Theoretical and Empirical Review of Ethiopian Water Resource Potentials, Challenges and Future Development Opportunities

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Abstract

Ethiopia is endowed with plentiful amounts of water resources potential. However, the backbone of Ethiopian economy, Agriculture, is highly rainfall dependent and the energy source relays on fuel wood. Even though the country has enough amounts of water resources potential, clear current figure of water resources potential especially in ground water part, utilization constraints and future water resources utilization opportunities is not clearly known. Reviews of different secondary data from various sources were conducted to fill these gaps. Based on the findings, The country has sufficient amount of surface water resources potential which is around 124 billion cubic meter and 30 million cubic meter (some but insufficient evidences shows it reaches 40 cubic meter) of ground water. The hydro power generation potential of major Rivers and Rift valley lakes is estimated to reach about 160,000 Megawatt/year. Irregular place to place and time to time sharing of major rivers and rain fall, cross boundary nature, topographic features of the country, technical and financial challenges are among main utilization constraints. The region has eye opening bright outlooks to go further in water resources development and utilization. Different factors hinder the utilization of the country water resources but these plenty amounts of water resource shows bright future opportunities to use it.

Keywords

Surface water; Groundwater; Water resource potentials; Hydropower

Introduction:

Ethiopia is categorized under the first largest counties in the continent, in second range in population from Sub African countries and the income of the people is very low. It is dependent on agriculture which in turn subject to rainfall. He country current intention in the policy and strategy is supporting to apply household level small scale DrtificiDO water application.

He country has twelve River basins; Eight River basins namely Abay, Awash, Baro-Akobo, Genale-Dawa, Mereb, Omo-Gibe, Tekeze, Wabishebbele have water flow. One of them is lake basin called 5ii valley and the remaining are dry basins which includes Aysha, Dinakle, Ogaden with no or insignificant flow out of the drainage system. He country has also 12 major lakes which have enough potential to use for different purposes. In addition, there is sufficient amount of underground water resources.

Factors lead to less use and development of water resources includes

- High temporal and spatial variability
- Most major Rivers are terminated to neighbouring countries, around 97% of total flow
- The government gives priority to other sectors
- Lack of technical expertise to support the development
- Absence of well leadership in water subdivision.
- Spatially and temporally not equally distribution of those water resources. Ethiopia has varies future opportunity to develop water resources utilization

Water resources potential and utilization in Ethiopia

According to Ministry Of Water and Energy report, among the total area of land of Ethiopia the land area and water bodies are covered 99.3% and 0.7% respectively. Hose water bodies are include major 12 river basins of the country; 8 Rivers with flow and one 5ii valley with water and the other 3 basins have not visible water flow due to they are located in the part of the country that is not get enough mount of rainfall throughout the year. Here are also 12 major lakes, reservoirs and dams as well as sufficient amount of underground water sources. He amount of water obtained from the major River basins are estimated to reach more than 124.4 billion cubic meters (BCM). But all the River basins except Awash are transboundary Rivers in which 97 percent of flows terminate to neighbouring countries.

Results and Discussion

Assessment of ground water potential of the country has not a past history. It is started recently and Dier then different studies argue to each other on its potential. Due to less information about the ground water availability, it leads much difficult to have information about the water cycles, the amount of extraction and percolation in to the ground water to recharge it for the sake of the required water management techniques in the right place and time. To solve such type of a problem, the ground water database of the Ethiopian national was placed since 2013 and this institution is working together with minister of water of Ethiopia and lower level water resources development o⁺ce, Non- governmental and private water work enterprise are working

Conclusion

He water resources potential and its utilization rate are in comparable in the country. Here are huge amounts of both surface and ground water resources but the utilization of it is in infant rate. It is clearly marked that the economic development of the country is never go far without utilization of water resources properly. But under current situation, the country is

not used their water resources properly due to different political, natural, technical and economic factors. On the other side, the water sector development programs are performing well to increase the utilization potential and at the same time there are different eye opening future opportunities to develop the water resources development and utilization.

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