4. Village Level Groundwater Resources Assessment & Management (GRAM)

Aim

To unravel the complexity of mapping groundwater at the village level, a technology development program has been taken up by NRSC and is currently being validated in different drought-affected villages of the country. This vision is in line with the nation's initiative of HarGhar Jal.

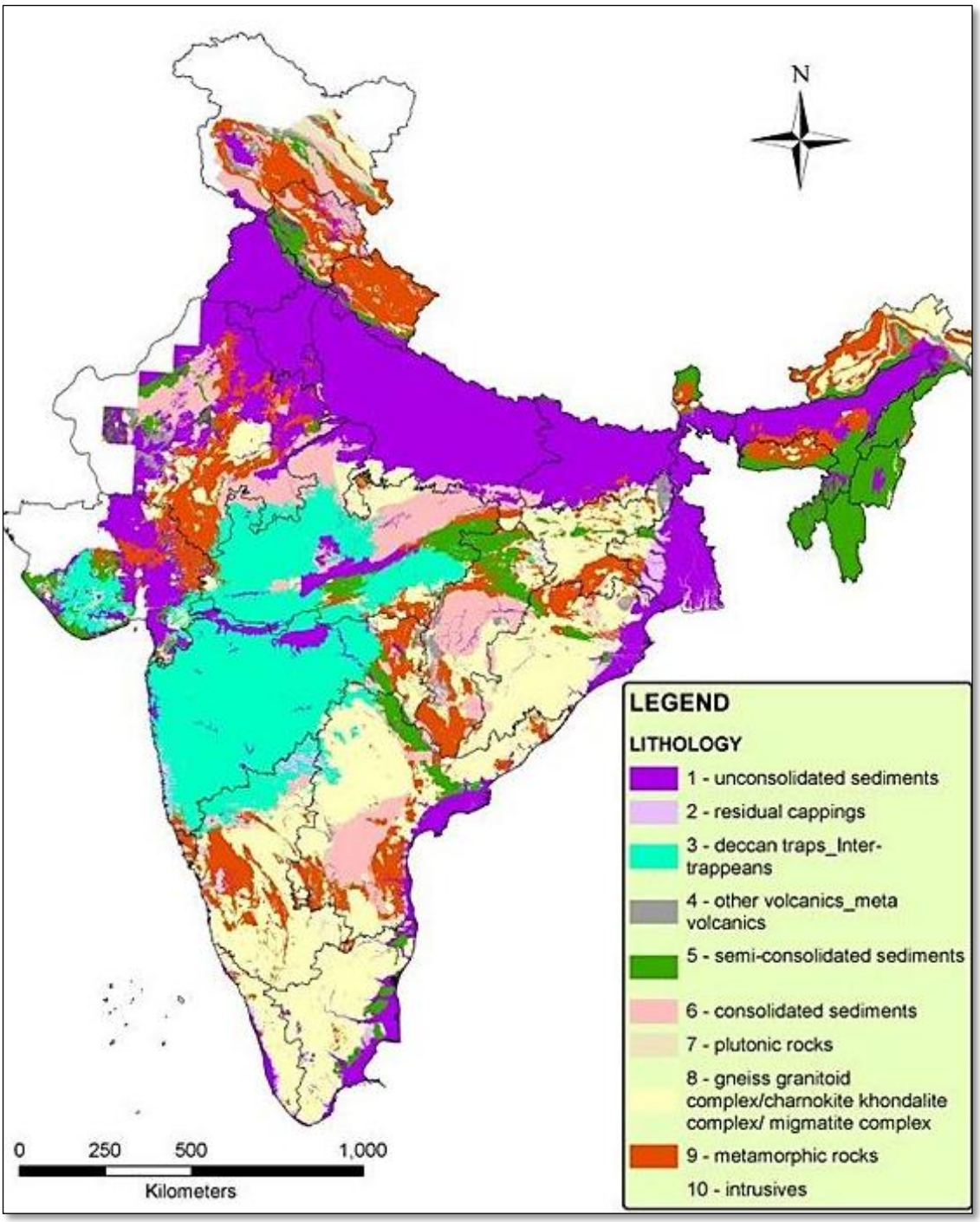
Scope

National Remote Sensing Centre/ Indian Space Research Organisation (NRSC/ISRO) has demonstrated the capabilities of geospatial technology using satellite and ground-based data to ensure the country's safe and sustainable groundwater potential on a 1:50,000 scale. Under the National Rural Drinking Water Program (NRDWP) funded by the Ministry of Jalshakti, a comprehensive database on groundwater prospect and quality has been prepared for the country and has been extensively used by the state line departments for source finding and developing sustainable measures in groundwater sectors. During this journey towards groundwater sustainability, it is understood that there is a need for a paradigm shift of groundwater mapping of meso-scale to groundwater modelling and resource assessment on a micro-scale.

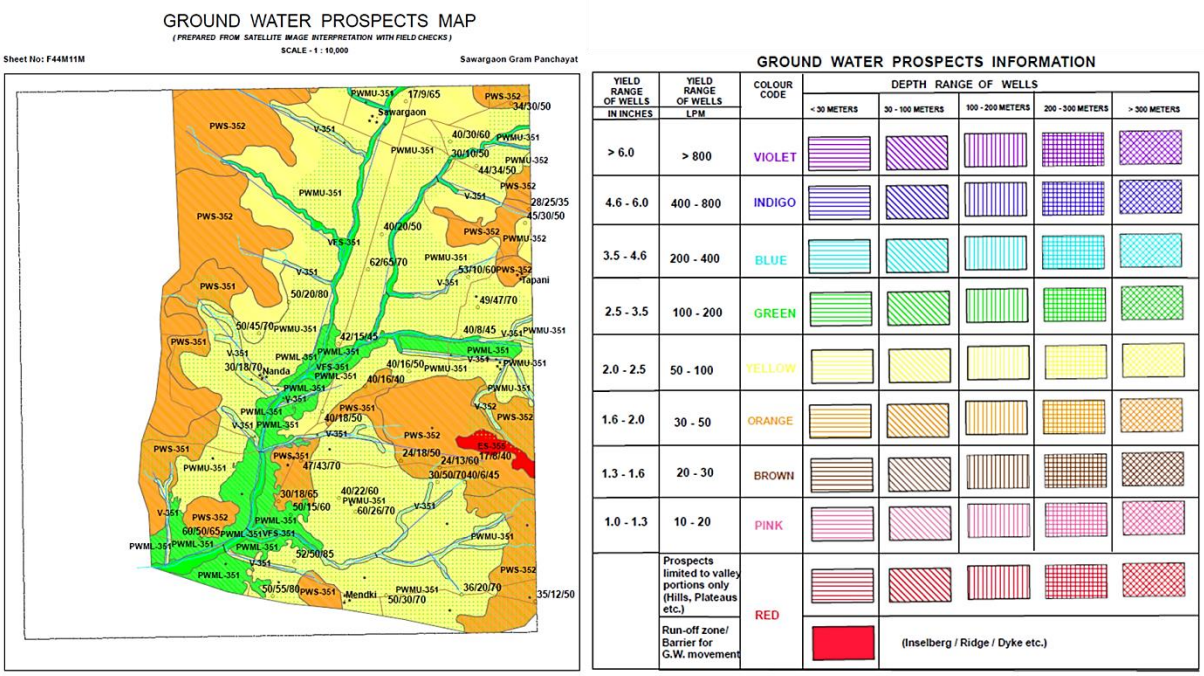
Over the last few decades' groundwater quantities have become an essential concern for water security in India. Heterogeneous hydro-geological conditions, over-exploitation, and infrequent monsoonal activities gave rise to the non-systematic distribution of groundwater and raised uncertainty about this precious resource. Any strategy for scientific management of groundwater resources should involve a combination of supply-side and demand-side measures depending on the geo-hydrological settings. Given the marked difference in the groundwater development stage in India, there is a need to critically analyze the underlying factors responsible for the micro-level imbalances in terms of technical and socio-economic considerations in the nine major hydro-geological provinces of India (RGNDWM, NRSC, 2008).

Expected Outcome

Few pilot studies are being carried out with a research attempt addressing the variability in the different hydro-geomorphic regimes that control groundwater availability. More precisely, this will assess micro-level groundwater resources and recharge in various hydro-geological provinces at the village level.



Nine major hydro-geological provinces of India (ref: RGNDWM manual, NRSC, 2008)



Groundwater prospects map and field photographs of Swargaon mili-watershed (69 sq. km.), Maharashtra, in Deccan Basaltic province