Implementing Integrated Water Resources Management in Ghana – The Case of the Densu River Basin

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OUTLINE OF PRESENTATION

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• The Legal Framework
• Definition of Integrated Water Resources Management (IWRM)
• The Water Resources Commission (WRC)
• Baseline Studies (Stakeholder Consultations)
• Initiation of the Implementation of River Basin Based IWRM
• Replication of the IWRM Concept in Other River Basins
• Monitoring and Evaluation (Measurable Outputs)
• Collaboration/Support
• Challenges
• Conclusion/Recommendation/Way Forward
• Acknowledgements
Background Information

- Ghana is drained by three River Systems: the Volta, Coastal, and South-western.
- Total annual runoff is about 54.4 billion m$^3$.
- Volta, South-western & Coastal Rivers Systems contribute a total of 38.3 billion m$^3$ (64.7%, 29.2% & 6.1% resp.).
- Consumptive water demand for 2020 projected to be 5.13 billion m$^3$ (13% of the surface water resources).
- Groundwater is also available in various geological locations in the country.
Major River Systems of Ghana

Volta Basin System

Southwestern Basins

Coastal Basins
River Basins of Ghana
Densu Basin Location Map
Issues in the Water Sector

Ghana could be described as well endowed with water resources but over the past three decades the country begun experiencing:

- Increasing demands on water availability (seasonal and uneven spatial distribution of water resources)
- Deteriorating water quality
- Conflicts in the use of water resources
- Unco-ordinated approach to water issues
- Inadequate legal and regulatory mechanisms
- Inadequate or lack of reliable data & information for water resources management
- Poor financing of programmes and projects
- Over emphasis on technical solutions; and
- Little focus on environmental and social impacts
The Legal Framework

- The 1992 Constitution of the Republic of Ghana (Article 268 and 269 - for the establishment of the Natural Resources Commissions
- Water Resources Commission Act 522 of 1996
- Related laws such as those of the Forestry Commission, Lands Commission, Minerals Commission, Environmental Protection Agency, etc. were passed
- Water Use Regulation LI 1692 of 2001
- Operational Guidelines of the Densu Basin Board, 2004
- Drilling Licence and Groundwater Development Regulations LI 1827 of 2006
- Dam Safety Regulations LI 2236 of 2016
- Buffer Zone Policy, 2012, etc.
Definition of Integrated Water Resources Management (IWRM) Concept

IWRM is a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.
Key Factors in IWRM

- Land
- Water
- People

Interactions among these factors determine the environmental quality of the RIVER BASIN and could spell Climate Variability or Climate Change.
The Water Resources Commission

The Water Resources Commission was set up by an Act of Parliament (Act 522 of 1996) as the overall body responsible for water resources management in Ghana.

Specifically to:

– *regulate* and *manage* the country’s water resources and

– *co-ordinate* government policies in relation to them.

The Water Resources Commission adopted the strategy of….

“…*an integrated, cross-sectoral, catchment area approach to Water Resources Management …...” This summarizes the term *Integrated Water Resources Management (IWRM)*
Baseline Studies I (Stakeholder Consultations)

- Water Resources Management Studies, 1998
- Rapid Environmental Assessment of the Densu River Basin, 2001
Baseline Studies/Plan 2 (Stakeholder Consultations)

- Training Needs Assessment of Stakeholders in the Densu Basin and Vegetation Cover Survey, 2004
- Towards Establishment of an IWRM Structure for the Densu Basin, 2004
- Densu Basin IWRM Plan, 2007
Initiation of the Implementation of River Basin Based IWRM

• Stakeholders’ Consultative Workshop to Determine Membership of River Basin Board

• Invitation of Nominations from Stakeholder Institutions (Public and Private) to Serve on the River Basin Board

• Inauguration of the River Basin Board

• Study Tours are conducted to confirm findings in Baseline Studies
Basin Based IWRM Activities

- Awareness Creation, Education and Training of Stakeholders
- Dredging of River Channels and Lakes to save flooding
- Water Quality Monitoring and Ecological Monitoring
- Law Enforcement on Encroachments and Pollution
- Stakeholder Consultations to Introduce and Implement Basin Based Projects
- Quarterly River Basin Board Meetings
Dredging to save flooding at Nsawam in the Densu Basin
River Basin Based Reporting

The following reports are made from various Basins to the Commission:

- Progress Report
- Minutes
- Quarterly Reports
- Special Reports
- Annual Reports
Replication of the IWRM Concept in Other River Basins

IWRM recommends setting up of co-ordinating/management structures in River Basins and in this respect;

6 River Basin Offices and their stakeholder determined Management Boards have been set up for –

1. Densu
2. White Volta
3. Ankobra
4. Pra
5. Tano and
Serene view of the Jei River – Tributary of the Densu River ( Desired State)
Tree Buffers Might Not Be Sustainable – Densu Basin
Water quality is systematically monitored to give a more accurate picture of the stresses on the quality of waters. The results of water quality monitoring covering 32 river stations and 9 reservoir/lakes stations nationwide are expressed in a developed Water Quality Index (WQI) expressed as follows:

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<th>Class</th>
<th>Range</th>
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<td>I</td>
<td>&gt;80</td>
<td>Good – unpolluted water</td>
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<td>II</td>
<td>50 – 80</td>
<td>Fairly Good</td>
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<td>III</td>
<td>25 – 50</td>
<td>Poor Quality</td>
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<td>V</td>
<td>&lt; 25</td>
<td>Grossly Polluted</td>
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Water Quality of Coastal Rivers

Water Quality Index

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Water Quality of Densu Basin (2005 - 2014)

- Potroase
- Weija Lake
- Mangoase
- Nsawam
- Average
Water Quality of Tano River

- Elubo
- Sefwi-wiaso
- Tanoso
- Average

Years

Water Quality Index
30.0 35.0 40.0 45.0 50.0 55.0 60.0 65.0 70.0
Water Quality of the Volta Lake (Main)

- **Ajena - Main Volta**
- **Kpong-Main Volta**
- **Sogakope-Lower Volta**
- **Average**
Hydrological and Meteorological Monitoring (Collaboration among public Institutions)

The Water Resources Commission depends on the Hydrological Services Department and the Ghana Meteorological Agency for data and information such as:

- Quantities of water
- Water flows
- Water levels
- Temperature
- Rainfall pattern, etc.
Existing Collaboration/Support & Possible Future Collaboration/Support I

Water Resources Management in Ghana has been promoted through national/internal institutional and transboundary initiatives

Promotion of dialogue(s) towards establishing permanent mechanisms for cooperation in the management of international river basins e.g.

• Volta Basin Authority (formally established in August 2009); and
• Ghana-Burkina Faso Joint Technical Committee for IWRM (set up in 2005 and operational since 2007)

Promotion of sub-regional cooperation through the ECOWAS Water Resources Coordinating Centre:

• Developed the West Africa Water Resources Policy
Existing Collaboration/Support & Possible Future Collaboration/Support 2

The WRC collaborates and gets support from the following stakeholders:

• UNHABITAT
• World Bank
• African Development Bank
• CIDA (Canada)
• SIDA (Sweden)
• The Dutch Government
• Civil Society Organizations, etc.
Challenges and Constraints

• Developing appropriate legislative instruments and inadequate enforcement of laws

• Setting up institutional management framework in a River Basin requires time and tact

• Capacity building within the Local Government Assemblies for effective participation in IWRM is limited and not easy to retain

• Public awareness needs to be sustained and requires a lot of financial resources

• Establishing cost effective and sustained data collection and monitoring

• Ensuring sustained funding for effective implementation of integrated management of water resources plans

• Poor attitudes towards the handling of the natural environment

• Political interference/manipulation
Challenges and Constraints (Continuation)

- Climate change and climate variability impacts on water and other natural resources are inadequately described and insufficiently incorporated in sectoral water management strategies

- Many activities in river basins leading to catchment degradation and poor water quality are unregulated

- Inadequate data and information on surface and groundwater quantity as well as quality

- Inadequate skilled human resources for IWRM at all levels

- Inadequate regulations on control of discharge of effluent from industrial and domestic sources

- Systems for early warning and mitigation of effects from floods and droughts are inadequate

- New protocols with Côte d’Ivoire on the joint management of the Aby Lagoon-Bia-Tano basins system and with Togo on shared groundwater resources are yet to be established.
Birim River Illegal Mining Scene
Quarrying Around the Weija Lake in the Densu Basin
Previous situation at a hot spot - Jei Channel/Tributary of the Densu Basin
Situation at same spot one year after drastic action by the WRC and EPA
Main Military and Police Security Post at the Weija Dam Acquisition in Accra for Checking Encroachment and Pollution
Conclusion/Recommendation/
Way Forward

For a successful and sustainable Integrated Water Resources Management future, efforts must be made to effectively address all the existing challenges and constraints in the fore going to realize clean and adequate water resources for all purposes.
Acknowledgements

I wish to tender sincere gratitude to UNESCO and all the key stakeholders in the Federal Republic of Nigeria who worked to make this workshop successful.

I also wish to express my appreciation to the Executive Secretary of the Water Resources Commission who offered me the opportunity to participate in this conference and share experiences with all of you.

Above all, I desire to indicate my thankfulness to the Almighty God for this opportunity.
Thank You for Your Attention!