

## Availability, Scarcity and Potentiality of Groundwater Resources in Puruliya District of West Bengal: An Appraisal

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### Abstract

Puruliya district is located in western boundary of West Bengal. It is situated within 22°42'23' North to 28°45' North latitudes and 85°45' East to 87° East longitudes. Geographically the district is part of ancient plateau of Chotanagpur where ancient crystalline rocks prevails at large. It is one of the most backward districts of the state in terms of economic and human developments. Notably the district possess second highest scheduled tribe population in the state. Water belonged at the epicenter of the socio-cultural activities of the people of Puruliya from a distant part, particularly its scarcity. Although, district receives 1400 mm of average rainfall during monsoonal months, most of it is drained through Kumari-Kangsaboti river systems. Low retention capacity of soil and presence of hard crystalline rocks beneath the ground create constraints to groundwater development.

In Puruliya district, ground water occurs in four hydro-geological conditions i.e. weathered mantle, saprolitic zone, and fractured zones on hard rocks and in unconsolidated sediments. Total dynamic ground water reserve of Puruliya district is assessed as 70147 hector meters (ha m). Only 9666 ha m or 13.78% of the net ground water availability is currently abstracted. Distribution of ground water reserve varies greatly among different blocks of Puruliya district, so as the utilization. Sixteen out of twenty blocks of the district belong to low groundwater utilization class. So, a huge groundwater potential is left unutilized in Puruliya district. It is intentional in some blocks while in others, low yielding capacity of the aquifers restricted proper ground water development.

Ground water in Puruliya is neutral to slightly alkaline in nature, with pH ranging between 7.6 and 8.2. Electrical conductivity value varies from 141 to 2830 micromohs/cm at 25°C. Chloride value ranges between 11 and 355 mg/l. Iron concentration varies from 0.01 to 1.9 mg/l. Fluoride concentration varies from 0.43 to 1.9 mg/l. Micro-watershed planning, particularly rain water harvesting seems to be the viable solution to the water scarcity in Puruliya district. Besides modern techniques of ground water abstraction and proper utilization of available water with pre-fixed sectoral priorities are urgently needed.

**Keywords:** Groundwater development; water scarcity; groundwater potential; groundwater quality.