SECOND GHANA DAMS FORUM AND WORKSHOP ON THE IMPACT OF CLIMATE CHANGE ON THE BUI HYDROPOWER PROJECT

FINAL PROCEEDING

MAIN THEME:

"BRINGING RESEARCH FINDINGS ON DAMS CLOSER TO THE PEOPLE"

VENUE: M PLAZA HOTEL, ACCRA

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List of Abbreviations

CO_2	Carbon Dioxide
DDP	Dams and Development Project
ERM	Environmental Resources Management
ESI	Environmental and Social Impact
ESIA	Environmental and Social Impact Assessment
GHG's	Green House Gases
GMC	Global Circulation Model
GTZ	German Technical Cooperation
GVP	GLOWA Volta Project
IPCC	Intergovernmental Panel on Climate Change
IWMI	International Water Management Research Institute
LVB	Land Valuation Board
LI	Legislative Instrument
MP	Member of Parliament
NAVRART 52	National Association of the 52 VRA Resettlement Townships
NCAP	Netherlands Climate Assistance Programme
NCC	National Coordinating Committee
NGOs	Non-Governmental Organizations
OS	Open Space Technology
PAP	Project Affected People
UCC	University of Cape Coast
UNEP	United Nations Environment Programme
VB-WAS	Volta Basin Water Allocation System
VBRP	Volta Basin Research Project, University of Ghana
VRA	Volta River Authority
ZEF	Centre for Development Research, University of Bonn

INTRODUCTION

The International Water Management Institute (IWMI) acting as a co-secretariat with the Volta Basin Development Foundation, for the National Dialogue on Dams and Development in Ghana; received financial assistance from GTZ to facilitate a multi-stakeholder dialogue process in Ghana. The process has a secretariat, National Coordinating Committee and a sixty-member Forum. The Forum comprises representatives of Government Ministries, Decentralised Government Departments, Research Institutions, Opinion Leaders of Dam-affected Communities, Traditional Leaders, the Private Sectors and other stakeholders to discuss priority issues relating to dam construction and development in Ghana.

After the first Ghana Dams Forum on the 4th of September, 2007, one of the recommendations was to commission three (3) issue papers for discussion at the Second Forum. Accordingly, at the Second Forum, the consultants who worked on the three issues namely; Research and Capacity Building, Compensational Issues and Community Involvement in Dam Issues presented their findings. The GLOWA Volta project funded by ZEF was also associated to the activity and presented the findings of the Climate change impact model. A working group session was organised after their presentations to provide an opportunity for stakeholders to discuss the findings in detail and make recommendations which served as a guide to the consultants in finalizing their papers.

Objectives

The objective of the Forum was to:

- analyse critical issues, and review recommendations for adapting guidelines relevant to decision making processes on dams in Ghana.
- support transparent information exchange and an active dialogue on important issues related to existing and planned dams.
- consolidate the synergy between members of the Forum and relevant research institutions.
- inform relevant stakeholders about the potential effects of climate change on the Bui Dam and to discuss these in the plenary/ in working groups.

- stimulate interest of the institutions responsible for the construction and management of the Bui Dam, in the multi-stakeholder dialogue process.

Outputs

The outputs of the Forum are as follows:

1. **Three Issues Papers**

Three issue papers based on an inventory of issues of relevance to Ghana dams context and strategies to address the issues were presented during the Forum. The presentations were structured to let members of the public (laymen) benefit the most.

2. **Multi-stakeholder platform**

Applying a mixture of presentations in plenary, structured working group discussions and a simplified Open Space Technology (OS) method, an active and informed platform with representation from all key stakeholders including government authorities and dam affected communities was established in discussing issues relating to dams and development. A broad-range of informed Ghanaian stakeholders present at the Forum had the opportunity to reflect and discuss dam related issues in a more integrated manner which considers social, environmental and economic dimensions of development to the planning and management of dams.

3. **Informing Stakeholders on Impact of climate change on the Black Volta Basin and the Bui Dam**

Looking at the 'Environmental and Social Impact Assessment '(ESIA) of the Bui Hydropower project, it s clearly shown that, not much about the potential impact of global climate changes on the Bui dam is known.

The GLOWA Volta Project which has been able to model future discharge scenarios that take climate change into account presented its findings during the Forum. The objective of this exercise was to get a greater understanding and appreciation of the impact of climate change on hydropower dams to both scientists and non-scientists.
The presentations were kept from being too scientific as the idea was to let members of the public benefit the most.

4. **A Policy Brief on Impact of climate change on the on the Black Volta Basin and the Bui Dam**

A short policy brief on the impacts of climate change on the Black Volta Basin and the Bui Dam was issued by project scientists of the GLOWA Volta Project (GVP) of the Centre for Development Research (ZEF, University of Bonn). Two studies that investigate the impact of global climate change on the water availability in the Ghanaian part of the Volta River basin served as the scientific background for this analysis. Both studies are based on different global climate change scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) that reflect different predictions for world wide CO_2 emissions. Please see section 5.4.

5. **Communiqué**

An action plan for the follow-up of recommendations on the issues discussed during the Forum was compiled through a communiqué (please see Section 6.1). The communiqué has been submitted to all the ministries that participated in the Forum including the Ministry of Energy. It is hoped that the communiqué will be useful for decision making process in the country.

Theme of the workshop

The workshop was held over two days, with the main theme being "Bringing Research Findings on Dams Closer to the People". Each day had its respective sub-themes namely, "Contribution of Community Involvements, Compensation, Research and Capacity Building to Dam Development in Ghana" and "Impact of climatic change on Dams, the case study of the Bui Hydropower Project".

Programme

The workshop took place on Tuesday and Wednesday, 26th-27th February, 2008 at M Plaza Hotel, Accra, Ghana, between 9:00 GMT and 17:30 GMT. A copy of the workshops' programme can be seen at Annex 1.

Organizers of the workshop

The workshop was organized by the National Coordinating Committee (NCC) with International Water Management Institute (IWMI) and Volta Basin Development Foundation (VBDF) acting as the de-facto secretariat.

Donor

The workshop was financed by German Technical Cooperation (GTZ).

Participation

About 150 stakeholders attended the workshop. These comprised officials from Ministries, Departments and Agencies; Local Non-Governmental Organization and Media; National Operators and Private Sector; Communities and Traditional Structures; International Finance and Donor Agencies; Research Organizations and Local Level Institutions. Annex 3 presents the list of the participants.

DAY ONE (26th FEBRUARY, 2008)

Theme: Contribution of Community Involvements, Compensation, Research and Capacity Building to Dam Development in Ghana.

SESSION I: OPENING CEREMONY

Session I was the opening ceremony. After the Welcome address by the chairperson of the NCC, four (4) invited guests delivered speeches. The invited speakers were Mrs. Gladys Asmah as the Guest of Honour on behalf of His Excellency, The Vice President of The Republic Of Ghana; Prof. George Gyan-Baffour, Hon. Deputy Minister, Ministry of Finance and Economic Planning; Hon. Rita Idi, Deputy Minister for Lands, Forestry & Mines and Hon. Maxwell Kofi Jumah (MP), Deputy Minister For Local Government, Rural Development and Environment. They were selected because of the important role they play presently or can play prospectively in a dialogue on dams issues in Ghana.

Mrs Gladys Asmah on behalf of the Vice President for Ghana, brought out the importance of water resource development projects on livelihoods particularly those of inland fishermen. She said that the second forum comes at an appropriate time since the President of Ghana is negotiating other smaller dams and these discussions could contribute to such projects. She encouraged the Forum to find ways to reduce the negative social and environmental and ecological impact of dams.

Professor George Gyan-Baffour, confirmed that the cost to society, the environment, the economy and to the tax payer can be great. He stressed the importance of the impact of climate change on performance which is already being felt by the existing dams and expressed the hope that the experts at the forum could advice the government on how to address this important issue. He hoped that the Forum would help resolve the issues pertaining to the existing dams and those that are yet to arise in the Bui project so the dams could achieve the set objectives.

The Honorable Rita Idi, commended the Forum for bringing together a wide group of stakeholders. She stressed the importance of the workshop in the light of the government's determination to meet the energy crisis but at the same time to adhere to the Kyoto protocol. She described the engagement that must take place between the

stakeholders and beneficiaries of development and the researchers for development to be a success. She said that government would be interested in analyzing policy recommendations from this Forum particularly on how much space could be created for stakeholders to negotiate on equal terms towards this end.

The Honorable Maxwell Kofi Jumah, mentioned how fitting the theme "Bringing Research Findings on Dams Closer the People" was, for this year's dialogue. The important opportunity that the Forum afforded, for sharing information between communities affected by the other completed Dam projects, and communities within the Bui Dam project site was noted. He highlighted the need for continuous monitoring which requires continuous scientific research and the need to inform sensitize and involve communities at all stages of the project.

Full speeches of the chairperson and the invited guests are available at Annex 6.

SESSION II: PRESENTATIONS OF PAPERS

Theme

"Contribution of Community Involvements, Compensation, Research and Capacity Building to Dam Development in Ghana"

2.1. STRATEGIES FOR COMMUNITY PARTICIPATION IN DAM DEVELOPMENT.

Benjamin D. Ofori (Volta Basin Research Project)

2.1.1 Executive Summary of Paper

The World Commission on Dams has observed that there has been little or no meaningful participation of would-be dam affected people in the planning, implementation and maintenance of dam projects. As a result the full benefits of such projects are not realized. The United Nations Environment Programme (UNEP) has therefore, under the Dams and Development Project (DDP), stressed the need for an informed and all inclusive stakeholder dialogue as a new approach in planning and management of dams. Against this background, the Ghana Dams Forum was constituted in 2007 as a multistakeholder organisation to promote national dialogue on dam-related issues including community participation. This paper examines how communities have been involved in dams development in Ghana.

Since its independence in 1957, Ghana has constructed large and small scale dams to generate electricity, supply water for domestic and industrial uses and to irrigate agricultural lands to boost food production. However, as in other parts of the world, the benefits of these projects have not gone without considerable social, economic and environmental costs.

The paper notes that there is no formal institutional framework for ensuring community involvement in dam projects and that community participation has taken varied forms with respect to the scale of the project. As a result community concerns have not been adequately addressed resulting in lack of confidence in institutional structures and implementing agencies. Many people including displaced populations, host communities and downstream riverine communities have been adversely affected by these dams. Resettlement programmes have fallen short of expectations, payment

of compensations have either not been effected or unduly delayed and reparations in general have been poorly managed.

The paper stresses the need to deepen stakeholder consultations and greater community involvement during initiation, planning, design, implementation and maintenance of dams in order to realise the full benefits of dam construction and effectively mitigate the adverse social, economic and ecological impacts. The paper recommends that:

- *Would-be dam-affected communities should be adequately informed, sensitised and educated about the scope, benefits and implications of the project.*
- *Local communities should be regarded as equal partners and must be given adequate time to offer their consent to dam projects before their implementation.*
- *Would be dam-affected populations and all potential people to be resettled should be given the chance to be active players in decision-making with regards to where they would want to be relocated and who should serve as their host communities.*
- *There should be consensus with respect to the nature and amount of compensation for loss of properties during dam construction and development. Good record keeping on compensations paid is also essential in avoiding future disputes.*
- *Lands acquired to resettle displaced populations should be properly documented and agreed compensation involved duly paid to the host communities in order to guarantee the livelihoods of the resettled population and avoid conflicts.*
- *There is the need for project managers to demonstrate serious commitment to the adaptive mechanisms and coping strategies of displaced and resettled communities in order to promote their total welfare and sustained livelihood.*
- *It is important to sustain and protect community interest in dam projects through regular consultations between project managers and representatives of affected communities.*

Finally, the paper emphasises the need for the establishment of institutional and legal framework for promoting community participation in dam development.

2.2. ISSUES ON COMPENSATION FOR DAM AFFECTED PEOPLE.

E. A. K. Kalitsi (Kalitsi and Associates)

2.2.1. Executive Summary of Paper

Introduction:

Compensation for Projects Affected Persons (PAP's) is no longer allowed to cover assessed losses in monetary terms only. Today national and international prescription is for compensation to cover not only as money assessed values but particularly also measures to address other factors as growth expectations and enhancement of living and working conditions, social relations among people and cultural values.

For dam projects the PAP's are those who are displaced upstream of the dam and those affected downstream of the dam, those whose lands are acquired for resettlement projects and other project requirements. The Akosombo and Kpong projects affected large categories of people. Resettlement measures were undertaken to mitigate losses of these PAP's. However the public and the PAP's have dissatisfaction with the manner in which the PAP's has been treated.

For Bui project measures to be put in place to address project impacts should not only restore losses but particularly also enhance livelihood. The experience of Akosombo and Kpong is expected to serve as a guide.

The objective of compensation in general is to make up for the loss suffered or disturbance occasioned. For dam affected people the main objectives of compensation are to:

- Replace asset losses.
- Restore and enhance the livelihood of affected people through provision for sustaining economic activities.
- Ensure affected people's primary services such as schooling and health care facilities are available.
- Ensure minimum disruption in their social organization and assist them to develop viable social relations.
- Ensure affected people share adequately in benefits from projects.

Legal Regime

Compensation issues in Ghana are governed by laws. The main Ghanaian laws have been cited in the report.

Losses Eligible for Compensation

Asset categories related to Akosombo and Kpong dams whose losses, restriction or displacement needed measures to restore or mitigate were land, structures, economic trees, business, crops, incomes, community and cultural facilities, infrastructure and environmental quality.

Types and Forms of Compensation

Compensation is payable either in cash or in kind payable either in Lump sum or annual/periodic payments.

For Akosombo and Kpong schemes cash was paid for losses of some interests in lands, building structures, abandoned or uncompleted structures, for food crops, economic trees and for socio-cultural properties not replaced.

Also for Akosombo and Kpong projects, the bulk of the compensation was in kind by way of resettlement programmes. Houses, infra-structure and farm-lands were provided to resettle people affected.

So far for both Akosombo and Kpong lands acquisition has been done under Act 125 of 1962. This has required lump sum compensation. It is estimated that GH¢750 million will be needed immediately to discharge outstanding compensation obligation for both dams. It will be useful to convert large compensation sums into long term interest yielding tradable assets for the beneficiaries.

Principles Underlying Compensation Payments.

Principles applied to meet Government's main policy not to make any one worse off as a result of Akosombo and Kpong dam project were:

-that property lost by affected persons be acquired at values which would restore losses.

-that special measures such as resettlement be undertaken to restore losses where people are displaced.

Samples of assessments upon which compensation entitlements for Akosombo and Kpong Projects were determined were checked with valuers and found to have been correctly computed under the laws. They were based on current market or replacement prices and on value to existing owner not the acquiring authority.

Impact of Policy Change on Future Projects.

Housing and Township development and Land Allocation for Farming were the main policy elements employed to attempt to realize the objectives of the policy of ensuring that affected people are no worse in their new environment than they were in the pre-displacement environment.

Housing and Township Facility.

The Housing and Township policy adopted for Akosombo resettlement was to provide standard core houses for the 14,000 house-holders displaced. No allowance was made for size of family or standard of housing occupied. The townships were well-laid out with streets and provided with minimum community services such as school buildings, potable water supply, public latrines, markets and cemeteries. There were very few community centers and chiefs houses. Plans were made for completion of the core house by "self help" using materials supplied by VRA. This housing and township policy has been acknowledged as inadequate.

So for Kpong resettlement projects there was a clear change in housing and township policy. Houses provided were based on the size, number of rooms and quality of housing structures displaced. The houses were fully built with kitchen and storage space. Township facilities were similar to what was provided for Akosombo resettlement towns but were of a higher standard and included electricity. In line with the trend, Bui housing and township facilities should also be at a higher level than the provision for Kpong housing.

Land Allocation and Farming.

The other major policy change has been in land allocation and farming. Akosombo started with an elaborate plan for modern farming programme with large acreages cultivated by cooperatives. These plans were abandoned in favour of 3 acre farming plots per farmer for traditional peasant cultivation. A special arrangement was made

for commercial farming which never took off. This simpler farming strategy was adopted for Kpong and will be recommended for Bui.

Also for Bui settlers, title documents should be provided for housing plots as well as for land allocated for farming.

These changes will involve investment per displaced person at a higher level than for Akosombo and Kpong.

Stakeholder Concerns and Observations

The observations made on the existing resettlements townships and concerns expressed by stakeholders are as follows:

Observations on Conditions of the Settlements

Most of the core-houses in several Akosombo project settlements have been completed. Several settlers expressed satisfaction with the location and lay-out of their towns. But the town streets in several settlements have been washed away and potable water supply systems are non functional. The 3 acre farming plots affected are being cultivated but not the land ear-marked for commercial development.

Complaints of Settlers.

Complaints against VRA and Government include:

- *Inadequacy of Akosombo core housing for a family.*
- *Inadequacy of 3 acre plot for a farming family.*
- *No maintenance of resettlement houses.*
- *Non payment by Government of compensation for land.*
- *Take- over of farming land by host communities.*
- *No title certificates covering housing and farm plots as evidence of inheritance allotments.*
- *Lack of support from District Assemblies.*

Land Valuation Board (LVB)

Interviews with LVB and Lands Commission reveal that

- *Claims for compensation on Akosombo and Kpong are still being registered.*

- *Unpaid compensation liability for lands affected by Akosombo project is estimated at GH¢ 690 million and Kpong lands at GH¢60 million. It is proposed that this obligation be discharged by a bond or by annuity payable over time.*

VRA Resettlement Trust Fund

The VRA Resettlement Trust Fund has been engaged mainly in activities related to education, water, health and electricity.

Resettlement Trust Fund confirms concern of settlers about poor condition of road, harassment of settlers because of non-payment of compensation by Government for land. The Trust Fund has done good job. It is suggested that a similar Trust be set up for Bui.

Bui Project

The ESIA prepared for the Bui project by their Consultants ERM has been done well.

It is recommended that all projects lands, including resettlement lands be formally acquired.

- *It is urgent to identify and plan sites for resettlement immediately and for acquisition processes to be initiated now.*
- *Housing should be planned for and provided on a room for room basis, with kitchen, KVIP latrine and electricity in every home.*
- *Each relocated farmer and host farmer should be given a standard allocation of land equal to what he farmed before.*
- *The allocation should be on lease hold for 99 years.*
- *Additional land should be allocated on conditions to be determined where initial allocation is adjudged to have been put to good use.*
- *Title documents covering houses and land should be given to persons allocated housing and farming plots.*
- *Cash compensation should be paid for bare/undeveloped lands, temporary, unoccupied or abandoned structures, crops and economic trees/timber.*
- *A special team of relevant professionals should be organized to carryout extensive consultation with affected persons to fast track land acquisition and compensation, to plan and implement resettlement housing and farming, drawing on the services and experiences of VRA.*

- *Bui Project Authority should assume responsibility for settlements for at least ten (10) years.*

General Conclusion

The BPA should carryout extensive stakeholder consultation especially involving affected persons and draw on the services and experiences of VRA.

Immediate steps should be taken to identify resettlements sites and expedite the acquisition process for lands under the Bui Project.

Action should be taken by Government and VRA to clear outstanding compensation obligations due Akosombo and Kpong Projects

Further action should be taken to review the legal framework of acquisition and compensation to provide for expeditious access to beneficiaries to their entitlements.

The possibility of improving the living conditions of projects affected people should be explored by enhancing their compensation and resettlement packages through increasing the acreage of farm lands allotted to settler farmers and by providing training and assistance to the settlers.

2.3. RESEARCH, DEVELOPMENT AND CAPACITY BUILDING FOR DAMS SUSTAINABILITY: THE BUI DAM PROJECT.

Dr. Liqa Raschid-Sally (International Water Management Institute, Ghana)

2.3.1 Executive Summary of Paper

Sustainability has been the principal criterion for development since Agenda 21 was adopted at the international conference on environmental issues in Rio de Janeiro in 1992. The World Water Vision exercise was the commencement of a new era in water resource development thinking by increasing awareness of water issues and encouraging innovative approaches to resolving water-related problems. The Vision stresses that if future water development is to be sustainable, much greater consideration must be given to environmental issues. The World Commission on Dams endorsed this point of view, specifically in relation to dams.

Ghana is reputed to have the largest man-made lake in the world created as a result of the construction of the Akosombo dam on the Volta River. Despite the economic importance of dams, the economic feasibility and viability of dams can be hampered by certain ecological and human problems which most often are not adequately taken into account or are deliberately disregarded during the planning and execution stages. The Akosombo dam created the largest artificial lake with an area of 8,520 km^2 and required the resettlement of 80,000 people besides the loss of fertile lands, forests and other ecological problems created by flooding.

Ghana has embarked on the construction of yet another hydropower dam at Bui on the Black Volta. Learning from past experiences associated with the construction of the Akosombo and Kpong dams, the government is very particular about reducing the negative impacts. Consequently, the Environmental Impact Assessment conducted on the Bui project has recommended measures to mitigate the potential adverse environmental and socio-economic impacts of the dam project.

This paper seeks to critically review the Bui Hydropower Project ESIA for weaknesses and identify potential research areas for further studies. The paper also seeks to identify research organizations, institutions and other agencies that collect

data in the water resources sector and examine their mandates and the types of data collected, and how they can be strengthened.

To review the ESIA study of the Bui hydroelectric power project, the background to the preparation of the report was summarized and presented. It was followed by an analysis of the key contents of the report to present the reader at a glance the essential information contained in the document and followed by a more focused critical review of the hydrological and hydraulic components of the original study and a revisit of the socio-economic and livelihood impacts in order to suggest follow up post dam impact studies.

After a critical review of the hydrology and hydraulics components as found in the Coyne and Bellier update and the ESIA reports on the Bui hydroelectric project, the following observations among other were made:

For the data quality and hydrological analysis results, it was observed that no drought flow analysis has been undertaken to determine the impact of recurrent drought conditions on the operations of the dam. Considering that extreme low flows in the past (including 2006) had put the Akosombo dam under severe stress and have been a major concern in the country, the omission of such analysis in the ESIA is rather serious.

The impact of accelerated erosion in the catchment resulting from future adverse land use changes on the sediment load of the river has not been investigated. It is important that various future land use-change scenarios, the resulting erosion in the catchment and corresponding sediment transport into the reservoir be simulated to assess the likely impacts on the integrity of the reservoir.

The hydraulics analysis was observed to be grossly inadequate. No actual measurements were used and there is no indication that any calibration and validation of the model were done before its use for the water surface profile simulations. Therefore, it is difficult to trust the results obtained. A more serious hydraulic modelling including downstream channel erosion and sediment transport simulations needs to be undertaken to provide more useful and acceptable results.

In development of projects such as dam development, a vast number of organizations play important roles with regards to the implementation and operational stages. It is therefore important to consult all these institutions in planning to ensure sustainability and maintenance through out the developing and operational stages.

Unfortunately for the Bui project, some mitigation authorities were not covered in the data collection undertaken for this study; no interviews were conducted with education or health facilities and no documents were obtained from them.

It was also observed that, there are no defined standards for conducting public hearing as stated by the Environmental Assessment Regulation. Also, there is no clear standard indicating the extent to which the submissions made during public hearings are considered in the further planning process.

In the ESIA, the consultants indicated that the greenhouse gas impact will be "minor". This appears to be a deliberate distortion of reality. It must surely be obvious to the ERM consultants that what is relevant in terms of greenhouse gas emissions per kilowatt-hour is not the large surface area as indicated by them, but the reservoir surface relative to its power generation. There is no scientific evidence behind the assertion that partial clearance of reservoir vegetation would mean that emissions would be "relatively low." Brazilian dams with high measured emissions have usually had their reservoirs partly cleared as per Brazilian law. Even full reservoir clearance may have relatively little impact on long-term methane emissions which will largely result from carbon entering the reservoir after its initial filling. (And of course much of the vegetation cleared would likely decompose or burn which would also release GHG’s).

In addition to the above comments, other questions and critiques arose during the review of the ESIA which are indicated for further discussion. The critiques cover areas like: Incorporating mitigation into Dam Design; Mitigation of downstream impacts; Community participation and stakeholder consultation process; Health issues and potential Ideas for (Post Dam) Research Studies

Fifteen (15) stakeholders in the water resources sector who are into development or research were approached to identify their responsibilities and mandates, data collection types, strength, and weakness amongst others.

Data collected by the research institutions include data on Hydrology, Hydro-meteorology, Hydro-geology, Agro-climatic, Socio-economic, Ecology, Water quality, Fisheries and Land-use. Most of these data are gathered through episodic surveys usually linked to finite projects, though others like the Meteorological and Hydrological Departments conduct regular monitoring programs and also daily data collection.

It was acknowledged that most of the water resources institutions (73%) are development oriented or concentrate more specifically on development operations. Only about 27% of the institutions approached were fully into research.

Though some of the institutions are strengthened by availability of expertise and facilities to collect quality data and also analyze them with scientific rigor, a major weakness that runs through all the institutions visited is inadequate funding for research work. Other areas recorded as weakness includes low motivation for research staff, and inadequate logistics and in some cases inadequate staffing. It was also observed that most institutions are unable to summarize and analyze their social data.

Research and development for dams, both traditional and modern are of considerable importance to the nation. An important requirement in the management of dams is continuous monitoring which also means continuous scientific research to identify emerging difficulties. This calls for serious commitment in funding, human and institutional capacity building.

Though there are many institutions with data the material is not organized. These institutions therefore need support in data management and in part also a mind shift to release their data for the benefit of the country. It is therefore necessary to stress the need for collaboration between researchers and stakeholders to pool resources together and even support each other to develop the appropriate research which could effectively respond to the challenges posed by the construction of dams.

Some areas for further capacity building indicated by stakeholders were:

(i) dam failure and safety

(ii) management of environmental perturbations resulting from changes in ecological settings and its impact on the climate

(iii) new techniques for weather prediction

(iv) water resources development and public health problems

(v) environmental flow requirements and its effects as a results of dam development dam ownership and community dam management.

2.4. DISCUSSIONS

Que.: It is observed that most of the dam affected people who were compensated normally come back several years later, economically worse off to demand further compensation. Could it be that they were not involved in the compensation negotiation for them to determine the type of compensation that could sustain them?

Ans.: In the case of Akosombo resettlement, the people were included in the discussions and the various compensation options were carefully explained to them. As a result, only 15% of them opted for and were given cash compensation. The rest of them were given resettlement houses with strips of arable land. Some of those who received compensation brought back their money and were later considered for accommodation compensation.

Que.: Why do fresh requests for compensation come up 40 years after the Akosombo scheme? Was there an adequate consultation among all stakeholders at the local level for the Bui project?

Ans.: Sometimes the succeeding generations of beneficiaries come back to make claims for compensation. In actual fact, most these fresh requests had already been catered for. On the second question, there has been enough interaction with the local people and consultations are still on-going. As you can notice, there is even a representation of local people at this Forum.

Que.: The emotional and psychological trauma that the resettled people went through could not be compensated for with money alone. It is obvious the VRA did not factor this into their resettlement scheme and hence the numerous post-resettlement problems.

Ans.: It is true this aspect of the people's life cannot be compensated for with money alone; and VRA has recognised that. It is however important to understand the fact that subsequently during such operations, psychologists and other relevant specialists will be employed to interact with the people to explain critical issues so that even though the trauma cannot be entirely eliminated, it could be reduced to a manageable level.

Que.: Were people from Bui community and more especially people from the Bui Secretariat who is the implementer of the Bui project invited to this forum?

Ans.: Yes, people from both outfits were invited. Representatives from the Bui communities together with their Chief are in attendance. However, the people from the Bui Secretariat are not represented and it should be emphasized here that the Bui Secretariat has made it a point, whether deliberately or otherwise, to always avoid fora such as this organized by us that address important issues in which they have high stake.

Comment: In the interest of moral justice, the issue of compensation for those affected by existing dams (Akosombo/ Kpong) should not be isolated from that of the

Bui dam. Meanwhile, some advances from the GH¢750 million due to the earlier settlers should be paid.

Comment: Issues arising from the recommendations of the previous Forum should have also been presented at the current Forum. It was advised that a monitoring agency should be established to make sure recommendations are thoroughly implemented.

SESSION III: WORKING GROUPS DISCUSSION

- **GROUP I:** STRATEGIES FOR COMMUNITY PARTICIPATION IN DAM DEVELOPMENT
- **GROUP II:** ISSUES ON COMPENSATION FOR DAM AFFECTED PEOPLE.
- **GROUP III:** RESEARCH, DEVELOPMENT AND CAPACITY BUILDING FOR DAMS SUSTAINABILITY: THE BUI DAM PROJECT

Working Group Discussions were focused on:

1. Identification of priority issues and gaps in the discussed papers.
2. Identification of 2 actions for Government Immediate Action.
3. Identification of 2 actions for future Dams Forum

3.1. GROUP I: STRATEGIES FOR COMMUNITY PARTICIPATION IN DAM DEVELOPMENT

Led by Mr. B.D. Ofori

Priority issues and gaps in the discussed papers.

- Who is responsible for ensuring community involvement or participation?
  - Project proponent
  - Affected Communities Involved
  - Government Agencies
- Is there legislation for ensuring community participation?
  - Environmental Impact Assessment Regulation (1999) LI 1652

Identification of 2 actions for future Dams Forum.

- Extent of Community participation
  - Law is silent on extent of quality of public participation
- Exposure of Communities to provisions of LI 1652 and Local Government Act 462.
- Community participation in project implementation

Actions for Government Immediate Action.

- Create awareness on legal provisions for community involvement (Government and civil society).
- Build Local capacity to participate in project design, implementation and monitoring.
- Civil society must be encouraged to support communities to participate meaningfully
- Extent of Community participation
- Law is silent on extent of quality of public participation
- Exposure of Communities to provisions of LI 1652 and Local Government Act 462.
- Community participation in project implementation

3.2. GROUP II: ISSUES ON COMPENSATION FOR DAM AFFECTED PEOPLE

Led by Mr. E.A. Kalitsi

Identification of priority issues and gaps in the discussed papers.

- Not much was discussed on other dam projects like irrigation, water dams etc.
- Payment of royalties for Chiefs
- Mechanism for project monitoring and implementation

Identification of 2 actions for future Dams Forum.

- Review of Legal framework for acquisition and compensation.
- Enhance Compensation and resettlement packages by increasing acreage of farm land and also giving special training to adequately equip settlers to enable them enhance their living condition

Identification of 2 actions for Government Immediate Action.

- Identification of sites required for the Bui Project and commencement of acquisition.
- Clean up issues outstanding on Akosombo and Kpong compensation and resettlement.

3.3 GROUP III: RESEARCH, DEVELOPMENT AND CAPACITY BUILDING FOR DAMS SUSTAINABILITY: THE BUI DAM PROJECT

Led by Prof. Chris Gordon

Priority issues and gaps in the discussed papers.

- Certain important institutions not consulted in the preparation of the issue papers e.g. Forestry Commission, Conservation International and Public Health institutions should be approached.
- Social economic and health issues not highlighted as much as the biophysical aspects.

Identification of 2 actions for future Dams Forum.

- Setting of social and environmental standards/targets for monitoring purposes.
- Broad based Capacity building including Community Capacities

Actions for Government Immediate Action.

- Provision of Funding for research and adequate motivation for researchers.
- Government should task particular agency to be responsible for data organization.
- Avenues for disseminations of research findings should be established.
- Appropriate agencies should be tasked to undertake monitoring of the dam and its impact on the society and environment.

3.4 CHAIRMAN'S CLOSING REMARKS

Distinguished participants of this 2nd Ghana Dams Forum and Workshop; we have come to the end of the first day of our deliberations. The main theme of the Workshop is "Bringing Research Findings on Dams Closer to the People". We have all listened attentively to our experts who presented the following papers:

a) Mr. E K. Kalitsi (Kalitsi and Associates) *Issues on Compensation for Dam Affected People*

b) Mr. B. D. Ofori (Research Fellow, Volta Basin Research Project, VBRP, University of Ghana, Legon) *Strategies for Community Participation in Dams Development*

c) Dr. Liqa Raschid-Sally (Head, West African Regional Office of the International Water Management Research Institute IWMI, Accra) *Research, Development and Capacity Building for the Sustainability of Dam Development with Special Reference to Bui Dam*

We have been informed that during the construction of the Akosombo Dam, 80,000 people were displaced; 739 villages within the 8,500km^2 area were relocated in 52 townships. The Kpong Hydro Electric Dam displaced 7,200 people and covered a land area of 12km^2. The displaced people were relocated in 6 townships nearby. The new Bui project will displace 859 people; 168 households in 7 villages will be resettled, 93 households and 4 villages will lose farmlands and need compensation. All displaced persons (including those not losing housing structure but only a part of farmland) will be relocated unless the people themselves prefer to live on the remaining land available to them.

It is the current international view that nobody should be worse off by the implementation of government projects especially dams.

The accounts given by the experts, of the entire process leading to the construction of the Akosombo and Kpong Dams indicate that:

I. There was limited time for effective community participation since this was considered essentially technical. As a result, community concerns were not adequately addressed resulting in lack of confidence in the institutional structures. For example, some communities with different ethnic and cultural

backgrounds were brought together at Ajena and Amankwakrom resulting in social conflict and unwarranted tension.

II. Many of the resettled people did not understand the implications of selecting the different Compensation Laws of Ghana for monetary gains and therefore did not make informed choices.

III. Land acquisition, procurement, compensation and resettlement have to be tackled diplomatically with education and assistance to the affected people.

IV. The strategic intervention by establishing the Resettlement Trust Fund set up by the VRA is a blue- print worth duplicating at Bui.

V. There were about 14 complaints from the Project Affected People (PAP) in relation to Akosombo and Kpong Dams that have not been addressed to date.

VI. There have not been exhaustive studies on the archaeological status of the Bui dam site and surrounding areas to ascertain the cultural and historical heritage loss that should be considered for appropriate compensation.

VII. There must be continuous monitoring and scientific research to identify emerging difficulties at dam sites. Financial support for research should be considerably increased .To avoid duplication of effort, there ought to be effective collaboration between researchers and stakeholders to pool resources and disseminate information expeditiously.

According to Mr. Kalitsi's paper, national expectations, political realities and international requirements prescribe compensation to cover not only restoration of financial values but also measures that will sufficiently address social issues as changes in relation among people, cultural values, growth expectation and enhancement of living and working lives of affected people.

The three discussion groups on: compensation, community involvement, and research and development, have identified priority issues and identified gaps left in the papers presented. We shall be presenting a communiqué tomorrow which spell out, for each topic, two actions for immediate attention by government and two actions to be followed up in the near future.

I would like at this juncture, to thank the IWMI who teamed up with the National Coordinating Committee (NCC) to organize this very successful forum. We are also grateful to GTZ for financial support for this 2nd Ghana Dams Forum.

Togbe O, Mama O, Nenemei, Distinguished Participants; thank you for your wonderful contributions and staying up to date. We shall meet again tomorrow to continue. God Richly Bless you all.

Prof G.T Odamtten, (Forum Facilitator/Chairman)

DAY TWO (27th FEBRUARY, 2008)

Theme: Impact of Climate Change on Dams, the Case Study of the Bui Hydropower Project

5.0. SESSION I: PRESENTATIONS

5.1 IMPACT OF ENVIRONMENTAL, CLIMATIC AND SOCIO-ECONOMIC CHANGE ON THE WATER CYCLE OF THE VOLTA BASIN.

Dr. Wolfram Laube (ZEF/GLOWA)

Objectives of the GLOWA Volta Project is to:

1. **Integrated analysis of the impact of…**
   - climate change
   - land use and land cover change
   - population growth
   - infrastructure development and increasing water demand
   - changing political and legal frameworks

   …on the hydrological cycle in the Volta Basin
2. Scientifically sound Decision Support for the sustainable development of water resources.
3. Capacity Building via advanced education and training, co-operative research, knowledge sharing and stakeholder participation

GLOWA Volta Overview

	Basin Scale (Transboundary)	**Sub-Basin Scale (National)**	**Sub-Basin Scale (Regional)**	**Catchment (Local)**
Issues	Water Allocation Climate Change Impact Data Management	Water Allocation Infrastructure Development Data Management	Storage Development Irrigation Development	Land Use Change
GVP solutions	Volta Basin Water Allocation System (MM5, WaSim, MB) GVP Data Portal	National Water Allocation System (MM5, WaSim, MB, MM3) GVP Data Portal	White Volta Water Allocation System (WaSim, MB)	Multi-Agent Land and Water Use Modelling (WaSim, LUDAS)

Partners	Volta Basin Authority National Water Administrations International Donors	National Water Administrations Government Agencies Research Institutes NGOs International Donors	Water Resources Commission Ministry of Food and Agriculture	Farmers NGOs Water Resources Commission Ministry of Food and Agriculture

Decision and Knowledge Exchange:
Decision support and knowledge exchange needs **to** involve **water administration, scientists,** as well as **CSOs and stakeholders** who are effectively involved in the decision making over water resources.

Objective of the Presentations:

- Contribute to the ongoing stakeholder dialogue in Ghana:
- Compare the results of different climate change scenarios for Ghana
- Show how the impact of climate change on the behaviour of rivers can be simulated
- Present preliminary results on the impact of climate change on the Black Volta and Bui Dam.
- Raise important questions about infrastructure planning processes in times of climate change

5.2 CLIMATE CHANGE IMPACTS ON THE WATER RESOURCES OF THE VOLTA RIVER BASIN IN GHANA.

Dr. Barnabas Amisigo, (CSIR-WRI and UNU-INRA, Accra).

Outline of Presentation:

- Introduction
- Assessing impact of climate change on water resources
- Using one set of climate change scenarios
- Results
- Proposed Adaptation measures
- Implications for Bui dam

Introduction:

Under the Netherlands Climate Assistance Programme (NCAP), Ghana undertook 8 independent sectoral climate change vulnerability and adaptation studies. The sectors included:

- Water Resources (completed in 2000): Surface water and Groundwater
- Agriculture
- Fisheries and
- Human Health

Climate Change Impacts on Water Resources:

- Impacts on surface water availability (eg. Riverflows)
- Impact on groundwater recharge
- Impact on Flooding and water pollution
- Impact on Sea water intrusion into inland water bodies

Adaptation measures (Water Resources): Promotion of water conservation and use efficiency:

- Building reservoirs on rivers with run-of-the-river intake points
- Use of aquifers as underground storage reservoirs to reduce evaporation
- Good landuse practices to maintain water bodies and keep them functional

- Reuse and recycling of industrial water and use of dry cleaning technologies
- Recycling domestic water for non-potable uses
- Adoption of new technologies for growing crops with less water

Adaptation measures (Other sectors):

- Establishing efficient irrigation projects
- Promoting Aquaculture
- Releasing reservoir water for irrigation
- Adopting drought tolerant crop varieties

Implications for Bui Dam

- Reduced inflows to the dam as a result of:
  - Reduced runoff and riverflow
  - Demands from other sectors e.g. Agriculture
- Current design of dam operations would not be feasible under climate change.

5.3. THE ROLE OF A VOLTA BASIN WATER ALLOCATION SYSTEM FOR RESERVOIR OPERATION ANALYSIS.

Dr. Constanze Leemhuis

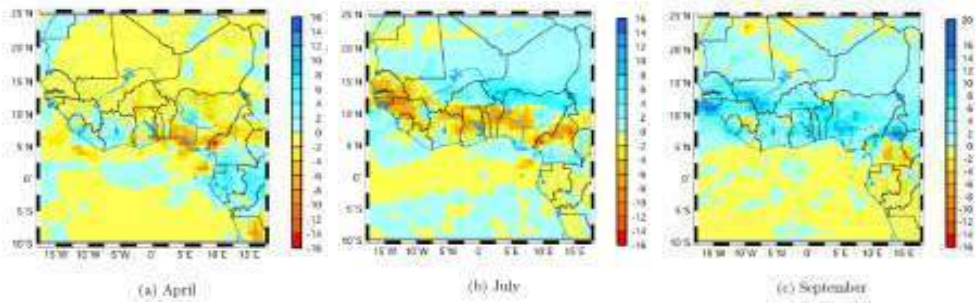
Outline of Presentation:

- Volta Basin Water Allocation System (VB-WAS)
- Impact of global climate change on the water resources of the Volta Basin
- River basin management model for reservoir impact assessment analysis

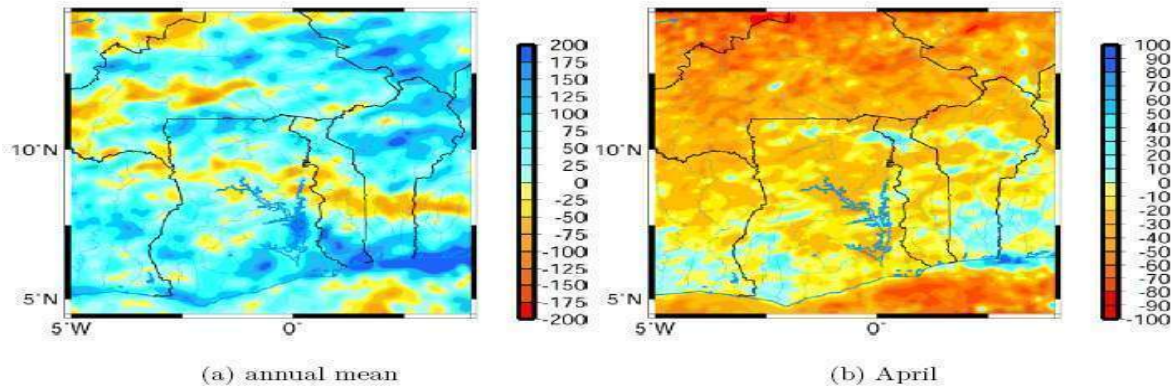
Volta Basin Water Allocation System (VB-WAS)

- **Comprehensive**: integrated study analysis
- **Flexible:** operating on different scales, selection of climate change and water use scenario
- **User friendly** : capacity building for decision makers
- **Fast simulations:** participatory decision support

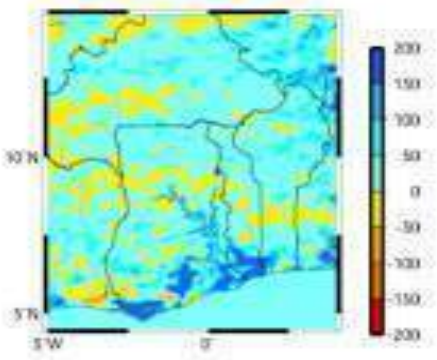
Mean precipitation change (2030-2039 vs 1991-2000) [%]



Mean precipitation change (2030-2039 vs 1991-2000) [%]



Mean change (2030-2039 vs 1991-2000) [%]

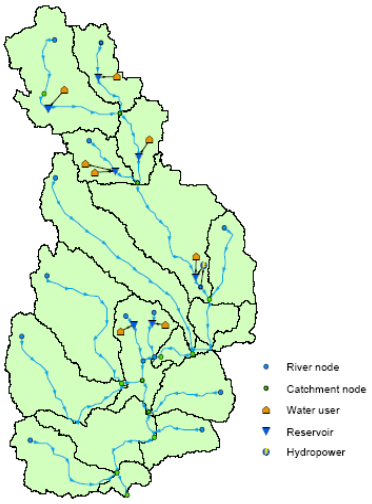


- Surface
- Soil Erosion
- Sedimentation

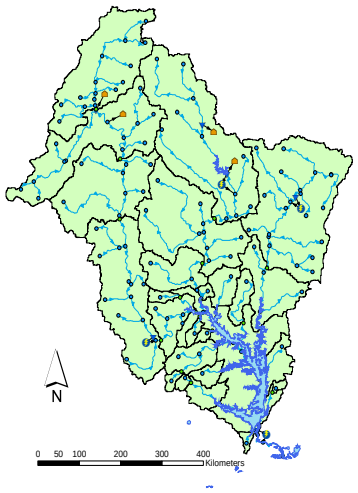
Source: Gerlinde Jung, 2005

MIKE BASIN:
River Basin Management in GIS - The Power of keeping it simple

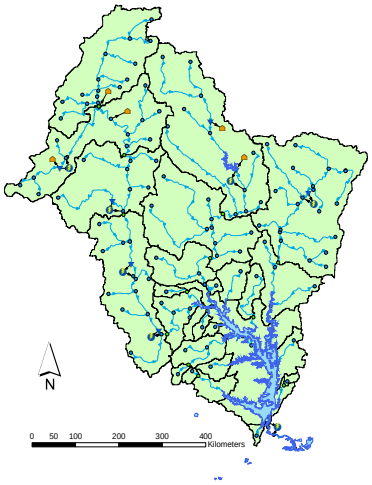
- MIKE BASIN builds on a network model
- Quasi steady state mass-balance model
- Open (link to Excel, Visual Basic)
- Standard water management model
- Basin scale solutions:
  - water allocation
  - reservoir operation
  - hydropower operation
  - conjunctive water use
  - irrigation



Present water use Volta Basin



Future water use Volta Basin?



Conclusions

- Global climate change leads to a change of the rainfall pattern in space and time for the Black Volta River subcatchment.
- Due to a change of the rainfall pattern the overall streamflow (river flow) variability increases.
- Increasing stormflows are followed by increased soil erosion, causing serious sedimentation problems for reservoir operation.
- A prelongiation of the dry season causes a decrease of groundwater recharge and streamflow. At the same time it leads to a higher demand on water for irrigation purpose.

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5.4 DISCUSSIONS ARISING FROM THE GLOWA/ZEF PRESENTATIONS

Que.: Are the situations of low-flow into the Kpong and Akosombo dams due to water use activities such as dam construction taking place in the upper stretches of the Volta Basin?

Ans.: The low flows in these dams are actually due to climate change, and not necessarily as result of water uses and other activities in the upper stretches of the Volta Basin. In fact the construction of the Burkina dam has rather improved water flow in the Black Volta because water from the reservoir must constantly flow to generate electricity, as opposed to the period before dam construction when there used to be zero flow during certain times of the year.

Que.: Are there trans-boundary interactions between countries within the Volta Basin to regulate activities within the basin by the riparian countries?

Ans.: Previously there was none but currently, discussions are on-going. Based on a common understanding, a Secretariat has been set up by the Volta River Basin Development Project, constituted by the six countries sharing the basin with a Ghanaian as the Executive Secretary to see to all trans-boundary issues.

Que.: Since the impact change predicted by the modeling of the second presenter indicates high water vulnerability in future (by 2050) why should there be the need for the construction of more dams (knowing that this will lead to increase in evaporation)?

Ans.: The prediction made by the presenter was based on one set of climate change scenarios, different scenarios may produce different predictions. However, irrespective of the scenarios used for the predictions it is very obvious that there will definitely be less water in the future. This justifies the question why there should be more reservoirs, either in the form of dams or aquifers (underground reservoirs) to ensure water security in the future.

Que.: In view of the fact that water availability will reduce in future, the second presenter of the day recommended various ways to manage water, including underground storage. To the ordinary farmer at Bui, Kpong or Akosombo what type of irrigation system will be appropriate for them in terms of efficiency and effective water management? How could irrigation water be more efficiently used and how affordable is it?

Ans.: One recommended method of irrigation to conserve more water is trickle irrigation. Trickle irrigation, sometimes referred to as drip irrigation, is a low-pressure system that places water slowly and directly in the root zone of the desired plant, increasing the efficiency of the water applied. Trickle irrigation can reduce water usage by 30 to 70 percent compared to more traditional means of irrigation, such as overhead sprinklers or hand watering.

On other methods of water conservation, it was suggested that as a nation we should begin to attach more seriousness to water conservation. We need to promote conservation farming systems like mulching, cover cropping, etc., and also encourage rainwater harvesting, which has extensively been researched in this country. We do not have to wait to be caught up in climate change backlash before we begin to adopt agricultural techniques that promote water conservation

Que.: It is observed that dams in our country are constructed differently from those seen elsewhere, especially in Europe. Those dams look well constructed and the architectural designs, more elaborate. Why can't we also construct our dams in a similar manner?

Ans.: Construction of dams depends on the purpose for which they are constructed, and also on the topography (nature of the land). Dams constructed in the European communities are mostly for transportation, recreational purposes and drinking water whereas in Africa, they are normally for power generation as well as for domestic usage.

Que.: How is this valuable information on climate change, as presented, being disseminated?

Ans.: It will take the joint effort of both Ghanaians and Burkinabes to disseminate the information. The GLOWA project has no dissemination phase but efforts are under way to solicit donor support to facilitate the dissemination of the findings. Meanwhile the information has been saved on CDs and can be accessed at the project secretariat. Indeed our farmers will need this information as presented in determining the right planting seasons for their crops in order to be assured of good yields. Dissemination of information is therefore very important.

Que.: Considering the possible threats posed by climate change to future water availability in the Volta basin, have there been enough feasibility studies done to ascertain the viability of Bui as a suitable site?

Ans.: The VRA had identified a number of potential sites for dam construction and after detailed assessments including hydrological studies and cost effectiveness, the Bui site was selected. The reality of the issue is that high electricity demand is, and will continue to put more pressure on hydropower sources, hence the need to harness other sources like thermal, solar etc. To support our energy needs.

It is also to be noted that the climate change phenomenon as presented is not conclusive in itself, but depends on the status of the set of scenario for which the Global Circulation Model (GMC) was run. Thus the model suggests that if human activities inimical to the environment within the Volta Basin continue through 50 years, there would be grave consequences for water availability.

Que.: How much of research findings like GLOWA's findings on Climate Change, are incorporated in project implementation since such findings could go a long way to guide policy makers in their decisions? (The questioner suggested that strong lobby groups like legislators be brought on board to put pressure on implementing agencies to make use of research findings).

Ans.: Scientific findings may not have been incorporated since most often, decisions to implement projects tend out to be political rather than what is scientifically right.

Indeed lobby groups are needed to pressurize government but a platform like the Dams Forum can also serve as a mouthpiece to articulate these issues to government.

Que.: There is iron pan formation within the middle belt soils including the Bui hydro-dam site over the past several years. In the running of the GCM, did the researchers take into consideration this observed phenomenon?

Ans.: The model included all aspects of water balance like infiltration, evaporation, etc., but it did not really take into account the observed phenomenon of iron pan formation.

Que.: There has been an observed trend of decadal drought in Ghana that seems to have much greater impact in the northern portions of the country than the south. Given the fact that the Volta takes its source from a region with relatively lower amounts of rainfall, why did we choose Bui since we already have problems with the lake levels at Akosombo? One would have thought that smaller rivers within the southern sector of the country where rainfall is higher (e.g. the pilot mini-hydro project initiated by the Indian government in the Hohoe district of the Volta Region) would be a better options.

Ans.: The decision to construct the Bui Dam is a political one and we at the Dams Forum cannot explain that decision. Feasibility studies have however shown that the Black Volta at Bui has enough water to generate electricity. Power generation capacity of a dam depends on several factors including the type of architecture and design, how large or high small is the surface area, etc.

Que.: One disturbing phenomenon is the rate of deforestation especially by charcoal producers in the Afram Plains, which invariably will be extended to the Bui area. Other forms of reckless human activities notably grazing and bush burning are currently taking place. If immediate steps are not taken to halt these activities, we are most likely to pay dearly. What are the authorities doing?

Ans.: Local government authorities have by-laws against the setting of bush fires however people lack the courage to enforce these laws. There is the need to intensify

the campaign against bush fires within the basin, and to increase the pace of afforestation.

Suggestion: Important recommendations often come up as a result of serious group discussions on very relevant issues during fora of this kind. These recommendations if implemented would have accelerated the growth and development of our nation; but as is usually the case, they never get implemented and the loser is the entire nation. This time, it is suggested that the NCC of this forum should be given the legal authority to follow up and ensure the implementation of all the excellent recommendations emanating from this forum and workshop.

Remark: There are two potential problems that the Bui dam is likely to face in the light of climate change. The first is that water flow in the Black Volta is presently very low; and secondly, the water is full of sediments. In the light of this, was there any comprehensive options assessment before the initiation of the project? There is need to bring science into decision making if we really want to move forward. It is a fact that inefficient use of electricity is a major problem and is believed that when Ghanaians use energy more efficiently, we could save an amount of money equal to what is being spent on the Bui project and still conserve the anticipated power output of 400 MW that Bui dam would provide.

In reaction to this, it was explained that power generation to meet the increasing demands in the country continue to be a major problem facing the VRA, and that until we begin to pay the real cost of power generation, we will continue to have problems.

5.5 POLICY BRIEF ON IMPACT OF CLIMATE CHANGE ON BUI

GLOWA Volta Policy Brief: March, 2008

Wolfram Laube, Constanze Leemhuis and Barnabas Amisigo

Impact of Climate Change on the Black Volta Basin and the Bui Dam

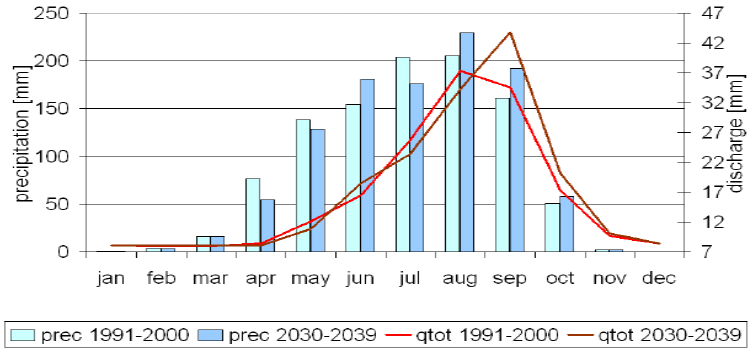
As contribution to the 'Second Ghana Dams Forum of the National Dialogue on Dams and Development' scientists of the GLOWA Volta Project (GVP) of the Center for Development Research (ZEF, University of Bonn) have undertaken a hydrological assessment of the likely impact of climate change on Black Volta River and the Bui Dam. Two different studies that investigate the impact of global climate change on the water availability in the Ghanaian part of the Volta River basin served as the scientific background for this analysis. Both studies are based on different global climate change scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) that reflect different predictions for world wide CO_2 emissions.

Climate modeling does not lead to exact predictions of climatic events but allows projections into the future. By looking at different scenarios that take different assumptions into account and by comparing the modeling results for different scenarios, the reliability of climatic predictions can be enhanced. Future trends that can be observed under different scenarios are more likely to really occur than trends that can be only observed under individual scenarios. One prediction for the Volta basin on which various global climate change scenarios agree, is the overall increase of seasonal river flow variability due to a change of the rainfall pattern. In that prediction, less water will be available during the dry season, while river flows will increase in the rainy season.

GVP's regional climate predictions for the Volta Basin

A regional analysis on the impact of climate change on the Volta Basin was conducted by GVP researchers (Kunstmann and Jung, 2005; Jung, 2006). A coupled climate-hydrological model allowed simulating seasonal and spatial predictions for the Black Volta subcatchment, which is the main source of inflow for the Bui reservoir.

Figure 1: Monthly amounts of rainfall (precipitation) and river flow (discharge) 1991-2000 and 2030-2039).



Comparing the simulated rainfall and streamflow for a historical time series (1991-2000) and a global climate change scenario (2030-2039) the following changes are predicted:

- Decreasing rainfall in the month of April
- Increasing duration of the dry season
- Increasing unpredictability of the onset of the rainy season
- Increase and intensification of rainfall at the end of the rainy season
- Slight decrease of river flow
- Increase in flood-events

Potential consequences of GVP regional climate predictions:
The decreasing rainfall in April and an increased duration of the dry season render rain-fed agriculture less reliable. It becomes difficult for farmers to predict the onset of the rainy season and therefore the right time to plant crops. Greater variability and a general shortening of the rainy season may cause the loss or even failure of crops. With regard to the Bui dam, the decrease of stream flow and the increase of flood events have negative impacts. Less water becomes available, while floods increase erosion and speed up the siltation of the dam.

Regional Climate Predictions of the Water Research Institute

The second study discussed at the Forum was conducted by the Water Research Institute (WRI, 2000) as part of Netherlands Climate Assistance Programme (NCAP). While eight independent sectoral climate change studies were undertaken, the WRI study had a special focus on the impact of global climate change on the water resources. The predictions of this study with regard to surface water availability and river flows were discussed at the Second Dam Forum.
Based on different GCM-based global climate change scenarios, the change in river flow in the Volta Basin was simulated for years 2020 and 2050.

Table 1: Percentage change in streamflow in the Volta Basin from GCM-based climate change scenarios for year 2020 and 2050.

YEAR	Low Sensitivity	Medium Sensitivity	High Sensitivity
2020	-8.8	-15.8	-22.9
2050	-24.0	-37.1	-50.9

Potential consequences of WRI's regional climate predictions:
The WRI study predicts a considerably stronger reduction in river flow than the GVP study. The decrease of the annual mean of river flow and the predicted increase of temperatures and evapo-transpiration would seriously impact the Black Volta basin and the Bui dam. Under these scenarios the inflows into the reservoir will be seriously reduced and may render the dam operations under the current design difficult.

Conclusions

Both studies discussed at the Second Ghana Dams Forum predict a significant negative impact of global climate change on the water resources of the Volta River basin. While the GVP study predicts relatively small changes in overall water availability, it points to serious changes in seasonal rainfall and river flows that may cause droughts and flood events. The WRI study predicts a much higher decrease in river flows. Both studies agree that water availability will be further reduced by higher temperatures and increased evapo-transpiration. While these factors alone have the potential to negatively affect water availability in the Black Volta basin and the operation of the Bui hydropower project, additional factors have to be taken into consideration also. The increase in flood events predicted by the GVP study will increase erosion and speed up the siltation of the Bui dam. This has the potential to seriously affect the lifespan of the dam. Increased erosion, also through an increasing deforestation of the Black Volta basin, needs to be taken account of when the economic viability of the Bui project is evaluated.

It is a serious oversight that the impact of global climate change was not taken into account when the plans for the construction of the Bui dam were evaluated and finalised. This is even more so, as climate change will not only affect rainfall, evapo-transpiration and river flows directly, but will also lead to an increase of water demand for irrigation. The overwhelming majority of the population of the Black Volta basin depends on rain-fed farming for their livelihoods. However, climate change makes rain-fed agriculture increasingly unreliable. Throughout the Volta Basin this will lead to an expansion of irrigated agriculture. How competing water needs for hydropower generation and agriculture will affect each other is very important and should have been taken into consideration when the Bui dam was planned. The failure to account for the dynamics of climate change is a major shortcoming of the planning and evaluation process of the Bui dam and should not be repeated when other major hydraulic infrastructure projects are planned and commissioned.

Literature:

Amisigo, B. (2006) Modelling Riverflow in the Volta basin of West Africa. A data-driven framework. Doctoral Thesis. Available at: www.glowa-volta.de.

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Links:

www.zef.de www.glowa-volta.de

The GLOWA Volta Project has been generously funded by the Federal German Ministry for Education and Research, BMBF.

6.0 SESSION II: ROUND UP

6.1 COMMUNIQUÉ FROM THE 2ND GHANA DAMS FORUM

We, members and participants of the Ghana Dams Forum, met at M Plaza Hotel, Accra on 26th-27th of February, 2008 for the 2nd Ghana Dams Forum and Workshop On The Impact Of Climate Change on the Bui Hydropower Project under the Theme: "Bringing Research Findings on Dams Closer to the People" and have resolved as follows:

- that there is the need to adhere to and implement national social and environmental standards and set specific targets for monitoring purposes.
- that comprehensive options assessment is undertaken for future water and energy resources development.
- that modalities of community participation in project design, management, monitoring and evaluation be clearly defined, and that the roles and responsibilities of all stakeholders enunciated.
- pertaining to the Bui dam development project, we state:
    - that monitoring of project activities and implementation of recommendations (ESIA and EMP) be undertaken by a designated agency
    - undertake drought-flow analysis
    - assess the potential impact of climate change on the dam
    - assess the contribution of the dam on Green House Gases
- that detailed proposal for developing, implementation, monitoring and evaluation of hydropower and other water resource development projects be disseminated and made available (particularly at the local level) and strictly adhered to by relevant parties.
- that human capacities of all stakeholders should be strengthened with special emphasis on empowering communities which will lead to their active participation.
- that outstanding issues (e.g. compensation and royalties) relating to the existing dams should be urgently re-examined and addressed.

- that the living conditions of the people to be resettled should be enhanced through the provision of improved livelihoods and building of capacities for effective living
- that adequate funding for research and monitoring related to dams and development be provided from both government and private sources and researchers be motivated.
- that government should facilitate data management by tasking appropriate agencies for this purpose
- that appropriate avenues for dissemination of research findings be established.
- that relevant research findings and other pertinent information on dams development and planning should be made available to all stakeholders.

SIGNED

…….....

Mrs. Cecilia Amoah

Director, Volta Basin Research Project of the University of Ghana, Legon

Chairperson, National Coordinating Committee of the Ghana Dams Dialogue

…….....

Mr. Minta A. Aboagye

Director, Water of Ministry of the Ministry of Water Resources, Works and Housing

Vice Chairman, National Coordinating Committee of the Ghana Dams Dialogue

…….....

Mr. Samuel Ayeh-Dateh

Director, Finance and Administration of the Ministry of Energy

Member, National Coordinating Committee of the Ghana Dams Dialogue

6.2 STATEMENT BY REPRESENTATIVE OF GTZ.
Dr. Daniela Kussberger

Dear Chairperson, Members of the National Coordinating Committee, traditional Authorities, Distinguished Participants.

Thank you for giving me the opportunity to say a few words here. It was a great pleasure for me to attend to this forum and Workshop as a representative of GTZ (German Technical Cooperation). I can assure you that I have learned a lot in terms of participatory processes, dam decision-making and scientific approaches towards climate change/impact on water resources with special reference to dams/dam affected people and Bui dam.

The GTZ has been following and supporting the development of the Ghana dams dialogue for almost 2 years now and has seen it growing from its embryonic stage up to today's grown-up stage.

We at the GTZ feel that GDF is on a good track. Through the strong commitment and joint efforts of the stakeholders and the competent guidance of the steering group, the Dialogue has proved its ability to reconcile diverging interests and to channel them into a goal-and results-oriented process.

Now that priority issues and gaps have been identified and a communiqué has been agreed upon, the next step of integrating these recommendations into existing mechanisms is a particularly challenging one. As the Okyehene put it, now the dialogue has to move from theory to action and make use of the information through shaping the way forward accordingly.

Let me conclude with an African proverb, that most of you will probably know, it brings to the fore what dialogue is all about;
"if you want to go fast, travel alone', if you want to go far, travel together".

I think that you the Ghanaian stakeholders have gone considerably far already and I am confident that jointly you will reach the final destination within the time that is needed.
Thank you.

6.3 CLOSING REMARKS BY THE CHAIRPERSON.
Mrs. Cecilia Amoah

Fellow Participants, Nana Nom, Togbuiwo, Nene Invited Guest Ladies and Gentlemen

Once again, we have come to the end of another successful 2nd Dams forum with the theme "BRINGING RESEARCH FINDINGS ON DAMS CLOSER TO THE PEOPLE". This could not have been possible without your enthusiastic response to our invitation. On behalf of NCC, IWMI, and our sponsors of this forum, I would like to express our deep gratitude for your sustained interest and valuable contributions.

We may not have found answers to all your poignant questions and concerns raised, particularly about the handling of the resettlement, community participation, and compensation issues about the Akosombo and Kpong Hydroelectric Project. What we have seen and heard is 40 years experience of HOW NOT TO HANDLE CONSTRUCTION, RESETTLEMENT AND PEOPLE COMPENSATION in dams construction. Experience is always the BEST TEACHER. We have been taught many lessons over the past 40 years which should guide us to correct our approach to the construction of a new Hydroelectric Dam at Bui where people will be affected both positively and adversely. New information from today's discussion shows that Greenhouse omissions susceptibility to climate change, prolonged drought period and reduction in water availability. Impact on crop production and use of new varieties which can survive drought conditions.

I believe that it is time for this country to hold a NATIONAL FORUM ON DAMS with the theme "HYDROELECTRIC DAMS CONSTRUCTION IN GHANA: Prospects and Problems of Akosombo and Kpong in Retrospect. Lessons for the Bui Projects".

This forum should not be held in Accra and should be under the sponsorship and auspices of the Ministries of Information and Energy.

The Communiqué for immediate action of government should highlight this point….. while we seek to address future direction of the NCC. It is also important that we endeavor to bring on board the Bui Dam Authority to discuss and collaborate with all stakeholders in Dams in Ghana.

We have taken the right steps and we shall continue to facilitate dialogue in the interest of the Ghanaian populace.

On this note I thank you all for your attention and wish you safe journey and God's blessing and protection.

ANNEXES

Annex 1: Workshop Programme

NATIONAL DIALOGUE ON DAMS AND DEVELOPMENT IN GHANA

2ND GHANA DAMS FORUM AND WORKSHOP ON THE IMPACT OF CLIMATE CHANGE ON THE BUI HYDROPOWER PROJECT

Main Theme:
"Bringing Research findings on Dams Closer to the People"

Date: 26-27th February, 2008 Time: 08:00 am Venue: M Plaza Hotel

PROGRAMME

DAY ONE (26th February, 2008):

Theme: Contribution of Community Involvements, Compensation, Research and Capacity Building to Dam Development in Ghana.

8:00 – 9:00	**Arrival and Registration of Participants**		
Session 1: Opening Remarks			
9:00-9:05	Opening Prayer		
9:05-9:10	Welcome Address	-	Chairperson of NCC
9:10-9:15	Introduction of Chair	-	Secretariat
9:15-9:20	Chairs' Response	-	Okyehene,Osagyefo Amoatia Ofori Panin II
9:20-10:20	Speeches		
	• Ministry of Water Res. Works and Housing	-	The Minister
	• Ministry of Local Gov't, Rural Dev't & Env"t	-	The Minister
	• Ministry of Lands and Forestry	-	The Minister
	• Ministry of Finance & Economic Planning	-	The Minister
	• Ministry of Energy	-	The Minister
	Guest Speech	-	**Hon. Gladys Asmah**
10:20-10:30	Chairs' Remarks		
10:30-10:35	Announcements	-	Secretariat
10:35-10:55	Group Photographs		
10:55-11:10	**Cocoa Break**		
Session 2: Presentations			
11:10-11:15	Introduction of Chair/Facilitator	-	Chairperson of NCC
11:15-12:15	Presentations of Issue Papers		
	• Introduction of Presenters	-	Secretariat
	• Presentations		
	• Community Involvement	-	Mr. B. D. Ofori
	• Compensation	-	Mr. E.A. K. Kalitsi
	• Research and Development	-	Dr. Liqa Raschid-Sally

12:15-12:20	Announcement	-	Secretariat
12:20-13:20	**Lunch**		

Session 3: Discussions

13:20-13:30	Modalities for working groups	-	Facilitator
13:30-14:30	Working group discussions		
	• Community Involvement		
	• Compensation		
	• Research and Development		
14:30-15:30	Inter-group Interactions		
15:30-16:00	Reporting	-	Group Representative
16:00-16:30	Way Forward for the next phase		
16:30-16:40	Closing Remarks	-	Facilitator
16:40-16:45	Announcement	-	Secretariat
16:45-16:50	Closing Prayer		

.....Cocktail.....

DAY TWO (27th February, 2008):

Theme: Impact of climatic change on Dams, the case study of the Bui Hydropower Project.

8:30-9:00	**Arrival of Participants**		
Session 1: Opening Remarks			
9:00-9:05	Opening Prayer		
9:00-9:10	Welcome Address	-	Chairperson of NCC
9:10-9:15	Introduction of Chair	-	Secretariat
9:15-9:20	Chairs' Response		
9:20-10:30	Presentations		
	• Introduction of Presenters	-	Secretariat
	• Presentations		
	• GLOWA	-	Dr. Wolfram Laube
	• Climate Change	-	Dr. Barnabas Amisigo
	• Hydrological Modelling	-	Dr. Constanze Leemhuis
10:30-11:00	**Cocoa Break**		
11:00-13:00	Discussions/ Solidarity Messages / Film Show		
13:00-14:00	**Lunch**		
Session 2: Round up			
14:00-15:00	Communiqué		
15:00-15:15	Closing Remarks	-	Chairman
15:15-15:20	Announcement	-	Secretariat
15:20-15:25	Closing Prayer		

Annex 2: Message from some NCC Members about the Ghana Dams Dialogue

Name: Dr. Liqa Raschid-Sally

Profession: Environmental Engineering

Position: Senior Researcher

Profile: Liqa Raschid-Sally has more than 20 years of varied work experience after her PhD in urban planning and pollution control, environmental assessments and natural resource management; and capacity building in the water supply and sanitation sector. She has also served on the Steering Committee of the UNEP Dams and Development Project, from 2003 to 2005.

Short message: The Dams Dialogue in Ghana is distinctive in that stakeholders with divergent perspectives are able to gather around a table and talk through problems. How do you explain this? Are Ghanaians peaceful by nature? They are passionate about issues, but seem willing to listen. Given this climate, the government of Ghana has now a unique opportunity of utilizing the ongoing Bui dam project as a showcase for good environmental and social practices in dams planning.

Name: Nene Tetteh Amoako IV

Title: Natriku Chief (Osudoku Trad. Area)

Occupation: Civil Servant/Farmer

Short message: Dam Forums has made me abreast with the advantages and disadvantages of dams and its effects on people. Keep it up.

Name: Togbe Adom Drayi II

Profession: Trade Unionist

Position: Chairman – NAVRART/52 and Head, Organization Department Ghana TUC.

Profile: Postgraduate Diploma – Organization Development (UCC) and Master of Arts Student - Organization Development (UCC).

Short message: The Dam fora have been extremely productive. The platform presented by the forum has not only been used to discussed the development challenges associated with the Akosombo and Kpong dams but also provided the opportunity to generate fresh ideas to influence the Bui Hydro Power Project positively. The Dams forum seems to be the only body that is bringing all stakeholders together to engage in a discussion on the impact of Dams in Ghana. The communities to be affected by the Bui project do not seem to have the capacity and

voice to effectively put across their fears and concerns about the negative impacts of the Bui project on them. If the Dams Forum is sustained, it will fulfil the obligation of providing public awareness on the socio-economic implication of Dams in Ghana.

Name: K.D. Bright Siayor

Profession: Civil Engineer

Position: Manager, Project Management, Volta River Authority.

Other Qualification: Masters in Business – Administration (Finance), Diploma, Hydropower Development

Short message: The Dams Forum has actually served as the platform for effective dialogue between the Dam affected people and the Project Implementers. Hope the forum will be sustainable.

Name: Dr. E.O. Bekoe

Profession: Hydrologist/ Water Resources Engineer

Position: Research Scientist

Other Qualification: PhD. Water and Environment, MSc. Soil and Water Engineering and BSc. Agric Engineering.

Short message: The Dams Forum has been very fruitful and successful.

Name: Torgbe Kpakpa Agbesi II

Profession: Teaching

Position: Training Officer

Short message: This Forum has come at its right time and I am very much grateful to GTZ the donors, and IWMI the organizers of such forum. I hope that the Forum continues to enable the affected communities to come out from their ignorance and acquire the necessary benefits from such big projects as a dam.

Annex 3: Pictures from the Forum

Hon. Rita Idi delivering a speech on behalf of the Minister of Lands, Forestry and Mines.

Mr. Mintah Aboagye delivering a speech on behalf of the Minister of Water Resources, Works and Housing

Prof. Gyan Baffour delivering a speech on behalf of the Minister of Finance and Economic Planning

The Chairman of the Programme, Okyehene, Osagyefo Amoatia Ofori Panin delivering his speech.

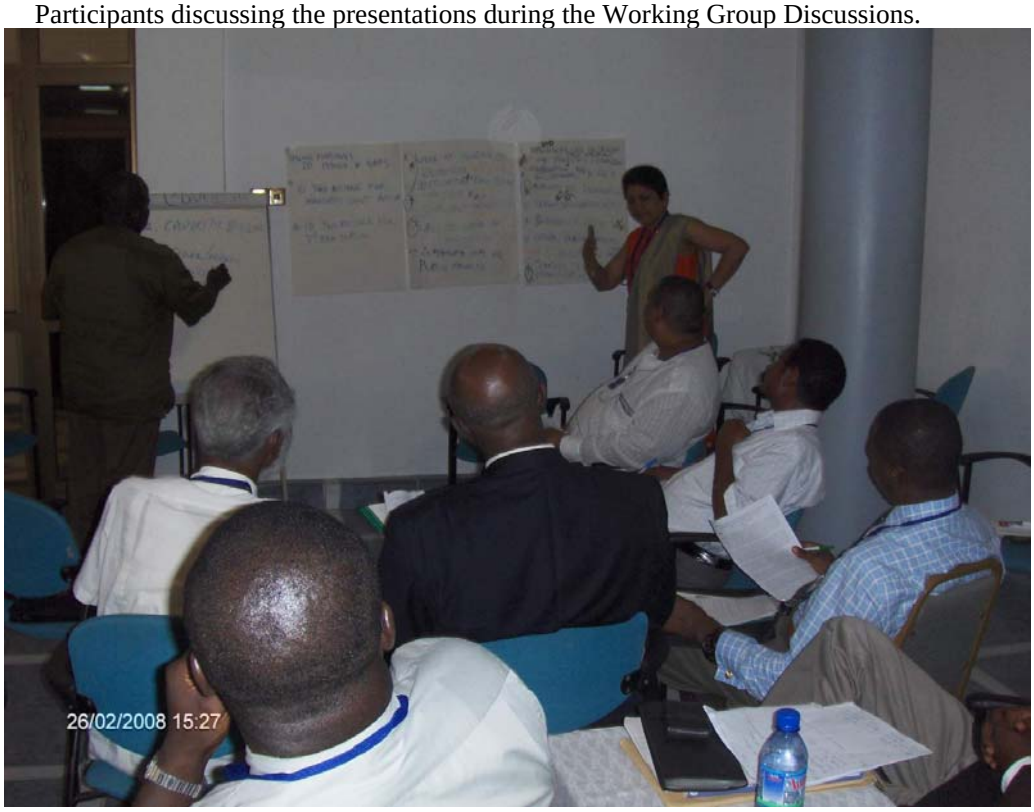
Participants listening to the programme.

Participants listening to presentation by scientist from the GLOWA/ZEF.

Participation by participants during question time.

Participation by participants during question time.

Participants discussing the presentations during the Working Group Discussions.



Dr. Liqa Sally explaining something to the participants during the Working Group Discussions.

Lunch time.

Lunch time.

Cocktail gathering.


Guest speaker for the Forum taking time to greet participants as they leaving the Forum.

Annex 4: Newspaper Publications on the Dams Forum

PAGE 2 The Insight WEDNESDAY 27TH -THURSDAY 28TH FEBRUARY, 2008

The INSIGHT

— EDITORIAL —

WEDNESDAY, FEBRUARY 27, 2008

YES, WE AGREE

The decision by the Government of Ghana not to allow the United States of America to establish a military base in Ghana is most welcome even though the issue has not been closed completely.

US President George Bush quotes President John Agyekum Kufuor of Ghana as telling him "Look, we.... You're not going to build any bases in Ghana."

It is refreshing that President Kufuor finally found his voice and told Bush in the face that Ghana would not accept the building of a US military base here.

NEWS HERE, NEWS THERE

DAMS ARE IMPORTANT

By Elizabeth Annan & Monica Quainoo

Various stakeholder institutions and personalities at an ongoing national dialogue forum have unanimously stated that dams are uniquely important in man's life.

The Executive Director of Volta Basin Development Foundation (VBDF), Mr. Richard Twum Barimah Koranteng who summed up the essential element permeating all the views expressed by various speakers said, "The debate about dams is at once overwhelmingly complex and fundamentally simple because the issues are not confined to the design, construction and operation of dams themselves but embrace the range of social, environmental and political choices on which the human aspiration to development and improved well-being depend."

National Dialogue which started on May 2006 has been working towards the strengthening of institutional structures and processes to holistically discuss and assess the need for dams and different options possible to respond to water and energy needs.

Speaking at a press briefing, Mr. Koranteng announced that the upcoming 2nd Ghana Dam forum and workshop on the impact of climate change on the Bui hydropower project will begin from the 26th to 27th of this month, under the theme "Bringing research findings on Dams closer to the people".

Dams, the Executive Director emphasized, fundamentally alter rivers and the use of natural resources frequently entailing the re-allocation of benefits from local riparian users to new groups of beneficiaries at a regional or national level.

Mr.Koranteng said their main objectives are to set up a platform (the Ghana Dams Forum) with representation of all groups with a stake in dam development and also to analyze issues and review, adapt guidelines and strategies.

According to him, during the first Ghana Dams forum which was attended by over hundred stakeholders, a consensus was reached to further conduct study into issues like compensation, community involvement, research and capacity building related to the development of dams in the country.

"It is absolutely true that dams have made an important and significant contribution to human development and the benefits derived from them have been considerable" he added.

Mr. Koranteng observed that since the project has been able to model future discharge scenarios that take climate change into account, there is the need to consider them to the design and management of reservoirs within the basin.

NAGRAT STRIKES AGAIN

News — THE DEMOCRAT — 4

2ND GHANA DAMS FORUM TO BE HELD

By William Sarpong/Fati Tahiru

The 2nd Ghana Dams Forum and Workshop on the Impact of Climate change on the Bui hydropower project will take place from 26th of February 2008 in ACCRA UNDER the theme "Bringing Research findings on Dams closer to the people.

Addressing the press on the fourthcoming events, Mr. Richard Twum Koranteng, Executive Director Volta Basin Development Foundation pointed out that the debate about dams is very complex and fundamental because the issues are not confined to the design, construction and operation of dams themselves but embrace the range of social, environmental and political choices on which the human aspiration to development and improved well-being depend.

Mr. Twum Barima narrated that the National Dialogue on Dams and Development in Ghana, which started in May 2006, has been working towards the strengthening of institutional structures and processes and to holistically discuss and assess the need for dams and the different options possible to respond to water and energy needs.

He mentioned that the objectives of the National Dialogue on Dams and Development is to set up a platform (the Ghana Dams Forum) with representation of all groups with a stake in dam development, to support transparent information exchange and an active dialogue on important issues related to existing and planned dams, and to analyse issues and review and adapt guidelines and strategies developed by the UNEP-DDP relevant to these, for inclusion as needed into to the relevant decision making processes in Ghana.

According to Mr. Twum Barima, during the first Ghana Dams Forum, a consensus was reached to further conduct a study into issues like compensation, community involvement and research and capacity building related to the development of dams in the country. Therefore at the second Ghana Dams Forum to be held, the issue papers prepared by experienced consultants and researchers will be presented. He hinted that during the first forum, it was realized that the 'Environmental and Social Impact Assessment' (ESIA) of the ongoing Bui Hydropower project for which the final designs are being prepared; should be reviewed to identify potential impact indicators which could be taken up for further study.

"It is intended that the outcomes of this study, in a format understandable both to technical and non-technical stakeholders will also be presented at the Forum". He said.

Mr. Twum Barima noted that dams have made an important and significant contribution to human development, and the benefits derived from them have been so considerable. However, in too many cases an unacceptable and often unnecessary price has been paid to secure those benefits especially in social and environmental terms by people displaced, communities downstream, tax payers and by the natural environment. Therefore, bringing to the table all those whose rights are involved and bear the risks associated with different options for water and energy resource development, the conditions for a positive resolution of competing interests and conflicts would be created.

WOMEN CAN BAIL SUSPECTS - ASP QUAYE

Winneba District Police Commander Assistant Superintendent of Police Jordan Quaye has appealed to women in the district prepared to satisfy legal terms governing sureties to come forward to bail suspects.

He said there was no law that banned women from bailing suspects at police stations but rather women were not prepared to bail suspects because of its implications. ASP Quaye made the appeal in an interview with Ghana News Agency at Winneba.

He explained that the law required anyone who stood surety for a suspect to pay twice the bond when the suspect absconds and most women were not prepared to face the consequence.

ASP Quaye said no money should be paid before a suspect was granted bail, adding "any official payment to the police requires an official receipt, without which it is corrupting a public officer". He pointed out that monetary bargain over bail was criminal and such acts should be reported to Superior Officers. "The Ghana Police Service is not a business-oriented enterprise that bargains with the public for services rendered," he added. ASP Quaye said suspects should not be detained for more than 48 hours as stipulated by law.

the incumbent New Patriotic Party (NPP) in the up-coming December general elections since the party has not been able to provide jobs thereby worsening the plight of ordinary Ghanaians.

Dr. Ekwow Spio-Garbrah

which always recognised the needs of the ordinary Ghanaians was ready for the onslaught in order to give the citizenry what they wanted and called on Ghanaians to give the party their mandate during the 2008 general elections.

Dr. Ekwow Spio-Garbrah was speaking to the *New Punch* just after he presented cash valued at GH¢20,000 to be used to run

alluded the fact that the economic hardship that Ghanaians are experiencing currently under the NPP leadership was clear indication that the good people of Ghanaian had been deceived politically.

He urged Ghanaians to have confidence in the party since it would isolate politics from economy and business in order to create more jobs for the youth when it comes into

way to improve upon the economic stability was to relegate ethnicity and tribalism to the background and ensure equitable distribution of the country's resources.

He explained that the party had now been strengthened particularly at the grassroots to fight the NPP to win the general elections.

of a prosperous, peaceful, strong and a united nation from 2009 when Prof. Evans Atta Mills, the party flagbearer becomes the next president of the Republic of Ghana.

The chairman of the Finance Committee of NDC, Naval Captain Kwadjo Butah (rtd) who received the money on behalf of the party expressed appreciation to Dr. Garbrah and urged the party members to emulate him.

Forum On Dams Ends

By Eddie Owusu-Afram

A forum to discuss issues on dams in Ghana is scheduled to take place at the Mplaza Hotel, in Accra from Tuesday, February 26-27, 2008.

At a news conference in Accra recently the Executive Director of the Volta Basin Development Foundation, Mr. Richard Twum-Barimah said, debate about dams is overwhelmingly complex but fundamentally simply.

"It is complex because the issues are not confined to the design, construction and operation of dams themselves but embrace the range of social, environmental and political choices on which the human aspiration to development and improved well-being depend" he noted.

Mr. Twum-Barima, who is the coordinator of the International Water Management Institute (IWMI) said the forum, the second in series after the first one held in May 2006 will focus on the Bui dam as well as dams yet to be constructed at other areas in the country and make assessments on the socio-economic impact these dams will have on the affected people.

He said the forum will bring to the table all stakeholders to help improve decision-making on water and energy resources, achieving better outcomes.

The New Punch
Motto: Daring To Be Different
Vol. 1 No. 194 Tuesdsay February 26, 2008 to Thursday February 28, 2008 Price: Ghana ¢ 5,000/Go50 U.K. 50p US $1.00

What's Inside

THE MOMENT
Every Moment In History Is Unique
VOL. 3 NO.79 THURSDAY, FEBRUARY 21 2008 — SUNDAY, FEBRUARY 24, 2008 PRICE: ¢50,000 / 50 GP

then the country has three years to be certified to prove that the disease has been entirely eradicated.

He noted that there would be still some surveillance to make sure nobody comes into the country with the Guinea Worm Disease.

He encouraged the partners who were assisting in the eradication programme to adopt

programme, which also represented an 86 percent reduction.

She also pointed out that the three other most endemic regions outside of the Northern Region thus Brong-Ahafo, Volta and Upper West would interrupt transmission by the end of this year.

Honourable

in his presentation said the 3,358 cases of Guinea Worm during January to December 2007 included 22 recorded by Volta Region representing 0.7%, with Upper West 23 representing 0.7 Brong-Ahafo with 42 representing 1.3% with Northern Region the highest of 3,237 representing 96.4% and others 34 representing 1.0%.

SECOND DAM FORUM TO BE HELD

By: Angela Afotey

The National Dialogue on Dams and Development in Ghana will hold its second Ghana Dams Forum and Workshop on the Impact of Climate Change on the Bui Hydropower project.

The National Dialogue on Dams and Development in Ghana started in May 2000 has been working towards the strengthening of institutional structures and processes and to holistically discuss and assess the need for dams and the different options possible to respond to water and energy needs.

Briefing the media, the Executive Director of Volta Basin Development Foundation, Mr. Richard Twum Barimah Korantieng indicated that the first Ghana Dam Forum which was attended by over one hundred stakeholders reached a consensus to further conduct a study into issues like compensation, community involvement and research and capacity building related to the development of dams in the county. He reiterated that these issues which had been prepared by experienced consultants and researchers would be presented at the second Ghana Dam Forum and Workshop.

He further stated that at the first forum it was realized that the Environmental and Social Impact Assessment (ESIA) of the ongoing Bui Hydropower project for which the final design are being prepared should be reviewed to identify potential impact indicators and the use of a natural resource frequently entailing the reallocation of benefits from local ripairing users to new groups of beneficiaries at a regional or national level.

He noted that at the heart of the Dams debate are issues of equity, governance, justice and power thus issues that underlie the many intractable problems faced by humanity.

Mr. Richard Twum Barimah Korantieng explained that dams had made an important and significant contribution to human development and the benefits derived from them had been considerable. However, in many cases an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms by people displaced, by communities downstream, by tax payers and by the natural environment.

According to him, by bringing to the table all those whose rights are involved and who bear the risks associated with different options for water and energy resource development, the conditions for a positive resolution of competing interest and conflicts are created.

The two-day forum and

GIVE POLYTECHNICS MANDATE TO ISSUE CERTIFICATE -GNUPS

By: Angela Afotey

The President of Ghana National Union of Polytechnic Students (GNUPS), Mr. Abass Salifu has called on the National Board for Professional and Technical Examination (NABPTEX) to give

Board for Professional and Technical Examination (NABPTEX) and the Conference of Polytechnics Rectors (COPR) to come together and resolve in the short term the conflicting clauses in the Polytechnic

successful election to the admiration of the world.

He asked political parties to carry out their campaign on issues that would benefit the Ghanaian rather than insult.

The Union also called on government to

Ghana.

He revealed that the Union objects to such a policy and would legitimately resist any attempt by government to further subject the Ghanaian to hardship.

"The Union however,

Annex 5: List of Participants for the Forum

	NAME	ORGANIZATION
1	A.K. Ofosu Ahenkorah	Energy Commission
2	Akissa Bahri	IWMI
3	Akoto-Danso E.K.	IWMI
4	Alhaji Jamal	NRHC
5	Ama Kondua	Rep. MP North Dayi
6	Ansu Tutu	GWCL
7	Barimah Kwadwo Dua	
8	Barimah Kyei Kantanka	
9	Barimah Obenako Kwarifa	
10	Barnabas A. Amisigo	UNU, INRA – Legon
11	Ben Laryea	Searchlight
12	Ben. D. Ofori	VBRP- University of Ghana
13	Benard Kwame Antwi	
14	Benjamin Lamptey	IWMI
15	Benson Owusu	
16	Carl Fiati	EPA
17	Cecilia Amoah	VBRP
18	Charles Addo	Volta River Authority
19	Chief Teye Kpabi	Kpong
20	Christian Brentuo	Jasikan District
21	Christine Asser	Energy Commission
22	Constanze Leemhuis	ZEF/GLOWA
23	Cudjoe Mensah	House of Chiefs, Hohoe
24	Cynthia Pappoe	The Point
25	D. A. Derreck	
26	Dagadu Felix	VRCC
27	Daniela Bampoe	GWCL
28	Daniel Adjetey Adjei	GWCL
29	Daniela Kussberger	GTZ
30	David Mensah	The Public Agenda
31	David Moffat	CSRD
32	David Sakitey Asare	Manya Krobo
33	Deborah Debrah	IWMI
34	Dr. Muslim Idris	Nigeria
35	Duah Yentumi	Sene District Assembly

36	Dzifah Azumah	GNA
37	E. Laing	Dept. of Botany - UG
38	E.A.K. Kalitsi	Kalitsi & Associates
39	E.O. Bekoe	WRI
40	Ebenezer Ofoe Ceaser	Fanteakwa District Assembly
41	Elizabeth Annan	The Insight
42	Ellen Agbavor	Gye Nyame Concord
43	Elorm Akaba	Kalitsi & Associates
44	Emily Bowers	Bloomberg News
45	Emmanuel Martey	Kalitsi & Associates
46	Enoch Egyir	Vibe FM
47	Eric Accah	Channel R
48	Ernest K. Chanam	Free Press
49	F. K. K. mensah	Ghana Institute of Foresters
50	Fati Tahiru	The Democrat
51	Felicia Afum Addo	Adjena
52	Florence Teiko	ERHC
53	Francesca Ayerro	ISODEC
54	Francis Gbeddy	Energy Commission
55	Fred Afful	VRA Trust Fund
56	G. T. Odamtten	Dept. of Botany - UG
57	H.H. Leigh	Natriku
58	H.K. Nfodjo	Natriku
59	Hanrietta Tamaklo	
60	Harijatu Yakubu	Top Radio
61	Harris P. Andoh	Center for Africa Wetlands
62	Henrietta Tamaklo	
63	Hilda Akyia Bonsu	Energy Commission
64	Hinvi Toussaint	Benin
65	Hon. Gladys Asmah	MoF
66	Hon. Maxwell Kofi Jumah	Min. of Local Government
67	Hon. Rita Tani Iddi	Min. Land and Forestry
68	Idi Mohammed	
69	Ishmeal Barfi	The Independent
70	James Adjinyo Kwasi	Kpong
71	Jamilatu Wahab	Ghanaian Voice
72	Jessie Paditey	

73	Jessie Sey Ayeivor	VBRP - University of Ghana
74	Jushei Adobea	Foot Print
75	K.A. Tabi	MLGRDE
76	K.D. Bright Siayor	VRA
77	Kingsley Duad	Rep. MP Asuogyaman
78	Kumadie Prosper	House of Chiefs, Hohoe
79	Kwabena Kankam – Yeboah	WRI
80	Kwame Prosper	VRHC
81	Liqa Raschid- Sally	IWMI
82	M.K. Galley	NAVRART 52
83	Mathias Galley	NAVRART 52
84	Matilda Brown	Kalitsi & Associates
85	Maxwell Goadaga	Bui
86	Mezo Nartey	
87	Micheal Larnor	VBDF
88	Mike Anane	GJA
89	Minta A. Aboagye	MoWRWH
90	Miriam Imrie	BNA
91	Moses Anyemiteye	New Somanya
92	Mr. Prosper Hayogha	NAVRART 52
93	Mr. Sabuki	Channel R
94	Nana Kwadwo Wunn II	Bui
95	Nana Kyei Kukuruwa II	Adjena
96	Nana Oduro	Kessben FM
97	Nana Okorowaa Asifrom III	Adjena
98	Nana Yentumi Boaman	
99	Nene Dautey Ologo VI	Eastern Regional House of Chiefs
100	Nene Odjidji I	New Somanya
101	Nene Pediator	Ada
102	Nene Tetteh Amoako IV	Natriku
103	Nicholas Jengre	CI
104	Nicholas Odamptey	ISODEC
105	Okyeame Appiah	
106	Osabarima Okokyeredom Kwadwo Sito I,	BA House of Chiefs
107	Osafo Mensah	Eastern Regional Coordinating Council
108	Osagyefo Amoatia Ofori Panin	
109	P.K. Dempeh	NAVRART 52

110	P.K. Ofori Danson	University of Ghana
111	Paul Asenso	BARCC
112	Peter Dompeh	NAVRART 52
113	Phillip Boahene	Africa Development Bank
114	Prof Gyan-Baffour	MoFEP
115	Regassa Namara	IWMI
116	Remeo Adomah-Darteh	CSRD
117	Richard Agbah	Mpakadan
118	Richard Koranteng	VBDF
119	Ruth Sisidua	Business Week
120	S.A. Appenteng	AGI
121	Sam Poku	West Africa Busness Association - Ghana
122	Sam. Senyo Koranteng	VBRP - University of Ghana
123	Samuel Adoboe	GTZ
124	Samuel Asamoah	Network Herald
125	Stephen Asim Nyarkoh	Forestry Commission
126	Tain Annang	
127	Ted. Y. Annang	VBRP - University of Ghana
128	Togbe Anyaklo III	Togorme
129	Togbe Emmanuel Agbesi Kpakpa	Battor
130	Togbega Gabusu VI	Volta Regional Hse. of Chiefs
131	Torgbe Adom Drayi II	NAVRART 52
132	Victor Owusu	Energy Commission
133	William Agyeman Bonsu	EPA
134	William Sarpong	The Democrat
135	Wisdom Awuku	Daily Guide
136	Wolfram Laube	ZEF/GLOWA
137	Yaw Annang	Somanya
138	Yaw Opoku-Ankomah	Director, WRI

Annex 6: Speeches of the Chairperson and the Invited Guests of the Second Dams Forum

WELCOME ADDRESS BY THE CHAIRPERSON OF NATIONAL COORDINATING COMMITTEE, GHANA DAMS FORUM

Hon. Minister of State for Fisheries, (representing his Excellency, the Vice President), Hon Minister of State, Osagyefo Amoatia Ofori Panyin, Members of the Diplomatic Corps, distinguished Invited Guests, Colleagues, Participants, Members of the Press, Ladies and Gentlemen.

You are all welcome to today's function, but before we get into the business of the day let me brief you on some events leading to this Second Forum Dams. The Ghana Dams and Development process was initiated in 2006 following the recommendations from the United Nations Environmental Program on Dams and Development Project. Realizing how important and beneficial this process will be for the country, the German Development Cooperation(GTZ) sponsored a National Consultative meeting in January 2007 bringing representatives of diverse interests together to discuss a background documentation prepared by Prof. Chris Gordon of the Volta Basin Research Project, University of Ghana. At this meeting the participants arrived at a consensus on establishment of the National Coordinating Committee (NCC) with a representation of all Stakeholders in Dam Development and Ghana Dams Forum.

About 6 months ago (September 2007) the First Dam Forum was held to deliberate on socio-economic and environmental issues related to Dams and Development in Ghana. Your response then was overwhelming and your contributions invaluable. It is as a result of the success of the first Forum that we are gathered here today to hold the Second Forum with the theme "*Bringing Research Findings on Dams closer to the People*". We are grateful for your overwhelming and spontaneous support to attend this 2nd Forum.

Consequently, there are about 120 participants comprising representatives of Government Ministries, Decentralized Government Departments, Research Institutions, Opinion Leaders of Dam-affected communities, Traditional Leaders, the

private sector and other stakeholders; 60 of these (half) are members of the Ghana Dams Forum representing the different stakeholder groups.

The solution to man's problems (whether self-inflicted or natural course) always has a human factor in the formulation of mitigating strategies. Progress comes when lessons from the past are applied in wisdom to improve the future.

It is in this regard that we have called you here again inspite of your busy schedule to discuss critical issues, and review recommendations for adapting guidelines relevant to decision making process on dams in Ghana.

Three (3) issue papers which are recommendations of the 1st Dams Forum will be presented by consultants on:

(a) Community Involvement,
(b) Research and Development and
(c) Compensation.

It is our ardent hope that this workshop will stimulate government and all stakeholders to support transparent information exchange, and an active dialogue on important issues related to the existing and planned dams. it is anticipated that the outcome of this Workshop will also consolidate the synergy between members of the Forum and relevant research institutions and finally, but not the least to stimulate interest of the institutions responsible for the construction and management of the Bui Dam, in a multi-stakeholder dialogue process.

Democracy is incomplete without the involvement of the people at the grass root because it is defined as the rule of the people, for the people and by the people. Democracy is people centered and our growing democracy enjoins us to give a plain level field for cross-fertilization of ideas for national development.

Mr. Chairman, on this note I wish to express our deep appreciation for the impressive turnout and we anticipate a fruitful workshop. Thank you for your attention and God bless our nation and all of you.

WELCOME TO YOU ALL.

SPEECH DELIVERED BY PROF. GEORGE GYAN-BAFFOUR, HON. DEPUTY MINISTER, MINISTRY OF FINANCE AND ECONOMIC PLANNING

Your Majesty Osagyefo Amoatia Ofori Panin II, Honourable Ministers of State, Nananom, Development Partners, Friends from the Press, Ladies and Gentlemen, *Life is a "game of chance", we win sometimes and we lose sometimes.*

Your Majesty, we are very much aware of the energy crisis we faced in 2006 and 2007. Government tackled the situation using short, medium and long term measures. One of the medium term measures was the pursuit of the plan to construct the Bui Hydropower project.

Your Majesty, the 400 MW Hydropower power project, for which construction has begun in earnest, is considered the most technically and economically attractive hydropower site in Ghana after the Akosombo and Kpong power plants. And although the project is designed primarily for hydropower generation, it has potential for agricultural development and tourism. The Bui project, when completed, is expected to improve the security of electricity supply to the country and also improve the potential to export power to our neighbours Burkina Faso and Cote d'Ivoire under the West African Power Pool (WAPP) arrangement.

The project also involves the construction of a nucleus township which will be the building block of a planned metropolis to be known as Bui City. The project is therefore envisaged to be the basis for a major economic and social transformation of the area.

The Bui Dam project has been conceived, planned, designed and under construction to enhance the development of the nation. The dam is expected to have major impacts on economic growth and development. It will also have some social and environmental impacts. The required mitigation and compensatory measures have been evaluated. Stakeholder consultations have also been carried out.

The concern of Government generally, and my Ministry in particular is that development of dams comes at a great cost; to society, the environment, the economy and to the tax payer to mention but a few.

The performance of large dams in terms of achieving technical, financial and economic targets is marked by a high degree of variability with a considerable portion of dams failing to deliver on their overall objectives and many falling short of specific targets. In part, this variability of achievement can be attributed to climate change and its effects. Though the two large dams in Ghana have been able to meet some of the targets and continue to generate benefits after 40years, we are beginning to feel the impact of climate, and its effects on these two large dams.

It is my hope that experts on this issue of climate change participating in this dialogue will advise us how best we can handle this important issue. Early analysis will help government to consider the implications of climate change for key sectors and evaluate proposals for action. My Ministry recognizes the critical role it must play in addressing these issues and stands ready to be advised on the economics of climate change.

A very import dimension of large dams which should be considered by this Forum is the extent to which project time schedules are met. Delays in the date at which a project is commissioned lead to increase in interest accumulated on funds borrowed for construction activities and activities and delays in revenues accruing to the owner from the completed project.

For consumers, delays mean additional periods of not being served with electricity or water. Delays thus affect the delivery of benefits as well as the financial and economic performance of a dam project.

In assessing the performance of large dams in Ghana, there is the need to measure them against the target set by those planning and designing the facilities. These projections of cost and benefits provide the rationale and basis for project approval and funding. In most cases, project proponents set firm physical, financial, economic and increasingly social and environmental performance targets.

It is the hope of Ministry of Finance and Economic Planning that this Forum which brings almost all the relevant stakeholders in water and energy issues together will help resolve the issues pertaining to the existing dams and those that are yet to arise in

the Bui project so the dams could achieve the set objectives. I wish you a fruitful workshop and I thank you for your attention.

SPEECH DELIVERED BY THE HON. DEPUTY MINISTER FOR LANDS, FORESTRY & MINES DELIVERED BY RITA IDI.

His Excellency Vice President of the Republic of Ghana, Nana Chairman, Chairperson of NCC, Hon. Ministers of State, Nananom, Distinguished Guests, Members of the Press, Fellow Ghanaians, Ladies and Gentlemen.

Let me begin by acknowledging the excellent job of the National Coordinating Committee of the Ghana Dams Forum in bringing together as many stakeholders as we have gathered here this morning. I am informed there is a representation from a number of Departments and Agencies of some Ministries, Dam Affected Communities, Research Organizations and Civil Society Groups.

I am honoured by your invitation to participate in this Second Ghana Dams Forum which is on the theme 'Impact of Climate Change on the Bui Hydropower Project'. I find the theme very interesting because of the two main reasons: first, Government's determination to meeting the ever-increasing energy demands through the Bui Hydropower Project and secondly recent initiatives by my Ministry and that of Finance and Economic Planning towards accessing full benefits of carbon credits under Clean Development Mechanism of the Kyoto Protocol.

Nana Chairman, one of the guiding principles in our policy making process is engagement with stakeholders to analyze evidence from researchers on policy review. This stems from the widely accepted view that better use of research-based evidence in development policy and practice can help save lives, reduce poverty and also improve the quality of life. We believe that for this to happen more effectively, researchers need to develop a detailed understanding of the key influencing factors of the policy making process; the credible, practical and operational usefulness of research evidence. Indeed, the impact of research and evidence on development policy is not only beneficial but very crucial.

For us, development workers in the field of management, the institution of benefit-sharing schemes which ensures equitable distribution of revenue from resource exploitation is also a key concern. To this extent, we would be interested in analyzing policy recommendations from this Forum particularly on how much space could be created for stakeholders to negotiate on equal terms towards this end.

As some of you may be aware, the management and utilization of forest and wildlife resources is governed by the 1994 Forest and Wildlife Policy of Ghana. The overall goal of that policy is the conservation and sustainable development of the nation's forest and

Wildlife resources for maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society. The goal of that policy was guided by a need to develop a decentralized democracy by involving local people in matters concerning their welfare.

Nana Chairman, we are all aware that dams are constructed for purposes of power generation, water supply for domestic, industrial and agricultural use, navigation and/or recreation. However, for us as a Ministry, our prime concerns are the legal and institutional frameworks governing the acquisition of the dam site and the roles and responsibilities for the management of the dam. Our specific tasks include a need to ensure the payment, within reasonable time, a fair and adequate compensation for land acquired by government from stool, skin or traditional authorities, clan, family of individuals. We also do acknowledge that some of the possible biological impacts of dam construction include loss of unique habitat, loss of biodiversity with potential conservation value, ecological changes due to altered hydrological flows, biological aspects of water quality, loss of habitat owing to the transmission lines, impacts on fisheries and many others. It is for this reason that we insist on environmental impact assessment for such projects.

Nana Chairman, solving these problems calls for a holistic and integrated approach with different environment and non-governmental agencies providing the expertise and communities providing the necessary cooperation.

Nana Chairman, it my hope that the discussions scheduled for today and tomorrow will focus on how to build a common integrated water resource management based strategy to guide dam development in Ghana. I also hope that all stakeholders can work together towards poverty reduction and sustainable development in our dear nation.

On this note, I wish you fruitful deliberations.
May God bless you all.

Thank you.

SPEECH DELIVERED BY HON. MAXWELL FOFI JUMAH (MP) DEPUTY MINISTER FOR LOCAL GOVERNMENT, RURAL DEVELOPMENT AND ENVIRONMENT.

I am glad that I have another opportunity to be part of the National Dialogue on Dams and Development in Ghana. You could not have chosen a more appropriate theme for this year's dialogue than this theme of "Bringing Research Findings on Dams Closer the People".

Mr. Chairman, last year's dialogue was the first forum to be held on the dams in Ghana. The Forum was a consultative meeting of major stakeholders in dam development and it afforded participants the opportunity to discuss problems that are associated with dam development.

The Forum provided the platform for the inauguration of The Ghana Dams Forum and participants used the occasion to identify priority issues and prepared the Terms of Reference for detailed issue papers that would facilitate the exchange of information on dam construction and management among stakeholders.

The Forum also afforded participants the opportunity to share information between communities affected by the Akosombo, Kpong and other completed Dam projects, and communities within the Bui Dam project site.

Mr. Chairman, I am informed that the current Forum will provide participants with the opportunity to review the recommendations of the first forum and to chart the way forward.

It is clear from the on-going global debate on sustainable development and poverty reduction that dams make significant contribution to human development. Dams are critical for major economic activities and for economic inputs such as agricultural, water supply and hydro power generation. Dams enable communities to manage and regulate the flow of water bodies, thus helping in flood control; dams are sources for irrigation and serve as watering ponds for livestock. They sustain fish stocks and serve as centres of recreation and also facilitate transportation.

Mr. Chairman, despite these laudable benefits of dams, however, there are numerous social and human problems associated with the construction of dams.

Therefore bringing research findings and recommendations on the socio-economic benefits and problems on dams closer to the people at this initial stage of implementing the Bui Dam Project is very timely.

Dams destroy the natural ecosystems of the area covered by the reservoir. They dislocate people and in the process, people can lose their livelihoods. The reservoir areas can also become breeding sites for the emergence of new disease vectors which were hitherto unknown in the area.

Therefore, Mr. Chairman, the experiences that have been gained from the construction of Akosombo, Kpong and other dams both within and outside Ghana should be studied and brought to bear on the planning and construction of the Bui Dam and other future dams so that we can realize as much benefit as possible from dams and reduce the problems normally associated with their construction and management.

Mr. Chairman, at no time in the history of the world has energy played a more crucial role in the development and well-being of nations than now. The source and nature of energy, the security of supply and equity in distribution, the environmental impact of its supply and utilization are all critical matters that must be addressed. If we are to avoid the unfortunate energy situation experienced by the country last year, and its consequential effects on the economy, there is the need for serious commitment in the

provision of funding, and also human and institutional capacity building in the management of dams.

To ensure the sustainability of dams, there should be continuous monitoring of all the key factors that go into the construction and management of dams. This will of course require a continuous scientific research to identify emerging difficulties.

Mr. Chairman, with current concerns over Climate Change and its negative consequences on land use and environmental conditions, the assessments that have so far been carried out need to be constantly reviewed. We need to be proactive and do not have to wait till problems arise in and around dam sites before we seek solutions.
Mr. Chairman, those of us in Government are aware that institutional issues are critical to sustainable dam development and management. I will therefore like to assure you that government is prepared and committed to support the relevant institutions and stakeholders with the required financial and technical inputs and the legislative framework to facilitate the work you are doing.

I would also like to reiterate that communities affected or vulnerable to the construction of dams should be informed, sensitized and involved in such projects from the planning stage to the implementation, through to the monitoring and maintenance stages of the projects to get their acceptance and cooperation.

Again, appropriate compensation packages must be worked out and agreed to with communities whose lands will be used, and resettlement packages must be thoroughly planned with the intention of improving the standards of living of the affected communities. This will help avoid the situation where unacceptable and often unnecessary packages have been paid to people displaced with taxpayer's money.
Finally, Mr. Chairman, I will like to assure our research institutions that we appreciate the work they are doing and that we are prepared to team up with them to access the resources they need in their work.

I wish you all fruitful deliberations.
Thank you for your attention.

SPEECH DELIVERED BY MRS. GLADYS ASMAH AS THE GUEST OF HONOUR ON BEHALF OF HIS EXCELLENCY THE VICE PRESIDENT OF THE REPUBLIC OF GHANA.

Nana Chairman, Colleague Ministers, Members of the National Coordinating Committee, Invited Guests, Ladies and Gentlemen:

I feel very honoured to be appointed to represent His Excellency, the Vice President as the Guest of Honour at this forum.

I am particularly happy to be a part of this forum because the Ministry of Fisheries has a vested interest in the outcome of your deliberations. Indeed, the inland fishers and those at the coasts have their livelihoods directly or indirectly affected anytime a dam or the water system in our area is tampered with.

Nana Chairman, Ghana is not new to the benefits and problems of dams. If we have nothing to guide us at all, Akosombo and Kpong dams are enough to make Ghanaians masters in that field. The issue of dams must never be taken lightly due to its multifaceted and mixed effects. It is said that with the exception of the Great Walls of China, Dams are the next largest structures which have ever been built. This should send signals to all of us sitting here today, to take this forum very seriously and critically.

Ladies and Gentlemen, The first forum on Dams, I am told it was in 2006, and it seems the concerns raised during that time have not as yet taken roots. But you will all agree with me that the issue of putting up more dams comes up strongly when we had to go through series of energy problems in 2007. This Second Forum of yours therefore comes at a very appropriate time. Ghanaians need results from your discussions.

Indeed, His Excellency the President, in his State of the Nations Address touched, on this, and indicated that, while the Bui Dam is being implemented, negotiations are on-going to get smaller dams on the Ankobra, Tano and Pra Rivers.

Nana Chairman, His Excellency has given us good news; it is left for us as engineers, scientists, and stakeholders to make sure that the experiences learnt with the Akosombo and Kpong Dams guide us very critically.

As members of the National Coordinating Committee, I will appeal to you to come up with issues that will reduce drastically the negative environmental, social and ecological impact that this new dams will bring.

Indeed, while we think on how to abate the negative impacts, we must also come up with issues on how to maintain, improve and upgrade our existing dams for better and efficient yields. Maintenance of our dams should be a priory if we want to maximize their use. I am not sure whether even our Volta has seen regularly desilted or any serious effort has been made to re-afforest the river banks to create micro-climate that mitigate excessive evaporation.

Nana Chairman, since this present Forum has its focus on the Bui Dam, I will again emphasizes the need to get the communities living along the banks, and those to be displaced, well briefed and resettled.

Another important aspect is the disturbance that this dam will create for the ecosystem. The fishes and animals will also need some resettlement. You as engineers must make sure we do not wipe out colonies of important and rare species. For example, a greater part of the 1800 km Bui National Park would be submerged under water as a result. Subsequently, the fate of the black hippopotamus, whose current population, we are told is about 140 to 150 is not known.

According to a research carried out by the University of Aberdeen, the Black Volta has about 46 species of fish from 17 families; all of them having economic importance. But with the dam in place, these fishes may be displayed or die due to change in temperature, water flow, and non-migration for food.

Nana Chairman, having said all these, the human race must develop, and the dams have been one useful tool in the enhancement of development. However, in the building of every dam, be it the Arch type, Buttress type, Embankment type or the

Gravity type, we must always do it with a human face. That is why such forum as this is so important.

Ladies and Gentlemen, on behalf of His Excellency the Vice President and on my behalf, I declare this forum duly open.

I wish you all happy deliberations.
And I would be happy if you could favour us with your final report.

Thank you.