the loggers, Gaura Devi marshalled the women of the village. They put their bodies in front of the axe-wielding men, eventually forcing the loggers to leave[1,5].

What made these village women, whose roles were conventionally restricted to the home, come out in force to protect the trees? The environmental activist Vandana Shiva, adopting an ecofeminist lens, argues that women, especially in rural areas, share close bonds with nature because their daily tasks are entwined with nature[7]. For the historian Ramachandra Guha, however, although Chipko did see women participating on a scale like never before, it would be simplistic to reduce it to a women's movement. For Guha, Chipko is a peasant movement centred on the environment, in which both men and women were involved[1,5].

Chipko is also synonymous with two men: Bhatt and Sunderlal Bahuguna. Both had strong roots in the community, having worked with voluntary organizations based on the Gandhian ideology of non-violence and *satyagraha* (which loosely translates as 'truth force'). Through eco-development camps, Bhatt worked tirelessly to raise awareness about the fragility of the region's environment. Bahuguna's *padayatras* (journeys on foot) across India brought Chipko to the attention of people in other parts of the country and across the world. Chipko thus began to spread[3,5,6].

In the forests of the Western Ghats in the south Indian state of Karnataka, Chipko inspired similar protests called *Appiko* (meaning 'cling' in the local language, Kannada). Internationally, Bahuguna took Chipko to university lecture halls in western Europe, and the simple idea of hugging trees for protection also resonated with activists in Canada and the United States[6]. In 1987, the movement was awarded the Right Livelihood Award, known as the alternative Nobel prize, for its impact on the conservation of natural resources in India.

The afterlife

Over the years, Chipko has been interpreted and reinterpreted by academics and activists. It has been the subject of many books, peer-reviewed papers and popular articles, and is mentioned in the curriculum of Indian schools. Chipko has a prominent place in the discourse on sustainability, too — as an example of the demand for sustainable development at a regional or local level. In March 2018, to commemorate the 45th anniversary of the movement, an iconic photograph of women joining hands around a tree appeared as a Google doodle, highlighting the movement's international fame.

An immediate effect of the 1974 Reni protest was a 15-year moratorium on tree felling[4]. A slew of laws and regulations for protecting the forest came into effect. Ironically, Chipko, which had set these laws in motion, resulted in local communities losing access to the very forests that met their livelihood and subsistence needs. Little changed in terms of development or employment opportunities for the locals. With forest protection prioritized, even minor development projects, such as village roads or small irrigation channels, were denied permission. At the same time, large infrastructure projects promoted by the government, such as hydroelectric dams, got the go-ahead[2].

The fragility of the landscape has steadily worsened. In February 2021, a catastrophic landslide in Chamoli district caused the death of some 200 people. What made the disaster worse were the multiple hydropower plants situated in the path of the landslides. In January 2023, disaster struck again when the town of Joshimath in Chamoli began sinking. Cracks developed on roads and in homes, and people had to be moved to relief camps. The unplanned development of the town on top of an earthquake-induced subsidence zone was a key reason. But a persistent concern in the region is its intrinsic ecological vulnerability, compounded in recent years by climate change.

What is the relevance of Chipko today? According to the United Nations, all of us are living amid the triple planetary crises of climate change, biodiversity collapse and air pollution. Humanity has also transgressed six out of the nine 'planetary boundaries' that ensure Earth stays in a safe operating space[8]. In the context of these monumental concerns, it's remarkable that Chipko continues to inspire.

Social and environmental movements in India are still guided by its spirit. It is a strategy used by non-governmental organizations, activists and citizen groups in their fight against development projects that adversely affect tree cover. Thus, hundreds of Chipko-like movements have bloomed in villages and cities across India, inspired by a simple idea — hugging a tree to save it — and by the courage of village folk.

A villager from Chamoli, Dhan Singh Rana, wrote a song describing the life and struggles of Gaura Devi, in which he says, "In this world of injustice, show us your miracle again."[3] As the world careens from one crisis to the next, it is more imperative than ever to rekindle the memory of Gaura Devi. It should inspire us to act to save the planet and contribute to sustainable change, putting aside any misgivings about our own limitations as individuals or communities.

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How to achieve safe water access for all: work with local communities

Farhana Sultana, Tara McAllister, Suparana Katyaini & Michael D. Blackstock

Four scientists reflect on how to foster a more sustainable relationship between water and society amid complex and wide-ranging challenges.

More than two billion people worldwide lack access to reliable, safe drinking water. Challenges around managing water resources are complex and wide-ranging. They are interlinked with those affecting land and food systems and are exacerbated by the climate crisis. Four scholars propose ways to prompt progress in water governance — and highlight just how crucial it is for local communities to be involved.

AB RASHID/SOLENT NEWS/SHUTTERSTOCK

Women walk across a dried-up lake in Bangladesh to collect water.

FARHANA SULTANA
COLLABORATE TO ADVANCE WATER JUSTICE

Throughout my childhood in Dhaka, Bangladesh, the frantic call '*Pani chole jaitese*!' ('The water is running out!') prompted my family, along with the entire neighbourhood, to scramble to fill pots and buckets with water before the taps ran dry. I witnessed women and girls walk long distances to secure this basic necessity for their families, long before water governance became central to my academic career. Amid water insecurity, the opposite extreme was just as familiar — going to school through devastating floods and experiencing the fall-out from disastrous cyclones and storm surges.

Municipal water services in Dhaka also struggled to meet the growing demands of a rapidly urbanizing and unequal megacity. Access to electricity — needed to run water pumps — was sporadic, and there weren't enough treatment plants to ensure clean water for millions of residents.

These early experiences fuelled my dedication to tackling water injustices. Today, as an interdisciplinary human geographer with expertise in Earth sciences, and with policy experience gained at the United Nations, I approach environmental harms and social inequities in tandem — the root causes that connect both must be addressed for a just and sustainable future. My research also encompasses climate justice, which is inextricably linked with water justice. Climate change intensifies water-security concerns by worsening the unpredictability and severity of hazards, from floods and droughts to sea-level rise and water pollution.

Such events hit marginalized communities the hardest, yet these groups are often excluded from planning and policymaking processes. This is true at the international level — in which a legacy of colonialism shapes geopolitics and limits the influence of many countries in the global south on water and climate issues — and at the national level.

However, collaborative work between affected communities, activists, scholars, journalists and policymakers can change this, as demonstrated by the international loss-and-damage fund set up last year to help vulnerable countries respond to the most serious effects of climate-related disasters. The product of decades of globally concerted efforts, this fund prioritizes compensation for low-income countries, which contribute the least to climate change but often bear the brunt of the disasters.

I also witnessed the value of collaboration and partnership in my research in Dhaka. Community-based groups, non-profit organizations and activists worked with the Dhaka Water Supply and Sewerage Authority to bring supplies of drinking water at subsidized prices to marginalized neighbourhoods, such as Korail, where public infrastructure was missing.

Globally, safe water access for all can be achieved only by involving Indigenous and local communities in water governance and climate planning. People are not voiceless, they simply remain unheard. The way forward is through listening.

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TARA MCALLISTER
LET MĀORI PEOPLE MANAGE NEW ZEALAND'S WATER

I have always been fascinated by *wai* (water) and all the creatures that live in it. Similar to many Indigenous peoples around the world, Māori people have a close relationship with nature. Our connection is governed by geneaology and a concept more akin to stewardship rights than to ownership. This enables us to interact with our environment in a sustainable manner, maintaining or improving its state for future generations.

I was privileged to go to university, where I studied marine biology. I then moved to the tribal lands of Ngāi Tahu on *Te Waipounamu*, the South Island of New Zealand, which triggered my passion for freshwater ecosystems. Intensive agriculture is placing undue pressure on the *whenua* (land) and rivers there. Urgent work was required. Undertaking a PhD

in freshwater ecology, I studied the causes of toxic benthic algal blooms in rivers. For me, there is no better way to work than spending my days outside, with my feet in the water.

Having just started a research position at *Te Wānanga o Aotearoa*, a Māori-led tertiary educational institution, I am now exploring the interface between *Mātauranga Māori* (Māori Knowledge) and non-Indigenous science, and how these two systems can be used alongside each other in water research. I have also been working on nurturing relationships with *mana whenua*, the community that has genealogical links to the area where I live, so that I can eventually work in the community's rivers and help to answer scientific questions that its members are interested in.

Despite a perception that *Aotearoa* (New Zealand) is 'clean and green', many of its freshwater ecosystems are in a dire state. Only about 10% of wetlands remain, and only about half of rivers are suitable for swimming. Water resource management is challenging, because of a change this year to a more right-wing government. The current government seems intent on revoking the National Policy Statement for Freshwater Management, established in 2020.

This policy has been crucial in improving the country's management of freshwater resources. Although not perfect, it does include *Te Mana o te Wai* – a concept that posits that the health and well-being of water bodies and ecosystems must be the first priority in such management. It is now in danger of being repealed.

I think that, ultimately, our government's inability to divulge control and power to Māori people to manage our own *whenua* and *wai* is what limits water resource management. More than any change in policy, I would like to see our stolen lands and waters returned.

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SUPARANA KATYAINI
CONSIDER WATER, FOOD AND LAND TOGETHER

MILAN GEORGE JACOB

Suparana Katyaini calls for more policy support for Indigenous-led water management.

Growing up in New Delhi, I always had easy access to drinking water – until the summer of 2004, when a weak monsoon triggered a water crisis and the city had to rely on water tankers. I realized then that good management of water resources supports our daily lives in ways we take for granted until we experience scarcity.

My professional journey in research and teaching has been motivated by this experience. During my environmental studies of water poverty in India, I noticed that the field relied largely on quantitative data over qualitative insights – the degree of water-resources availability, access and use are typically assessed through metrics such as the water-availability index or the water-demand index. But in many places, Indigenous and local communities, including farmers and women in any occupation, have collectively developed skills to weather periods of water scarcity. Paying attention to these skills would lead to better water management. For example, the issue of food and nutritional insecurity in water-scarce areas in the state of Odisha, India, is being solved by Bonda people through revival of the crop millet, using varieties that are nutritious, water-efficient and climate-resilient.

But these efforts need more policy support. My current work at the Council on Energy, Environment and Water explores how water, food and land systems are interlinked in India, and how better understanding of these relationships can inform policies. I am looking to identify similarities and differences in objectives of national and regional policies in each sector, as well as exploring whom they affect and their intended impacts. The aim is to move towards unifying water, food and land governance.

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MICHAEL BLACKSTOCK
SHIFT ATTITUDES TOWARDS WATER

In 2000, I conducted an ethnographic interview with Indigenous Elder Millie Michell from the Siska Nation in British Columbia, Canada, that transformed my interest in water from intellectual curiosity to passion. She passed a torch to me that fateful day. During our conversation for my research about the Indigenous spiritual and ecological perspective on water, she asked me: "Now that I shared my teachings and worries about water, what are you going to do about it?" She died of a stroke a few hours later.

As an independent Indigenous scholar, I went on to examine climate change from a water-centred perspective – drying rivers, downpours, floods and melting ice caps are all water. This approach, for which I coined the term 'blue ecology', interweaves Indigenous and non-Indigenous ways of thinking. It acknowledges water's essential role in generating, sustaining, receiving and, ultimately, unifying life on Mother Earth. This means changing our collective attitude towards water.

In 2021, I co-founded the Blue Ecology Institute Foundation in Pavilion Lake, Canada, which teaches young people in particular to acknowledge the spiritual role of water in nature and in our lives, instead of taking it for granted as a commodity or ecosystem service. Giving back to nature with gratitude is also crucial. Such restrained consumption – taking only what is needed – would give abused ecosystems time to heal.

A focus on keeping water healthy can help to guide societies towards more sustainable environmental policies and climate-change resilience – and ensure that future generations will survive with dignity. Critics say, 'Blue ecology is kinda out there.' In my view, however, 'here' is not working.

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