Design and Field Evaluation of Groundwater Recharge Structures in Hard Rock Areas

Water availability scenarios in the WHS before the intervention

Barren land near the structure before the intervention

Increased dug well command area due to rainwater harvesting and recharge structures

Developed by

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RELEVANCE

- In the hard rock area of Nayagarh district of Odisha, water for irrigation during the rabi and summer season was not available due to poor groundwater recharge and drying of water harvesting structures.

DESCRIPTION

- Geospatial data analysis using GIS and RS tools was undertaken to identify the groundwater recharge potential zones in the Bargharia nala micro watershed in the Daspalla block of Nayagarh district.
- Based on the field survey, water harvesting structures and recharge wells were designed, constructed and evaluated by estimating water balance parameters.

BENEFITS

- The impact of recharge structures was observed up to 300 m^2 area covering the area of influence of 15 ha command area in hard rock areas.
- The water table depth in the dug wells in the command area rose to 1 m during pre-monsoon season.
- Nearly 14.98 ha was brought under the *kharif* crops like paddy and vegetables.
- During *rabi* and the summer, nearly 11.54 ha of land was covered under pulses and vegetable crops.
- Due to supplemental irrigation, *kharif* paddy yield was enhanced up to 1.0 t ha^{-1}, while *rabi* and summer crops obtained a net return of ₹ 21140 ha^{-1}.