Eucalyptus monoculture plantation in Brazil's Jequitinhonha Valley

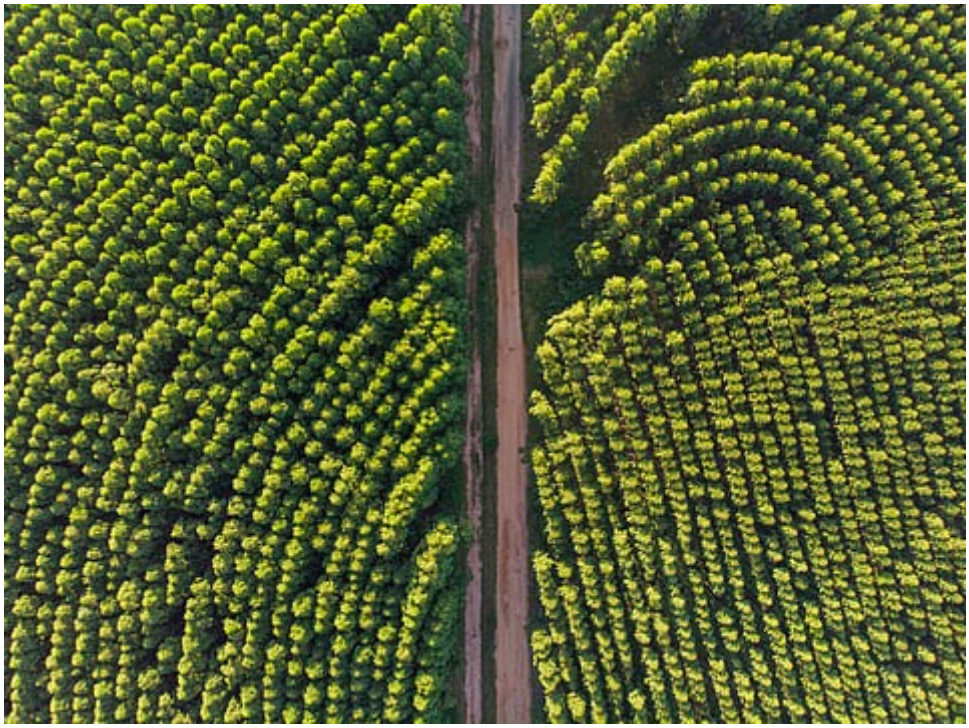
Prelims: *Current events of national and international importance | Geography*

Why in News?

A recent report documented that 45 years of large-scale industrial eucalyptus monoculture in Brazil's Jequitinhonha caused a 4.5-meter drop in the regional groundwater table and dried up 89% of local springs.

Ecological Drivers

- **High Evapotranspiration Rates -** Fast-growing eucalyptus species absorb vast volumes of soil moisture, transpiring hundreds of liters of water per tree daily.
- This significantly outpaces the evapotranspiration of native Cerrado vegetation.
- **Disruption of Groundwater Recharge**
  - Under native Cerrado vegetation, approximately **50% of annual rainfall** infiltrates the soil to recharge underground aquifers.
  - Under dense eucalyptus monocultures, infiltration drops to **~29%**, drastically lowering the subterranean water table.
- **Loss of Native Savanna ("Green Deserts") -** In the Chapada das Veredas plateau, native Cerrado cover plunged from **86.1% (1973) to 24.6%**, converting biodiverse savannas into timber-crop monocultures.
- **Stream Flow Collapse -** Analysis of the local **Fanado River** revealed that maximum flow rates fell from during dry seasons, turning perennially flowing streams into intermittent watercourses.



Socio-Economic Concerns

- The drying of local springs (*veredas*) disrupted subsistence agriculture and livestock grazing for rural *Quilombola* (afro-descendant) and traditional farming communities.
- The plantations supply charcoal to fuel charcoal-based pig iron production (marketed as "green steel") and biochar offset projects.
- The report highlights these operations as an instance of **greenwashing**, where carbon sequestration claims overlook severe local hydrological damage.

Lessons for India

- Mirror concerns in India, where historical introductions of *Eucalyptus* and *Acacia* monocultures across the Western Ghats and Nilgiri hills depleted local water tables and degraded shola-grassland ecosystems.
- Reaffirms the need to prioritize native, multi-tiered species over fast-growing exotics in afforestation drives (such as CAMPA or commercial agroforestry) to safeguard long-term hydrological stability.

Reference

Down to earth | Eucalyptus monoculture plantation in Brazil