

# India

## Restoration Opportunities Assessment Methodology

## ROAM COUNTRY BRIEF

*The ROAM results can be used to facilitate holistic and collaborative land use planning, as well as the implementation of forest landscape restoration (FLR) interventions by different agencies, to avoid duplication of resources and efforts.*

### Why FLR?

India is a megadiverse country, and also the second most populous country in the world. A sizeable proportion of its population is directly dependent on natural resources and ecosystem services, thus the country's ecosystems are increasingly threatened with deforestation, degradation and fragmentation.

Currently, the total vegetation cover of the country is 80.2 million ha, or 24% of the total area. To bring the country's total forest land cover to a minimum of one third, an additional 27.8 million ha of land must be converted to forests. The FLR approach is a nature-based solution to address drivers of degradation. It increases forest cover on forest lands, while enhancing ecological functions on non-forest lands by embracing mosaic restoration.

For further information, please see: [Application of ROAM in Asia](#)

### Uttarakhand

A sub-national ROAM was piloted in the state of Uttarakhand, part of the Indian Himalayan Region (IHR). The work was carried out by IUCN in partnership with the G.B. Pant National Institute of Himalayan Environment & Sustainable Development, in consultation with the government of Uttarakhand. Spatial analysis, along with consultations with experts, institutions and stakeholders were used. The results can be adapted and scaled up to other Himalayan states.

Uttarakhand has a rich history of forestry and restoration. Of the state's total area of 53,483 km<sup>2</sup>, 45% is primarily forested landscape. The state's population is about 10 million, with 70% residing in rural areas. Uttarakhand is subject to natural disasters, such as earthquakes, landslides, fires, floods, cloudbursts and flash floods. Although it has recorded a net increase in vegetation cover of 23 km<sup>2</sup> (mostly expansion of tree cover outside of forests), there has been a net decrease of 49 km<sup>2</sup> in recorded forest area due to rotational felling and development activities.

The key drivers of degradation are: forest fires; over-dominance of a few species due to human disturbance, especially chir pine; free-grazing livestock; landslides; forest degradation due to increasing anthropogenic pressure; and increasing community apathy towards agriculture and forest management. The consequences of degradation include: scarcity of water and drying up of natural springs; human-wildlife conflict; out-migration from villages; and decreasing livelihood opportunities.

For further information, please see: [Assessing Landscape Restoration Opportunities for Uttarakhand, India](#)

### Restoration priority

The equivalent of 77.3% of the state's geographical area requires restoration to varying degrees, with 19% being high priority and 18% very high priority. The mid-elevation

zone (1,000–2,000 m above sea level) is classified as the highest priority zone and the high-altitude zone of 2,000–3,000 m emerges as the second highest priority zone.

## Recommended interventions

- **High altitude elevation zone (2,000–3,000 m above sea level):** High tectonic activity, frequent landslides, intense precipitation, etc.; rich in medicinal and aromatic plants, forests and biodiversity, alpine meadows, and sacred natural sites.

**Interventions:** Disaster management; forest protection through promotion of sacred groves/spiritual forests; and promotion of livelihood options.

- **Mid-altitude elevation zone (1,000–2,000 m):** Forest dominated region (mostly community forests); rainfed agriculture; increasing urban centres; chronic forest degradation due to chir pine invasion; increasing water scarcity and forest fires.

**Interventions:** Forest fire management; promotion of community forestry through *Van Panchayats* (forest councils); and water source rejuvenation.

- **Low altitude elevation zone (< 1,000 m above sea level):** Valleys, moderately sloping regions, and flatlands in river plains; subsistence activities include modern, cash crop-based agriculture; urbanisation; invasive species (*Lantana* and *Eupatorium* spp.); and human-wildlife conflict.

**Interventions:** Promotion of cash crop-based agriculture, horticulture and floriculture; promotion of agroforestry system (e.g. bay leaf for income generation).

Cross-cutting interventions include improving availability of alternative sources of energy, and planting of fuelwood and multi-purpose trees in degraded landscapes.

## Opportunities and roadmap for the future

- The results can be used to facilitate holistic, collaborative planning and implementation of interventions across agencies to avoid duplication of resources and institutional efforts.
- Restoration best practices have been identified based on government, private and NGO efforts.
- Some recommendations and restoration strategies are being adopted, including the organisation of a GIS database and the restoration of dry springs in forested areas in Uttarakhand.

The next steps include: open dialogue between stakeholders to discuss and plan implementation across the state; and continue identifying and engaging with funders, including private sector partners.

## Forest landscape restoration in India

Efforts in India are underway to meet the 21 million ha restoration commitment under the Bonn Challenge, with 9.8 million ha already restored between 2011 and 2017. Of this, government agencies have contributed 94%, while the surveyed NGOs and private companies contributed 4% and 2%, respectively.

**For further information, please see:** [Bonn Challenge and India - Progress on restoration efforts across states and landscapes](#)

**Resources:**  
[InfoFLR.org](http://InfoFLR.org)  
[iucn.org/forests](http://iucn.org/forests)



 INFOFLR  
by IUCN