INDIA

LONG TERM ECOLOGICAL MONITORING (LTEM) SYSTEM
INDO-GERMAN BIODIVERSITY PROGRAMME

SITUATION:

Currently in India, long term monitoring of forests is still a gap area. Most long-term forest monitoring systems only focus on the growth of timber species, and very few are designed on ecosystem dynamics (Tewari et al. 2014), none for monitoring ecosystem services. The lack of long-term data on forests, ecosystem dynamics and the supply of ecosystem services deters quantifying services from forests.

The Himachal Pradesh Forest Ecosystem Services Project (HP-FES) together with the Himachal Pradesh Forest Department (HPFD), is developing a Long-Term Ecological Monitoring (LTEM) system for the Himalayan state of Himachal Pradesh. This system will support decision-makers and managers of natural resources to identify suitable management strategies for sustainable forest management.

OBJECTIVE:

The objective of developing an LTEM system is "to understand the dynamics of forest ecosystem for developing appropriate management strategies to ensure sustained flow of ecosystem services for society". The project in partnership with HPFD has prepared an LTEM framework. To sustain the LTEM system, the forest department has institutionalised it within the working plan division.

APPROACH:

The aim of the LTEM was defined together with the Himachal Pradesh Forest Department and experts, followed by the development of a framework design in consultation with them. An agreement was reached on the institutional set up for the LTEM accompanied by necessary state-level decisions. The design of the LTEM was developed based on national and international experiences and the system was set up, including a trial run.

Capacity development for the front-line staff of the forest department on field data collection; and the GIS cell on monitoring, data analysis, LTEM database and its installation on the server accompanied the setup. Finally, the first data assessment was carried out and analysed.

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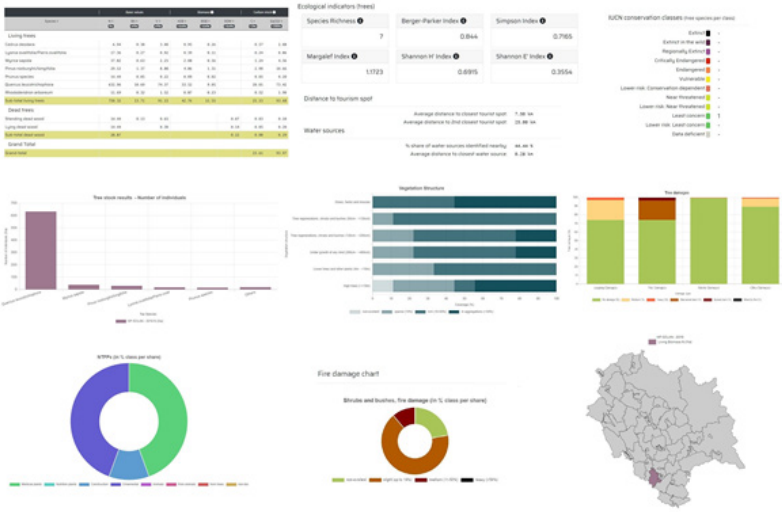
APPLIED DIGTIAL TECHNOLOGY:

This is an online database system installed in the server of the state forest department. The LTEM application is built with an open-source architecture based on MySQL and Node.js.

• The MySQL server is used for data storage, basic calculations and data filtering.

• The LTEM core is based on the JavaScript framework and Node.js. The user web interface is built with the Vue.js framework.

• The entire application is containerized with Docker Platform for multi-operating system compatibility.



ACHIEVEMENTS THROUGH DIGITALIZATION:

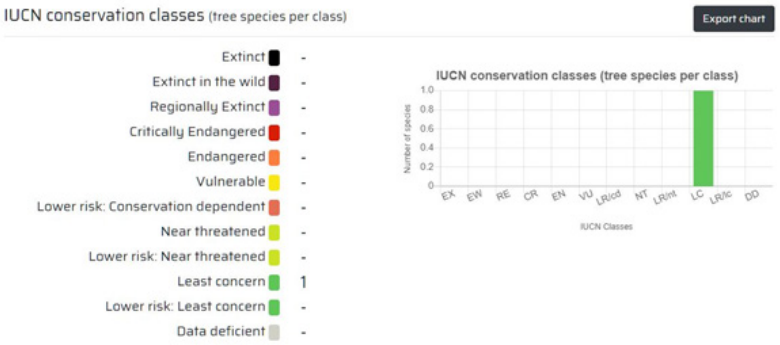
• The LTEM database is the only state-level database in India that ensures a sustainable flow of Forest Ecosystem Services (FES).

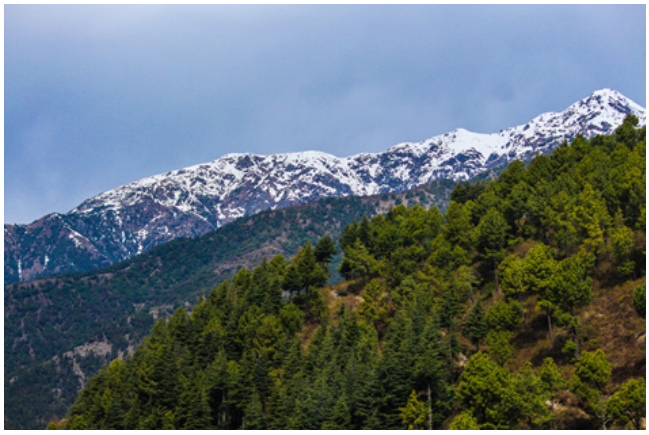
• A sustainable flow of FES is expected to be achieved in future, by monitoring and comparing the changes and improvising on the management interventions carried out by the forest department.

• Grazing intensity can be assessed and areas with high grazing pressure can be identified, based on certain indicators.

• Assessment of Non-Timber Forest Products (NTFP) can be made by evaluating their potential and current use.

• This online database can be adopted at many levels and can be used for monitoring National Parks, Wildlife Sanctuaries, Reserves etc.





POINT OF CONTACT:

Mr Ravindra Singh

Director

Indo-German Biodiversity Programme

E biodiv.india@giz.de

Address

A2/18, Safdarjung Enclave,

New Delhi, 110029

Country

India

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Registered offices
Bonn and Eschborn

Friedrich-Ebert-Allee 36+40
53113 Bonn, Germany
T +49 228 44 60-0

Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany
T +49 61 96 79-0

E info@giz.de
I www.giz.de

Responsible
Florian Moder,

Henderikus Geert Velzing

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