



Groundwater Recharge Challenges

[Source: DTE](#)

A recent study estimated **groundwater recharge rates** in Australia using the **Chloride Mass Balance (CMB) method**, indicating that climate and vegetation significantly influence recharge rates.

- The CMB is a tracer technique that is used to **quantify the recharge rates for groundwater wells** in a dry environment using the **chloride content** of both precipitation and groundwater.
- Researchers state that the groundwater recharge rate is influenced by **climate and vegetation factors**.
 - Climate-related variables include rainfall distribution and evapotranspiration, while vegetation-related factors include the health and density of vegetation.
 - Soil properties and geographic variation also influence the rate of groundwater recharge.
- The study emphasised the importance of **considering changes in land-use patterns**, especially in rapidly urbanising areas, to increase groundwater recharge rates.
- In India's context, **Bengaluru's rapid urbanisation has led to a drastic reduction in green spaces and waterbodies**, with built-up areas increasing from 8% in 1973 to 93% in 2020. This has resulted in a severe **groundwater crisis**, with declining levels each year.
- In India, few studies estimate groundwater recharge rates using CMB, and large-scale analyses of chloride deposition are yet to be attempted.
 - The **Water Table Fluctuation (WTF)** method is common in India, estimating groundwater recharge by monitoring water level changes in wells.
- It is crucial for Indian cities to accurately estimate groundwater recharge rates and explore scientific measurement methods.

Read More: [Protecting Our Groundwater: A Priority for a Sustainable Future](#), [Bengaluru's Water Crisis: A Wake-Up Call for India](#)

PDF Reference URL: <https://www.drishtias.com/printpdf/groundwater-recharge-challenges>