

# **PRELIMINARY SURVEY OF GROUNDWATER POTENTIAL OF SNNPR**

BY KEDIR YASIN\*

## **Abstract**

Southern Nations, Nationalities and People's Region covering an area of 110,932 sq. km is located between 4° 27' – 8° 30' N latitude and 34° 21' – 39° 11' E longitude. The region is organized in to 104 woredas with a total population of around 14 million.

There is a great elevation difference in the region varying between over 3500 m.a.s.l. at Gurage mountains and the water divide of Rift Valley and Genale basins in the north and northwest respectively to less than 500 m.a.s.l. around lake Rudolf in the south. Generally the elevation declines from north to south and this gradual sloping surface is modified by two ways; through erosion and late Tertiary Rifting activity. In the region rainfall varies from 2200 mm in the northwestern highlands to around 400mm in the low lands of Omo River. Temperature is generally altitude dependent and the mean annual temperature is above 27°C in the lowlands and around 10°C in the Gurage and Hagereselam highlands.

The region is endowed with both abundant surface and ground water resources. There are five drainage basins of which the Omo-Ghibe drainage basin covers above 50% of the total area of the region, and the smallest is Awash River drainage basin, which covers small area in the northern part of the region.

Rock suites ranging in age from Archean to recent characterize the geology of SNNPRS. The geological units in Southern regions fall in to one of the following three major categories; the Precambrian basement, the Cainozoic volcanic rocks & Quaternary sediments.

The major aquifer in volcanic terrains is fractured volcanic rocks. Groundwater in the volcanic rocks of the rift valley basin is generally fault controlled and of moderate to high potential in low relief areas; depth to groundwater in these units varies from around 100 meters to more than 300 m. However, the Quaternary sediments situated at physiographically low relief areas and around lakes possess high groundwater potential; and depth to groundwater varies from a few meters near lakes to 50 meters. On the other hand in the hard rock terrains the availability of groundwater is restricted to fracturing or weathering and recent sediment depositions along stream channels. Generally these rocks possess low to moderate groundwater potential and depth to groundwater is from a few tens of meters near stream channels to more than 60 meters.

As far water quality is concerned, generally the groundwater is of good quality for drinking but high concentration of fluoride is observed in the groundwater of the rift valley drainage basin in waters, which are characterized by high temperature and low calcium content. In the highland areas covered by volcanic rocks concentration of iron in both surface and ground water is higher.

SNNPR is affected by recurrent drought due to the delay of the seasonal rainfall and this resulted in drying of springs, drying of streams and lowering of the water table in hand dug wells. However, the effect of climate change is minimal on the groundwater resource. The water supply coverage in the region is one of the lowest in the country; it is estimated to be around 38% with out considering the non-functional schemes. Of the water supply over 90% is from groundwater.

In general considering replenishable groundwater potential of the region much remains to be done in utilization of the water resource for irrigation, human and animal consumption and industrial purposes.

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\* SNNPR WATER RESOURCE DEVELOPMENT BUREAU, AWASSA