

In-field Experience with Groundwater Governance in Northeast Ghana



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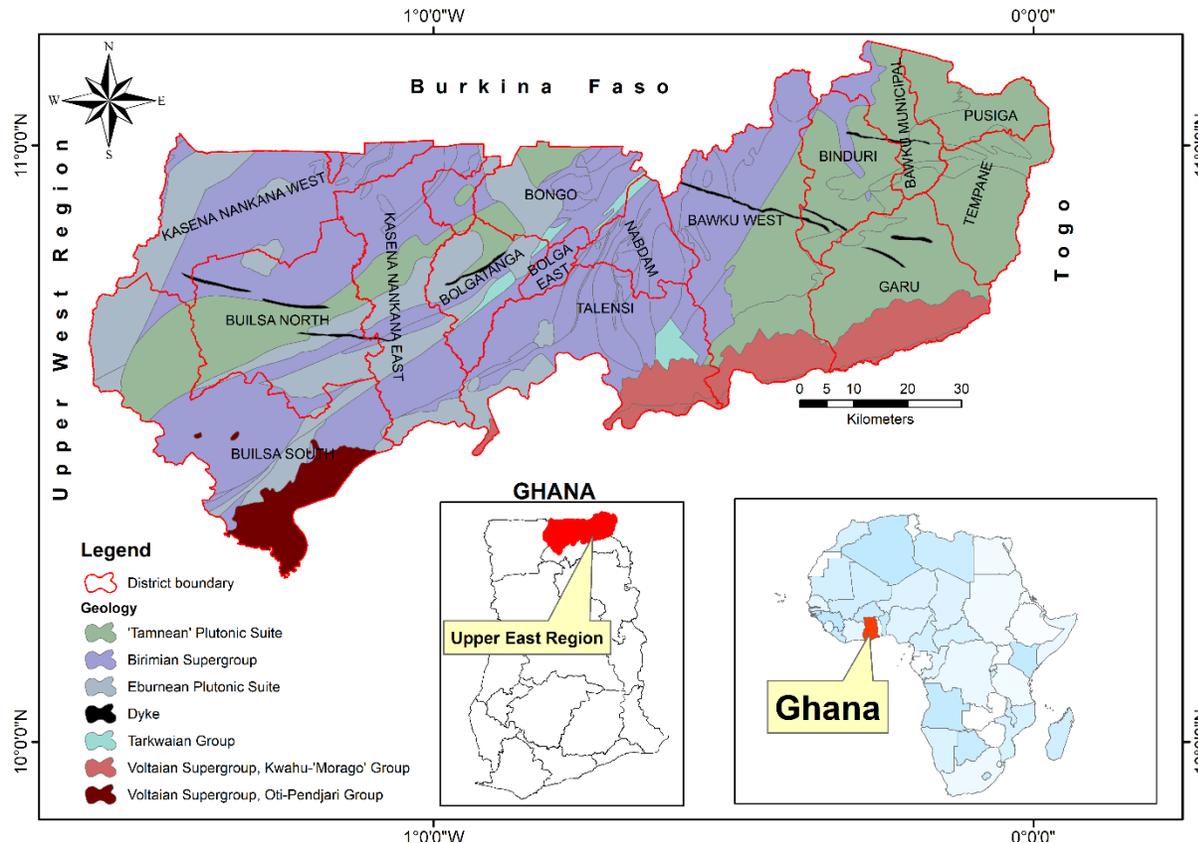
IFPRI's Session on "Governing Groundwater: The Why and How"



World Water Week, 25th August 2022



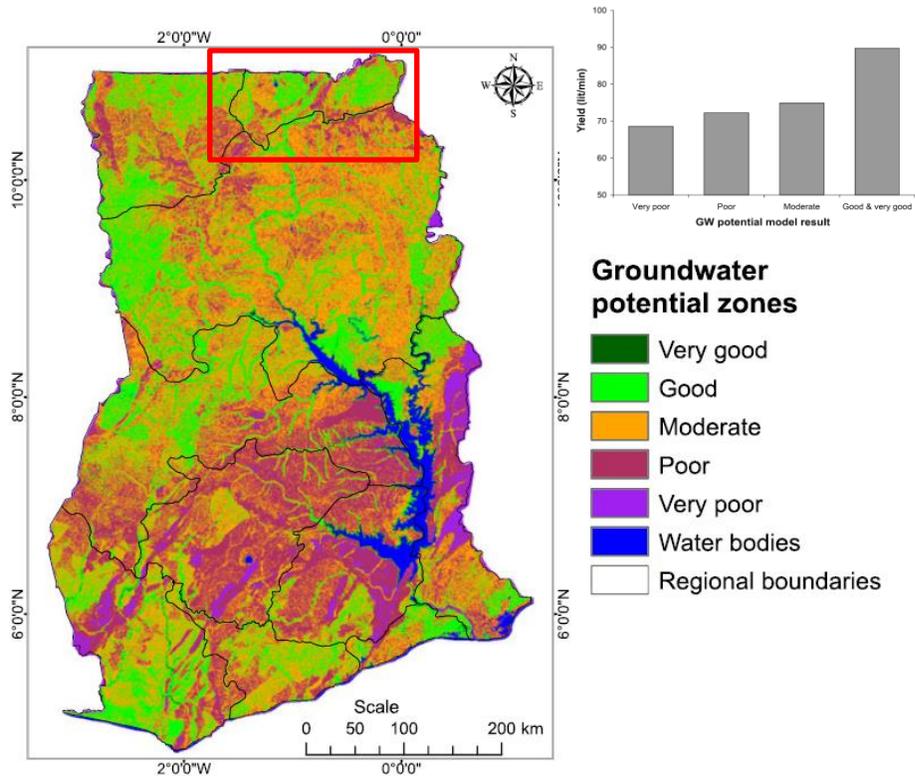
GW resources in NE Ghana



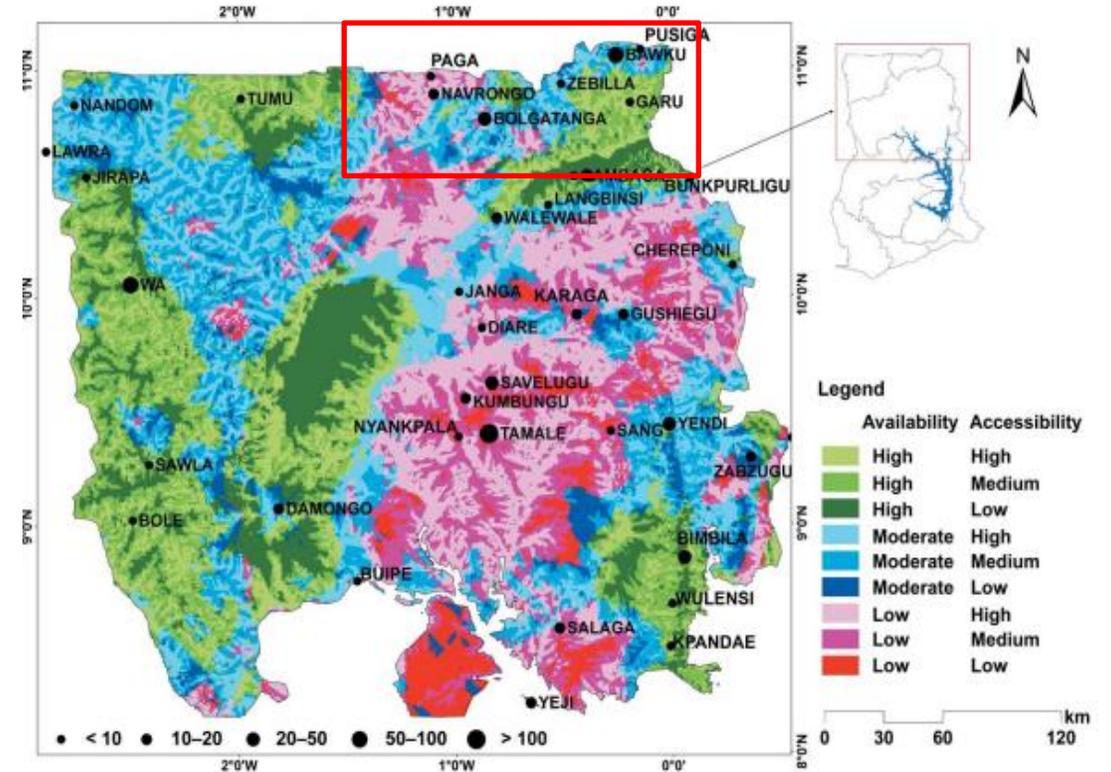
- Underlain by 3 main hydrogeological units
 - Crystalline Basement Granitoid Complex
 - Birimian Provinces
 - Consolidated Sedimentary formation - Voltaian
- Groundwater occurrence and movement are controlled by secondary features such as fractures, faults, joints and weathering
- Generally 2 main aquifer types exist in area: weathered zone aquifers, located within the saprolite and saprock; and the fractured zone aquifers within the fractured bedrock

- Borehole depth: 30m to >100m
- Yield: 0.41 - 29.8 m³/h (weathered zone); 1 - 9 m³/h (fractured zone)
- Recharge: 3%-19% of average annual rainfall (990mm)

GW Potential for irrigation



Groundwater potential map of Ghana (Gumma and Pavelic, 2012)



Groundwater potential map of northern Ghana (Forkuor et al., 2013)

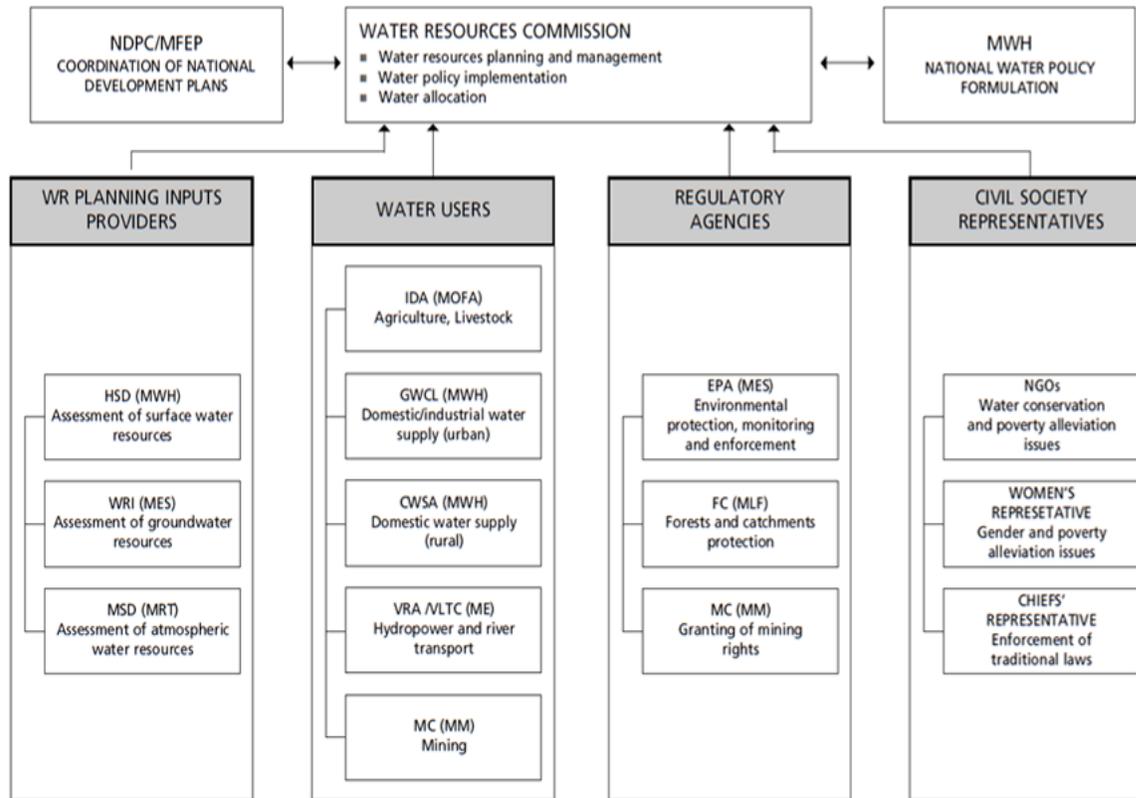
- Potential is generally 'good' to 'moderate', with yield of ≥ 75 l/min
- Quality of groundwater is generally good for drinking, domestic, irrigation and for industrial purposes

- Moderate to high availability and medium to high accessibility for over 80% coverage of NE Ghana

GW Challenges in NE Ghana

- Developing wells in shallow aquifers is labour-intensive and drudgery.
- Low water tables and seasonal drying up of wells in shallow aquifers in some areas.
- Lack of access to efficient drilling technology for shallow wells;
- Land use problems associated with land tenure and limited land availability since areas suitable for SGI farming are presently limited to lowlands that are owned by particular families in respective communities.
- High cost of purchasing and operating motorized & submersible pumps.
- Low produce prices due to lack of storage facilities and limited marketing channels which allow for few buyers to bid the price down.
- Limited extension services to help farmers adopt relevant agronomic and irrigation technologies.
- Lack of centralized effort by government to support, monitor and regulate the development of the emerging irrigation systems.
- Some of the challenges can be addressed from governance perspectives

GW Governance in Ghana



Governance structure for water resources management in Ghana

- The Water Resources Commission (WRC), established by an Act of Parliament (Act 522 of 1996) is mandated to “regulate and manage the utilization of water resources and coordinate government policies in relation to them.”
- WRC has decentralized IWRM activities at river basin level via the formation of River Basin Boards/Secretariat to coordinate water resources management activities.
- Level of decentralization is further deepened via sub-basin level management but only in few river basins; currently being piloted in one area in NE Ghana.

GW Governance in NE Ghana



- Local communities have little or no engagements with the River Basin/WRC. Most communities were not even aware of the existence of an institution for managing/regulating groundwater.
- In many communities, rivers and dams are considered to be communal resources but groundwater accessed on private land is considered a private resource.
- Farmers irrigating with surface water in dams/reservoirs have water users associations and have rules in many communities to govern water abstraction for different uses. GW irrigators have no associations and have no rules.
- One exceptional case (Kongo Gozesse) where GW irrigators have an association and regulate sizes of plots to cultivate depending on the level of groundwater recharge from preceding rainfall season.

IFPRI's GW Experiential Game in Ghana

- Scooping survey conducted to inform modification of the GW experiential game adapted from India and Ethiopia.
- Implemented the game in 15 communities, with control in 15 other communities.
- Planning a mid-term intervention focused on assessing individual/community actions arising from the intervention and to co-identify actions communities would like to take towards improving GW governance, including potential challenges and support required.
- Endline survey will be conducted in first quarter of 2023.
- GW game is being extended to Southeast Ghana.



- Activities are designed to support communities improve GW governance

Concluding Remarks

- There is good potential to further develop and use groundwater for domestic, irrigation and industrial purposes in NE Ghana. However, this should be done sustainably, to avoid over abstraction.
- Community level groundwater governance is extremely important to achieve sustainable use of the resource. But there is presently a disconnect between institutions with mandate for water resources management at the National and River Basin levels and the communities. Efforts are required to bridge the gap
- Communities should be partnered, educated and supported to relook at groundwater as a communal resource and manage it in a similar manner as they do for surface water in rivers and dams, to ensure sustainability.
- The GW game/intervention by IFPRI can help to promote and improve community governance of groundwater resources.

Thank You
