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A Climate of Democratisation: Indigenous Ecological Knowledge and Climate Communication

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Abstract

The importance of communication in dealing with climate change cannot be understated, yet many voices, such as those of Indigenous communities often go unheard. Greta Thunberg's *The Climate Book* features both climate scientists as well as Indigenous and other climate activists, emphasising the democratisation of climate knowledge. Indigenous communities across many parts of the world have a deep connection with their natural environments, and traditional ecological knowledge (TEK) has been seen as critical to climate change adaptation and mitigation. Continuing the emerging discussions in Greta Thunberg's *The Climate Book*, this article reflects on the democratisation of climate knowledge and communication, drawing on the complex nature of TEK and Indigenous ecological knowledge (IEK). This article is based on the author's ethnographic insights from Indigenous and other communities in India. Traditional ecological knowledge comprises non-conventional intergenerational knowledge. Despite its growing acceptance in the last 20 years, TEK is still not fully seen as harmonious with scientific ecological knowledge (SEK); the latter still dominates ecological discourses. While TEK needs more presence in conventional climate discourses and may very well further the process of democratising climate knowledge, communicating this perspective in relation to climate change also presents numerous challenges. Crucially, some TEK holders are faced with changing relationships to their natural environments, as well as other social, cultural and political challenges.

Communication has an enormous role to play in dealing with climate change, but as Corbett (2021) suggests, communication has struggled to deal with "polarization and climate silence," thus resulting in "individual, social, political, and biospheric consequences" (p. 16). *The Climate Book*, which Greta Thunberg (2022) conceives as "democratic", brings together a variety of people concerned about climate change—scientists, activists, authors and others—to address complex and interconnected issues that require multifaceted perspectives and approaches. As with the climate scientists whose work is featured in *The Climate Book*, Indigenous and other climate activists also make an important appearance. As Thunberg (2022) says, "we are not all in the same boat".

Indigenous and non-western (and non-white) experiences and responses to climate change are included in the book. Saleemul Huq focuses on Bangladesh and Jacqueline Patterson explores environmental racism. Sônia Guajajara, who is herself Indigenous and is the Minister of Indigenous Peoples in Brazil, writes*:*

> those who care most for our planet, our forests, our sources of fresh water, are those who are most impacted by their destruction. And this is an undeniable fact, reinforced by numerous scientific institutions: the true guardians of the forests, and of the planet, are the Indigenous peoples. (Guajajara, 2022, p. 176)

Guajajara's words are important and draw attention to Indigenous knowledge, ethics of care towards the natural environment, and the fact that Indigenous communities across the world are worst affected by climate change. *The Climate Book* also includes essays by two other Indigenous voices. In the essay titled "Rain in the Sahel", Hindou Oumarou Ibrahim, an Indigenous geographer, writes about the impacts of global warming on the Sahel region where Lake Chad has been drying up. Sámi journalist Elin Anna Labba's essay focuses on the social and cultural impacts of climate change on winters in her Sápmi homeland. All three Indigenous writers in this book highlight the distinctive impact of climate change on Indigenous communities and the necessity of turning towards Indigenous knowledge. Despite the ecological knowledge inherent to Indigenous communities across the world and the potential of this knowledge to deal with environmental and climate crises, Indigenous knowledge is still not mainstream. As is evidenced in this article, Indigenous communities possess a rich knowledge of their environments and climate, yet they are often among the worst affected due to climate and environmental change. Indigenous and other place-based communities are also at risk from extractive industries. While traditional ecological knowledge (TEK) remained on the sidelines for many decades, it has recently made a comeback within UNESCO's LINKS, which analyses climate change impacts.

Taking inspiration from the ideas outlined in *The Climate Book*, this article argues for the democratisation of climate knowledge and its communication by drawing on TEK and climate communication. The article considers the complex nature of TEK and Indigenous ecological knowledge (IEK), based on reflections from my long-term ethnographic research with Indigenous (Adivasi) and other place-based communities in India. Certainly, TEK needs more presence in conventional climate discourses, and may very well further the process of democratising climate knowledge. However, communicating TEK in relation to climate change also presents numerous challenges, particularly where some TEK holders are faced with changing relationships to their natural environments, as well as other social, cultural and political challenges. Multiple questions emerge: how can TEK and IEK in relation to climate change be communicated in a way that allows traditional and Indigenous knowledge holders a place at the table? Can scientific ecological knowledge on climate change be democratised, and what challenges are presented with the communication of climate change?

In many parts of the so-called Global South, rising temperatures, erratic weather, changes in agricultural patterns and other concerns increasingly form the lived reality for many Indigenous and other communities. Here, climate communication is also bound by other restrictions, such as a shrinking interest in and increased challenges for environmental reporting (Mishra, 2020). Climate reporting in India is still largely focused on major events such as international summits and relies heavily on scientific data (Mishra, 2020) and government sources (Comfort et al., 2019).

Indigenous communities across many parts of the world have a deep connection with their natural environments, and IEK and TEK have recently been recognised as critical to dealing with climate change (Raygorodetsky, 2011). Berkes (1999) defines the latter "as a cumulative body of knowledge, practice, and belief; evolving by adaptive processes and handed down through generations by cultural transmissions, about the relationship of living beings (including humans) with one another and with their environment," which is itself "a subset of indigenous knowledge" (p. 5). Traditional ecological knowledge comprises non-conventional generational knowledge. Even in the last 20 years since its growing acceptance, TEK is still not fully seen as harmonious with scientific ecological knowledge (SEK)—the latter still dominates ecological discourses (see Mishra, 2018). Indigenous communities have a rich ecological knowledge and can identify a wide range of animal and plant species including those that serve as critical medicines. Indigenous knowledge has also helped in predicting weather patterns, and in recent years Indigenous communities have reported changing weather patterns and rampant biodiversity loss due to climate and environmental change (Mishra, 2018, 2022). For many Indigenous communities in India, this TEK has been critical in climate change adaptation and mitigation. Such knowledge is varied, rich and often anchored to place, and attempts to write it down lead to a change in its properties (Ellen & Harris, 2000). A lack of formal ways of dealing with traditional knowledge has led to evolving relationships with the land and resource bases (Gadgil & Berkes, 1991).

Indigenous ecological knowledge

Modernisation programmes in many parts of the Global South often meant replacing traditional knowledge systems with modern scientific knowledge systems, as the former was presented as a hindrance to development (Melkote & Steeves, 2001). While in the 1950s and 1960s, traditional and Indigenous knowledge systems were relegated to an inferior position, in the last 30 years or so, the former have increasingly been seen as containing valuable knowledge for environmental conservation (Posey, 2000) and sustainability (IPCC, 2007). Even more recently, IEK has been seen as having the potential to deal with the impacts of climate change (Nakashima et al., 2018).

As Berkes (1993) puts it, TEK "represents experience acquired over thousands of years of direct contact with the environment" (p. 1). This includes beliefs and practices that have been passed down through generations. Traditional ecological knowledge is critical to Indigenous communities in "managing ecosystem processes and functions" (Berkes et al., 2000, p. 1251) and cultural landscapes (Culler-Unsworth & Maclean, 2015). Indigenous communities have used IEK to predict weather (Chinlampianga, 2011). Berkes (1993) compares TEK to SEK and writes that they both are born out of the "same intellectual process of creating order out of disorder" (p. 3). However, Berkes also notes the differences: TEK tends to be more qualitative, uses intuition too (alongside the rational) and is holistic, where mind and matter are not separated. Traditional ecological knowledge is also empirical, diachronic as well as moral, spiritual and generated by communities themselves (not specialists). This places TEK in the unique position of being highly adaptable and democratic in its outlook. Shiva (1993) points out that Indigenous knowledge is itself mostly ecological.

As Gadgil et al. (2000) point out, TEK is affected by peoples' changing relationships to their natural environments, especially concerning reduced access to these environments and decreased dependency on local animals and plants for medicines (Gadgil & Berkes, 1991). As much of TEK is inter-generational knowledge reliant on oral transmission, recording it has proved to be a challenge (Ellen & Harris, 2000). Additionally, if the source or creator of the knowledge cannot be identified,

it can be left without protection (Posey, 2000). Traditional knowledge generally, which is also held within customs and generational wisdom—"embedded in proverbs, customs and practices" and dictating "dictated a respectful relationship with the natural environment"—has been affected by the migration of people from rural to urban areas (Mishra, 2018, p. 64). Some traditional practices may themselves not complement the movement of people, simply because the surrounding environments may change; hence, the experiences and traditions related to one particular type of environment may no longer hold true (Mishra, 2018). Indigenous or non-SEK knowledge is greatly undervalued—and this has meant that while Indigenous knowledge is highly sought after, it is also at great risk from bio-piracy (Shiva, 2016). Globalisation, and international agreements, such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), are inherently capitalistic and have accelerated biopiracy, that is, the "appropriation of plants and cultural knowledge" (DeGeer, 2002, p. 180).

Modernisation programmes of the 1950s and 1960s in many parts of India also meant a shift towards modern, western medicinal systems, thus placing traditional medical knowledge in the background. In recent years, the ancient Indian medical system Ayurveda has gained research interest in India and other countries with regard to its scientific importance (Hankey, 2005), medicinal plants (Kumar et al., 2017), holistic and life science approach (Shi, et al., 2021), along with its contributions to cardiology (Vedam et al., 2021). Unlike well-documented medicinal knowledge systems such as Ayurveda and traditional Chinese medicine (TCM), other Indigenous and traditional knowledge regarding medicine is passed down orally through generations and can present unique challenges when recorded. In recent years, numerous works have examined Indigenous perspectives on TEK, the uses of medicinal plants along with health and medicinal knowledge (Caballero-Serrano et al., 2019; Ugulu, 2011).

UNESCO's Local and Indigenous Knowledge Systems (LINKS) programme, which was started in 2022, aimed to increase the relevance of Indigenous, traditional and local knowledge. UNESCO (2022) sees LINKS advancing the "science-policy interface and how science is produced, and a new appreciation of the diversity of human understanding and capacity to observe and respond to our environment" (para. 3). UNESCO (2022) thus highlights the importance of conjoining local and Indigenous knowledge with the natural and social sciences to deal with biodiversity loss, climate change and ecosystem decline. Local and Indigenous knowledge are therefore critical to Sustainable Development Goals (SDGS), particularly SDG 13 on climate action (UNESCO, 2023). A large body of work has been produced by UNESCO on Indigenous and local knowledge to address climate change (e.g., Nakashima et al., 2018; UNESCO, 2020). Nakashima et al.'s (2018) volume *Indigenous Knowledge for Climate Change Assessment and Adaptation* contains 20 chapters written by international scholars. Mondragon (2018), for instance, argues that knowledge must be co-produced by "scientific and indigenous actors" and that underestimating Indigenous knowledge "points to a critical limitation of the international development and natural sciences' communities to take seriously the diversity of ways in which environmental knowledge is entangled with local productive, effective, moral and spiritual worlds" (p. 37). Other authors similarly argue in favour of Indigenous epistemologies and knowledge in responding to climate change (Cabalzar, 2018; Briones, 2018).

Despite these efforts to bring traditional and Indigenous knowledge systems to the forefront in thinking about climate change, western climate science remains dominant. This is despite many natural scientists' recognition that effective climate change action is not possible without collaboration with the social sciences (see Maslin, 2014; Yearley, 2009). Social scientists have

contributed to definitional reflections on the current epoch, i.e., the Anthropocene (Ellis et al., 2016). Yet climate denialism and misinformation have not declined, despite the scientific consensus on climate change. Climate denialism serves neoliberal agendas (Ekberg & Pressfeldt, 2022) and neoliberalism itself as an ideology reimagines "society as consisting not of structures but of individual human persons who are attributed immense agency, entitlement, and rationality" (Lerch et al., 2022, p. 97). In this context, individual-centred approaches to climate change can be seen as insufficient, as climate change remains by and large a structural problem. In India, though, climate change denialism and scepticism are low; there is considerable trust of climate science (Whiting, 2020). This results from the understanding of climate change through lived experiences (Thaker et al., 2020). Climate science serves to validate long-standing individual experiences of, say, extreme weather and other climatic events.

Although western science is still dominant not all science is western, and scientific knowledge has been produced over millennia through the transfer of knowledge across the East and West (Iaccarino, 2003). However, with climate change information and climate journalism, climate scientists have remained elite sources of information as Schäfer and Painter (2021) show. Climate news sources in China, India, Singapore and Thailand are, according to Comfort et al. (2020), mostly government sources, followed by scientists, while other sources, including activists, are underrepresented. Many climate communicators may not take into account the lived experiences of communities (see Rödder, 2020). Challenges of environmental and climate reporting are especially of concern, with environmental journalists facing greater risks as certain environmental concerns are tied to powerful political and economic interests (Freedman, 2020). In India, environmental journalists are presented with physical and structural challenges which affect the coverage of several environmental issues (Mishra, 2020). Climate communication still mostly relies heavily upon climate science, perhaps amplifying the abstract nature of climate change (see Giddens, 2011). As Hulme (2015) asserts, climate science needs to be democratic in that "proliferation of diverse and inspiring narratives and meanings surrounding the idea of climate change needs encouragement" (p. 901).

Local and Indigenous communities are communicating about climate change, but the question remains whether anyone is listening. My work with Indigenous community members and leaders shows that they possess a deep knowledge of their environments in relation to climate change. It is extremely important to listen to these multiple and diverse perspectives and voices on climate change which are based upon the lived experiences of local and Indigenous communities. Climate communication needs to be more democratic, more inclusive and bottom-up.

Negotiating TEK: Indigenous observations of climate change in India's highlands

In this section I present data from my ethnographic fieldwork in eastern India's highland areas. For many journalists, covering environmental stories in such secluded areas remains a challenge because national mediascapes change (see Rao, 2018). The eastern Indian highlands regions (also called the East Deccan Moist Deciduous Forests), which are made up of discontinuous mountain ranges with altitudes of 50-1670 metres have high rainfall, high biodiversity and temperatures that vary from -2 degrees to 45 degrees Celsius. These areas are home to several Indigenous—Adivasi or Tribal—communities, who have maintained distinct cultural and linguistic identity through their relative isolation. For these communities, much like other Indigenous communities across India and

in other parts of the world, traditional knowledge is enshrined in cultural practices and transmitted orally through generations. Indigenous communities have a rich knowledge of their environments, and their lifeworlds are tied to a diverse base of foods and medicines. In the face of climate change, Adivasi resilience is tied to Indigenous knowledge and a diversified resource base (see Mishra, 2022).

My ethnographic fieldwork in these highland areas, across multiple Adivasi villages revealed that Adivasi communities have a rich knowledge of their natural environments—of animals, plants, landscapes, water, soil and so on. This place-based knowledge is arguably more holistic than scientific ecological knowledge. Traditional land use and resource management has allowed for intercropping, high food and nutritional diversity, a diversified resource base and protection of the forests and biodiversity. This rich knowledge allows the community to detect changes to their natural environments. These local observations are important for adaptive strategies. Traditional practices have been maintained by these communities, including those pertaining to forestry and agriculture. Forests, sources of food and medicines, are seen as critical to the community—thus tied to the community's adaptive strategies in the event of unprecedented weather events. Traditional agricultural practices (including shifting cultivation with long fallow periods) ensured the health of forest ecosystems. The community has a rich knowledge of biological and climatic indicators—these are generally tied to sightings of flowers, animals, etc., and include environmental observations to determine rainfall.

In recent years, these Adivasi communities have observed changes to their environments: changes in and loss of biodiversity, agricultural decline, increasing temperatures, erratic weather and more extreme weather events. As I compared community memory and records of extreme weather events, they were consistent with scientific records. Biodiversity loss is especially significant, as this has environmental and socio-cultural implications. In this context, the community depends on medicinal plants, and community members have a rich medicinal knowledge. Loss of plant biodiversity also has immense health implications, especially when particular medicinal plants and medicinal knowledge are essential to treat common ailments in isolated locations.

Community members have pointed towards rising summer and winter temperatures and compared their experiences of heat to those of their own childhood. While temperatures in the past would drop below freezing during winter in these highland areas, Indigenous elders' recollections point towards warmer winters in the present, and changing rainfall patterns reflected changed timings and experiences of winter (Mishra, 2022). These seasonal shifts have impacted upon the flowering of certain plants and also the growth of crops. With changing rainfall patterns, some people pointed out that the weather had become erratic and, in many cases, unpredictable. Generationally established coping mechanisms in the event of increased heat and extreme weather were also mentioned by community members. Other prolonged environmental effects have meant changes to traditional practices as well, such as decreased fallow periods.

Clearly, with extreme changes to environments, Indigenous communities have observed irreversible loss of plant and animal species that have critical social and cultural implications. Beyond this, the community's coping and adaptive strategies have been affected by extra-local and non-local social and political factors, which include the illegal takeover of Adivasi land by non-Adivasis (see Mishra, 2022). With climate change, Indigenous knowledge systems are faced with challenges, yet many have adaptive strategies to deal with these. They include reliance on specific foods and cooling practices to deal with extreme heat (see Mishra, 2022).

Other place-based communities are similarly aware of climate change, loss of biodiversity and changes to ecosystems. My fieldwork in several parts of rural India revealed similar lived experiences of this. Biodiversity loss, particularly of plant, bird and insect species, was reported to be a widespread problem. Many local communities still have a rich generational ecological knowledge, and their observations of biodiversity loss, changes in seasons, changes in rainfall patterns, coastal erosion and other problems were based on their everyday realities.

Traditional ecological knowledge is based on physical interactions with Nature and can be seen as "cultural practices/traditions and manifestations in language" (Mishra, 2018). Unlike most conventional western conceptions of human-nature relations (such as anthropocentrism), Indigenous and traditional knowledge systems see humans as a part of nature and not superior to it (see Mishra, 2022).

For the Indigenous communities of the eastern Indian highlands that I have worked with, as well as for other Indian place-based communities, traditional thought dictates a kinship with Nature—animals, birds, trees are seen as part of a larger community that includes human beings. In the eastern Indian highlands, Indigenous communities refer to the forest as "mother," a life-giving source that should not be destroyed; it is customary to take just enough from the forest and not more (see Mishra, 2022). Yet the forest is not only a mother that contains everything but is the source of their survival—their livelihoods are directly tied to the health and wellbeing of the forest. Animals and birds too, in Adivasi myths and legends, are presented as friends and community members (Mishra, 2022). These manifestations of language—through stories and proverbs—bridge the divide between the human and the nonhuman, ensuring that both are respected. Thus, just as there is no separation between Nature and humans, the mind and body are not seen as separate. Everything is connected and conceptualised holistically, including traditional and Indigenous medicinal knowledge. For non-Adivasi (Indigenous) communities, there are similar conceptions, at least in thought—all of Nature is seen as part of a larger community. As Shiva (1989) terms it, Indian cosmology is one of "duality in unity" (p. 40), and I would employ the same phrase to characterise the Adivasi communities that I have worked with.

It is these deep physical, spiritual and emotional connections to the land, the forests, rivers and animals that dictate the preservation and respect for all living things. The post 1990s economic reforms in India, called LPG (liberalisation, privatisation, globalisation) led to a host of economic and socio-political changes, including environmental degradation. With neoliberalism, "Nature lacks intrinsic value", creating a host of "invisibles", which includes "animals, bird, rivers, forests, mountains and indigenous people" (Mishra, 2018, p. 61).

Climate change is already impacting upon Indigenous foods and medicines. While Indigenous communities have a rich knowledge of medicinal plants and crops (in the eastern highlands and elsewhere, Adivasi communities grow a diverse variety of crops), these are threatened by climate change. Similarly, while TEK/IEK is adaptive, it is faced with challenges from rapidly changing natural environments, the threat of extractive industries, and socio-cultural factors. If plants disappear due to environmental change, then the traditional knowledge tied to that particular plant will inevitably be affected. Furthermore, as is the case for smaller Indigenous populations, if knowledge holders pass away and no one replaces them, the traditional medicinal knowledge may also die with them. Despite these challenges, Indigenous knowledge is dynamic; it presents multiple approaches to cope with and adapt to environmental and climate change.

Political economy, neoliberalism and environmental collapse

In *The Climate Book,* Naomi Oreskes (2022) writes "capitalism as currently practised has imperilled the existence of millions of planetary species" (p. 30). As climate change appears to be a threat that is "too far away" (Thunberg, 2022, p. 22), denialism and climate doubt became inherent to "advertisements and public relations campaigns". In particular, it was the "politically conservative, libertarian and neoliberal think tanks that amplified the message of climate doubt" (Oreskes, 2022, p. 29). Equity is another important aspect, and Narain (2022) raises this, drawing attention to how poor and disadvantaged communities are the worst affected by climate change. These points highlight the necessity of a political economy approach that allows the examination of power incorporating media organisations and communication.

Political economy and the political economy of communication's emphasis on examining capitalism (Mosco, 2009) and privatisation (Murdoch, 2014) while challenging "unjust and inequitable systems of power" (Wasko et al., 2014), has become ever more important in regard to climate change. Political economy has been applied to the environment (Robbins, 2000; Rudel et al., 2011) and to climate change specifically (Boykoff & Yulsman, 2013; Brevini & Murdoch, 2017). Political economy approaches have been critical in highlighting how inequalities accelerate environmental destruction (Boyce, 2002). Examples include Maxwell and Miller's (2012) book *Greening the Media* and their subsequent work on environmental risks of smartphones (2020), Brevini and Murdoch's (2017) volume *Carbon Capitalism and Communication* and Morgan's (2018) work on the techno-finance fix and environmental policy. More than 20 years ago Boyce (2002) showed that democratic and equitable power distribution was critical to protecting the environment. In recent years environmental destruction worldwide has only deepened, revealing new forms of inequality and environmental injustice (Malin et al., 2019).

In some parts of the world, including the areas I have worked in, extractivism remains a significant concern, as Indigenous regions are resource rich (O'Faircheallaigh, 2013; Crate & Yakovleva, 2017**)**. Climate change impacts therefore may be heightened due to extractive industries (see Addison, 2018). These may be facilitated by the state to the detriment of Indigenous areas in many parts of the world. Resource extraction has more immediate impacts on Indigenous communities, thus accelerating the environmental changes they are already experiencing. Mining in Indigenous lands, for instance, has huge environmental, cultural and social risks for Indigenous communities. Indigenous peoples bear the burden of more than a third of all environmental conflicts in the world. Of these, mining, dams, fossil fuels and the agriculture, forestry, fisheries and livestock (AFFL) sector are the largest causes (Scheidel et al., 2023). In some parts of India, destruction of traditional lands, pollution and Indigenous dislocation have been exacerbated by neoliberal reforms allowing foreign corporations to enter ecologically-sensitive regions (Mishra, 2013). One Indigenous community I worked with was faced with threats to their hills and forests from a UK-based mining corporation (see Mishra, 2013). In general, neoliberalism in the service of global capitalism has strained natural environments (Mishra, 2022) by privatising common or state-owned resources, thus weakening environmental regulations (Liverman & Vilas, 2006).

Democratising climate knowledge and climate communication

While some on the world stage are still debating whether or not climate change is real, local and Indigenous communities across the world are experiencing climate change through their immediate, lived experiences. The term "climate change" has long entered the vocabulary of many Indian languages. In Hindi and several other Indian languages the term for climate change is जलवायु परिवर्तन, which loosely translated means "changes to wind and water". India has a large diversity of languages, so other Indian languages also have their own words to express the lived reality that is climate change. Tribal/Adivasi (Indigenous) communities that I have worked with also have their own languages, and there are words to describe different environmental and climate-related phenomenon, although these words are born out of particular Indigenous cosmologies and relationships with the natural world.

In other Indian rural areas where I conducted research, farmers and their communities unanimously pointed out that temperatures have been rising, water bodies have been drying up or disappearing and rainfall patterns have changed. Extreme weather events have become more intense and common, just as seasons have changed (in some parts of the country where colder winters were seen in the past, present-day experiences of winter are significantly milder). Most of these observations have lived realities, rather than the retelling of media narratives. Indeed, climate science and climate reporting have tended to verify Indigenous peoples' everyday experiences.

As O'Reilly et al. (2020) point out, knowledge about the climate is beyond "expert" knowledge; instead, it is "embodied and material" (p. 18). Indigenous knowledge systems documented by anthropologists show detailed climate observations (Ingold & Kurttila, 2000; Orlove et al., 2010). Anthropological research also highlights the difference between climate science and place-based approaches to climate change (Jacka, 2009). McNamara and Prasad (2014) show Pacific Island communities adapting to climate change. Indigenous knowledge is dynamic and adaptive and Indigenous communities have learned to cope with extreme weather events. Much like the Pacific Islands Indigenous communities, adaptive strategies have been developed by the Indigenous communities in India's eastern highlands. Anthropological research draws attention to the multiple ways through which place-based communities, including Indigenous peoples experience, conceptualise and adapt to climate change.

Such research highlights the need for democratic, bottom-up and horizontal approaches to climate change and its communication. Climate change reporting in India is still largely science-based, relying on expert knowledge, although some alternative media organisations such as *Down to Earth* have drawn attention to lived experiences of climate change (for more on *Down to Earth*'s environmental reporting see Mishra, 2020).

Traditional ecological knowledge and IEK are crucial in order to deal with biodiversity loss, environmental change and climate change. Indigenous and local communities' observations of climate change are rich and can provide a complementary understanding of climate science because they reflect the lived reality of climate change effects. Climate communication needs to incorporate these multiple perspectives and not just rely upon climate science. Democratisation of climate knowledge would mean acknowledging the ways of knowing and knowledge systems of local and Indigenous communities. Place-based Indigenous communities still have a strong connection to their natural environment, their lived experiences and traditional knowledge, which includes knowledge of coping methods and adaptation strategies that can be lessons for many others.

As Maslin (2014) points out, information deficit is not the root cause of climate inaction; rather, climate change is about politics. Climate change knowledge and its communication must be democratised. There is no doubt that climate science must continue to counter climate denialism, but it must do so with the support of the social sciences and Indigenous knowledge. The experiences and perspectives of non-western, place-based peoples (including Indigenous communities) are ever more important for climate science and climate communication. Presenting climate science as knowledge sourced by the scientific establishment in the Global North centralises it, thus denying the agency of other knowers (Global South natural and social scientists, place-based and Indigenous communities, and others). UNESCO's LINKS has been a step in the right direction. By acknowledging that there are other knowers and other ways of knowing, the organisation highlights the necessity of interdisciplinary approaches and multiple stakeholders. The recent switch to TEK in analysing climate change does however place undue burdens on systems of thought and knowledge that have been side-lined for centuries. For climate science and TEK to be synthesised it will require a rethinking of western scientific philosophy, and will need an openness towards holistic, non-reductionist approaches to knowledge.

Indigenous (and many local) communities have been communicating about climate and environment change for a long time, but have they been heard? Traditional and Indigenous knowledge systems present a holistic, place-based, lived approach to ecological knowledge, and by nature are highly democratic. Returning to the idea of *The Climate Book,* by bringing many voices together, the notion of the climate expert is in a sense rewritten—it decentralises knowers and presents us with an array of experts. It is not necessarily overriding existing knowers but instead asking us to reconsider others as knowers. As Hulme (2015) points out, climate change requires a rethinking of ourselves, our societies, and the future, as climate change leads to "an exemplary case of scientific knowledge, personal experience, and the human imagination interacting in multiple, complex and changing social contexts" (p. 893). Climate communication, in its many forms, from the top to the bottom still has potential to shape awareness, attitudes and behaviours, and in doing so, it must bring to the table different knowers, and present new ways of creating stories and narratives about climate change.

Author Bio

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