espa ecosystem services for poverty alleviation

Impact Story

May 2018

ESPA research informs local citizens' action to protect critical water sources

In the northern Indian state of Uttarakhand, Nainital's lake supports its growing population and tourism industry, but its water levels are declining. A project funded by the Ecosystem Services for Poverty Alleviation (ESPA) programme researched the impact of human activities on water levels, and convened an expert group that supported local citizens who are engaged in a public interest lawsuit to protect their water source.

Key messages

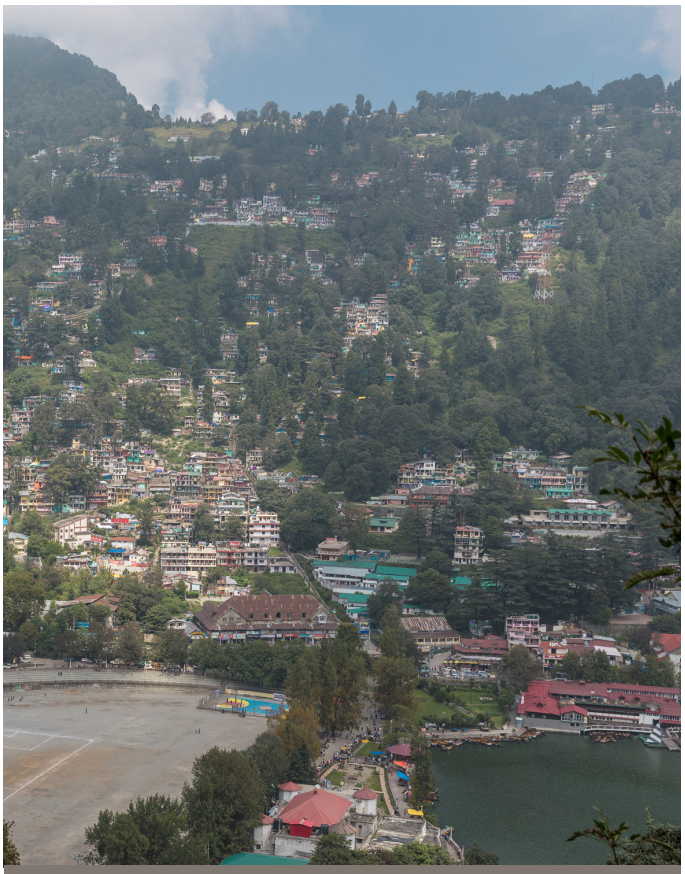
- Nainital is reliant on its central lake to support its growing economy, but its critical recharge zone has suffered a rapid increase in water pumping and construction that has resulted in declining water levels. ESPA research suggested that such activities should be halted in order to restore the capacity of this critical water recharge zone.
- The research fed into a public interest lawsuit, media articles and a citizen group, all focused on building support to rejuvenate the recharge zone. The Uttarakhand state government has released 30 million rupees (just under US$500,000) for this purpose.
- The project worked to empower non-experts with crucial knowledge about critical water zones and the importance of recharging watercourses, and brought together diverse stakeholders (in particular the citizens impacted by water shortage) to promote dialogue.

Background

The resort town of Nainital, located at an altitude of 1,938 metres, depends on its central *tal* (lake) to support its growing economy. A secondary lake, Sukhatal, stores water from the monsoon period until later in the winter, and acts as a critical water recharge zone, providing nearly half of subsurface flow to lake Naini. In recent years, there has been a sharp decline in Nainital's lake levels: in the summer of 2017, the water level fell 5.5 metres below maximum capacity, a phenomenon never observed in the past. Water shortages are at their worst in the hottest summer months, which also coincides with peak demand due to tourism. The seasonal influx of tourists and temporary workers can double the number of residents during the dry summer period, putting further pressure on the town's resources. The cost of water for poorer families can be particularly high, as they are not connected to municipal networks and must rely on alternative sources further away.

Illegal construction and dumping in Sukhatal, a critical recharge zone, has resulted in declining water levels in lake Naini.

Photo credit: Toby Smith



Residents living in Nainital's dense hillside housing are at risk of landslides and earthquakes.
Photo credit: Toby Smith

The research

An ESPA-supported project explored the ways in which urbanisation has changed the towns, lives, livelihoods and connectivity among hill-dwelling communities, using water as an entry point.[1] It looked at the dependence of six towns in the Western Himalayas (India and Nepal) on their nearby water flows, to understand the sustainability of surface and groundwater flows and how water is accessed and distributed.

In Nainital, the project assessed the impact of water management on the poorest residents, who rely on springs directly dependent on the recharge zone of the lake. The team conducted stakeholder discussions to understand the geo-hydrological and socioeconomic context of the town. Geographic information system (GIS) mapping was carried out to delineate the catchment boundary of the recharge zone, and to understand changes to the area's land-use patterns over time.

The team assessed archival records from the municipality, land ownership details, roles of institutions and past policies, and examined the technical problems caused by construction activities in and around the critical water zone and on the main water source. They conducted household interviews to understand the dependency of people on secondary spring sources and carried out repeated water quality assessments on the springs.

Results

Based on their investigations, the project team produced a report that confirmed the role of Sukhatal as a critical water recharge zone. The water from the Sukhatal system passes through different geological layers, and reaches Nainital lake in a relatively clean condition, both purifying the lake water and adding to lake recharge at a lean period when the lake levels start declining.

In recent years, Sukhatal lake has seen a significant decline in water levels, with consequential impacts on its ability to recharge Nainital's lake. There is evidence that these changes originate largely from human activities, and particularly from illegal construction activities, dumping of debris and pumping of water, which are impairing the lake's natural function. To restore the capacity of this critical water recharge zone, the results of the research suggested that these encroachments should be removed, and the lakebed should be dredged.

Impact and next steps

The project team, which consisted of the University of Cambridge and the Centre for Ecology Development and Research (CEDAR) in Dehradun convened a three-day meeting to bring together hydrologists, geologists and social scientists to discuss the impact of illegal construction on Nainital's critical recharge zones, drawing on the ESPA research. The recommendations from this meeting were submitted to the district administration, and to court as evidence in a public interest litigation lawsuit filed by a concerned citizen. The team's multidisciplinary expertise and the credibility of an internationally funded programme were leveraged to inform the proceedings. As of April 2018, the court case is still ongoing; in the interim, the high court has banned any further construction and given immediate orders to the irrigation department to prepare a detailed project report to rejuvenate the recharge zone.

The findings of the expert group were also shared through a series of articles by local media, informing the community about the problem when water scarcity was at its peak in order to underpin the connection

> **"The future of cities lies with their citizens, and scientists and experts can play an important role in collaborating with these efforts to co-create more sustainable and inclusive forms of urbanisation."**
>
> Vishal Singh, CEDAR

between water management and the shortage. In 2017, a group created by the local community, 'Citizens for Nainital', approached CEDAR for technical inputs and direction to lobby the government to protect Nainital's most important recharge zone. On 3 June 2017, around 1,000 people took part in a barefoot march to raise awareness about the issue.[2]

The recommendations drafted by CEDAR and the expert group, in consultation with the University of Cambridge, were presented by CEDAR staff to the Chief Minister and the Honourable Governor of the State. On the basis of the project's results and the growing visibility of the hydrological crises experienced by the town's citizens in 2017, the Governor, the Chief Minister and the Chief Secretary of the state asked CEDAR, along with the United Nations Development Programme (UNDP) India, to organise a stakeholder meeting to discuss short-, medium- and long-term solutions. So far, the state government has released just under Rs 30 million (US$0.5 million) to rejuvenate the lake[3] and the recommendations of the meeting are under consideration by the Governor. Meanwhile, a detailed project report on the rejuvenation of the lake and its catchment, worth just under Rs 180 million (US$3 million), has been submitted to the relevant state department. CEDAR continues to provide expert scientific advice to concerned government bodies and the citizens' group as requested, and a visual archive from this and other project sites has been curated to maintain the public discourse on these issues.[4]

> **"What we can see in Nainital is how research, local activism and public engagement all work together to create conditions for genuine dialogue, generate the demand for better governance, and contribute to meaningful social change."**
>
> Bhaskar Vira, Principal Investigator

A timeline of key events

2014

MARCH

Nainital becomes a study site for the ESPA research project, based on bio-physical and socio- economic factors, and citizens' interest.

MAY

First stakeholder meeting is held.

Secondary research identifies Sukhatal as the most important recharge zone for lake Naini.

Citizens of Nainital decide to file a Public Interest Litigation (PIL) in the Honourable High Court of Uttarakhand against illegal construction and dumping in Sukhatal.

Local news articles focus on the importance of lake Naini and the impact of detrimental human activity in Sukhatal.

JUNE

PIL is filed by Professor Ajay Rawat, a noted environmentalist and historian.

JULY

The court orders removal of illegal construction around the lake. Encroachers appeal the decision.

2015

APRIL

An expert committee workshop is held to understand the hydrological significance of Sukhatal and its implications for Nainital.

Recommendations are submitted to the court for further action.

2016

FEBRUARY

A detailed project report on Sukhatal is prepared by the irrigation department in 2014 is modified in light of the recommendations of the expert committee workshop.

2017

MAY

A public consultation meeting is held.

Responsibility for maintenance of lake Naini moves from the public works department to the irrigation department.

Over 1,700 people sign the 'Save Naini Tal' petition, including celebrities from sport, the arts, music and film.

JUNE

Governor of the state chairs discussion on possible scientific and technological intervention to restore lake Naini.

Thousands of citizens participate in a barefoot walk to raise awareness of Nainital's water crises.

NOVEMBER

CEDAR collaborates with UNDP to hold a stakeholder meeting with citizens of Nainital, the heads of various Indian Institutes of Technology and other government organisations to identify practical long- and short-term options to conserve Nainital lake. The workshop is chaired by the Honourable Governor of the State of Uttarakhand, Chief Minister and Chief Secretary of the State.

● ESPA project activities ● Community and government activities ● All stakeholders

About the project

The project *'The political economy of water security, ecosystem services and livelihoods in the Western Himalayas'* (NE/L001365/1) was implemented by the University of Cambridge and the Centre for Ecology Development and Research (CEDAR) in Dehradun, India. It ran from 2013 to 2017, and aimed to understand the synergies and trade-offs associated with managing natural landscapes in order to secure water supply for the towns, in relation to their potential use for other livelihood and resource-use strategies. Building on this research, the ESPA project *'Exploring water and urbanisation in the Himalayas: Bridging communities of practice through photography and place'* (IAF2017-18-001) in 2017 created a travelling exhibition of visual materials (photos and videos) to document changing lives and livelihoods in small towns in the Himalayas. The exhibition was taken on the road in the United Kingdom, India and Nepal, with a view to stimulating public dialogue on urban development strategies.

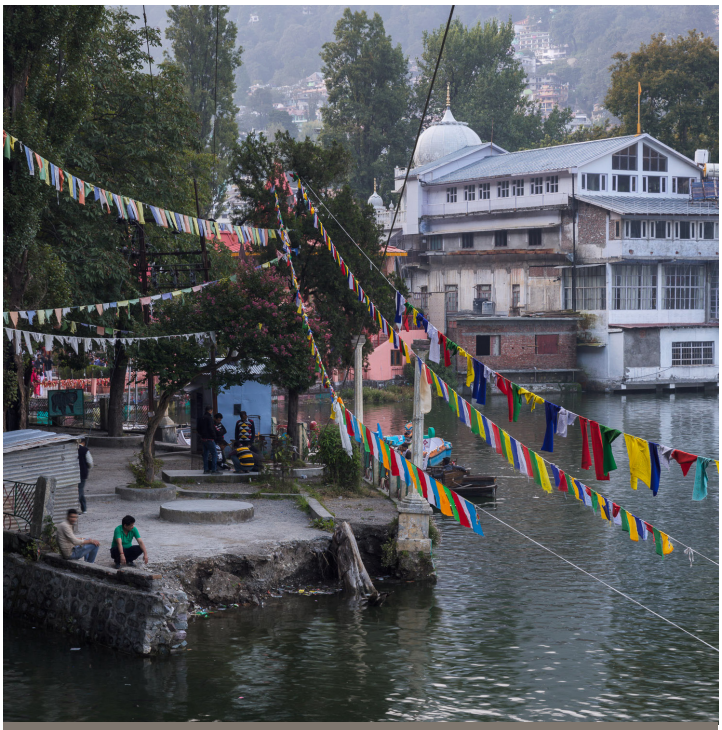
Credit

This briefing was written by the ESPA Directorate based on information provided by the project team.

About the ESPA Programme

ESPA is a global development research programme established in 2009 with funding from the Department for International Development (DFID), the Natural Environment Research Council (NERC) and the Economic and Social Research Council (ESRC). ESPA is one of the most comprehensive research programmes exploring the linkages between ecosystem services and human wellbeing. ESPA aims to provide new worldclass research evidence demonstrating how ecosystem services can reduce poverty and enhance wellbeing for the world's poor.

Programme enquiries:
support@espa.ac.uk



Seasonal tourism in Nainital results in rapid and poorly constructed housing, and waste and sewerage problems that create further problems for residents already facing water shortages.

Photo credit: Toby Smith

Endnotes

1. www.espa.ac.uk/projects/ne-l001365-1
2. https://timesofindia.indiatimes.com/city/dehradun/thousand-walk-barefoot-to-back-save-naini-lake-drive/articleshow/58983995.cms
3. http://indianexpress.com/article/india/uttarakhand-cm-trivendra-singh-rawat-sanctions-rs-3-crore-for-the-revival-of-naini-lake-4696711/
4. The archive is available to view at www.panipahar.com, where readers can explore photographs of Nainital by Toby Smith, with commentaries.

Disclaimer

espa ecosystem services for poverty alleviation

A research programme co-funded by DFID, NERC & ESRC

UKaid from the British people

NERC SCIENCE OF THE ENVIRONMENT

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL