP)	1988
World Bank/Burkina Faso-Ghana	To satisfy lending conditions Burkina Faso made a request for 'no objection' from Ghana for a water supply scheme on the Ziga Dame on the White Volta/Nakambe in Burkina Faso. This brought about the first existing 'formal agreement' on water use on the Volta between Ghana and Burkina Faso.	1996
Ghana and Burkina Faso	Permanent Technical Committee to focus on the study of power generation, irrigation, water transport and the control of water-borne diseases, especially in the Volta Basin was formed for the two countries formed	July 1998
UNEP/GEF	A supported project on the Volta basin to promote IWRM in the basin. A project for 'Addressing Transboundary Concerns in the Volta Basin and its Downstream Coastal Area' was prepared and endorsed by all the six (6) countries.	1999
Ghana	Formation of the Secretariat of the Water Resources Commission and the existence of a National Focal point for Ghana	1999
UNESCO/Ghana	IHP National Committee of Ghana organized a consultative workshop on Integrated Water Resources Management of the Volta Basin which meeting was attended by representatives of five out of six riparian countries of the basin.	2002
FAO and ECOWAS	A pilot trans-border Burkina Faso and Ghana project encompassing 30 communities (15 communities each), that to improve socio-economic development of the Onchocerciasis freed zone with the White Volta sub-basin.	Feb. 2004.
Ghana-Burkina Faso	Joint Ghana-Burkina Declaration on the improved management of the natural resources in the Volta Basin	Apr 13, 2004
Ministry of Water Resources, Works And Housing of the Republic of Ghana and the Ministry of Agriculture,	Memorandum of Understanding on the setting up of a Joint Technical Committee on Integrated Water Resources Management (JTC-IWRM)	2005

Hydraulics And Fisheries of Burkina Faso		
Water Governance of the Volta Basin Project sponsored by IUCN, in collaboration with GWP - the PAGEV Project	The Project is designed to improved water governance in the White Volta basin, with particular focus on Ghana and Burkina Faso. The Ghana Water Resources Commission and Burkina Faso DGRH are acting as the focal points.	2004-2006
GLOWA Project, funded by the German Federal Ministry of Education and Research	GLOWA Volta Projects initiated the process of developing a scientifically sound Decision Support System (DSS) for the assessment, sustainable use, and development of the Volta basin's water resources.	2004 – 2006
Ghana – Burkina Faso, the Volta Basin Technical Committee (VBTC)	<p>The fourth (4th) Session of the VBTC to the second (2nd) Ministerial Meeting of Ministers in charge of Water Resources from Countries Sharing the Volta Basin, the Ministers adopted the following</p> <ol style="list-style-type: none"> a. General Resolution on the Adoption, Signature and Enforcement of the Convention and Statutes of the Volta Basin Authority (VBA); b. Resolution was adopted on the Transitional Provisions for the Establishment of the VBA; c. Resolution on the Funding of the Establishment of the VBA and start up of its activities; d. Resolution on the Constitution of a Financial and Technical Support Group (FTSG) for the VBA; e. Decision on the Appointment of the Acting Executive Director and a Deputy for the VBA; f. Final Communiqué of this meeting established the Headquarters of the VBA at Ouagadougou, Burkina Faso. 	July 14 -15, 2006,
Ghana-Burkina Faso	Convention on the statute of the Volta River and setting up the Volta Basin Authority	January 19, 2007
Ghana-Burkina Faso	3 rd meeting of the Joint Technical Committee on Integrated Water Resources Management (JTC-IWRM), - Represented by the Focal Points (WRC and DGRE respectively)	June 17, 2007

Annex 3: Main Institutions and Actors Involved in the Transboundary Process

No.	Name	Position/Country
1.	BOUGAIRE Francis Daniel	Directeur Général des Ressources en Eau/Président de l'ABV
2.	AZONSI V. Félix	Directeur des Ressources en Eau Directeur Général de l'Hydraulique/Ministère des Mines, de l'Energie et de l'Eau (MMEE), Benin
3.	OUEDRAOGO Edith	Direction Générale des Ressources en Eau, Burkina Faso
4.	FOFANA Almoustapha	Directeur du Laboratoire de la Qualité des Eaux, Direction Nationale Hydraulique, Mali
5.	DOUMBIA Bakary	Division des Affaires Juridiques au Ministère des Affaires Etrangères et de la Coopération Internationale, Mali
6.	Hilaire N. DOFFOU	Director of Water Resources, Ministry of Environment, Water and Forestry, Cote d'Ivoire.
7.	SILVA Rui Lui	ECOWAS-WRCU, Burkina Faso
8.	Ben Ampomah	Water Resources Commission, Accra, Ghana
9.	Derman Assouma	Directeur General de l'Hydraulique, Lome, Togo
10.	Dr. Bonny Kouadio Eugene	Directeur des Ressources en Eau Ministère des eaux et Forêts, Cote d'Ivoire
11.	Dr. Charles Biney	Acting Executive Director, Volta Basin Authority , Burkina Faso
12.	Idrissa YAYA	IMC/Consultant, Burkina Faso
13.	Maxwell Opoku Agyemang	Legal Consultant, Accra.
14.	Minta A. Aboagye	Director, Water, Ministry of Water Resources, Works and Housing, Ghana
15.	Yao Tete Mawussey Atikpo	Acting Deputy Executive Director, Volta Basin Authority , Burkina Faso

ACRONYMS

DGIRH	General Directorate for Inventory of Water Resources
DGRE	Directorate General for Water Resources
DSS	Decision Support System
ECOWAS	Economic Commission of West Africa States
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
GEF	Global Environmental Facility
GIRE	Integrated Water Resources Management
GLOWA	Global Change of the Water Cycle
GWP	Global Water Partnership
ICJ	International Court of Justice
IHP	International Hydrology Programme
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resources Management
MDG	Millennium Development Goals (United Nations)
PAGEV	Project for Improvement of the Water Governance in the Volta Basin
PAGIRE	Action Plan for Integrated Water Resources Management in Burkina Faso
TDA	Transboundary Diagnostic Analysis
TWM	Transboundary Water Management
UNEP	United Nations Environmental Programme
VBA	Volta Basin Authority
VBTC	Volta Basin Technical Committee
WATAC	West African Technical Advisory Committee
WRC	Water Resources Commission
WRCU	Water Resources Coordinating Unit

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