

Title of the Project : Use of excavated soil for enhancing natural regeneration and plantation activities of Greenko Energy Pvt.Ltd., Rampura Forest Range, Neemuch district of M.P

Why this Project :-

As per the letter no./F-4/2021/10-11/3375 Bhopal, dated 07/10/2021 from Principal Chief Conservator of Forest (Land Management), Satpura Bhawan Bhopal in which it is mentioned that Greenko Energy Pvt.Ltd. is establishing pump storage in 301.96 hectare for which Govt. of India given in-principle approval for setting up pump storage in the proposed forest land. This proposed area is about 4 km away from Gandhi Sagar Sanctuary with 8 to 10 inch soil depth as per the above said letter. After in-principle approval from Govt. of India the pump storage project was proposed by Greenko Energy Pvt.Ltd. Govt. of India has imposed condition and suggested to take up a study regarding enhancement of natural regeneration and afforestation on excavated soil by a recognised institute.

Keeping the above consideration and with the consent of office letter no./Gen./3128 dated 01/11/2021 the project proposal was formulated in compliance for the above proposed activities. Hence, this project was formulated for providing necessary suggestion to the concerned agency.

Research Methodology :-

a. Survey of the project area – It covered the following activities.

- Collection of meteorological data - climate, topography, rainfall, number of rainy days, temperature etc.
- Soil samples will be collected for analysis of their physico-chemical properties viz pH, Electrical Conductivity, NPK, organic carbon, moisture content, water holding capacity etc.
- Vegetational survey – includes present status of naturally occurring species and their regeneration status.

b. Site improvement activity - It covered the following suggestions/activities.

- Suitable species for afforestation scheme.
- Spacing and different pit size for various suitable species.
- Appropriate soil mixture in pits for better growth.
- Enhancing natural regeneration through protection and various conservation practices.

Study Design :- For ecological studies, three main activities was carried out in Greenko Energy Pvt.Ltd. site and adjoining area.

a. Crop composition - As per the guidelines of working plan, 5 plots of 0.1 ha was laid out randomly to study crop composition in the area.

b. Regeneration status - In each plot of 0.1 ha, three sub plots of size 10m x 10m was laid out for observing the natural regeneration of various species in the site.

c. Ground flora study - Similarly, 5 sub plots of size 1 sqm will be laid in each 0.1 ha plot to study ground flora of the area.

For edaphic soil study, three-three soil samples was collected randomly along the road side and from the excavated dump. This will helped to understand the physio-chemical properties of the soil as well as to help the suggestion for afforestation through suitable species.

Objectives of Research:-

- To improve impacted site through natural regeneration and plantation activities.

Activities Undertaken:-

Field tour was conducted for site survey, vegetation survey and soil samples collections for their physico-chemical analysis

Cost of the Project :- Rs. 8.45 Lakhs

Outcome of Research :-

1. The soil of project site is moderately suitable for plantation activities.
2. The pH of the soils of study area varied between 6.53 to 6.83 which is suitable for plantation of tree species.
3. The Organic Carbon of the soil of project site are varied from 0.68% to 0.81%.
4. The bulk density of different soil samples is medium and it may be due to the presence of clay content.
5. It was observed that the Nitrogen and Phosphorus level were less. Therefore, the supplements of these macro nutrient will essential for soil fertility. As far as Potassium is concern in given samples is normal.
6. In the project site it was recorded that the copper found 0.208 to 0.390 ppm, Fe. 4.197 to 5.690 ppm, Mn. 2.315 to 3.392 ppm, Zn. 0.604 to 0.760 ppm respectively.
7. Mixed vegetation was found in the area and the average girth & height of the trees were recorded between 12 cm to 34 cm and 1.42 m to 4.92 m respectively.
8. Regeneration was found very poor in all studied points. Palash was recorded as a dominant species in one plot while mixed status of existing species was recorded in remaining other plots.
9. *Cassia tora* was recorded as dominant species.



Study site, natural vegetation and land pattern