

Case study on the Assessment of the Socio-Economic Importance of the Hydrological Services in Uganda



By

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Outline of the presentation

- Introduction of the Water Resources subsector
- Common uses of Water Resources Information
- Case Study Description
 - *Location, Tools Employed, Description of Application, Outcomes of Application, Cost / Benefits*
- Characteristics of the Case Study
 - *Consultation Mechanisms, Delivery Mechanism, Feedback Mechanism,*
- Project Logistics
 - Resources used, Data requirements, Economic expertise required
- Lessons Learned
- Possible Future Advances

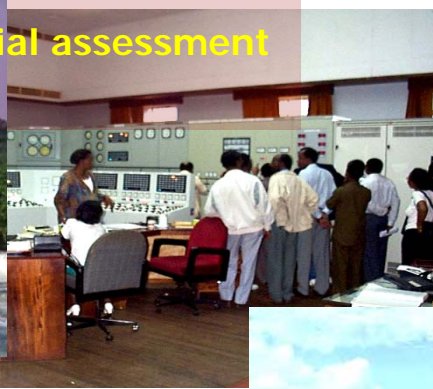
Introduction of the Water Resources of Uganda

- Water resources of Uganda consist of open water bodies in lakes, ponds, rivers, wetlands, dams and groundwater which occur underground.
- The country's surface area of about 241,500km² contains 15% open water in lakes and rivers, 3% permanent wetlands and 9.4% seasonal wetlands.
- The annual rainfall in Uganda is in the range of 600 – 2500mm.
- The country's water resources is unevenly distributed both in space and time.
- The resource is threatened with:
 - rapid population growth averaging to 3% per annum,
 - increased industrial activities,
 - environmental degradation causing soil erosion,
 - drainage of wetlands, and
 - pollution of rivers and lakes.

3b

HEP potential assessment & design

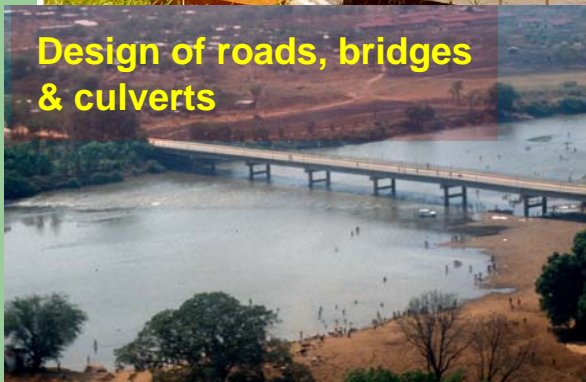
Planning & design of water supply systems



Ecosystem management



Design of roads, bridges & culverts



Common use of water resources

Recreational and aesthetic uses



Industrial Consumptive uses and abstraction

Planning and design of valley dams/tanks for livestock

Planning & design of agricultural irrigation systems



Planning & design of gravity flow schemes

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DWRM's mandate and Policies

Case Study Description

- The study area Location was the Lake Victoria release at Owen Falls dam at Jinja, Uganda
- *Tools Employed:*
 - Benefits transfer of electricity to water
 - Cost- Benefit Analysis
 - Economic value (and importance) of Water Resources
- *Description of Application:*
 - Relationship of economic development as a result of using electricity vis a vis water that produces that amount of power.
 - outline of all the importance and uses of Water Resources Information and attaching economic value to each given the importance of the outcome derived from the use of the Water

Case Study Description(Contd

- Identify tradeoffs and the economic implication in terms of monetary value arising out of the resource use and its information.
- Analysing the amount of electricity produced from a specified amount of water and the economic and monetary value benefited from that specified amount of power
- Developing a scenario where the equivalent amount of power produced by thermal energy and the cost of producing it using heavy oils/diesel , that may provide a value of that amount of water.

Case Study Description(Contd)

- *Outcomes of Application:*
 - *The cost of saving water at a rate of 100cubic metres per sec far outweighs the accruing benefits in the long run.*
 - *Raising the level of awareness of users/stakeholders to understand the areas of Water Resources use and how to make the most efficient use of the information and forecast to achieve a full or most optimal economic benefit.*
- *Cost / Benefits*
 - *A Three months period of saving water at a rate of 100cumecs would result into an increase in lake level of only 1cm.*
 - *However the savings translated into a reduction of 16MW of Hydropower production equivalent to a loss of 35.3 million KWH of energy from the cheaper Hydro resource in the three months period, which could be compensated by a thermal power plant at a cost of Ushs.13.6 billion(US\$7.33 million) excluding duty on fuel.*

Characteristics of the Case Study

- *Consultation Mechanisms*
 - Ministry of Energy using information from the Ministry of Water
- *Delivery Mechanism* : physically, internet & fax
- *Feedback Mechanism*
 - Physical data acquisition coupled with email information transfer between Energy Experts and Water Resources Experts.
- *Review Mechanism* :
 - It is yet to be reviewed
- *Other?:*
 - *It is an issue that wanted a high level policy intervention at almost the level of President's office*

Project Logistics

- Resources used
 - References from the Ministry of Energy and the Ministry of water in Uganda. International and local technical experts that involved Engineers, Hydrologists and Economists
- Data requirements
 - The economic data of Uganda, exchange rate at the time, economic value of one unit of power, amount of water that will produce that unit of power. Stakeholders and there economic value attached to water.
- Economic expertise required
 - Cost-benefit analysis, economic Optimisation, economic modelling

Lessons Learned

- Come up with an optimum value after developing scenarios and there economic value.
- Need to consider environmental aspects in the trade offs while coming up with cost – benefit analysis.

Possible Future Advances

- Include socio-economic aspects and environmental factors in the scenarios to be made

Concluding Remarks

- A cost – benefit analysis is the optimisation tool and the way to go when analysing the value of hydrometeo services.
- It is worthy noting that the benefits are not direct, (thus indirect) and that it should be considered because those benefits are accrued from the hydrometeo services offered.

Thank you

For listening