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WORKING PAPER 111

# Hydro-political Assessment of Water Governance from the Top-down and Review of Literature on Local Level Institutions and Practices in the Volta Basin

Yaw Opoku-Ankomah, Youssouf Dembélé, Ben Y. Ampomah  
and Léopold Somé

**Working Paper 111**

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## Acronyms and Abbreviations

AMVS	-	Sourou Valley Development Authority
AWIRU	-	African Water Issues Research Unit
CGIAR	-	Consultative Group on International Agricultural Research
CWSA	-	Community Water and Sanitation Agency
DGH	-	General Directorate of Hydraulics
DGRH	-	General Directorate for Fishery Resources
DGEAP	-	General Directorate for Provision of Potable Water
DGHA	-	General Directorate of Agricultural Hydraulics
DGIRH	-	General Directorate for Inventory of Hydraulic Resources
DSS	-	Decision Support System
ECOWAS	-	Economic Community of West African States
EPC	-	Environmental Protection Council
EPA	-	Environmental Protection Agency
EU	-	European Union
FAO	-	Food and Agriculture Organization of the United Nations
FDR	-	Rural Development Fund
FEER	-	Water and Rural Facilities Fund
GEF	-	Global Environmental Fund
GLOWA	-	Global Change of the Water Cycle
GWP	-	Global Water Partnership
GWSC	-	Ghana Water and Sewerage Corporation
HSD	-	Hydrological Services Department
IDA	-	Irrigation Development Authority
IFPRI	-	International Food Policy Research Institute
IHP	-	International Hydrological Programme
INERA	-	Environmental and Agricultural Research Institute
IUCN	-	World Conservation Union ( <i>formerly</i> International Union for the Conservation of Nature and Natural Resources)
IWMI	-	International Water Management Institute
IWRM	-	Integrated Water Resources Management
MEE	-	Water and Environment Ministry
MFEP	-	Ministry of Finance and Economic Planning
MOB	-	Bagre Development Agency
MSD	-	Meteorological Services Department
ONBAH	-	National Office of Dams and Agricultural Hydraulics Facilities
ONBI	-	National Office of Dams and Irrigation
ONEA	-	National Water and Sanitation Office
PURC	-	Public Utilities Regulatory Commission
SONABEL	-	Burkina Faso Electricity Society
UNEP	-	United Nations Environment Programme
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
VBA	-	Volta Basin Authority
VBTC	-	Volta Basin Technical Committee

VRA	-	Volta River Authority
WATSAN	-	Water and Sanitation Committee
WRC	-	Water Resources Commission
WRII	-	Water Resources Research Institute
ZEF	-	Center for Development Research



## Foreword

This Working Paper reports on research carried out in the Volta River Basin, by the research team in that basin implementing Project number 47, supported by the Challenge Program on Water and Food. The Project title is “Transboundary Water Governance for Agricultural and Economic Growth and Improved Livelihoods in the Limpopo and Volta Basins: Towards African Indigenous Models of Governance.” A companion Working Paper (Earle et al. 2006) is being produced reporting on similar work in the Limpopo River Basin.

In sub-Saharan Africa, there are some 63 transboundary river basins, i.e., basins shared by two or more countries. Development and management of the resources in these basins require cooperation among the riparian countries; and institutional arrangements are needed as a mechanism for such cooperation. The question is; thus, not whether transboundary water management in Africa should be strengthened, but rather, how. In part, the knowledge needed can be derived from experiences in developed countries and Asia. However, there are, at least, three reasons why Africa must be cautious in copying the transboundary experience of others. First, in general, water scarcity in sub-Saharan Africa is primarily ‘economic’ water scarcity; i.e., it is not lack of water, but the lack of financial and human resources and poor governance that are the key issues. This implies that the win-win option of capacity building for new resource development, should receive higher priority than the division of scarce resources among competing users, as is often the case elsewhere. Second, sub-Saharan Africa is overwhelmingly poor, and there is an extreme dependence upon access to water for rural livelihoods, particularly for the poor and women, groups that tend not to be strongly represented in decision-making bodies at an international scale. Third, indigenous arrangements in the management of natural resources, in particular land and water, continue to be very important in Africa, a point invariably neglected in international agreements and indeed in “modern” national water laws.

So how can transboundary institutions be built, which address sub-Saharan Africa’s unique conditions? This project on African Models of Transboundary River Basin Governance *hypothesizes* that, through an indigenous African “bottom-up” approach, starting from local traditions and social arrangements, it will be possible to create more resilient and successful transboundary water institutions than would otherwise be possible, while also giving greater voice to the poor, women and men alike, in the process. In order to tackle this problem, the project began with an assessment of the current institutional arrangements from a historical perspective. This is largely a literature review, using published and unpublished sources. The present Working Paper reports on the results of this historical hydro-political assessment of the Volta River Basin. The second phase of the project is currently (2005-2006) supporting groups of postgraduate students, who are doing detailed case study field work in rural areas, in order to identify potential local traditions and social arrangements that could possibly be built into the design of larger-scale river basins.

The African Models of Transboundary River Basin Governance involves a direct partnership among two CGIAR centers (IWMI and the International Food Policy Research Institute, IFPRI), several national research partners, and government water management institutions (including the Water Resources Commission of Ghana, and the Department of Water Affairs of South Africa), and one advanced research institute (Center for Development Research [ZEF], University of Bonn). In the Volta Basin, the national research partners are the Institut de l’environnement et de recherches agricoles (Environmental and Agricultural Research Institute, INERA, Burkina Faso) and the Water

Research Institute, Ghana. In the Limpopo Basin, the formal national research partners are the Department of Soil Science and Agricultural Engineering, University of Zimbabwe and the African Water Issues Research Unit (AWIRU), University of Pretoria, South Africa. In addition Waternet, a regional consortium of universities promoting integrated water resources management is involved, as is, informally, the University of Eduardo Mondlane, Mozambique.

IWMI and its partners are grateful to the Challenge Program on Water and Food for its support.

Douglas J. Merrey  
Project Leader  
January 2006

## Résumé

L'évaluation "hydro-politique" de la gouvernance de l'eau dans le Bassin de la Volta est une des deux activités préparatoires qui doivent orienter et fournir les données nécessaires à l'élaboration d'un modèle méthodologique générique dont le but est d'ériger les principes institutionnels endogènes locaux en dispositions institutionnelles au niveau international/transfrontalier de bassin.

Ce rapport analyse d'un angle "sommet vers la base" les évolutions historiques de la gouvernance de l'eau dans le bassin de la Volta, en accordant une attention particulière aux dynamiques politiques, économiques et sociales de la gestion de l'eau dans les cadres légaux et institutionnels sur les portions ghanéenne et burkinabè du Bassin de la Volta. Les résultats sont principalement tirés de la recherche documentaire, des entretiens avec quelques personnes ressources qui sont surtout des professionnels et, dans une certaine mesure, des connaissances antérieures et de l'expérience acquise sur le terrain par l'équipe de recherche.

### L'Ère Pré-coloniale

Avant le début de la période coloniale, les territoires actuels du Ghana et du Burkina Faso étaient peuplés de groupes ethniques différents qui avaient chacun sa propre identité politique, économique et socio-culturelle. Les moyens de subsistance de ces groupes ethniques étaient basés en grande partie sur l'agriculture, mais le type d'activité agricole dépendait des caractéristiques géographiques de la zone considérée. Au Ghana, les habitants de la partie Nord, ainsi que ceux du Centre et du Sud de Burkina, c'est-à-dire de la zone de savane du bassin, cultivant des céréales. Les groupes ethniques de la zone Nord du Burkina Faso (partie sahélienne du bassin), vivaient essentiellement d'élevage. On assistait le plus souvent à des conflits entre agriculteurs et éleveurs, et même entre éleveurs sédentaires et éleveurs transhumants.

Les croyances et pratiques des différents groupes ethniques qui existaient avant la mise en place des États-nations modernes du Ghana et du Burkina Faso renseignent sur les approches coutumières en matière de gestion de l'eau. Les Chefs et *prêtres* dans les régions faisant partie du Ghana détenaient la responsabilité de chefs de terre et de l'eau. Leur responsabilité était exercée pour et au nom des dieux et des ancêtres ; ils veillaient à ce que les deux ressources ne soient pas surexploitées. De même, les pratiques et institutions en matière d'eau dans les régions du Burkina Faso indiquent que l'eau et la terre étaient traitées comme des ressources sacrées et que les Chefs et *prêtres* réglementaient leur usage de manière à en favoriser une utilisation équitable et à leur assurer un certain niveau de conservation.

Dans les sociétés pré-coloniales ou traditionnelles burkinabè (et dans une certaine mesure ghanéennes), les rapports des femmes avec la terre sont quelque peu différents de ceux de l'homme. Ils sont déterminés par le contexte social. Chez la plupart des groupes ethniques, les femmes n'ont pas le droit de posséder la terre, et elles sont tenues à l'écart des processus de prise de décision la concernant ; mais elles avaient leur propre accès aux sources d'eau, principalement en ce qui concerne l'approvisionnement en eau pour les usages domestiques. Les nouvelles règles introduites par la colonisation ont eu une certaine influence sur de telles pratiques coutumières qui continuent à évoluer, mais l'ampleur de cette influence varie selon le type et le degré d'imposition de l'administration coloniale.

## **L'Ère Coloniale**

L'évolution historique du Ghana et du Burkina Faso peut être considérée à partir de 1885, quand la Conférence de Berlin a autorisé les Anglais, les Français et les Allemands à coloniser virtuellement toute l'Afrique de l'Ouest. Les tracés des frontières coloniales ne prenaient en compte ni la configuration du réseau hydrographique ni les entités socio-culturelles existantes. Elles étaient plutôt basées sur des considérations politiques et la sécurité commerciale des puissances coloniales. C'est ainsi que le Bassin du fleuve Volta a été partagé entre la colonie anglaise du Gold Coast (Ghana actuel), plusieurs régions de l'Afrique occidentale française dont la Haute-Volta (actuel Burkina Faso) et, temporairement, la partie allemande du territoire togolais qui a été annexée par le Ghana en 1957.

### ***Les lois coutumières en matière de gestion de l'eau***

Les lois coutumières *en vigueur* au Ghana et notamment dans le Bassin de la Volta ont évolué au fil des années. Traditionnellement, les coutumes et lois traitant de la conservation de l'eau, de la lutte contre la pollution, de la protection des bassins hydrographiques et de la protection de la pêche étaient formulées sous forme de règles émanant des chefferies traditionnelles et dont les dépositaires étaient les Chefs et les prêtres ou les prêtresses traditionnels. Ces Chefs et prêtres agissaient également en qualité de gardiens et de régulateurs des ressources eau et en terre pour et au nom des dieux et des ancêtres, en veillant à garantir leur protection et leur utilisation durable.

Le principe de base d'utilisation de l'eau au sein des communautés riveraines était que chaque usager pouvait utiliser l'eau disponible à condition qu'il en laisse suffisamment pour d'autres utilisateurs. En substance, l'eau était perçue comme une propriété commune de toute la communauté. Ces lois et pratiques sont peut-être appropriées et applicables dans les petites communautés rurales, mais leur mise en œuvre dans les communautés citadines n'est pas si évidente. D'autre part, la loi coutumière des Mossi qui constituent le groupe ethnique le plus important en nombre au Burkina Faso, était la loi dominante la plus souvent appliquée pendant la période coloniale. Dans cette loi, les droits de propriété de la terre et de l'eau sont les mêmes. La terre ou l'eau est "un bien collectif" librement accessible aussi longtemps que ce bien collectif n'est pas détruit.

### ***Réglementation Coutumière de Utilisation de l'Eau***

Les pratiques coutumières (souvent exprimé en dicta juridiques pendant la période coloniale) en matière de réglementation des ressources en eau au Ghana comprennent: la délimitation d'espaces sur l'étendue du fleuve où aucune activité humaine n'est autorisée; l'identification de parties des cours d'eau réservées à l'activité humaine; l'interdiction de certaines activités en des jours donnés de la semaine et pendant certains mois de l'année; et la prohibition basée sur le genre de l'accès à l'eau réservée à l'utilisation domestique et à la pêche.

Il existait des mécanismes coutumiers similaires d'utilisation et de réglementation de l'eau au Burkina Faso. Par exemple, les procédures coutumières pour le contrôle et le partage des ressources en eau et de la pêche comprenaient une restriction dans l'espace et dans le temps en ce qui concerne l'entrée dans l'eau, aussi bien pour les usages domestiques que pour la pêche. En ce qui concerne l'approvisionnement en eau pour l'usage domestique, les femmes avaient accès aux sources d'eau, tandis que la pêche était une pratique généralement réservée aux hommes.

La défaillance de certains de ces mécanismes de régulation et le dysfonctionnement des dispositions institutionnelles au niveau communautaire dans beaucoup de zones rurales du bassin peuvent être attribués à l'avènement de la colonisation, du Christianisme et de l'Islam, à la migration, au besoin de restructuration institutionnelle et à l'introduction de technologies modernes.

### ***Les Influences Coloniales sur les Institutions Traditionnelles de Gestion de l'Eau***

Les pratiques et institutions coutumières de gestion de l'eau pouvaient se développer de façon relativement indépendante pendant des siècles, mais elles ont dû changer de manière significative pendant les colonisations anglaise et française. Pendant l'ère coloniale anglaise, deux actes législatifs régissant l'eau ont été adoptés pour réglementer globalement l'utilisation de l'eau à des fins autres que les usages domestiques, et pour veiller à la conservation et à la gestion des espaces forestiers comme un bien et comme une ressource. Il n'y avait aucune action de suivi de ces actes législatifs, que le temps et d'autres lois ont depuis supplantés.

Les pratiques coloniales et traditionnelles de gestion de l'eau ont été étroitement couplées au régime foncier. Or l'imposition de législations et de politiques sur la gestion foncière en Gold Coast a doté les commissaires coloniaux d'une grande autorité pour contrôler l'attribution de la terre. Ainsi, au sud et, dans une certaine mesure au centre du Bassin de la Volta, même si certaines pratiques de gestion de la terre et de l'eau ont persisté, ces pratiques ont subi des modifications dues aux influences coloniales.

Pendant la période coloniale, le système légal au Burkina Faso était basé sur la coexistence des règles coutumières et de la législation de la puissance coloniale. Mais dans la pratique, la gestion et le contrôle quotidiens étaient laissés aux mains des Chefs traditionnels. Le résultat en est que tandis que les pratiques coutumières continuent d'évoluer en raison des changements économiques et sociales, leur évolution en milieu rural est très lente et, de nos jours, les populations conservent la plupart de leurs croyances traditionnelles sur l'utilisation de l'eau. Aujourd'hui, l'eau et la terre appartiennent officiellement à l'Etat au Burkina Faso, mais dans la pratique, l'utilisation de l'eau et de la terre est réglementée par les Autorités traditionnelles qui les administrent selon les valeurs traditionnelles locales.

### **L'Ère Post-Coloniale**

Depuis son indépendance en 1957 et jusqu'en 1996, le Ghana a eu une pléthore de lois traitant de l'utilisation et de la gestion des ressources en eau. L'Autorité du Fleuve Volta (VRA), la "Société Ghanéenne de l'Eau et de l'Assainissement" (GWSC) et l'Autorité de Développement de l'Irrigation (IDA) ont été créés et représentaient les trois principales institutions régissant les utilisations de l'eau jusqu'aux années 90. Le Département de Météorologie (MSD), le Département de l'Hydrologie (HSD) et l'Institut de Recherche sur les Ressources en Eau (WRI) ont été créés pour la collecte et la gestion des données.

Après l'indépendance du Burkina Faso en 1960, les activités du secteur de l'eau qui ont été mises en oeuvre dans le pays avaient pour but l'approvisionnement des populations rurales en eau potable et l'abreuvement du bétail. Entre l'indépendance et 1995, le secteur de l'eau a été successivement géré par le Département des Travaux Publics, le Ministère de l'Economie et de la Planification, le Ministère du Développement et du Tourisme, le Ministère de l'Agriculture et de l'Elevage et, finalement le Ministère de l'Eau, qui a été renommé Ministère de l'Eau et de l'Environnement (MEE). De nos jours, le secteur de l'eau est rattaché au Ministère de l'Agriculture, de l'Hydraulique et des Ressources Halieutiques.

### ***Absence de Politique et de Cadre de Coordination***

Dans les deux pays, la création d'instituts traitant de l'eau, l'attribution des rôles aux services chargés de la mise en valeur et du suivi, et de la prise de décision concernant l'eau ont été faites avec des objectifs (ou des mandats) unilatéraux, sans tenir compte des liens ou de l'interdépendance

des fonctions, ni des rôles de chacun d'eux. Ce manque de coordination des activités dans le secteur de l'eau crée des conflits de plus en plus sérieux entre les objectifs et les fonctions des différentes institutions.

### **Les progrès récents dans la gestion de l'eau au niveau transfrontalier, national et du Bassin**

Au Ghana, un certain nombre de réformes ont été introduites à partir des années 90, et ont été conçues pour sortir le pays de la gestion désordonnée et peu durable des ressources en eau. Un pas important a été franchi dans la direction d'une solution à la situation confuse des fonctions et l'autorité dans le secteur des ressources en eau avec la création de la Commission des Ressources en Eau (WRC) en 1996, en tant que seul organe responsable de la coordination, de la réglementation et de la gestion des ressources en eau du pays. En 1995, après la création du Ministère de l'Environnement et de l'Eau au Burkina Faso, la Direction Générale de l'Hydraulique (DGH) a été mise sur pied pour organiser les activités et les interventions liées à l'eau dans le pays et assurer une coordination générale du secteur de l'eau. En outre, une coordination exécutive intersectorielle a été créée respectivement à l'échelle nationale, régionale, provinciale et locale pour motiver et requérir des avis sur les projets de développement de l'eau à chaque niveau.

#### ***Conflits légaux et harmonisation***

Au Ghana, un examen de la Loi portant création de la Commission des Ressources en eau montre que cette Commission a des mandats très clairs mais qu'il existe un certain nombre de chevauchements avec les mandats d'autres institutions. Cette situation s'explique principalement par le pouvoir que la Commission détient de diriger les activités des autres acteurs du secteur de l'eau.

Les conflits sur l'utilisation et la gestion de l'eau au Burkina Faso sont localisés dans des bassins spécifiques. Dans le bassin la Volta Blanche (Nakanbé), les problèmes d'accès et d'utilisation des ressources naturelles existantes (terre, eau, pâturage et forêts) constituent une cause fondamentale de conflit. Les conflits constatés entre les petits utilisateurs de l'eau naissent de la pénurie des ressources en eau et du développement technique insuffisant des sources d'eau, c'est-à-dire les infrastructures. Par exemple, les forages sont souvent sans structures d'abreuvement qui puissent répondre aux besoins des éleveurs qui viennent abreuver leurs animaux. Dans le bassin de la Volta Noire (Mouhoun), les conflits sont engendrés aussi bien par le partage des ressources limitées entre des usagers de plus en plus nombreux, que par la pollution accidentelle de l'eau. Cette pollution provoque souvent des pertes de poissons et constitue une menace pour la santé des utilisateurs de ces eaux.

#### ***Les facteurs de changement de la gestion de l'eau et des pratiques coutumières dans le bassin de la Volta***

La gestion de l'eau au niveau national a eu, dans une certaine mesure, un effet de mutation sur des pratiques endogènes dans le bassin de la Volta. Parmi les facteurs de gestion actuelle de l'eau identifiés, qui ont eu un impact sur les pratiques endogènes, on peut mentionner l'introduction des politiques responsabilisant les populations dans l'utilisation de l'eau, la participation communautaire et permettant l'extension de l'eau principalement aux zones rurales, la mise en œuvre de la décentralisation et de la gestion de l'eau au niveau du bassin, et les impacts des plans de développement économique sur la population.

## *Les Acteurs et les Evolutions Transfrontalières dans le Bassin de la Volta*

Le présent rapport traite des évolutions transfrontalières à partir des années 90 quand l'attention et les préoccupations se sont portées sur les arrangements transfrontaliers, en particulier au niveau de la Volta, entre le Ghana et le Burkina Faso. En dépit des différentes initiatives et la coopération existant sur le bassin de la Volta, celui-ci demeure l'un des quelques principaux bassins transfrontaliers en Afrique qui ne soit régi par aucune dispositions institutionnelle formelle légale entre les pays riverains, pour la gestion de ses ressources en eau. Toutefois, ce problème est en voie de résolution à travers l'appui d'une Initiative d'Eau de l'Union Européenne par le biais d'un programme transfrontalier de gestion des ressources en eau, et à travers le désir de tous les pays riverains de travailler à la mise en place d'une institution transfrontalière de gestion<sup>1</sup>.

### **Conclusions**

Les 150 dernières années, ont été marquées, dans le Bassin de la Volta, par un profond changement dans les institutions et approches traditionnelles relatives à la gestion des ressources en eau, aussi bien au Ghana qu'au Burkina Faso.

Pendant l'ère pré-coloniale, les approches traditionnelles de la gestion de l'eau et de la terre étaient apparemment efficaces et contribuaient à une utilisation durable de ces ressources du fait, en partie, de la faiblesse de la population et de l'utilisation de l'eau à une échelle réduite. Au Ghana, les réglementations traditionnelles ont été graduellement érodées avec l'avènement du colonialisme. L'indépendance du Ghana a vu la mise en place d'institutions et de législation étatique dans le but de prendre formellement en main le développement et la gestion des ressources en eau. Il est très peu fait mention ou reconnaissance formelle de la tradition dans les documents officiels jusqu'à la mise en place de la Gestion Intégrée des Ressources en Eau au cours des années 90 dont le but est la restructuration du secteur de l'eau dans le pays.

Par ailleurs, l'impact de la colonisation au Burkina Faso est relativement faible, compte tenu, en grande partie, de la contradiction des politiques françaises caractérisées par *une politique de l'eau non formulée ou non écrite*. Ainsi, les institutions traditionnelles et les lois coutumières sont demeurées la règle dominante qui régit la gestion de la terre et de l'eau, principalement dans les zones rurales où ces lois sont bien respectées par les gouvernements locaux. Des lois modernes ont récemment été élaborées par l'Etat en vue de réglementer la gestion de l'eau, mais leur application reste encore difficile en zone rurale.

Ces évolutions notées au fil des années dans les institutions traditionnelles, les pratiques et le respect des autres utilisateurs riverains peuvent être utiles dans l'élaboration de mécanismes destinés à la gestion des eaux transfrontalières, particulièrement avec la volonté actuelle de créer une institution transfrontalière pour la Volta. Si les pays riverains pouvaient se considérer de la même manière comme des entités traditionnelles, ils seraient à même de coopérer dans la gestion des ressources en eau de la Volta. Un des objectifs principaux dans la prochaine phase de cette étude dont le but est la transformation des principes institutionnels endogènes locaux en dispositions institutionnelles internationales/transfrontalières au niveau du bassin, sera, de ce fait, une évaluation détaillée des mécanismes communautaires, de leur fonctionnement et de la manière dont ils pourraient être adaptés pour une plus large utilisation.

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<sup>1</sup> Le 6 décembre 2005, les Ministres en charge de l'eau du Bénin, du Burkina Faso, de la Côte d'Ivoire, du Mali et du Togo ont signé un Protocole d'Accord pour créer une Autorité du Bassin de la Volta.

## Summary

An “hydro-political” assessment of water governance in the Volta Basin is one of two preparatory activities intended to guide and inform the development of a generic methodological model for building local indigenous institutional principles into international/transboundary river basin institutional arrangements.

This report details from a “top-down” perspective, the historical developments of water governance of the Volta River Basin, paying special attention to the economic, political and social dynamics of water management within the legal and institutional frameworks in the Ghana and Burkina Faso portions of the Volta basin. The findings are based primarily on literature review, interviews with some key professionals and to some extent, previous knowledge and field experience of the research team.

### Pre-Colonial Era

Before the era of colonization, the present territories of Ghana and Burkina Faso were made up of distinct ethnic groupings each with its own political, economic and socio-cultural identity. The livelihoods of these ethnic groups were largely agriculture based, but the type of agricultural activity depended on the geographical characteristics of the area. In Ghana, those in the northern zone or savanna portions of the basin cultivated cereals, as did the majority of ethnic groups in Burkina Faso. However, the livelihood of the ethnic groups in the northern zone of Burkina Faso or the Sahelian and sub-Saharan portions of the basin was mainly transhumant livestock rearing, which often generated conflicts among farmers and pastoralists, and even among sedentary and transhumance breeders.

The beliefs and practices of the various ethnic groups which pre-existed the superimposition of the modern nation states of Ghana and Burkina Faso informed their customary approaches to water management. Chiefs and priests within the regions of Ghana were custodians of land and water for, and on behalf of, the gods and ancestors ensuring that they were not overexploited. Similarly, the water practices and institutions in the regions of Burkina Faso indicate that water and land were treated as sacred and regulatory functions were played by chiefs and priests to promote equitable use and a certain degree of conservation.

In traditional pre-colonial Burkinabe (and to an extent Ghanaian) societies, the links of women with land in practical terms are partially different and determined by the social context. Women were denied land ownership in most ethnic groups and kept away from decision-making processes, though they had their own access to water sources, particularly to supply water for domestic use. The advent of colonial rule, however, influenced and continues to change such customary practices, though the extent of influence varies depending on the type and degree of colonial administration imposed.

### Colonial Era

The historical development of Ghana and Burkina Faso can be traced as far back as 1885, when the Berlin Conference set the stage for the British, French, and Germans to colonize virtually all of West Africa. The partitioning of colonial boundaries was not based on hydrologic and socio-cultural considerations, but rather on the political and trade security of the colonial powers; hence, the Volta River Basin was divided among the British colony of the Gold Coast (later renamed Ghana), several



regions of French West Africa including Upper Volta (later renamed Burkina Faso), and temporarily German Togoland, part of which was annexed by Ghana in 1957.

### ***Customary Water Law***

Customary laws in Ghana and within the Volta Basin have emerged over the years. In the traditional sense, customs and laws covering the areas of water conservation, pollution control, protection of catchment areas and protection of fisheries have been in the form of traditional chieftain rules, issued by chiefs and traditional priests or priestesses. The chiefs and priests also acted as guardians and regulators of water and land resources for, and on behalf of, the gods and ancestors, ensuring the protection and sustainable use of these resources.

The basic water use principle among riparian communities was that each user may use available water provided that sufficient water is left for other users as well. In essence, the water resource was viewed as community common resource property. These laws and practices are appropriate and applicable in small rural communities, but perhaps not in urbanized communities. On the other hand, the customary law of the Mossi, which is the largest single ethnic group in Burkina Faso, was the dominant law most often applied during the colonial period. Under Mossi law, the right of ownership of land and water is similar. Land or water is a “collective right” with free access, so long as the collective good was not harmed.

### ***Customary Water Use Regulation***

Customary practices (often expressed in judicial dicta in the colonial period) for regulating water resources in Ghana included: demarcating areas in river courses for no human activity; marking out portions in water courses for human activity; prohibiting certain activities on named days in the week and certain months in the year; and prohibition of access by gender to water associated with domestic use and fishing.

There were parallel customary water use and regulatory mechanisms in Burkina Faso. For instance, the customary procedures for water and fishing resources control and sharing included restricted entry into water bodies in time and space for domestic uses and fishing. As regards the supply of water for domestic use, the women had access to water sources, whereas fishing was a practice generally reserved for men.

The breakdown of some of these regulatory mechanisms and the undermining of community level institutional arrangements in many rural parts of the basin can be attributed to the advent of colonialism, Christianity and Islam, migration, the need for institutional restructuring and the introduction of modern technology.

### ***Colonial Influences on Traditional Water Management Institutions***

Customary water management practices and institutions may have developed and evolved relatively independently for centuries, but have been altered significantly during the British and French colonial era. During the British colonial era, two water-related legislative acts were passed to comprehensively control the use of water, other than for domestic use, and to ensure the conservation and management of forest areas, as a commodity as well as a resource. There were no follow-up actions to these legislative acts, and time and other enactments have since overtaken these legislations.

Colonial and traditional water management practices were closely coupled to land tenure, but the imposition of legislation and policies concerning land tenure in the Gold Coast gave the colonial Commissioner extensive authority to control the allocation of land. Thus, in the southern and, to some extent, the middle parts of the Volta Basin, even though traditional land and water management practices persisted, such practices often underwent a process of modification due to colonial influences.

During the colonial period, the legal system of Burkina Faso was based on the coexistence of the customary rules and the legislation of colonial powers, but in practice the daily management and control were left with traditional leaders. The result is that while customary practices continued evolving due to economic and social changes or modifications, they evolved very slowly in rural areas, where even today the inhabitants maintain many of their traditional beliefs about water use. Today, the state officially owns all waters and lands in Burkina Faso, but in practice, land and water use is regulated by traditional authorities, who govern them according to local values.

## **Post-Colonial Era**

Since its independence in 1957, up to 1996, Ghana has had a plethora of legislation dealing with water resources use and management. The Volta River Authority (VRA), the Ghana Water and Sewerage Corporation (GWSC), and the Irrigation Development Authority (IDA) were established as the three major water-user institutions until the 1990s. The Meteorological Services Department (MSD), Hydrological Services Department (HSD) and the Water Resources Research Institute (WRRI) were set up for data collection and management.

Burkina Faso became independent in 1960 and water sector activities were implemented with the view to supplying drinking water for rural areas and developing water for livestock. Between independence and 1995, the water sector had, at various times, been under the Department of Civil Engineering, Ministry of Economy and Planning, Ministry of Development and Tourism, Ministry of Agriculture and Livestock, the Ministry of Water, which was renamed the Water and Environment Ministry (MEE), and later, the Ministry of Agriculture, Water and Fish Resources.

### ***Absence of Policy and Coordination Framework***

In both countries, the creation of water institutions, assignment of roles for development and advisory services, and decision-making, were done with single purpose objectives (or mandates), without considering the linkages or interdependency of each other's functions and roles. This lack of coordination of activities in the water sector increasingly led to conflicts in the objectives and functions of the various institutions.

## **Recent Developments in Transboundary, National and Basin Water Management**

In Ghana, a number of reforms were introduced from the 1990s, designed to move the country away from the uncoordinated and unsustainable management of water resources. A significant step was taken to address the diffused state of functions and authority in the water resources sector with the creation of the Water Resources Commission (WRC) in 1996, as the overall responsible body for coordination, regulation and management of the nation's water resources. In 1995, after the establishment of the Ministry of the Environment and Water<sup>2</sup> in Burkina Faso, the General Directorate of Hydraulics (DGH), now called the General Directorate for Inventory of Hydraulic Resources (Direction Générale de l'inventaire des Ressources hydrauliques, DGIRH), was formed to organize water-related activities and interventions in the country, and provide overall coordination to the water sector. Furthermore, an inter-sector executive coordination was created at the national, regional, provincial and local levels, to motivate and seek opinions on water development projects at all levels.

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<sup>2</sup> Now, the Ministry of Agriculture, Water and Fish Resources.

### ***Legal Conflicts and Harmonization***

In Ghana, an examination of the Water Resources Commission Act shows that the Commission has very clear mandates, but there are a number of overlaps with the mandates of other institutions. This relates specifically to the power of the Commission to direct the activities of the other water sector actors.

Conflicts in Burkina Faso over water use and management are localized within specific basins. In the White Volta, a cause of conflict is access to and use of existing natural resources: land, water, pasture, and forests. Conflicts among small water users arise from the scarcity of water resources and insufficient technical development of water sources, i.e., infrastructure. For example, drilled wells are often without watering structures that could meet the needs of livestock herders who come to water their animals. Within the Black Volta, conflict arises from sharing scarce resources between various users with increasing needs, and accidental water pollution resulting in loss of fish and the threats to the health of users of these waters.

### ***Drivers of Change in Indigenous Management and Practices in the Volta Basin***

Water management at the national level has, to some extent, had a displacement effect on indigenous practices in the Volta basin. Some of the identified drivers of current water management that have impacted on indigenous practices are the introduction of policies for charging people for their use of water, community participation and management approaches to water extension, especially to the rural sector, introduction of decentralization and basin level management, the issue of compensation for the appropriation of private property, and the impacts of economic development schemes on the population.

### ***Transboundary Actors and Developments in the Volta Basin***

This paper elaborates on transboundary developments from the 1990s, when attention and concern began to be placed on transboundary arrangements, particularly on the Volta between Ghana and Burkina Faso. Despite the various initiatives and cooperation on the Volta, it remains one of the few major transboundary river basins in Africa with no formal legal and institutional arrangements among the riparian countries for managing its water resources. This issue is being addressed through the support of an EU Water Initiative, under a transboundary water resources management programme, and the desire of all the riparian countries to work towards the establishment of a transboundary management institution<sup>3</sup>.

### **Conclusion**

For much of the past 150 years, a potentially important vehicle for water resources management—traditional institutional arrangements—has experienced profound changes in the Volta basin, in Ghana and Burkina Faso.

During the pre-colonial era, the traditional approaches to water and land management were apparently effective and contributed to the sustainable use of the resource due, in part, to the small population and small scale water use. In Ghana, the traditional controls were gradually eroded with the advent of colonialism. The independence of Ghana witnessed the establishment of state institutions

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<sup>3</sup> On 6 December 2005, the ministers responsible for water in Benin, Burkina Faso, Ivory Coast, Ghana, Mali and Togo, signed a Memorandum of Understanding to establish a Volta Basin Authority.

and legislation to formally take control of the development and management of water resources. There was scarce mention and formal recognition of tradition in any official documents until the Integrated Water Resources Management-oriented restructuring of the countries' water sector in the 1990s.

On the other hand, the colonial impact in Burkina Faso was somewhat minimal, due largely to the inconsistency of French policies, characterized by an unformulated or unwritten policy, in relation to water. Thus, traditional institutions and customary laws are the dominant rule in regulating the land and water management, especially in rural areas and are well respected by local governments. Modern laws were recently elaborated by the State, but their application remains difficult in rural zones.

These developments in the traditional institutions and customary practices over the years, and the respect for other riparian users, may be useful in developing mechanisms for the management of transboundary waters, especially with the current desire to create a transboundary institution for the Volta. If the riparian countries could consider themselves in the same manner as traditional entities, they would be capable to cooperate in managing the water resources of the Volta. One of the major objectives in the next phase of the study, towards building local indigenous institutional principles into international/transboundary river basin institutional arrangements, will therefore require a detailed assessment of the community mechanisms, how they work and how they could be adapted for broader use.

# **Hydro-political Assessment of Water Governance from the Top-down and Review of Literature on Local Level Institutions and Practices in The Volta Basin**

## **SECTION I: INTRODUCTION**

The compilation of a basin profile and the top-down hydro-political assessment of water governance in the Volta Basin have been identified as the two activities that will guide and inform the development of a generic methodological model for the development of indigenous institutional principles into a set of principles that guide and inform international or transboundary river basin institutional arrangements.

### **Purpose**

The basic profile of the Volta Basin on its water resources and uses, socio-economic features, poverty characteristics, and current water governance arrangements, from the local to the transboundary levels has, to a large extent, been compiled. This was based on existing information (GEF-UNEP 2002; Andah and Gichuki 2003) and is intended to serve as a baseline appraisal for future impact assessment.

The next step is to consider the drivers of current water management institutions and their historical milieu, placing special attention on economic, political and social drivers of water management, legal frameworks and institutions. This report, therefore, is an account of progress and key findings on institutional arrangements and frameworks for water governance within the Ghana and Burkina Faso portions of the Volta basin that could form the basis for comparison within the riparian countries. The report primarily focuses on these two countries, which share about 82 percent of the basin area.

### **Methodologies and Sources**

The report is based on literature review, interviews with key professionals and, to some extent, previous knowledge and field experience of the research team. It also highlights current developments on some aspects of the basin profile. An exhaustive list of information that include the libraries, references (some of which have been used in this report) and informants contacted, or yet to be contacted, are presented in Annex 1.

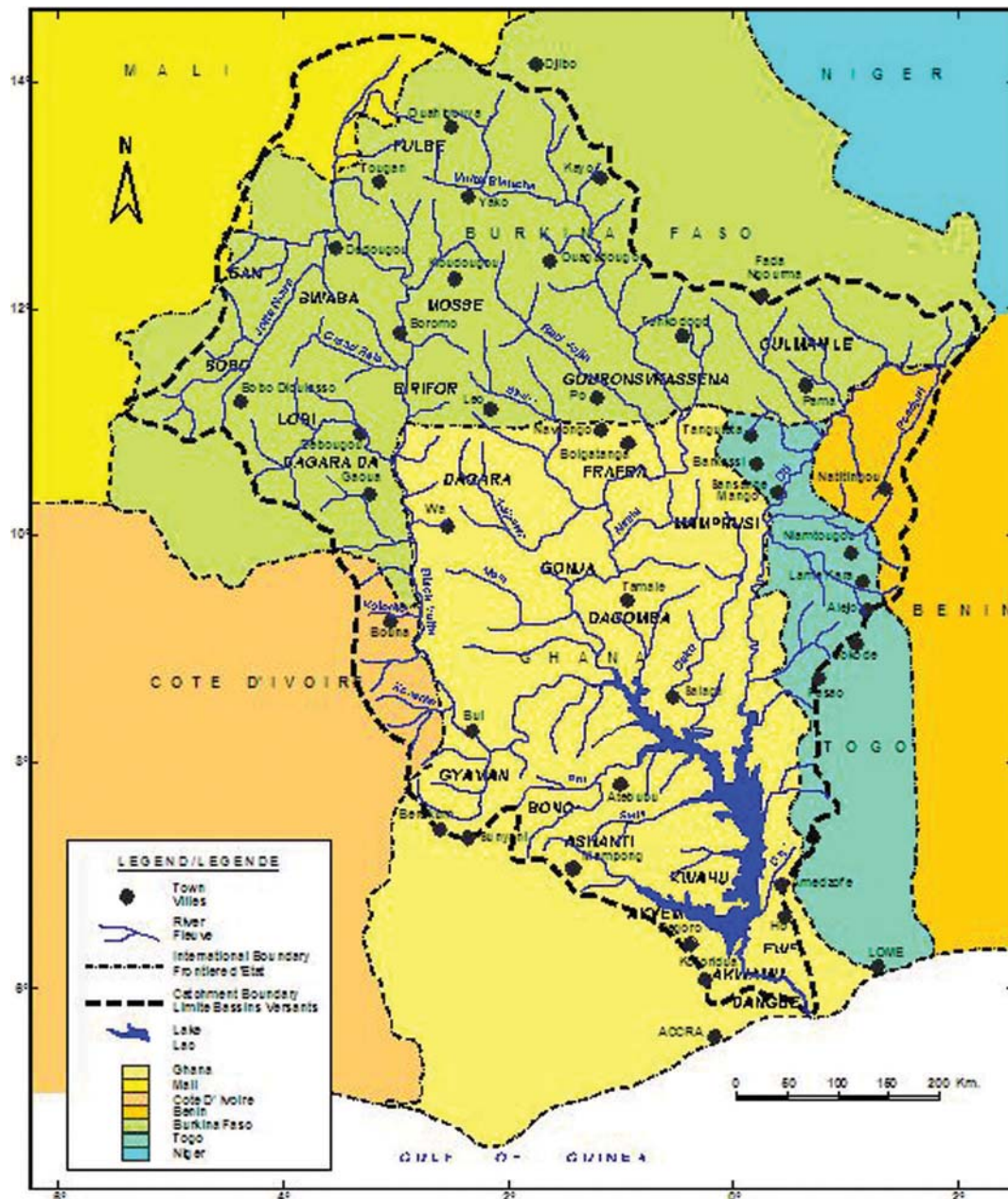
## **SECTION II: PRE-COLONIAL ERA**

### **Generic Features of Ethnic Groups**

Before the era of colonization, the present territories of Ghana and Burkina Faso were occupied by distinct ethnic groupings, each with its own political, economic and socio-cultural identity (see figure 1). A school of thought, with J. B. Danquah as the chief protagonist, however, has tried to establish some historical links between the powerful medieval Western Sudanese Empire of Ghana, which was very rich in gold, and the occupants of present day Ghana – a process that contributed to the name of independent and present day ‘Ghana’ (Okyere 1997).

The ethnic composition in the present territory of Ghana, of the Volta Basin, could be termed heterogeneous; the most prominent being the Akan (made up of Ashanti, Akim, Bono, Kwahu and Akwapim), who occupy much of the southern Volta basin. Others include the Mole-Dagbani, which occupies the northern parts (White and Black Volta) of the basin, the Ewe settled in the eastern parts, while the Guan and Ga-Adangme are located in parts of the central and southern sections of the basin (Okyere 1997).

Figure 1. Map of the Volta Basin showing Ethnic Groups



Sources: Okyere 1997; Togo Press 1974. No. 3779.

The origins of these groups, particularly the Akan, have been a subject of debate between the 'Migrationists' and the 'Anti-Migrationists' (Adu Boahene 1966; Fage 1961). With the exception of the Mole-Dagbani, traditional power in the other groups rested with the chief, who achieved his

position through hereditary succession. In the case of the Mole-Dagbani, a sort of dual-authority was exercised, with the descendents of the invaders as the political leaders and the indigenes – owners of the land as the spiritual leaders.

The livelihoods of these ethnic groups were largely agriculture-based, but the type of crop cultivated depended on the geographical characteristics of the area. For instance, those in the northern zone or savanna portions of the basin cultivated cereals, those in the middle forest sections cultivated food crops such as yam, plantain and cassava. Fishing was the most important economic activity for those in the south.

The Volta River was the main mode of transport of goods among the various ethnic groups since carrying head-loads of goods on foot was not an easy alternative. This phenomenon gradually led to the proliferation of settlements along the river, some of which, such as Kete Krachi and Adawso, developed into strategic market centers (Okyere 1997).

The most important ethnic groups in the Mouhoun (Black Volta) basin are the Bobo, Bwa, Marka, Samo, Dagara, Gourounsi, Lobi, Birifor, Gourounsi/Lela, Dioula, and Sénoufo. The Nakanbe (White Volta) basin is largely Mossi country. With their superior numbers, they dominate the other communities of this basin: the Gourmantche, Bissa, Gourounsi/Nuni, Gourounsi/Kassena, Yana, and Kurumba (Kohler 1971; Togo Press 1974). Most of these ethnic groups came from neighboring regions, mainly from the north of Ghana (the Mossi group and the Lobi-Birifor-Dagara-Dian group). The Dioula came from Kong, north of Côte d'Ivoire.

The livelihoods of these ethnic groups were agriculture based. Only the Peulhs were cattle breeders. Due to the phenomenon of transhumance over large areas, they are also present in all parts of the basin. During the dry season, the southern part of the territory was a focal zone for cattle, from the northern and central parts of the country, as well as from neighboring Mali. Livestock rearing was extensive, generating conflicts among farmers and pastoralists, and even among sedentary and transhumance breeders (Massa and Madiega 1995).

These ethnic groups have created a number of kingdoms. The best known are the kingdoms of Ouagadougou, Yatenga, and Fada N'Gourma, which constituted the Mossi Empire (Central and Eastern regions). The Mossi kingdoms had a very hierarchical social organization. The Mogho Naba (the King), was the single source of law, but he was bound by custom and he could decide nothing contrary to it. The other kingdoms were less prestigious and more transitory, like the Dioula kingdom named Guiriko (in the Western region, Bobo-Dioulasso), the Peulhs kingdoms of Liptako (in the Northeast of the country, Dori), and Barani (Northwest).

### **Customary Water and Land Management**

Customary approaches to water management within the regions of the Volta basin reflect the beliefs and practices of the various ethnic groups which pre-existed the superimposition of the modern nation states of Ghana and Burkina Faso. Indigenous water management in most of the ethnic groups during the pre-colonial era was invariably tied to their religious belief systems (Kohler 1971; Opoku-Agyemang 2001). For instance, the Akan regarded rivers, streams, and the lake as abodes of gods/goddesses; they, together with land, were seen as sacred and inherited from the ancestors. Chiefs and priests were custodians of these resources for, and on behalf of, the gods and ancestors, ensuring that they were not overexploited (Opoku-Agyemang 2001).

The water practices and institutions in the regions occupied by the Mossi in Burkina Faso indicate that here too, water was treated as sacred, and regulatory functions were played by chiefs and priests to maintain sanitation in villages and promote a certain degree of conservation. Land

was considered as the main source of man's existence and had a fundamental female power, a symbol of fertility (Kohler 1971). In the Burkinabe traditional societies, water played a central role in the accomplishment of sacrificial rites; it was the fundamental element to beseech the blessing and forgiveness of the ancestors. Land and water were not supposed to be the object of quarrels or conflicts, and any offence to the land involved serious sanctions that were manifested through diseases, sterility, the death of the guilty person, social calamities, etc. (Magnin 1960; Kohler 1971). Sacrifices are regularly offered to water and the land; so that they "would give health and strength to individuals and groups, fecundity to women, social harmony, rain at the appropriate moment, reproduction for domestic animals, and also for them to forgive the faults humans have committed to them (transgression of interdicts or perjuries)."

However, the links of the woman with land, in practical terms, are partially different and determined by the social context. In traditional pre-colonial Burkinabe (and to an extent Ghanaian) societies, women were denied land ownership in most ethnic groups and kept out of decision-making processes. Generally, women had the right of access and usage of the land through their husbands, but had their own access to sources particularly to supply water for domestic use (Salibo and Kam 1997).

It must, however, be recognized that such indigenous water management practices and institutions vary temporally. Indeed, with the advent of colonial rule such customary practices have been influenced and have continued to change. The extent of influence, however, would vary from type and degree of colonial administration imposed on the societies (Buah 1998).

### **SECTION III: COLONIAL ERA**

#### **The Creation of 'Ghana' and 'Burkina Faso'**

The historical development of Ghana can be traced to 1885, when the Berlin Conference set the stage for the British, French, and Germans to colonize virtually all of West Africa. Significantly, Ghana evolved from the Gold Coast and, as noted, was renamed 'Ghana' upon independence in 1957, based on the possible historical linkages with the ancient Western Sudanese Empire of Ghana. The Gold Coast had three different territorial administrations until it was consolidated by the British prior to independence. The only significant change was the addition of British Togoland prior to independence (Boateng 1966; Buah 1998).

The partitioning of colonial boundaries was not based on hydrologic and ethnic considerations, but rather on the colonial powers' political and trade security; hence, the Volta Basin was divided among the British colony of the Gold Coast (later renamed Ghana), several regions of French West Africa, and temporarily German Togoland, part of which was annexed by Ghana in 1957 (Boateng 1966; Buah 1998).

The institutional structure for water management in the country has evolved through the political administration, the historical role of water in national development and the perceived desires and needs embodied in the value of water. For instance, the need for hydropower generation gave rise to the establishment of the Volta River Authority, with the mandate to produce hydropower and manage the Volta Lake (Ministry of Works and Housing 1998a).

French penetration into West Africa began in the last decade of the nineteenth century and ended with the conquest of the Voltaic states. The French Lieutenant, Voulet, entered Ouagadougou on 31 August 1899. The Mogho Naba, who had signed a protectorate treaty with the English, resisted



and tried to fight, but he was obliged to go into exile in the Gold Coast. The conquest of the country was completed in 1904 with the integration of these territories into the colony of Haut-Senegal-Niger. This colony was later divided and Upper Volta (later renamed Burkina Faso) was established as a distinct territory in 1919 (Togo Press 1974). The territory was then divided in 1932 among French Sudan (current Mali), Niger and Côte d'Ivoire for effective governance and to supply cheap and ready labor for plantation and railway construction. The territory was once again redefined in 1947, based on Act n° 3678 A.P. of September 12 1947.

Just like the case of Gold Coast (Ghana), the dissolution and reconfiguration of the Voltaic territory was not based on the boundaries of the Volta or the social cultural divisions that prevailed. Rather, the boundaries were based on the political and economic interests of the colonial powers, that later manifested in conflicts on waters shared between Upper Volta (hereafter referred to as 'Burkina Faso') and the other Francophone countries.

### **Customary Water Law**

Customary water law refers to the body of water law which has judicially evolved from the customs specific to an ethnic or tribal group. These are normally unwritten, but over time have been recognized as part of the body of laws of the country.

Customary laws in Ghana, and within the Volta Basin, have emerged over the years and cover the areas of water conservation, pollution control, protection of catchment areas and protection of fisheries. In the traditional sense, customs and laws flowed in the forms of traditional chieftain edicts issued from the palaces of chiefs; fetish<sup>4</sup> prophesies issued by fetish priests and priestesses on the assumed dictates of tribal ancestors; the demands of gods as interpreted through the media of fetishes; and the commemorative practice of historical events.

In the southern Volta Basin, under the Akan customary water law, for instance, water resources were considered as community property, which was not individually owned. Water was vested in "stools" (chiefs sit on stools, which are the symbol of their political authority, with each political lineage normally having its own distinct stool), communities, and families. On the other hand, land was handed down from the ancestors through the system of inheritance (patrilineal or matrilineal). Chiefs and priests acted as guardians and regulators of water and land resources for, and on behalf of, the gods and ancestors, ensuring the protection and sustainable use of these resources (Ministry of Works and Housing 1998b; Opoku-Agyemang 2004).

Riparian communities, under customary law, recognize the right of use by all. Thus, the basic water use principle among riparian communities was that each user may use available water, provided sufficient water is left for other users as well. In essence, the water resource was viewed as community property and, in a sense, a free good. In practice, the water resource was shared during periods of scarcity, while other avenues were explored for water, such as digging shallow wells near river banks. These laws and practices are certainly appropriate and applicable in small rural communities, but perhaps not in urbanized communities. It must, however, be emphasized that the issue of how water was shared and the rules, if any, guiding such sharing during periods of scarcity seem not to be well documented and would necessitate further investigation into the principles and rules of sharing, particularly in areas where water scarcity was a frequent problem (Ministry of Works and Housing 1998b; Opoku-Agyemang 2004 and personal communication).

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<sup>4</sup> Gods or divinities that are symbolized by shrines, worshipped by the community or individuals and normally served by traditional priests or priestesses who are usually chosen by such gods.

The customary law of the Mossi (the largest single ethnic group of Burkina Faso, constituting 48 percent of the total population) was the dominant law most applied during the colonial period in Burkina Faso. This law had community considerations for land and water, i.e., the right of “ownership” of water is similar to that of land: it is a “collective right” and of free access, as long as the collective good was not harmed. Thus, in most societies, the land regime depended on:

- Collective appropriation where land is distributed between lineage founders of the community. The right of appropriation of lands is inalienable and administered by the leader of the lineage under the moral authority of the leader of land; and
- The right of temporary or permanent usage of the land awarded to an individual. The conception of the land right, therefore, allowed each person to work on the land of the ancestors (Massa and Madiega 1995; Ouédraogo 2002; Mathieu et al. 2003).

This law on land similarly applied to traditional management of water resources, ensuring that water was a “collective right”, of free access and that every community had its “slice” of river, stream and/or lake (Massa and Madiega 1995; Bruce 1998).

These concepts of community ownership, and respect for other riparian users, may be useful in developing mechanisms for the management of transboundary waters. If riparian countries could consider themselves in the same manner as traditional entities, they would be capable to cooperate in managing the water resources of the Volta. This would, however, require a more detailed assessment of the community mechanisms and how they work and how they could be adapted for broader use - a major objective in the next phase of the study.

### **Customary Water Use Practices and Regulation**

According to the Ghanaian Ministry of Works and Housing (1998a) customary practices for regulating water resources in the Volta Basin, include the following:

- \* ‘Custom generally as expressed in judicial dicta in the colonial period;
- \* Demarcating areas in river courses for no human activity;
- \* Marking out portions in water courses for human activity;
- \* Prohibiting certain activities on named days in the week and months in the year; and
- \* Practices requiring strict compliance with orders for communal labor of clearing, weeding and desilting river courses, drains and other tasks.

These laws are enforced through various sanctions, usually determined by traditional authorities. For instance, there is considerable internal migration of fishers within the basin, particularly the lower Volta basin in Ghana. The fishermen follow the migration of fish seasonally along the river. Traditionally, the migrant fishers pay some dues to the chief fisherman of the fishing village they migrate to. This may be in the form of money, drinks or fish. This arrangement is to ensure that the migrant fisher will be accorded some assistance at a time of social and economic need, such as bereavement and ill-health (Entsua-Mensah 2001). Furthermore, the three main objectives in the traditional fishery management of the lower Volta basin are the control of fishing rights and reduction of conflict, generation of food and income for the family, and conservation of the fish stocks. The main method of management is the control of access by

restriction of entry and/or time, and the decision-making authorities are the leaders of the community and traditional government, although all users may have input into this process (Entsua-Mensah 2001).

In Northern Ghana, which falls entirely in the Volta basin, many reservoirs had been established by the end of the 1990s for water supply, watering of livestock and irrigation. Authority for these reservoirs rests with traditional chiefs, who appoint responsible men as 'Master of Fisheries' to manage the daily utilization of the water by monitoring fishing practices such as use of the right gear and appropriate time of fishing. They are expected to deal with the misuse of water, and to report to the chief any situation beyond their control for appropriate sanctions such as ceasing of the wrong gear used or payment of fines (Braimah 1990; Ayariga, personal communication).

Some of the significant traditional regulatory systems put in place that need mention are:

1. **Regulation of fishing to develop tourism:** In Paga, in the Upper East Region of Ghana, when a crocodile dies, it is expected that someone in the village will also die. Fishing is prohibited to ensure adequate supply of fish for the crocodiles. This practice is being preserved not only for its traditional significance, but also to promote tourism.
2. **Regulation of entry into the water body in terms of time and area:** This practice related to fishing, when fishing activities were restricted for some days or weeks, and only indigenous people were allowed to fish or access water. Certain areas, normally upstream portions, were also earmarked specifically for domestic water supply use and isolated from pollution-related activities.
3. **Regulation of access by gender:** Regulation of access to water by gender in the Volta Basin was associated with domestic use and fishing. Most of the active gear, such as drag nets and cast nets, were used by men and the passive gear, such as fish and crab traps, were used by women.

There were parallel customary water use and regulatory mechanisms in Burkina Faso. For instance, the customary procedures for water and fishing resources control and sharing, included restricted entry into water bodies in time and space for domestic use and fishing. As regards the supply of water for domestic use, the women had access to water sources, whereas fishing was a practice generally reserved for men (Massa and Madiaga 1995; Traoré 2002).

A customary practice that could be considered as negative was tree planting. Tree planting is seen as a symbol of usurping ownership and is strictly forbidden on borrowed lands. In general, this restriction was a major constraint to reforestation, and directly contributed to the reduction in interest for conservation and natural resource management practices (Salibo and Kam 1997).

According to Satia (1995), some of these traditional regulatory practices were practiced with definite resource management intentions in mind. These included specific methods of water use for fishing (gear restrictions) and habitat modification. There were also strategies that were put in place without specific resource management objectives or desired results in mind. Examples were the honoring of water deities through the commemoration of events, such as ritual restrictions to certain areas and access at particular periods of the year. Many of these latter practices, nevertheless, had resource conservation impacts, whether intended or not.

The breakdown of some of these regulatory mechanisms and the undermining of community level institutional arrangements in many rural parts of the basin can be attributed to the advent of colonialism, Christianity and Islam, migration, the need for institutional restructuring and the

introduction of modern technology. Furthermore, apart from issues on the protection of water for domestic use, some of which are already present in existing statutes, many traditional regulations are rather localized and do not have any common features that can be readily incorporated into the national common law. For instance, the traditional practice of restricting fishing to certain periods of the year is generally localized to lagoons, lakes and ponds, and not extended to rivers and recently created man-made reservoirs for water supply and irrigation, which now contribute a significant portion of inland fishing. However, it must be emphasized that some of these local rules and regulations have, over time, been recognized as part of the body of laws of the country and could be institutionalized at the district level within the basin.

## **Colonial Influences on Traditional Water Management Institutions**

### ***Ghana***

It can be assumed that the customary water management practices and institutions that developed and evolved relatively independently for centuries have been altered significantly during the British and French colonial era. Colonial water legislation from the British Gold Coast colony consists primarily of two key legislations (Opoku-Agyemang 2001; Ministry of Works and Housing 1998b).

The Rivers Ordinance (1903, Cap 226) passed in the Gold Coast was the first attempt to comprehensively control the use of water other than for domestic use. There was no follow-up to this ordinance. No regulations were made, and time and other enactments have since overtaken the ordinance. Parts I and II of the Rivers Ordinance have since been repealed by the Water Resources Commission (WRC) Act 522 (1996). Part III of the Ordinance is, however, still operative relating to the provisions on 'licensing for dredging, steam vessels and the power to issue regulations to protect and improve navigability, fishing, timber, mining, etc.' (WRC 1999).

The second colonial legislation was the Forests Ordinance (1949, Cap 157), aimed at ensuring the conservation and management of forest areas, as a commodity as well as a resource. Under the ordinance, water development and management activities, such as the construction of a dam or weir across any river or obstruction of a river channel in a forest reserve, could be authorized by the competent forest authority (Opoku-Agyemang 2001; WRC 1999).

The British Gold Coast colony practiced the British common law legal system. Under the Common Law rules on riparian rights, the owner of any land abutting on water, known as the riparian owner, had unrestricted access to the free flow of the water insofar as his land was in actual daily contact with the water (Opoku-Agyemang 2001; WRC 1999). Thus, under the British common legal system, two systems of water management operated in concert, i.e., traditional and modern, formal and informal, state-regulated and community-regulated, though the colonial system dominated that of the traditional laws and practices (Odame-Ababio 2002).

Colonial and traditional water management practices are closely coupled to land tenure. The imposition of legislation and policies concerning land tenure in the Gold Coast was, however, marked by inconsistency and ambiguity (Lund 2002). Even though native tribunals were allowed to persist, a 1901 Land Ordinance gave the colonial Commissioner extensive authority to control allocation of land. In the southern and, to some extent, the middle parts of the Volta Basin, traditional land and water management practices persisted, but such practices often underwent a process of modification due to colonial influences.

## ***Burkina Faso***

During the colonial period, the legal system of Burkina Faso was based on the coexistence of the customary rules and the legislation of colonial powers. Furthermore, the colonial legislation had a defined public domain, which included waters and other natural resources, notably land, but in practice the daily management and control was left with traditional leaders. Thus, for instance, the Decree of May 09 1906 allowed for the administrative certificate of deals based on customary rules.

Colonial legislation relating to use of property, organization and conservation of water resources were as follows:

- The Decree of April 1 1906 determined the powers of the authority, in charge of the representation in justice of state administered properties;
- The Decree of March 5 1921 related to the water regime;
- The Decree of October 8 1925 established “land right” for the natives;
- The Decrees of November 25 1930 and August 23, 1933 related to licenses for water withdrawal;
- The Decree of July 4 1935 related to the forest regime; and
- The Decree of November 15 1935 concerned the rules on state-owned lands.

Colonization of Burkina Faso upset the hierarchical order of the political organization of its ethnic groups and was a key factor in the weakening of some local customs. There was neglect of institutions and or local customary laws on waters during the conception and development of the colonial laws. Generally, however, certain customary practices have changed (just a little) due to outside influence, though certain traditional land and water management practices have persisted. Customary practices are likely to continue evolving, due to economic and social changes or modifications, but very slowly, mainly in rural areas where the inhabitants maintain many of their traditional beliefs about water use (Mensah 1999). Even today, the state officially owns all water and land in Burkina Faso, but in practice land and water use is regulated by traditional authorities, who govern them according to local values (Zone 2002).

## **SECTION IV: POST-COLONIAL ERA**

### **Institutional Framework of Water Resource Management**

#### ***Ghana***

Since independence in 1957, Ghana has gone through various political regimes, which implemented varying programs of economic development with accompanying changes in resource management, policies and institutions. Between 1957 and 1996, Ghana had a plethora of legislation dealing with water resources use and management. The first water development and management institution, Volta River Authority (VRA), the only institution with a mandate that extended over an entire basin in Ghana, was set up under the Volta River Development Act 46 of 1961. It was responsible for the generation of electric

power from all sources, including the development and operation of hydroelectric generation plants. The VRA, by virtue of its legislative authority, also had the mandate for the development of the lakeside area of the Volta Lake for improved health of the people and enhancement of its natural ecology.

The Ghana Water and Sewerage Corporation (GWSC), was launched in 1965, under Act 310. Among the GWSC's functions were the 'provision, supply, distribution, and conservation of the nation's water resources for public, domestic, and industrial purposes'. The Act further noted that, 'the Corporation shall have preference over other authorities in the use of water resources'. The term 'water', as used in the GWSC Act, was for both treated and raw water. However, its operations focused on the conservation of treated water or wastage, without much attention to the conservation of water resources (Ministry of Works and Housing 1998a).

The Irrigation Development Authority (IDA) was established in 1977, under SMC Degree 85, as the third major water-user institution until the 1990s. It had the responsibility to formulate plans for irrigation development, and was the executing agency for the implementation of programmes for the efficient use of irrigated lands (Ministry of Works and Housing 1998a).

Three agencies were set up for data collection and management. The first was the Meteorological Services Department (MSD) that was responsible for collecting, processing and assessing meteorological data. The Hydrological Services Department (HSD) collects, processes and assesses hydrometric data. The third agency, the Water Resources Research Institute (WRRI), focused on research into water resources, including water quality and sediment transport studies. These agencies serviced other governmental departments and agencies, local authorities, and the general public.

### ***Burkina Faso***

Burkina Faso became independent in 1960, and as was the case with Ghana, water sector activities were implemented with the view to supplying drinking water for rural areas and developing water for livestock. Until 1965, when the water sector was integrated into the Ministry of Economy and Planning, it was under the Department of Civil Engineering. From 1967 to 1971, the sector was under the Ministry of Development and Tourism, and later under the jurisdiction of the Ministry of Agriculture and the Livestock. In 1984, a Ministry of Water was created. In 1995, it was renamed the Water and Environment Ministry (MEE).

During the mid-1970s, a number of institutions were created to supply drinking water for rural areas and developing water for livestock. In 1976, the Rural Development Fund (FDR) was created to strengthen the state's capacity to intervene and combat the impacts of droughts. During the same period, the National Office of Dams and Irrigation (ONBI)<sup>5</sup> was created, with the aim of expanding and exploiting the irrigation potential of the country (Dembélé 1998). Other types of development activities were implemented, among which were the development of Sourou, Douna, Kompienga and Bagre dams, and their associated schemes for irrigation and hydropower.

### **Absence of Policy and Coordination Framework**

In the creation of water user institutions, assignment of roles for development and advisory services and decision-making were done with single purpose objectives (or mandates), without consideration of the linkages or interdependency of each other's functions and roles. The institutions and agencies consequently dealt with single purpose water use to serve sectoral interests. This lack of coordination

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<sup>5</sup> It was later renamed, the National Office of Dams and Agricultural Hydraulics Facilities (ONBAH). It does not exist anymore.

of activities in the water sector increasingly led to conflicts in the objectives and functions of the various institutions (WRC 1998). In Ghana, the VRA, GWSC, and IDA did not comply with the Rivers Ordinance or the Forest Ordinance, which were the regulating legislation in force then, before putting up dams or abstracting water for their operations in various parts of the country, including the Volta basin (Wellens-Mensah 1998; WRC 1998).

In Burkina Faso, as in most former African colonies, the “state” was a collection of many nationalities and groups of people. Their institutions were very different from each other. For example, the Mossi people were extremely well-organized in a formal sense, while the Lobi-Dagari villages were said to be ‘chief-less’. In such a case, mixing the two ethnic systems for managing natural resources, or designing any other, would have been difficult (Ouédraogo 2004). Therefore, Burkina Faso was inspired after its independence to create legislative and institutional models akin to those of its colonial master for the management and development of its water resources. However, each institution that was established executed its water projects without any coordination of activities (Conac *et al.* 1985). Furthermore, from 1960 to 1976, Burkina Faso did not have a water policy. The droughts of the 1970s, however, laid bare the country’s vulnerability to extreme natural events (Somé and Dembélé 1996). This led to the formulation of the first water policy, that focused on ensuring basic supply of water for all and minimization of vulnerability to long spells of low precipitation in 1977 (Ministère de L’Environnement et de l’Eau 2001). This policy has been reviewed twice, in 1982 and in 1992, but without taking into account certain aspects of water resources management such as:

- The necessity for joint management of the resource by all the users;
- The variety of the domains of use of the water;
- The economic value of the water; and
- The necessity for promoting water resources management and protection by considering hydrographical basin level as the appropriate economic planning unit.

In 1998, a water policy and strategy document, taking into account Integrated Water Resources Management (IWRM) and addressing the above issues, was adopted. It was launched at the beginning of 1999, with a view to introducing good water governance and a coordinated water sector for the country (MAHRH 2003).

## **SECTION V: RECENT DEVELOPMENTS IN TRANSBOUNDARY, NATIONAL AND BASIN WATER MANAGEMENT**

### **Reform Process**

#### ***Ghana***

In Ghana, a number of reforms were introduced from the 1990s designed to move the country away from the uncoordinated and unsustainable management of water resources. These were driven by initiatives such as the Economic Recovery Programme initiated in 1983 and continuing until the mid-nineties. During this period, administrative and political reforms were undertaken which aimed at devolution of power from the central government to the District Assemblies and lower levels of

governance. These administrative and political reforms were accompanied by direct reforms in the water sector to improve efficiency and to attain some measure of environmental protection and conservation (WRC 1999). Specific institutional weaknesses and the accompanying reforms are discussed next.

The GWSC was faced with increasing demand for water services and insufficient funds for development, operation and debt service. Thus, in most cases, its focus was on the provision of water to the urban centers that could afford but were not paying even the prevailing uneconomic rates. The poverty of rural communities and vulnerable groups requires special consideration in any tariff policy. Reforms were, therefore, introduced in the early 1990s to accelerate the coverage of the rural population with good drinking water and sanitation facilities. Thus, policy was introduced that required that the supply of water to rural communities should be demand driven and community managed. An autonomous Community Water and Sanitation Agency (CWSA) was later established by an Act of Parliament in 1998, to facilitate the implementation of this policy. At the time of the CWSA's creation, potable water supplies had been extended to only about 15 percent of rural Ghana. This is currently at about 43 percent (Mensah 1998). This rather remarkable increase in rural water supply coverage could be due, in part, to the unified definition of access to rural water supply given by CWSA to address the varying definitions and access figures quoted by various sources in the country.

In the urban water sector, a Water Sector Rehabilitation Project began around 1995, followed by reforms to create conditions through legal, business and regulatory interventions, to facilitate a favorable environment for increased private sector participation. As part of the reforms, the regulation of urban water and other services was shifted away from the government to an independent body, the Public Utilities Regulatory Commission (PURC).

Irrigation was faced with the high cost of providing infrastructure, low level of an indigenous irrigation culture and farmer participation, inadequate credit and insecure land tenure. The reforms in the irrigation sub-sector were to accelerate the slow pace of development of the potential 346,000 hectares of irrigable land (only 10,000 hectares had been developed since formal irrigation started in the early 1960s), with the view to increasing agricultural production, through development of water resources for irrigation, focusing on small to medium scale schemes. Other significant decisions were that, the management of irrigation schemes was to be handed over to farmer associations and assisted by the Irrigation Development Authority (IDA). Farmers were also involved from the inception to completion of projects, including making decisions on the type of technology to be used.

Prior to the setting up of the Environmental Protection Agency (EPA), the then Environmental Protection Council (EPC) did not have any regulatory powers. Hence, regulation of the exploitation of the environment was without any legal enforcement. Reforms aimed at the protection of water and the general environment were included in the Environmental Action Plan prepared for the country in 1985. Further, an Environmental Protection Agency (EPA) Act, passed by parliament in 1994, conferred regulatory and enforcement powers on the EPA.

A significant step was taken to address the diffused state of functions and authority in the water resources sector with the creation of the Water Resources Commission (WRC) through an Act of Parliament (Act 522 of 1996). The Act clearly defines the WRC as the overall responsible body for coordination, regulation and management of the nation's water resources. The institutional structure for decision making within the water sector at national level is presented in Annex 2.

The WRC Act 522 has replaced the common law riparian system. Under the Act, land has been severed from the abutting water resources and a landowner does not have an automatic right to use a water body contained on his or her land. Furthermore, water resources are now vested in



the President for, and on behalf of, the people of Ghana and the law prohibits the use of water resources without prior authorization from the Water Resources Commission. Provisions are, however, made in the law exempting persons who have lawful access to water resources to abstract water for domestic use and for fire fighting.

### ***Burkina Faso***

In 1995, after the establishment of the Ministry of the Environment and Water in Burkina Faso, the General Directorate of Hydraulics (DGH) was formed to organize water-related activities and interventions in the country, and provide overall coordination to the water sector (Ministère de l'Environnement et de l'Eau 2001). Three main directorates were established to implement the mandate of the DGH:

- The Directorate for Potable Water Supply is responsible for potable water supplies to urban and rural areas as well as for industrial uses;
- The Directorate of Agricultural Hydraulics directs and organizes work relevant to water use for agriculture, livestock, and energy; and
- The Directorate of the Inventory of Hydraulic Resources oversees data collection and processing concerning all water-related activities and interventions in Burkina Faso and conducts studies to identify areas in need of future water-related interventions.

In 2002, the Ministry of Agriculture, Hydraulics and Fishing Resources was created to replace the former Water and Environment Ministry. The mandate of this new ministry is implemented through the General Directorate of Agricultural Hydraulics (DGHA), the General Directorate for Provision of Potable Water (DGEAP), and the General Directorate for Inventory of Hydraulic Resources (DGIRH), which is in charge of collecting, processing and assessing hydrometric data. A new General Directorate for Fishery Resources (DGRH) was also created that seeks to establish a strategy for sustainable exploitation of the country's fish resources and assure the effective management of the fishing industry. It is also entrusted with preserving and protecting aquatic ecosystems (Ministère de l'Agriculture de L'Hydraulique et des Ressources Halieutiques 2004).

During the same year, Burkina Faso's water institutions underwent another restructuring, targeting the implementation of the Integrated Water Resources Management (IWRM) Program. An action plan for the Integrated Water Resources Management Program was adopted in 2003. The adoption and promulgation of the Framework Law on Water Management (law n°002-2202/AN of 8th February 2001), made IWRM the foundation of the global strategy for strengthening public efforts in the field of water. The IWRM involves the State, the local communities and the users (Ministère de l'Agriculture de l'Hydraulique et des Ressources Halieutiques 2003).

The objectives of the ongoing action plan for IWRM are to:

- Redefine the role of the State;
- Establish the National Council on Water as a national organ, designed for the concerted management of water resources and associating the State, local communities, the private sector and the civil society in its various components;

- Define new management approaches on the basis of the river basin, as the appropriate arena for planning and managing water resources;
- Develop and strengthen human resources in the field of water.

The water policy is also implemented by:

- A government company: the National Water and Sanitation Office (ONEA) with the mission to create and manage infrastructure for drinking water, in urban and peri-urban areas (more than 10,000 inhabitants);
- Three public agencies:
  - \* The Water and Rural Facilities Fund (FEER), which collects funds and implements small water resources development projects with the involvement of beneficiaries;
  - \* The Sourou Valley Development Authority (AMVS), to develop the Sourou valley and the high valley of Mouhoun for irrigation; and
  - \* The Bagre Development Agency (MOB), to develop the Bagre plains for crop irrigation and hydro-power production.

The current government policy on irrigation development focuses on two fields:

- Promoting small-scale irrigation at the village level by encouraging the use of treadle pumps for maize and cowpea growing during the dry season;
- Lowland development targeting partial water control. Families or cooperatives are encouraged to develop these lowlands. Hence, in the rainy season, they grow rice on the minor bank, and sorghum or maize on upper sides of the lowlands.

An inter-sectoral executive coordination was created at the national, regional, provincial and local levels, to motivate and seek opinions on water development projects at all levels (Ministère de l'Agriculture de l'Hydraulique et des Ressources Halieutiques 2003).

### **Legal Conflicts and Harmonization**

An examination of the WRC Act in Ghana shows that the Commission has very clear mandates. However, there are a number of overlaps with the mandates of other institutions. This relates specifically to the power of the Commission to direct the activities of the other water sector actors.

Of particular interest in an analysis of the mandates are the overlaps and conflicts in relation to the VRA legislation. The VRA is mandated under Section 33 (1) b of Act 46 to regulate water use in the Volta basin, while the WRC has the same mandate over the nation's entire water resources. The issue is whether the VRA, like other water users and water rights holders, should notify the WRC of its water claims as specified in the WRC Act? Second, under the Volta River Development Act, no person shall exercise any statutory power or duty inconsistent with the powers or duties conferred on the VRA. Specifically, there is a lack of clarity between the WRC and the VRA as to which body is vested with the final authority; on the management, utilization, and conservation of the resources of the River Volta.

The general recommendation is for the two institutions to work in close collaboration and cooperate with each other. However, the legal principles of *lex speciales* and *lex posteriore* apply. This means that conflicting legislation adopted before the WRC Act or legislation, which is more general than the specific mandates of the WRC Act, are implicitly either repealed or modified. These principles are recognized by the court system in Ghana. An exhaustive index of legislative acts that have a bearing on water use and management from the colonial period is presented in Annex 3.

Conflicts in Burkina Faso over water use and management are localized within specific basins. However, the Nakanbe (White Volta) basin is a zone of high potential conflicts, and illustrative of potential water problems and conflicts (Kibi and Sanon 2003). This is because the basin is well endowed with hydro-agricultural schemes and numerous socio-economic activities, utilizing the resources of the three biggest multi-purpose dams: Lake Bam, Lomita dam and Barge dam.

The first cause for conflict is over access to and use of existing natural resources: land, water, pasture, and forests. Conflicts among small water users arise from the scarcity of water resources and insufficient technical development of water sources. For example, drilled wells are often without watering structures that could meet the needs of livestock herders, who come to water their animals. Conflicts among the big or major users emanate from the uneven distribution of water resources. A case in point is the conflict between the National Water Society and the National Water Office on the use of the Loubila dam for drinking water supply while ensuring adequate supply for the irrigation of vegetable crops, construction and appropriate water levels for fishing.

Similarly, conflicts arise over the use of the Bagre dam, especially balancing necessary water levels for the production of hydro-power by the Burkina Faso Electricity Society (SONABEL) with adequate supply for the irrigation of rice fields and fishing. In the Lake Bam zone, conflicts come mainly from the water withdrawn for irrigation, livestock, domestic use and fishing (Kibi and Sanon 2003).

The second cause of conflict is witnessed in the Kou valley of the Mouhoun (Black Volta), arising from water sharing in the context of growing demands of the various water users, and also from accidental water pollution, resulting in loss of fish and the threats to the health of users of these waters. Due to the serious nature of the conflicts in the area, political and administrative authorities began to address the situation in 1987. However, it was not until 1997, that the Commissioner of the Houet Province enacted Act n° 97-41/ MATS/HC/SG that set up a temporary committee for the water management in the Kou valley that specifically:

- Identified partners for the management of the water resources of the Kou valley;
- Determined the modalities for the exploitation of water resources in the Kou basin through dialogue among the users; and
- Examined all relevant documents and developed a plan to guide the management of water resources of the Kou basin.

### **Drivers of Change in Indigenous Management and Practices in the Volta Basin**

Water management at the national level has, to some extent, had a displacement effect on indigenous practices in the Volta basin. This section identifies some drivers of current water management that have impacted on indigenous practices and assesses the extent of displacement.

### ***Pricing***

The recent institutional reforms of the Ghanaian water sectors accelerated the rate of local-level participation in the management of state-sponsored water extension schemes (WRC 1999). Prior to this restructuring, the GWSC was responsible for maintaining state-administered sources of water and collecting payments from customers for their use, both in urban and rural areas. This obviously weakened the control of traditional authorities, as they no longer could impose their rules on the use of water sources. Further, the new concept of charging people for their use of water created tension, as traditionally there was no such charge. Water was considered a free commodity and the myth of abundance prevailed (Ampomah 1999; WRC 1999).

There is, nevertheless, a desire on the part of communities to obtain water from state-sponsored schemes. Despite the payments associated with the use of water from state-sponsored sources, there is a perception among villagers that some customary practices could produce health-related problems such as malaria, bilharzias and guinea worm (Ampomah 1999). Most communities acknowledge inadequacies in traditional practices, and therefore seek to obtain water from “modern” state-sponsored sources, if these sources are available (Ampomah 1999; Twumasi et al. 1977).

### ***Community Participation and Management***

It became increasingly clear at the beginning of the last decade, that state water policies could not extend water supplies to all rural Ghanaians. Though there were inadequacies in indigenous approaches and institutions, it was realized that these institutions could serve as conduits for extension of rural water supplies. The Community Water and Sanitation Agency (CWSA), after it had been set up in 1994, took a much more participatory approach to water extension. Water and Sanitation Committees (WATSANs) and District Assemblies began to play a central role in the extension of water supplies, as traditional authorities were co-opted by the state system (Mensah 1998; DANIDA 2004).

Generally, it seems that the Volta’s rural inhabitants prefer the state-sponsored sources of water (as water from these sources is generally more potable), yet these inhabitants simultaneously maintain many of their traditional beliefs about water use. This is influenced by the extent of their involvement in the provision of the sponsored water facility (Ampomah 1999). Important research may, therefore, be to define those institutions which can successfully integrate accepted local approaches with modern state systems.

### ***Basin Level Management and Decentralization***

The most appropriate level of water management is at the level where all affected parties are represented. The key strategy at the national level is to secure good relationships among all stakeholders and to work in a participatory manner, involving all local communities at the basin level. In order to do this, the WRC is exploring ways to use, in the most appropriate manner, the decentralized government structure, specifically the Regional Coordinating Committees and the District Assemblies. A pilot project, implementing IWRM in the White Volta sub-basin is being tested by facilitating an iterative process to evolve a collaborative decentralized institutional framework.

The adoption of indigenous practices into basin level management is being given prominence through formal regulatory and administrative systems, such as the District Assembly. However, the adoption of indigenous practices is defined along the following:

- The removal of superstitious dogmas of tradition on water conservation practices, such as sacrifices, to request the gods to punish violators of existing rules to protect water resources;
- Education of masses on proven water management systems;
- Adoption of customs proven to be efficient means for water conservation and management; and
- Institutionalization of beneficial customs on water management in formal regulatory systems by means of by-laws, legislative measures, instruments, and statutes. Examples are the allocation of specific parts of a water body for specific water use activities, to protect abstraction points from pollution; periodic community practices and events, such as weeding and removal of debris from banks of rivers, where necessary; and preservation of fish stocks through restrictions on periods for fishing. (Ministry of Works and Housing 1998a).

In essence, the position of the WRC is that the rural populations should practice “proper” water management. Where customary practices violate those which are deemed ‘proper’, such customs should be eradicated. Where customary practices conform to proper practices, they should be institutionalized (Ministry of Works and Housing 1998a).

### ***The Issue of Compensation***

Under the national legal system, compensation is paid for any appropriation of private property. Compensation is paid in cases where one’s water rights are terminated or limited, or where land which is under degradation is declared a planning or protected area, and can be acquired in the public interest, for the purpose of preventing the degrading practices. On the other hand, under the customary system, no incentive is provided for a landowner who degrades the land in the process of using it for a living if the degrading practice is given up (WRC 1999). To address this issue, the emerging practice is the creation and promotion of communal plantation schemes that serve economic and conservation purposes. Such practices prevail mostly in the northern sections of the basin, where environmental degradation is most serious.

### ***Economic Development Schemes***

The major large-scale impacts of national water policy on the rural inhabitants of the Volta Basin resulted from the construction of the Akosombo dam in 1962 and, to a lesser extent, the Kpong dam in 1977. The primary objective of the Volta river project was increased industrialization of the economy, promoted by electrification. However, the construction of the Akosombo dam caused a total approximate area of 8,500 km<sup>2</sup> to be flooded. Subsequently, a population of about 80,000 people, who were living in 759 villages in this flooded area, had to be resettled in 52 new townships. A smaller population of 7,000 was relocated under the Kpong scheme. The social, economic and institutional structures of these villages were generally modified upon resettlement, and their water

institutions were usually altered by state-sponsored schemes. For instance, solutions to the problem of property rights and the provision and maintenance of basic social infrastructure have not been totally met. The re-settled populations do not have legal ownership of the acquired lands or replacement houses, and this has resulted in litigation. Population pressure and the lack of social and economic infrastructure which could have effectively supported the economic and social life of the re-settled, has compelled them to farm on lands close to the reservoirs (Sutherland et al. 2004; and Sutherland, personal communication; Sam 1993).

### **Transboundary Actors and Developments in the Volta Basin**

This section highlights the genesis of transboundary cooperation between Ghana and Burkina Faso and current developments in the basin.

The primary anxieties of Ghana are the reduction in flows into the Volta Lake for hydropower generation; loss of floodplain farming due to regulation of the river upstream; transboundary pollution; and the migration of aquatic weeds from the upstream riparian states. Other concerns include occasional unplanned flooding of northern parts of Ghana as a result of the opening of dam spillways in Burkina Faso.

These concerns were less important at the initiation of the first post-colonial cooperation between Ghana and Burkina Faso in 1971, when the Ghana/Burkina Faso Permanent Joint Commission for Co-operation was inaugurated. The purpose was to develop on a continuous basis, mutual co-operation in political, economic, commercial, industrial, cultural, transportation and other fields. The Commission remained dormant until it was revived in July 1998 to take up the issue of establishing a Permanent Technical Committee to study power generation, irrigation, water transport and the control of water-borne diseases, especially in the Volta basin.

Another initiative in 1988 was the provision by UNESCO of assistance within the framework of the International Hydrological Programme (IHP), by initiating a process of dialogue at the technical level to promote data exchange among the riparian countries of the Volta Basin. After the first dialogue meeting, it took another 14 years before the IHP National Committee of Ghana organized a consultative workshop on IWRM of the Volta Basin. It was attended by representatives of five out of six riparian countries of the basin (WRC 2002).

Cooperation on the Volta's waters (beyond issues related to power supply from Akosombo in particular) was largely initiated and driven by international donors, especially the World Bank, to satisfy lending conditions. Thus, the first existing agreement on water use on the Volta was between Ghana and Burkina Faso in 1996, and arose out of a 'no objection' request from Burkina Faso to Ghana for a water supply scheme on the Ziga Dam on the White Volta in Burkina Faso. It is worth noting that the 'no objection' was required by financiers of the project and not out of the realization by Burkina Faso of a need to coordinate the use of the shared water resources (Ministry of Works and Housing 1998b).

Further interest in a transboundary water management structure on the Volta gained momentum in 1998, when the reduced water levels at the Akosombo dam led to an energy crisis in Ghana. Prior to that, there was destructive flooding of parts of upper Ghana in 1994. Such events were attributed to preventable events in Burkina Faso, calling 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 1998b).

The GLOWA Volta project, funded by the German Federal Ministry of Education and Research, GLOWA-Volta, 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. This project is continuing as a collaborative effort with established institutions, such as the Water Resources Commission of Ghana, within the White Volta Basin, during the period 2004 – 2006. It is 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. At its first meeting in Accra, the ministers of environment and water or their representatives from all the six riparian countries of the basin agreed to join forces and collaborate on an integrated management of the basin (The Volta River Basin Declaration, Accra). Relevant project documents have been prepared and endorsed by all the countries for a project on 'Addressing Transboundary Concerns in the Volta Basin and its Downstream Coastal Area'. The broad objectives of the project include building capacity and creating a regional institutional framework for the effective management of the Volta Basin, and also development of regional policy, legal and regulatory framework for addressing transboundary concerns in the basin (GEF-UNEP 2002).

A Water Governance Project (2004–2006) sponsored by IUCN, in collaboration with GWP, has been designed to improve water governance in the White Volta basin, with a focus on Ghana and Burkina Faso. The Water Resources Commission is acting as the focal point in Ghana. Most importantly, the project would necessarily feed into 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).

A pilot trans-border Burkina Faso and Ghana project encompassing 30 communities (15 communities each), that is being supported by FAO and ECOWAS to improve socio-economic development of the Onchocerciasis freed zone within the White Volta sub-basin, took off in February 2004. The focus is to strengthen trans-border cooperation on transhumance and shared watersheds through the introduction of village level land and water resources management arrangements. This would involve the development of a transhumance corridor from Burkina Faso to Ghana, grazing lands all along the corridor, watering points for cattle, and an increase in private participation in animal health delivery.

Despite the various initiatives and cooperation on the Volta, it remains one of the few major transboundary river basins in Africa with no formal legal and institutional arrangements among the riparian countries for managing its water resources. Under the EU Water Initiative, that was launched at the Johannesburg World Summit on Sustainable Development in 2002, the Volta and Niger Basins have been selected as the West African co-beneficiaries to be supported under a transboundary water resources management programme (EU 2004).

As a follow up, Ghana and Burkina Faso began consultative meetings with the aim of creating a path for the establishment of a transboundary water management institution. In April of 2004, the Ministers in charge of water resources of Ghana and Burkina Faso signed the *Ghana-Burkina Joint Declaration*, which acknowledged common water and environmental issues and stated a desire to collaborate on management of shared water resources through a Volta Basin Technical Committee (VBTC), involving all riparian countries. This work was followed by a meeting in Ouagadougou in July 2004 that was attended by representatives from Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali, and Togo. All six riparian countries developed and accepted a statute of the VBTC, acknowledged the need for a transboundary management institution and a timeline for its creation. The process begun with the ministerial endorsement and signing of an agreement to form the Volta Basin Technical Committee (VBTC) in November of 2004 (WRC 2004). On 6 December 2005, in Ougadougou, the Ministers in charge of water from Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali and Togo signed a "Memorandum of Understanding to Establish a Volta Basin Authority (VBA)."

## SECTION VI: LOCAL LEVEL NATURAL RESOURCES MANAGEMENT TODAY: WHAT DO WE KNOW?

This paper has identified the major water management institutions and policies in the Volta basin, in Ghana and Burkina Faso, and discussed the changes that such institutions have undergone over the last 150 years. For much of this period, a potentially important vehicle for water resources management—traditional institutional arrangements—experienced profound changes.

During the pre-colonial era, indigenous approaches to water management within the Volta basin were practiced by the various ethnic groups which pre-existed the superimposition of the modern nation states of Ghana and Burkina Faso. Chiefs and traditional leaders exercised control over the land and its resources, to promote conditions which were beneficial to the environment and sustainable for communities. The traditional approaches to water and land management were effective during the pre-colonial and colonial era and contributed to the sustainable use of the resource. It must, however, be mentioned that the population was small then, and water use was on a small scale. Further, some traditional rules and water governance were shrouded in myths, but with environmental benefits.

In Ghana, the traditional controls were gradually eroded with the advent of colonialism. The British, during the colonial period, allowed for some persistence of tradition in the Gold Coast, but seldom did they use tradition as a mechanism to effect changes in water management practices. The independence of Ghana witnessed the establishment of state institutions and legislation to formally take control of the development and management of water resources. There was scarce mention and formal recognition of tradition in any official documents, until the Integrated Water Resources Management-oriented restructuring of the countries' water sector in the 1990s.

On the other hand, the colonial impact in Burkina Faso was somewhat minimal, due largely to the inconsistency of French policies characterized by a *politique non-formulee*; i.e., an unformulated or unwritten policy, in relation to water. Thus, traditional institutions and customary laws are the dominant rule in regulating the land and water management, especially in rural areas and are well respected by local governments. Consequently, the integration of traditional institutions and the customary laws, with modern management practices, is indispensable to the success of any water resources management.

### Post-Colonial Developments

This paper has elaborated on transboundary developments from the 1990s, when attention and concern began to be placed on transboundary arrangements, particularly on the Volta, between Ghana and Burkina Faso.

Some conclusions drawn from the discussions are that:

- State legislation is often internally inconsistent;
- State institutions may have different interpretations of state legislation, while thorough knowledge of the relevant legislation may be lacking;
- Government institutions often operate in isolation of each other. Some agencies may totally ignore customary or indigenous laws and practices, while others may try to accommodate them;



- In some agencies, there could hardly be any knowledge about traditional laws and practices, while others may have some or even a good understanding of them; and
- State interventions create new institutions, as well as new sets of regulations, for access and management. However, in some cases, the creation of new institutions and legislation could add to the complexity of roles and functions, since institutions and persons may not easily surrender their authority.

### **Some Highlighted Knowledge Gaps**

This section notes some gaps in knowledge, on which further research would be useful. To some degree, the next phase of the African Models of Transboundary Governance will begin to address these.

- The lack of consideration for indigenous approaches, particularly in Ghana, in itself may be worthy of examination and comparison to Burkina Faso.
- Why was a combination of traditional practices and modern policies not considered earlier?
- To what extent were traditional customs considered substandard compared to those imposed during colonialism?
- To what extent do nationals of both countries themselves, who have lived within both institutions, honestly prefer “modern” national policies? And to what extent are new institutional creations accepted by locals?

## **CONCLUSION**

The study has outlined the historical development of water governance in the Volta basin and provided a “top-down” assessment of water governance, focusing on Burkina Faso and Ghana as the study area. It was found out that traditional institutional arrangement had been effective in managing natural resources, including water resources, during pre-colonial times. The roles of these traditional institutions were, however, not recognized during the colonial period, even though they remained useful vehicles for effective water management. In Ghana, the traditional controls were eroded with the advent of colonialism. The colonial impact in Burkina Faso was minimized, due largely to the inconsistency of the French policies characterized by an unformulated unwritten policy in relation to water. Thus, traditional institutions and customary laws are still the dominant rule in Burkina Faso, for regulating the use and conservation of land and water resources, especially in the rural areas. These authorities were respected by the local governments.

These developments in the traditional institutions and customary practices over the years, and the respect for other riparian users, may be useful in developing mechanisms for the management of transboundary water resources, especially with the current desire to create a transboundary institution for the Volta. If the riparian countries could consider themselves in the same manner as traditional entities, they would be capable of cooperating in managing the water resources of the Volta. One of the major objectives in the next phase of the study towards building local indigenous institutional principles into international or transboundary river basin institutional arrangements will therefore require a detailed assessment of the community mechanisms, how they work and how they could be adapted for broader use.

A top-down assessment of the state institutions shows that their establishment was largely for single purpose objectives, without consideration to the linkages or interdependency of functions and roles. There was lack of coordination between institutions. Some of the institutions were also established with dual functions, of exploiting and managing water resources, which made them ineffective. The countries have started to address these problems by establishing institutions for coordinating and managing water resources. However, these institutions currently lack capacity in terms of human resources.

The following, among others, will need to be explored further in the field study:

- i. The issue of how water resources were shared, and rules guiding such sharing during periods of scarcity. This appears not to be well-documented and will necessitate further investigation.
- ii. Customary laws which are not only localized, but can be generalized for national and transboundary water governance in the basin.
- iii. The lack of consideration for indigenous approaches, particularly in Ghana, in itself may be worthy of examination and compared to that of Burkina Faso.
- iv. Why was a combination of traditional practices and modern policies not considered earlier?
- v. To what extent were traditional customs considered substandard compared to those imposed during colonialism?
- vi. To what extent do nationals of both countries themselves, who have lived within both institutions, honestly prefer “modern” national policies? And to what extent are new institutional creations accepted by local people?
- vii. Appropriate institutions, including traditional ones, which can be developed to deliver effective water governance.
- viii. Identification of past and future water conflicts at the local, national and basin level, and approaches used in the past which can be used in the future to resolve them.
- ix. Identification of barriers to transboundary water governance.

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## **ANNEX 1**

### **List of Libraries and Contact Persons**

#### **Libraries in Ghana:**

- University of Ghana (Balme, Sociology, Geography and Geology Departments)
- Volta River Authority Library
- Ghana Water Company Ltd.
- Water Research Institute
- Water Resources Commission

#### **Libraries in Burkina Faso**

- University of Ouagadougou (Sociology and Economics Departments)
- Social Science Institute – Ouagadougou
- IRD (Institut de Recherche pour le Développement)
- General Directorate for Inventory of Hydraulic Resources (DGIRH)
- Regional Directorate of Agriculture and Hydraulics and Fish Resources – Bobo Dioulasso
- Archives nationales (National Archives) - Ouagadougou

#### **Contact Persons in Ghana:**

- Dr. Dzorgbo Dan-Bright (Sociology Dept, Legon)
- Dr. Steve Tonah (Sociology Dept, Legon)
- Prof. Naaba Nabila (Population Impact Project)
- Prof. Sunsore (Geography Department)
- Dr. Abotsi (Sociology)
- Dr. S. B. Kendie (Centre for Development Studies, University of Cape Coast)
- Dr. N.K.T. Ghartey (Centre for Development Studies, University of Cape Coast)
- Mr. Roy Ayariga (Ministry of Food and Agriculture, Upper East Region)
- Prof. Dorm Adzobu (Chairman, WRC)
- Mr. Maxwell Opoku Agyemang, Legal Consultant
- Mr. Benjamin D. Ofori (Volta Basin Research Project, Legon)

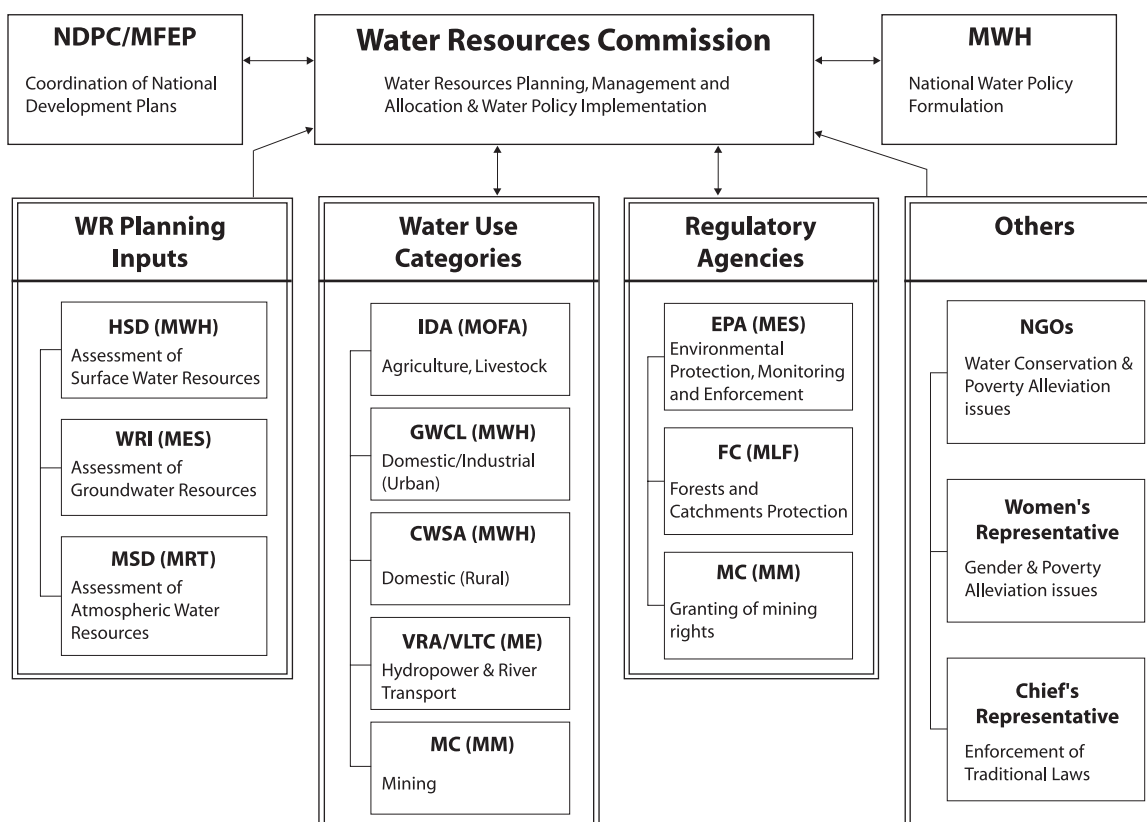
#### **Contact Persons in Burkina Faso:**

- M. Francis Bougaire (Director General of the Inventory of Hydraulic Resources)
- Dr. Karidiatou Sanou (Coordinator GUCRE Project, University of Ouagadougou, Dept of Economics)

- Dr. Fulgence Ky (Action Plan for IWRM)
- Mr. Ousseni Diallo, Green Cross (NGO)
- Dr. Hamidou Dicko, Hunger Project (NGO)
- Mr. Raymond Ouedraogo (General Directorate of Fish Resources)
- Dr. Rui Luis Silva (IWRM Unit, ECOWAS)
- Mr. Athanase Ouedraogo (Small Scale Irrigation Project)
- Dr. Aboubacar Toguyueni (University of Bobo Dioulasso, Department of Forestry and Fisheries)
- Dr. Bruno Barbier, Agricultural Economist, French Agricultural Research Center for International Development (CIRAD) – Ouagadougou
- Dr. Odame-Obabio Kwame, IUCN, Volta Water Governance Project Coordinator
- Joost Wellens, Coordinator of the Belgium-Burkina Faso joint project for water management studies in the Kou Valley

## ANNEX 2

### National Institutional Structure for Water Resources Management – Ghana



### Water resources data and information collection, research and analysis

- MSD (MRT)** Meteorological Services Department (Ministry of Roads and Transport) is responsible for the operation of synoptic, agro-meteorological, climatological and rainfall stations, as well as for collecting, processing and assessment of meteorological data.
- HSD (MWH)** Hydrological Services Department (Ministry of Works and Housing) is responsible for operating the national hydrometric data collection network on stream flows, sediment transport and water quality. Also processes and makes assessments of the hydrometric data.
- WRI (MES)** Water Research Institute (Ministry of Environment and Science) is responsible for research into the water resources, including quantitative and quality assessments of surface and groundwater resources, and sediment transport studies. It also conducts research on the inland and immediate coastal inshore water systems of Ghana, in order to provide the information needed for the utilization, exploitation, development and management of these resources.



### **Water usage and development sub-sectors**

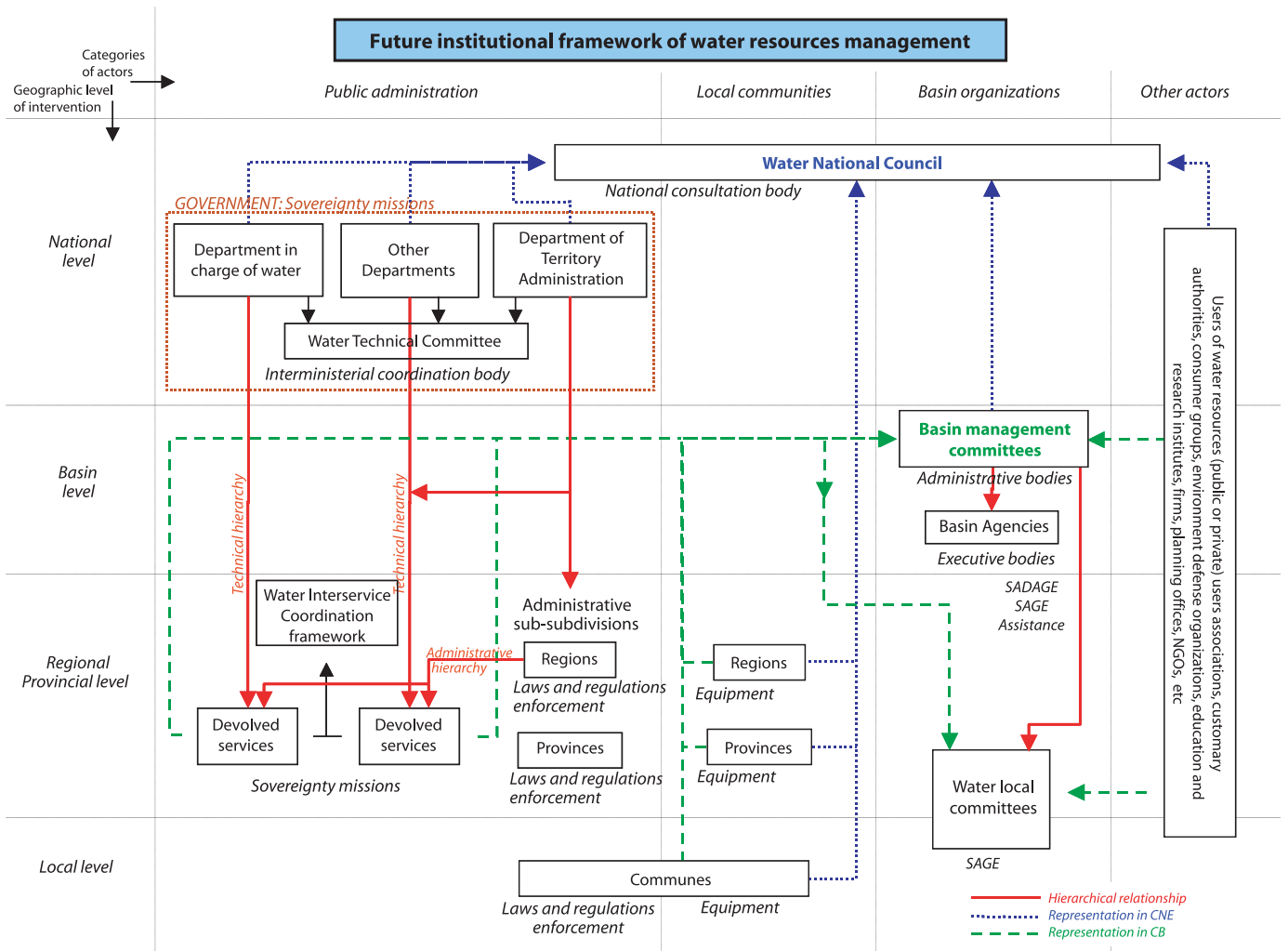
- GWCL (MWH)** Ghana Water Company Limited (Ministry of Works and Housing) is responsible for the provision, distribution and conservation of water in urban areas for public, domestic and industrial purposes.
- CWSA (MWH)** Community Water and Sanitation Agency (Ministry of Works and Housing) is responsible for supporting the District Assemblies and rural communities, to establish water and sanitation services in rural areas, which mostly rely on ground water.
- IDA (MOFA)** Irrigation Development Authority (Ministry of Food and Agriculture) is responsible for the formulation of plans to develop water resources for irrigated farming, livestock improvement and fish culture.
- VRA (ME)** Volta River Authority (Ministry of Energy) is responsible for the generation of electric power from all sources, including the development and operation of hydroelectric generation plants, and the distribution of electrical energy.
- VLTC (ME)** Volta Lake Transport Company (Ministry of Energy) set up as a subsidiary agency under the VRA, and it is currently an autonomous Company and is responsible for transportation on the Volta Lake.

### **Regulatory Agencies of relevance include:**

- EPA (MES)** Environmental Protection Agency (Ministry of Environment and Science) co-ordinates activities of the various bodies concerned with the environment, and it conducts and promotes investigations, surveys and analyses into environmental matters and oversees the EIA (Environmental Impact Assessment) procedures.
- FC (MLF)** Forestry Commission (Ministry of Lands and Forestry) charged with, among others, managing public forests and catchments, protection of water resources within their areas and regulation of timber harvesting.
- MC (MM)** Minerals Commission (Ministry of Mines) is charged with the power to grant mining rights, which may include mining in water bodies and/or abstraction, diversion and damming of water.
- EC (ME)** Energy Commission (Ministry of Energy) grants licenses for i.e. provision of hydroelectric power and for bulk transportation of petroleum products by barges.
- PURC (OP)** Public Utilities Regulatory Commission (Office of the President) is mandated to regulate and oversee the provision of utility services, including approving tariff levels and drinking water quality for treated water, to consumers.
- LC (MLF)** Lands Commission (Ministry of Lands and Forestry) is responsible for managing public lands, and for assisting co-ordination of land use planning and policy.
- NDPC (OP)** National Development Planning Commission (Office of the President) is the Central Economic Planning Authority in Ghana responsible for the preparation of the country's Poverty Reduction Strategy.

# ANNEX 3

## Future Institutional Framework of Water Resources Management for Burkina Faso



CNE: National Water Council  
 SADAGE: Master plan for water development and management  
 SAGE: Plan for water development and management  
 CB: Basin Committee

## **ANNEX 4**

### **Index of Legislative Acts of Ghana and Burkina Faso**

#### **Index of Legislative Acts of Ghana**

Environmental Protection Agency Act, 490 of 1994  
Public Utilities Regulatory Commission, 1997 Act 538  
Wild Animals Preservation Act, 1961  
Wild Animal Preservation (Amendment) Law, 1983, PNDCL no. 55  
Wildlife Conservation (Amendment) Regulations, 1989, LI 1452  
Fisheries Decree, 1979 AFRCDC 30  
Fisheries Law, 1991, PNDCL 256  
Fisheries Commission Act, 1993, Act 457  
Water Resources Commission Act, 1996, Act 522  
Volta River Development Act, 1961  
Volta River Development Act, 1961 (Amendment) Decree, 1967, NLCD 211  
Rivers Ordinance, 1903, Cap 226  
Oil in Navigable Waters Act, 1964, Act 235  
Irrigation Development Authority Decree, 1977 (SMCD 85)  
Irrigation Development Authority Decree, 1977 (SMCD 89)  
Irrigation Development Authority Decree, 1977 (SMCD 127)  
Irrigation Development Authority Regulation, 1987-LI 1350  
Water and Sewerage Corporation Law, 1987  
Water and Sewerage Corporation Act, 1965, 310  
Ghana Water and Sewerage Corporation act, 1965, Act 310  
Ghana Water and Sewerage Corporation Law, 1987  
Water Supply (Tamale) Ordinance, 1932, Cap 68  
Waterworks Ordinance, 1937, Cap 67  
Community Water and Sanitation Agency Bill, 1998  
Forests Ordinance, 1927, Cap 157  
Forests (Amendment) Act, 1957  
Forests Improvement Fund Act, 1960  
Forests Protection Decree, 1974  
Trees and Timber Decree, 1974 NRCD 273  
Forest Fees Regulations, 1976 LI 1089

Economic Plants Protection Decree 1979, AFRC D 47  
Ghana Forestry Commission Act, 1980, Act 405  
Control of Bush Fires Law, 1983, PNDCL 70  
Trees and Timber (Amendment) Law, 1983, LI 1275  
Forest Fees (Amendment) Regulations, 1983 LI 1275  
Forest Products Inspection Bureau Law, 1985, PNDCL 117  
Timber Export Development Board Law, 1985, PNDCL 123  
Forest Protection (Amendment) Law, 1986, PNDCL 142  
Forest Fees (Amendment) Regulations, 1989, LI 1483  
Control and Prevention of Bush Fires Law, 1990, PNDCL 229  
Trees and Timber (Chain Saw Operations) Regulations, 1991  
Forest Fee (Amendment) Regulations, 1993, LI 1576  
Forestry Commission Act, 1993, Act 453  
Trees and Timber, (Amendment) Act, 1994, Act 493  
Timber Resources Management Act, 1997, Act 547  
Timber Resources Management Regulations, 1998, LI 1649  
Mining Rights Regulation (Amendment) Ordinance, 1957  
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Minerals and Mining Law, 1986, PNDCL 153  
Small-Scale Mining Law, 1989, PNDCL 218  
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Mining Operations (Government Participation) (Repeal) Act, 1993, Act 465  
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National Development Planning Commission Act, 1994, Act 479

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 Local Government Act, no. 462, 1993  
 Council for Scientific and Industrial Research Decree, 1968, NLCD 293  
 Council for Scientific and Industrial Research (Amendment) Decree, 1969, NLCD 329  
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 Architectural and Engineering Services Corporation Decree, 1973, NRCD 193  
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 Interpretation Act, 1960 (Cap4)  
 Interpretation Act, (Amendment), 1961, Act 92  
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Loi n° 005/97/ADP du 30 janvier 1997 portant code de l'environnement au Burkina Faso	Environment Protection Law
<u>Loi n°006/97/ADP du 31 janvier 1997, portant Code Forestier au Burkina Faso.</u>	Forestry Law
Loi n° 041/98/AN du 6 août 1998 portant organisation administrative du territoire du Burkina Faso;	Burkina Faso territory reorganization law
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Décret n° 97-054/PRES/PM/MEF du 06 février 1997 portant conditions et modalités d'application de la loi sur la réorganisation agraire et foncière au Burkina Faso	Decree for the implementation of the land Reform Law

Décret n°97-598/PRES/PM/MEE/AGRI du 31 décembre 1997 portant adoption du cahier des charges pour la gestion des grands aménagements hydroagricoles	Large scale schemes management Decree
<u>Décret n°99-097/PRES/PM/MEE/MCIA du 9 avril 1999 portant approbation des statuts de l'Office National des Puits et des Forages (ONPF)</u>	Wells and Drilling Office Decree
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<u>Décret n°2002/285/PRES/PM/MAHRH portant détermination des bassins et sous bassins hydrographiques;</u>	River Basins and Sub basins Decree
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<u>Décret n° 2003/265/PRES/PM/MAHRH portant prérogatives du Ministre chargé de l'Eau en cas de circonstances exceptionnelles;</u>	Decree on the prerogatives of the Ministry of Water
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ACTS

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Arrêté 98-009 MEE.SG.DGEF.DP du 12 mai 1998 portant autorisation et concession de pêche au Burkina Faso

Fishery Act

Raabo an VI 6 FP.EAU.SANTE.EQUIP.MET. du 14 juin 1989 portant réglementation de l'assainissement individuel pour le traitement et l'élimination des eaux usées domestiques

Individual sanitation and waste water elimination Act

Arrêté N°2001-221/MEF/SG/DGTCP/DELF portant suppression de la régie des recettes instituée auprès du Centre National de Contrôle de la Qualité des Eaux

Water quality control Act

Arrêté conjoint n°01-036/ MEE/MAE/MATD/ MEF/AGRI portant création, attributions, composition et fonctionnement du comité de gestion du bassin du Nakanbé

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