



## Bihar strengthens its climate resilience using Systematic Catchment Area Treatment

**Government:** Bihar, India

**Region:** Asia-Pacific

**Sector(s):** Land use and forests

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### Summary

The Kaimur and Rohtas districts in the State of Bihar are rich in biodiversity and wildlife. To address the rising water stress and changing climatic patterns in the region, the Durgawati Reservoir project was conceived. Under this project, a reservoir is built on the Durgawati river which forms the boundary of the Rohtas and Kaimur Districts of Bihar. The reservoir and subsequent submergence zone became functional in 2014-15. The length of the dam is 1615.40 meters and height is 46.30 meters with the submergence zone spread over 1963.45 hectares. The core area of the Kaimur Wildlife Sanctuary forms the catchment of the Durgawati river leading up to the reservoir.

In order to check soil erosion and promote water conservation in the region, a Catchment Area Treatment Plan was devised. The catchment area is spread over 62,700 hectares and comprises of 112 micro watersheds with an average size of 555 hectares. The Catchment Treatment Plan will cover 51,657 hectares which is 97% of prime forest land thereby benefitting both local villages and wildlife population.

### Details

The Durgawati Catchment Area Treatment (CAT) Plan was conceived in 2016-17 with an objective to:

- Check soil erosion and retrieval of precious and limited topsoil on the rocky plateau and reduce silt load of the reservoir.
- Reduce the run-off of excess rainwater and conserve as much water as possible on the Kaimur Plateau to improve water availability of the region.
- Enhance green cover by moisture retention and topsoil conservation.

**62700** Ha of  
Catchment Area to be  
treated

**112** Micro  
watersheds will be  
developed

**51657** Ha Forest

- Enrich the habitat of endangered fauna like the Indian pangolin, tiger, hyena and four horned antelope by catalysing floral growth and elongated availability of water during the dry season.

The detailed operational plan of the projects is comprised of systematically building individual micro watersheds for treatment and execute Soil Moisture Conservation (SMC). This works through a detailed Catchment Area Treatment Plan operating in continuity over successive financial years.

The primary activities include mapping drainage channels on the micro watersheds designated by the Central Water Commission and preparing a site-specific Drainage Line Treatment Chart with mechanical structures designed to intervene and capture the silt load of all 1<sup>st</sup> to 3<sup>rd</sup> order streams falling in that particular micro watershed.

In the initial phase running from 2016-17 to 2018-19, adjacent micro watersheds comprising entirely of forest land were taken up for SMC works. Now, a detailed ground survey of socio-economic and other factors is being carried out in village areas located in the remaining micro watersheds to prepare a prospective CAT Plan keeping in mind local needs. The Durgawati Catchment Treatment Plan ultimately strives to treat all 112 micro watersheds falling within the river basin.

### Results

- **Soil conservation:** More than 23,700 hectares of forest area treated to check erosion and conserve precious topsoil.
- **Improved moisture regime** by recharging of aquifers through retention of water in Silt Detention Structures (SDS) and <sup>2</sup>check dams.
- **Availability of water** throughout the year in streams or *nullahs* and springs locally known as '*chuan*' are benefitting a population of around 4800 in the nine tribal villages and local wildlife, both residing within the Durgawati Catchment Area treatment zone.

### Enabling conditions

- Long term planning under the Durgawati Catchment Area Treatment Plan and committed financial support for the entire duration of the scheme through a dedicated fund.
- Provision for technical guidance from external consultant in designing technically sound and comprehensive CAT plans.

### Challenges

- The region is fairly remote due to its mountainous terrain.
- Safety concerns linked to the presence of extremist groups or *Naxalites* in the region.
- Shortage of staff in the department: the work was executed with staff strength of only 20-30 percent of the actual requirement.

### Key lessons learned

- An integrated CAT plan should be included in the project conceptualisation stage to visualise and plan the treatment operations for effective results in subsequent years.
- Local knowledge of hydrology such as water flow and moisture regime should be incorporated in the CAT plan for a sound micro watershed planning for local villagers.

#### For more information:

**Pradyumn Gaurav**, Divisional Forest Officer (DFO), Rohtas Forest Division, Government of Bihar, [rohtasdfo@gmail.com](mailto:rohtasdfo@gmail.com)

**Rana Pujari**, Program Officer – South Asia, the Climate Group [rpujari@theclimategroup.org](mailto:rpujari@theclimategroup.org)

[Department website](#)



<sup>1</sup>A stream of water is named based on its origin and when it joins the other streams as a tributary. A 1st order stream is the first or headwater channel with lowest flow, which is joined by smaller tributaries as 2nd, 3rd, 4th order streams and so on.

<sup>2</sup> A check dam is a small dam constructed across a drainage ditch, swale, or channel to lower the velocity of flow.