



***“Integrated Forestry and Water Management in the  
Uttarakhand Himalayas”***

*January 2024-December 2026*

**In collaboration with**



**MAKEMYTRIP  
FOUNDATION**

**Quarterly Report**

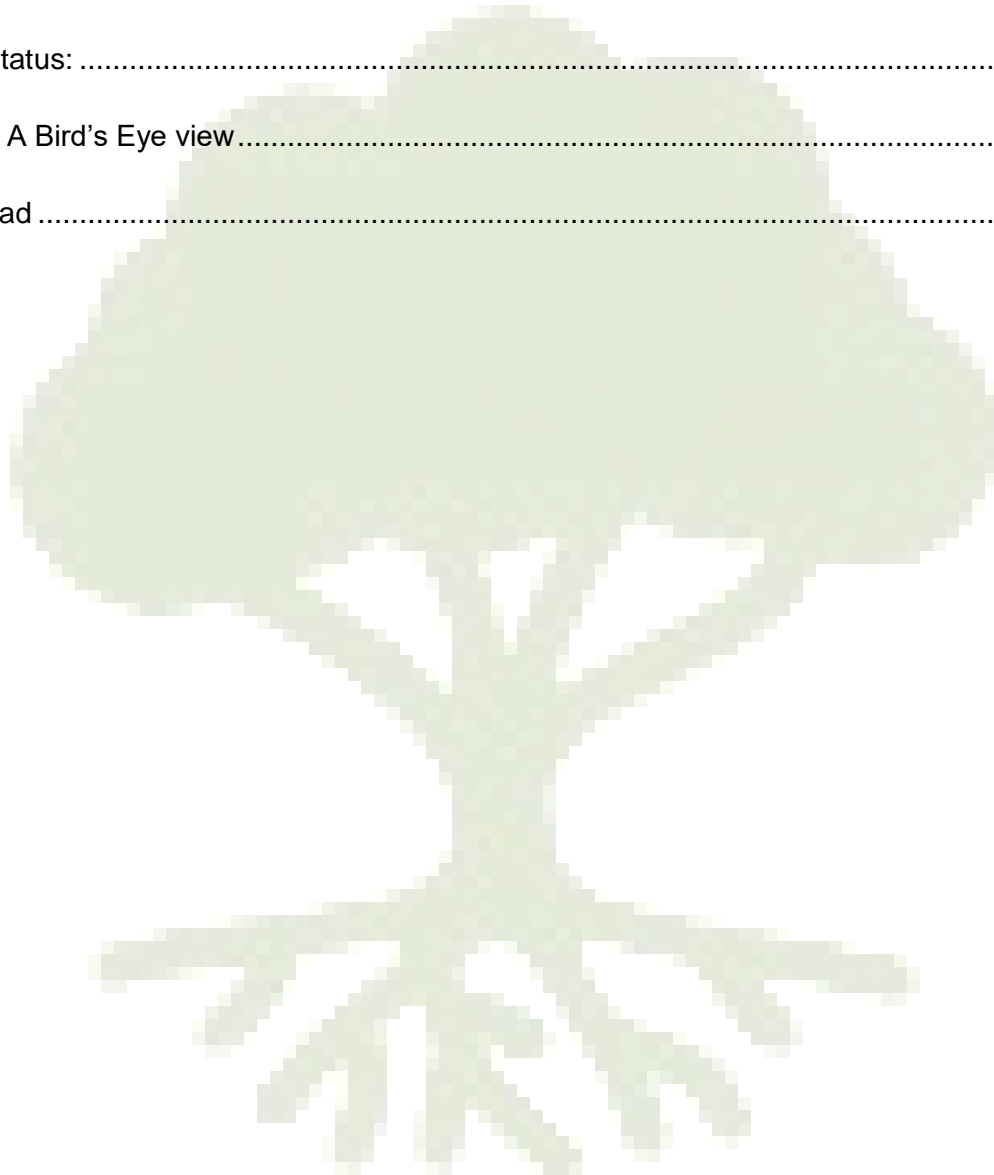
**July'2024 - September'2024**

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# Project Report

## Status report of the project implementation sites of Uttarakhand

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### **Background:**

The ecosystems in the Hindu Kush Himalayan region are diverse in their composition; they constitute significant forest resources, water resources, habitats and biodiversity. Humans benefit from ecosystems in many ways: ecosystems provide many goods that are crucial to people, they regulate the water cycles, purify the air, host many useful plants, provide raw material of many kinds, are a place of spiritual practices, recreation and many more. These benefits that humans get from ecosystems are called “Ecosystem Services” and such services derived solely from forest are known as “Forest Ecosystem Services” (FES).

According to Millennium Ecosystem Assessment (MEA) (2005), there are four categories of ecosystem services: provisioning, regulating, cultural and supporting services. The intended outcome of this partnership is to connect all the key stakeholders from the proposed sites on a common understanding about this interplay between the ecosystem services and the need to conserve them for the use by future generations.

Most of the Himalayan villages are facing a severe crisis of forest degradation and water shortage in recent times. These resources are under immense pressure from various human activities leading to environmental, social and economic consequences.

Forests are traditionally known to assist the replenishment of water sources. Forests and water resources are intricately linked, as forests play a vital role in regulating the water cycle. Healthy forests contribute to water quality, reduce erosion, and stabilize watersheds. However, they are often threatened by deforestation, climate change, and unsustainable land use practices. Integrated Forestry and Water Development seeks to address these challenges while promoting sustainable water management and ecosystem resilience.

They contribute in many ways towards the recharge of water sources:

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1. Regulating through fall: The branches/leaves of the trees/shrubs/grasses intercept the rain drops, slowing down the impact of raindrops directly on the soil. This assists in arresting surface run-off and enabling a sustained contact of rainfall with the surface for infiltration.
  2. Promoting infiltration through Root systems: Deep penetration of roots create channels that allow water to infiltrate more easily. They also enhance soil stability, reduce the chances of erosion with their soil binding properties.
  3. Retain Moisture: The leaf litter, organic matter absorb water and slow down the movement of water along a slope. This assists in maintaining moisture for a long duration.
  4. Enables better aeration in soil through microorganisms: The vegetation cover assists many soil organisms that help in aeration of soil which is crucial in smooth flow of water through soil profile.
  5. Microclimatic advantage: Vegetation regulates the microclimatic condition of the soil surface through the process of evapo-transpiration. This advantages the retention and infiltration of the water through the layers of the soil.

It is very important that the communities/concerned stakeholders acknowledge the value of these attributes of ecosystem (as a store-house of critical and diverse ecosystem services) and attach a utility to them so that ownership, commitment is ensured for Sustainability. There is an urgent need to trigger a behavioral change in stakeholders towards sustainable management of ecosystem services, especially Forests and Water.

## **Context:**

The forests in Himalayas are some of the most important ecosystems in the world providing a wide range of essential services to people and environment. They host wide range of biodiversity and play a significant role in regulating water flow, preventing soil erosion and mitigating climate change. A report by the Forest Survey of India published in 2022, indicates that the forest cover in Uttarakhand has reduced from 67.6% to 65.6% in last 10 years. This rate threatens the forests and the services they are providing, especially Water.

Most of the Himalayan villages are facing a crisis of water shortage in recent times. The crisis is an outcome of a gradual but regular reduction of water in natural springs that form the lifeline for most people. The decline in springs is at present believed to be multifaceted with change in rainfall pattern and receding vegetation cover. The reduction has had a cascading effect on the

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streams that are-fed by springs. They show a decline during the summer months further affecting the community as well as the ecology downstream.

Vegetation has a key function in enhancing the recharge of ground water in hilly areas. Vegetation in the form of trees, shrubs, grasses regulates the through fall of rain, promote compaction and enable infiltration towards the replenishment of ground water. Through its function of intercepting the rains, they reduce splash erosion of soil, litter layers enable moisture retention, root systems penetrate deep into the soil, creating channels to allow water to infiltrate more easily, create soil stability, supports soil organisms to enable a healthy aeration process. The vegetation controls the microclimate of soil surface during its cycle of evapo-transpiration thereby enabling a more favorable environment.

Some of the visible outcomes of the depleting natural resources are loss of biodiversity, soil erosion, increasing forest fires, human wildlife conflicts, reduced water flows, change in climatic patterns, increased carbon emissions and loss of livelihoods.

In Uttarakhand, Van Panchayats are traditional institutions that have historically played a significant role in forest conservation. Through application of traditional knowledge, understanding needs of the community helped them make informed decisions for management of their forests. The institution inculcated a sense of collective ownership of the forests and was very effective in adapting their techniques of forest management based on changing environmental conditions and social dynamics.

In the given context, Himalayan communities in Uttarakhand are highly dependent on natural resources for their survival and cultural identity. Protecting forests and water resources is crucial for the well being of the Himalayan communities in Uttarakhand. Forests and Water form foundation of life not just in the Himalayan Region but also in the downstream.

The conservation efforts require collaboration among local communities, reinstating community led institutions (Van Panchayats), Allocation of Resources, Catalyzing the efforts through effective mobilization, innovating, integrating & promoting traditional knowledge and building ownership among the natives.

CHIRAG, in collaboration with MakeMy Trip Foundation takes cognizance of these pertinent issues and has initiated a mechanism to address them.

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## **Core Objectives:**

The collaboration looks to address the following key objectives:

1. Sustainable Ecosystem Management: To maintain and restore forest ecosystems, ensuring their resilience and adaptability to environmental changes
2. Water Resources Management: To create awareness on Himalayan Ground water and enhance water resources for use of present generation without compromising on the needs of future generations
3. Climate Change Mitigation and Adaptation: Contribute to the global efforts in building resilience to climate change through preservation & restoration of forests and water sources
4. Build a cadre of youth sensitive towards the sustainable management of natural resources
5. Strengthen the village level institutions for local governance of the ecosystems

## **Current status:**

During the third quarter of 2024, substantial progress was achieved across 12 key sites: Sirsoura, Kaltani, Dhura Sangrouli, Palna, Ralakot, Toli, Dol, Golimohar, Dhubrouli, Chauna, Kanra, and Dhoura. Key activities included site preparation for plantation, pit digging, sapling grading, and plantation in the Van Panchayat, community engagement, baseline surveys, and hydrogeological assessments.

The quarter began with site visits to finalize plantation areas, alongside the repair of protection walls and installation of barbed wire fencing to safeguard the sites from grazing. Pits were dug at all plantation locations prior to the onset of the monsoon to enhance moisture retention. Our team also conducted village nursery visits to grade saplings in preparation for plantation. As the monsoon arrived, Van Mohatsav was celebrated at all sites to mark the beginning of the plantation season. Regular nursery visits were carried out to monitor sapling growth. A total of 209,709 saplings were successfully planted and monitored across the project sites. Baseline surveys were conducted in several villages, with four completing the surveys during this quarter. Hydrogeological surveys were carried out at six springs, identifying potential recharge zones, which will inform future soil and water management activities. Spring inventories were also conducted to assess water resources, and recharge initiatives have begun. Protective measures, including repairing protection walls and installing barbed wire fencing, were consistently implemented to safeguard the plantations. These efforts have laid a strong foundation for ongoing and future activities.

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## Nursery Visits

Frequent visits were conducted to all the nurseries to monitor the health and growth of saplings and ensure their readiness for transplantation. Activities involved grading the saplings based on their growth and size, helping to determine which saplings were most suitable for reforestation efforts. Nurseries play a crucial role in producing healthy saplings for the restoration of degraded forest areas. Regular checks included assessing watering schedules, identifying any diseases or pest outbreaks, and adjusting growth conditions to ensure optimum results.



*Sapling Grading in different Villages*

## Direct Seed Sowing and Assisted Natural Regeneration (ANR)

Both direct seed sowing and ANR were implemented to promote forest regeneration. Direct seed sowing involved planting seeds from native species directly into the soil, bypassing the nursery stage. ANR focused on protecting naturally occurring seedlings from threats like grazing and competition with invasive species. These activities were monitored regularly to ensure seed germination and seedling survival.



*ANR and Direct Seed Sowing*

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## Pit Digging

Pit digging was a preparatory activity for the plantation efforts at all project sites. Pits were dug systematically to provide adequate space, water, and sunlight for each sapling. The dimensions of the pits were tailored to the species of saplings being planted, ensuring that the root systems had room to develop properly. This step was critical to plantation success, as the quality and size of the pits directly influenced the survival and growth of the saplings.



*Pit Digging for Plantation in Van Panchayat*

## Plantation Activities

Once the pits were prepared, plantation activities began, with **209,709** saplings from nurseries transplanted into Van Panchayat areas. The focus was on planting native species to restore biodiversity, prevent soil erosion, and improve water cycles in the area. The plantations coincided with the Van Mahotsav celebration and the Harela festival, promoting tree planting and environmental awareness.



*Plantation by Women and Children*

*Van Mahotsav with Community Members*



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## Protection Activities

Protection activities were essential to safeguard the saplings from damage, especially in areas where cattle grazing occurs year-round. This involved repairing protection walls and installing fencing to create barriers against both cattle and wildlife. Regular community engagement was also necessary to ensure locals understood the importance of keeping grazing animals away from vulnerable saplings. Educating the community on the value of protecting these areas helped secure long-term success.



*Protection Measures to Protect Van Panchayat and Nurseries*

## Participatory Rural Appraisal (PRA) and Baseline Surveys

PRA sessions and baseline surveys were conducted to engage communities and gather data on forest resource usage, livelihoods, and environmental conditions. These interactive sessions provided valuable insights into local reliance on forests while the baseline surveys established benchmarks for tracking the project's impact. Together, they ensured community involvement and informed the development of targeted, sustainable interventions.



*PRA Session in Toli*



*Baseline Survey in Dhura Sangroli*

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## Hydrogeological Surveys

Hydrogeological surveys were conducted in Palna, Dol, Dhoura, and Golimohar to identify critical recharge zones and plan future water management strategies. The surveys mapped underground water flow patterns, assessed the potential for spring recharge, and identified areas where soil and water conservation measures could enhance water availability. These efforts were crucial for ensuring the long-term sustainability of the forest and the local communities, who depend on natural water sources. The hydrogeological data gathered will inform the placement of recharge structures and guide future water management efforts in the project areas.



*Hydrogeological Survey in Dol and Dhoura*



*Rock Exposure in Palna*

## Soil and Water Recharge Activities

Various activities to improve soil and water recharge were carried out to support natural springs and increase water availability in the region. This included constructing recharge pits, check dams, and other water retention structures, with notable efforts in Golimohar, Kaltani, and Dol. These interventions were designed to enhance the area's water retention capacity by increasing soil permeability and reducing runoff, ultimately replenishing groundwater. This work is essential for sustaining both forest ecosystems and agricultural activities in the region. Bhumiya Dhara in Golimohar, Udasin Dhara in Dol, and Pokhar Khana Gadhera were the three springs where much of the recharge work was nearly completed during this quarter.

<i><b>Overview of Soil and Water Recharge Activities at Key Springs</b></i>				
<i><b>Spring Name</b></i>	<i><b>Village</b></i>	<i><b>Latitude</b></i>	<i><b>Longitude</b></i>	<i><b>Status</b></i>
<b>Bhumiya Dhara</b>	Golimohar	29.523834	79.751777	Completed
<b>Udasin Dhara</b>	Dol	29.491489	79.761571	Ongoing
<b>Pokhar Khana Gadhera</b>	Kaltani	29.320230	79.440830	Ongoing



*Contour Trench in Dol*



*Percolation Pit in Kaltani*

## Timeline; A Bird's Eye view

In the third quarter, the project advanced with key activities across all sites. Regular nursery visits ensured sapling health, grading, and readiness for transplantation. Direct seed sowing and Assisted Natural Regeneration (ANR) were actively promoted to enhance natural forest regeneration. Pit digging and site preparation for plantations progressed, laying the groundwork for reforestation efforts. Transplantation of nursery saplings began, with strong community involvement during the Harela festival and Van Mahotsav. Protection measures like fencing and wall repairs safeguarded saplings from grazing. Participatory Rural Appraisal (PRA) sessions engaged communities in understanding forest dependency, shaping sustainable management strategies. Baseline surveys and hydrogeological assessments identified critical water recharge zones for future interventions. Soil and water conservation efforts, including recharge pits and check dams, were nearly completed, improving water retention. Post-plantation visits monitored sapling survival and growth, ensuring long-term project impact.

Activity Timeline													
S.No	Activity	Villages											
		Golimohar	Kaltani	Sirsoura	Dhubrouli	Dol	Dhura Sangroli	Ralakot	Toli	Palna	Chauna	Kanara (Paniyalichhi)	Dhoura
1	Community Orientation & Meeting	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Feasibility Study & Site Selection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Identifying Nursery In- Charge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Scheduled
4	Training of Nursery In-Charge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Scheduled
5	Nursery Establishment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Scheduled
6	Nursery Maintenance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Scheduled
7	Site Preparation & Pit digging	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	Soil & Water Conservation Interventions	Yes	On Going	Scheduled	On Going	Ongoing	Ongoing	Scheduled	Scheduled	Scheduled	Scheduled	Scheduled	Scheduled
9	Transplantation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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## Way Ahead

In the upcoming quarter, the primary focus will be on completing the remaining Soil and Water Conservation activities across all designated sites. Regular monitoring of sapling growth and health will remain crucial, with planned site visits to mitigate potential threats such as grazing, pests, or disease. The expansion of conservation efforts will include the installation of recharge pits, check dams, and other interventions to improve water retention and soil quality. Active community engagement will continue through additional Participatory Rural Appraisal (PRA) sessions to foster collaboration and ensure sustainable forest management practices. Protection measures, such as reinforcing fences and repairing structures, will safeguard vulnerable saplings. Additionally, the team will initiate post-plantation impact assessments to evaluate both environmental benefits and socio-economic outcomes. This integrated approach will support the project's long-term goals of forest restoration and enhancing community resilience.

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Annexures



*Nursery Grading in Chauna*



*Nursery Grading in Golimohar*



*Plantation in Dhoura Village*



*Van Mohatsav in Palna and Dol*

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Annexures



*Plantation in Palna*



*Plantation in Dhubrouli*



*Meeting with Nursery Persons in Dhubrouli*

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Anexuress



*Meeting with Nursery Persons in Ralakot and Dhura Sangrouli*



*PRA Session at Dhubrouli*



*Baseline Survey in Ralakot*



*Soil and Water Conservation Activities Proposed in Kaltani*