Status of Groundwater Resources Mapping in Uganda – Experiences and challenges

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Outline

- Background
- Justification
- Groundwater resources maps
- Methodology
- Challenges
- Status
- Way forward

Background

- GW resources mapping was initiated in 2001 to assess and map gw water resources at district, regional and national levels in order to guide efficient and cost effective water resources planning and development

Justification

- Use of expensive technologies where cheaper technologies could be adopted
- Drilling of low yielding or dry boreholes
- Development of water sources in areas where groundwater quality is of unacceptable quality
- Poor allocation of water sources (coverage)

- All the above have financial implications.

GW Maps produced

- **Source Location vs Geology** – relationship between source type and geology
- **Water Supply Technology Options -** Indicates the type of technology appropriate in groundwater development in different parts of the district. Technology Options_Kaliro.emf
- **Hydro-Chemical Characteristics** - indicates the distribution of specific groundwater quality problems for each district hydrochemical characteristics_luwero.wmf

GW Maps produced

- **Water Quality -** illustrates the spatial distribution of particular groundwater quality trends that occur in each district water quality_luwero.wmf
- **Groundwater potential -** Highlights areas of good potential with respect to yield and water quality. Groundwater potential_Mbarara.emf

GW Maps produced

- **Hydrogeological Characteristics –**
  - Inferred First and Main water strike - estimation of borehole depth
  - Static Water Level - estimation of depth at which a pump can be installed
  - Overburden Depth - estimation of the amount of Casing required and appropriate drilling method hydrogeological characteristics_luwero.wmf
- **Coverage Maps –** map depicts which areas are better or worse served with respect to population in that area and walking distance to the water source.

Methodology

- Compilation of data
  - Borehole logs
  - Hydro chemical
  - Source location
  - Physical features in the field

  Collection involves
  - Groundwater dev't contractors
  - local government officials (DWO)
  - Other GW dev't partners e.g. NGOs, CBOs

Methodology

- GIS is used to analyze and interpret data
  - Interpolation
    - Technology options map – main water strike and depth to bedrock
    - Hydrochemical Characteristics and water quality – physiochemical data
    - Groundwater potential – yield and water quality
    - Coverage maps – population and source type
  - Interpretation
  - Map verification (10% of data used)
  - Verification of the maps (DWRM and the district)

Challenges

- Methods assume point source data represent gw characteristics that can be spatially interpolated
- Regional variations have led to the realization that different approaches are required for mapping
- Mapping w.r.t political boundaries vs mapping w.r.t catchments downplays the natural behavior of groundwater

Status

- 19 districts complete
- 23 districts to be completed by August 2008
- 44 districts will be mapped starting from 2009 to the end of 2010 with funds received from EU (€1.3m), DANIDA (€ 0.5m) and GOU (€ 0.1m) Mapping status.emf

Way Forward

- Assessment of Usefulness of the maps
- Sensitise developers on use of maps
- Periodic updating of maps (every 5 years)
- Preparation of regional and national maps
- Preparation of a national hydro-geological map

Conclusion

- Sustainable GW dev't plans, cost effectiveness >> rapid increase in water supply coverage
- GW guide districts on feasible water supply technology options
- Better resource utilization by allocating the right technology to the right community
- Increased bargaining power for districts with low coverage

Appreciation

- DANIDA
- EUROPEAN UNION
- GOU

Thank you for your attention