

# IDS Bulletin

Transforming Development Knowledge

Volume 53 | Number 4 | December 2022

## REFRAMING CLIMATE AND ENVIRONMENTAL JUSTICE

Issue Editors **Amber Huff** and **Lars Otto Naess**



<b>Notes on Contributors</b>	iii
<b>Introduction: Reframing Climate and Environmental Justice</b> Amber Huff and Lars Otto Naess	1
<b>Recognising Recognition in Climate Justice</b> Tor A. Benjaminsen, Hanne Svarstad and Iselin Shaw of Tordarroch	13
<b>Cutting the Supply of Climate Injustice</b> Peter Newell and Mohamed Adow	31
<b>Livestock and Climate Justice: Challenging Mainstream Policy Narratives</b> Fernando García-Dory, Ella Houzer and Ian Scoones	47
<b>Policing Environmental Injustice</b> Andrea Brock and Nathan Stephens-Griffin	65
<b>Epistemological Justice: Decoloniality, Climate Change, and Ecological Conditions for Future Generations</b> Felipe Milanez, Mary Menton and Jurema Machado de A. Souza	85
<b>Climate Justice for Whom? Understanding the Vernaculars of Climate Action and Justice in Marginal Environments of India</b> Shilpi Srivastava, Shibaji Bose, Devanathan Parthasarathy and Lyla Mehta	101
<b>Glossary</b>	125

# Climate Justice for Whom? Understanding the Vernaculars of Climate Action and Justice in Marginal Environments of India<sup>\*†</sup>

Shilpi Srivastava,<sup>1</sup> Shibaji Bose,<sup>2</sup>  
Devanathan Parthasarathy<sup>3</sup> and Lyla Mehta<sup>4</sup>

**Abstract** As calls for climate action gain momentum, governments and international organisations are committing to ambitious climate targets and scaling up their climate action. In this article, we argue that to address climate change, 'just' climate action is required which moves away from portraying local communities as 'victims' and/or 'beneficiaries' and focuses on investing in their social and material capabilities so that they determine their futures and pathways of change. Climate action will have little meaning or will produce counterproductive results unless it is mobilised to question deep-seated inequalities and unjust framings that feed into epistemic closures and foreclose possibilities of plural pathways towards radical social change. Drawing on our research with front-line communities in India, we emphasise the importance of processual aspects of addressing climate (in)justice. We underline why climate action must be steered from 'below' for transformative change, and why this requires attention to more 'vernacular' forms of action.

**Keywords** climate justice, vernacular politics, transformation from 'below', marginal environments, pastoralism, fishers, India.

## 1 Introduction

The release of the Intergovernmental Panel on Climate Change (IPCC) (Working Group 1) report in 2021 (IPCC 2021) sounded a 'code red for humanity' (António Guterres, cited in UN News 2021), outlining the profound alterations that anthropogenic climate change has caused to our global environmental system. The message was loud and clear, urging countries to decarbonise rapidly and effectively. This 'crisis' framing spurred several countries into action: they committed to ambitious climate targets at the

© 2022 The Authors. *IDS Bulletin* © Institute of Development Studies | DOI: 10.19088/1968-2022.141

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non Commercial 4.0 International licence (CC BY-NC), which permits use, distribution and reproduction in any medium, provided the original authors and source are credited, any modifications or adaptations are indicated, and the work is not used for commercial purposes.

The *IDS Bulletin* is published by Institute of Development Studies, Library Road, Brighton BN1 9RE, UK  
This article is part of *IDS Bulletin* Vol. 53 No. 4 December 2022 '**Reframing Climate and Environmental Justice**'; the Introduction is also recommended reading.



2021 United Nations (UN) Climate Change Conference (Conference of the Parties (COP26)) in Glasgow, mostly through techno-centric pathways such as Net Zero. However, the process by which these targets will be implemented or realised has profound justice implications, especially in the situated contexts of countries in both the global South and North (Contreras, Srivastava and Shen 2021). If implemented poorly, these could inevitably cause dislocation and disruption for many, especially vulnerable populations with little to no voice in decision-making on climate action, thus perpetuating climate colonialism and injustice.

Climate justice recognises that impacts of climate change are spread unequally, unevenly, and disproportionately (Sultana 2021), leading to diverse forms of recognitional, distributional, cognitive, and procedural injustices. It emphasises that the burdens of change fall unequally on those who are the least responsible for creating climate change (Newell *et al.* 2021; Schlosberg and Collins 2014). This begs the following questions: How should these injustices be addressed, and whose voices count in the claims for justice? How is the justice language articulated by those on the front line? And how should these processes be made visible? This article focuses on some of these questions through the case of marginal environments in India that are characterised by climatic uncertainty.

Recognised as a global climate hotspot, India has large population groups that are highly vulnerable to the impacts of climate variability and change (IPCC 2014). As an emerging economy, India has one of the largest sources of greenhouse gas (GHG) emissions globally. Yet, it also has one of the lowest GHG emissions per capita, reflecting that it has an enormous share of the world's poorest people (Dubash 2012; Mehta *et al.* 2019). In global negotiations, India has constantly argued for the principle of common but differentiated responsibility, underlining that economically advanced countries should take on the burden for historic emissions. However, India's domestic policy often revolves around international negotiations and geopolitical interests rather than social and environmental justice concerns (Narayanan and Fernandes 2016) and usually builds on historical legacies of inequality, oppression, and injustice (Kashwan, forthcoming). Predominantly influenced by economic growth imperatives, these policies fail to address inequalities in a substantial way. This is also evident in the weakening of environmental regulations in India that are justified on grounds of 'ease of doing business' and that have facilitated the diversion of forest land and coastal commons for industrial activities (Kukreti 2017; Aggarwal 2020). Furthermore, many big corporations are engaging in greenwashing, often in the name of green energy and climate mitigation, which further dispossesses locals from their lands and livelihoods (see Section 4).

This paradox is clearly visible in climate hotspots such as drylands, deltas, and coastal ecosystems in India. These areas were often considered to be 'marginal environments' in colonial

and post-colonial policymaking in that they were subjected to unpredictable events, compared to 'environmental normal' areas which were considered productive and predictable (see Damodaran, D'Souza and Dey 2021). 'Marginal' to the gaze of mainstream development for decades, these areas are now being reimagined and remade as the new 'resource frontiers' (Barney 2009; Huff and Orengo 2020; Srivastava and Mehta 2021). Climate uncertainties are particularly acute in these marginal environments where climate stressors and shocks such as droughts, floods, and cyclones are intersecting with the uneven impacts of capitalist expansion and are threatening people's sense of place and identity (Mehta *et al.* 2021). This expansion includes coastal infrastructure projects in Mumbai which are decimating Koli livelihoods (Chouhan, Parthasarathy and Pattanaik 2018); aggressive industrialisation in coastal Kutch, Gujarat, which has dispossessed local fishers and pastoralists from the grazing and fishing commons (Mehta and Srivastava 2019); and poorly designed conservation projects in the Sundarbans, which have curtailed the forest-based livelihoods (honey, crab, or prawn collection) of the islanders. While local communities may have historically developed practices to deal with uncertainties arising due to environmental variability, current climate change impacts that intersect with neoliberal development have produced a radical uncertainty that severely curtails their adaptive capacity (Srivastava *et al.* 2021).

More recently, local communities within these habitats are now being dispossessed of their common-pool resources (grazing land, marine resources, coastal wetlands, farms, and forests) in the name of 'green' development (Martin *et al.* 2020). For example, in Kutch, renewable energy projects are increasingly being pushed as a solution for avoiding the ecological impacts of fossil fuel-based power projects (Aggarwal 2021; see Section 4). When implemented poorly, such schemes can overlook the synergistic and cultural relationships that local resource-dependent communities (artisanal fishers, pastoralists, farmers) have with these habitats. This can lead to profoundly alienating effects on local communities and can threaten their wellbeing and identity (Sullivan 2013; Mehta and Srivastava 2019; Fairhead, Leach and Scoones 2012). Therefore, questions of **distributive justice** (who gains and who loses) and **recognition justice** (understanding plural notions of value) become critical in unpacking climate action and the so-called climate 'solutionism' which was at full display at COP26 (Scoones 2021).

We argue that 'just' climate action is underlined by systemic transformative change (Newell *et al.* 2021; Mehta *et al.* 2021) which disrupts unequal power relations and is orientated towards socially just pathways. This requires both researchers and policymakers to move away from portraying local communities as 'victims' and/or 'beneficiaries' and to focus on investing in their social and material capabilities so that they can determine

their futures. In doing so, a place-based, bottom-up view on climate action is required that values the perspectives of the marginalised population who, despite being at the centre of climate change impacts, are often excluded from initiatives around climate action through epistemic, recognitional, and distributive injustices. The PhotoVoice approach (see Section 3) that we use in all the empirical cases is one way to make the hitherto invisible and tacit knowledges of marginalised groups visible. Through three diverse case studies from the Indian subcontinent, we demonstrate how local communities in marginal environments are experiencing climate change and injustice as top-down policies disrupt and dislocate their lives. In parallel, we also showcase how these communities are mobilising and working towards place-based or what we have called 'vernacular' forms of justice through building alliances. The latter involved stakeholder workshops, roundtables, and a study of autonomous protests, petitions, and resistance to marginalisation which draw from local awareness and understanding of climate change and its impacts on living spaces, assets, and livelihoods.

We begin by conceptualising climate justice and the importance of the 'vernacular' in centring the bottom-up views on action and we outline how our methods aided in reversing the gaze. We then turn to the case studies from Kutch, coastal Mumbai, and the Indian Sundarbans where front-line communities are mobilising through diverse tactics to challenge mainstream narratives of climate (in)action before concluding with some final reflections.

## 2 Vernacularising climate justice

Although there is considerable literature on climate justice that emphasises its procedural, distributional, and intergenerational aspects, including questions of recognition (Schlosberg and Collins 2014; Newell *et al.* 2021), the meaning, scope, and practical implications of climate justice remain contested. Emerging literature now points towards decolonising climate justice, arguing that global North-centric frameworks of justice can potentially erode other ways of (re)conceptualising climate (in)justice and how it is experienced and realised (Álvarez and Coolsaet 2020; Newell *et al.* 2021; Chakraborty and Sherpa 2021). To this end, several scholars have emphasised the need to pluralise climate justice, what it means, and how it is being realised in situated contexts (Chakraborty and Sherpa 2021; Sultana 2021), thus promoting alternative concepts of justice, value, knowledge, nature, and culture (see Martin *et al.* 2020). For example, we show below how, for the Koli fishers in Mumbai, climate justice has influenced the petitions of the small-scale fishers who have documented the losses and damage suffered by them due to cyclones and extreme precipitation events, and are seeking compensation from the government.

There are also scalar (international, national, and subnational) and temporal (intergenerational) aspects of climate change

and climate (in)justice (Chakraborty and Sherpa 2021; Sultana 2021). Research on local perceptions of climate change shows that climate change is often experienced in terms of changing and diminishing livelihoods in conjunction with historical relationships of inequity and exploitation (Chakraborty and Sherpa 2021; Mehta, Adam and Srivastava 2022). Impacts of climate change and injustice are most often experienced in the language of 'loss' for communities on the front line; loss of land, home, and identity, and very often in terms that are not amenable to quantification (see Boyd *et al.* 2021). Furthermore, the cascading and compounding impacts of climate change experienced via disasters bring in new dimensions of injustice that combine marginality and inequality to push resource-dependent communities such as the Koli fishers, pastoralists in Kutch, and women islanders into greater vulnerability (*cf.* Parthasarathy 2018; also see Sections 4, 5 and 6). However, global narratives on climate change often take an abstract and aggregate view of these changes, and push solutions and interventions that at best, may not fit local situations and at worst, yield counterproductive results leading to maladaptation (Chakraborty and Sherpa 2021; Eriksen *et al.* 2021). For example, in the Indian Sundarbans, concrete embankments have been implemented that have both increased the displacement of poor residents from their lands, and also often do not lead to the required flood control. Thus, without recognising the effects on poor and marginalised populations, they have led to 'cascading' maladaptations. Often seen as 'unintended' or negative effects, long-standing structural inequalities lie at the heart of such maladaptive outcomes (Ghosh, Bose and Bramhachari 2018; Srivastava, Mehta and Naess 2022). However, for policymakers, place-based articulations of climate change (how it is felt, experienced, and perceived) are often disparaged and sidelined as being anecdotal or not generalisable enough to warrant policy action (Srivastava *et al.* 2021).

In his book, *Politics in the Vernacular*, Kymlicka (2001) argues that democratic politics is essentially a 'politics of and in the vernacular'. Although he is referring to language capacities and communication, his key argument is that people associate with concepts, ideas, and issues and express these freely in a language and style in which they are comfortable. A similar lens when applied to climate change means that experience of climate change and (in)justice are locally embedded in the social, cultural, and political context. Similarly, resistance and mobilisation may also draw on cultural repertoires and diverse practices as we outline in our case studies. We locate these forms of action, articulation, and mobilisation as the politics of the vernacular and show how the PhotoVoice method, in particular, helps to reveal these practices and repertoires and bring them to the fore.

We use the category of the vernacular in two ways. First, to situate and centre the climate change experiences and

articulations of communities on the front line in marginal environments. Second, to highlight that mainstream theorisation of climate justice which rests on Western frameworks needs to give way to more indigenous and situated practices and discourses of justice. We need to critically engage with both these dimensions. In this vein, vernacular climate justice explores the diverse meanings and practices of climate justice (Newell *et al.* 2021). It makes a strong case for pluralising climate knowledge and recognising the value of experiential knowledge of those at the forefront of climate change as well as climate justice struggles (*ibid.*).

Cognitive justice is central to this vernacularisation as questions of whose knowledge and values count, who participates in agenda-setting, and how accountability is established are key (Visvanathan 2005; Forsyth and Sikor 2013; Martin *et al.* 2020). In Mumbai, for instance, the city and state administrations have failed to acknowledge the nature and scale of damages experienced by the Koli fishers due to Cyclones Nisarga (2020) and Tauktae (2021). This absence of a local-level understanding of disaster risks is linked to abstract methodological comprehension of disaster vulnerability, which usually depends on indicator-based approaches. Further, we observe that knowledge may not always be articulated verbally and can have diverse ways of representation in situated cultural practices (Srivastava and Mehta 2021). Scholarship on citizen science (Fischer 2002; Panda 2016; Vedwan and Rhoades 2001), indigenous environmentalism (Carruthers 1996), and alternative cosmologies have also contested this coloniality of power (Figueroa Helland and Lindgren 2016) and captured these tensions of asymmetries of knowledge production and generation. However, destabilising hegemonic, incumbent frames and knowledge can be a slow process (Lakoff 2010), 'once reified they may not disappear until the institutions, industries, and cultural practices disappear' (*ibid.*: 77). Hence, destabilising knowledge requires democratic and participatory politics and knowledge-making (Chakraborty and Sherpa 2021).

Thus, climate and environmental justice are not merely about the absence of injustice, but are also about the 'active creation' of relationships, structures, and knowledge systems that are embedded in principles and politics of dignity, fairness, and mutual respect (Huff and Naess, this *IDS Bulletin*) as well as in enhancing capabilities. Here justice is about the ability to live lives that individuals value and that also enhance their wellbeing (Sen 1993; Martin *et al.* 2020). In this vein, it is important to engage with how and whether practices of co-producing socioecological knowledge can enhance the agency of people who live in marginal areas to transform existing socio-political structures of power and recognition while being alert that entrenched injustices and exclusions are not reproduced (Mehta *et al.* 2021). We unpack some of these issues through our case studies in the following sections.

### 3 Methodology

This article draws on previous and ongoing fieldwork in Kutch, Mumbai and the Indian Sundarbans, building on *long durée* research of all the authors. Specifically, it draws on ethnographic research conducted between 2012 and 2019 under a range of projects<sup>5</sup> studying climate change and uncertainty in these sites. This was complemented by interviews, life history narratives, focus group discussions, and participatory visual methods such as PhotoVoice (with Jat herders in Kutch, Koli fishers in Mumbai, and women islanders in the Sundarbans), which helped to provide representation to the voices, knowledge, and perspectives from 'below' who are often framed as recipients rather than active stakeholders.

Creative and participatory methods such as PhotoVoice can potentially open up new and existing conversations that otherwise might be impeded by hierarchical social structures, such as caste traditions or gender inequities. These methods sought to address power imbalances and ensure that hidden and subaltern perspectives remain central to our research. Thus, we contend that climate justice must have a transgressive and emancipatory agenda if the aim is to address issues of social justice, and methods that facilitate this 'reversing the gaze' may offer a useful entry point in that direction (Srivastava *et al.* 2021). However, we also need to be aware that these methods require considerable buy-in and trust-building with local communities and should not be pursued as a standalone activity as they may risk being extractive. Such an activity could reproduce cognitive injustice and compromise the emancipatory agenda embedded in these methods. In all our case study sites, our work builds on long-term research where researchers and the community have worked together to build trust and co-created opportunities to reflect on the implications of these engagements. We now turn to these three sites in India.

### 4 Reframing dryland discourses in Kutch

Kutch, a dryland located in the state of Gujarat, is known for its ecological diversity, ranging from wetlands to thorn forests and the desert. As a region falling into an arid to semi-arid zone, droughts and water scarcity have always been part of the Kutchi landscape. Pastoral communities have harnessed this variability and developed a symbiotic and cultural relationship with the dryland habitat over several centuries (Srivastava and Mehta 2017; Bharwada and Mahajan 2007). Kutch is known for its livestock and distinct indigenous breeds. The Kutchi cow is still one of the best dual-purpose strains in India (e.g. the Kankrej and Thani breeds). The kharai camel, now recognised as a distinct breed, is a unique indigenous breed of swimming camel that can thrive in both a marine and desert environment (Mehta and Srivastava 2019).

Although most Kutchis were traditionally pastoralists, pastoralism today finds itself on the margins of Kutchi life mainly due to the

'dryland blindness' (Mehta 2005) that has permeated a series of state interventions across several decades. This includes powerful narratives of environmental degradation alongside 'modernising' discourses of settled agriculture and industrialisation (Mehta 2005; Mehta and Srivastava 2019), which have systematically ignored the particular dynamics around variability, uncertainty, and water scarcity as well as the experiences and expertise of local communities, especially pastoralists, to deal with these uncertainties. The predominant image of the 'overgrazed pasture' has perpetuated the view that livestock is to blame for environmental degradation (*cf.* Robbins 1998; Agrawal and Saberwal 2004). This view has persisted because problematic concepts such as 'carrying capacity' are still employed in drylands. Moreover, the notion of 'overgrazing' reflects certain culturally ingrained biases towards pastoralists, who are among the least vocal and empowered actors in Kutch (Mehta 2005; Mehta and Srivastava 2019).

This marginalisation is exacerbated by the rapid transition in Kutch's ecology owing to aggressive industrialisation after the 2001 earthquake, which has transformed this remote border district into a 'resource frontier' (*cf.* Barney 2009; Srivastava and Mehta 2021). Industrialisation has resulted in the loss of common grazing lands, denudation of mangrove forests, and water and land grabs. This has threatened the survival of the *kharai* camels that predominantly rely on mangroves (Srivastava and Mehta 2021). It is no surprise that private and government actors have leveraged these very discourses of environmental degradation, 'modernity', and wasteland to denude mangrove commons and dispossess local communities. For example, conservation scientists argue that 'unscientific grazing patterns' (e.g. camels browsing on leaves and damaging the tree) and cutting are responsible for the destruction of mangroves; economists characterise mangrove dependence as 'primitive and unsustainable'.<sup>6</sup> By contrast, herders speak of the synergistic relationship between mangroves and the camel. They claim that they have been swimming out to the mangroves for centuries and that there has been no disruption to the mangroves. They assert that the grazing of the camels helps to regenerate the mangroves – for example, their camels' hooves support seed germination and the browsing also helps to thicken the growth of leaves (see Srivastava and Mehta 2017). Disputing the degradation narrative of the scientists and the state officials, the *Jat* pastoralists who rear *kharai* camels disagree that these animals could 'ever be bad for mangroves because they share a natural relationship with them'.<sup>7</sup> They claim that scientists get their knowledge only 'from books, and do not look at the reality of everyday life'<sup>8</sup> and that the real culprits are the big polluting industries that have cleared both the mangroves and also changed the coastal ecology, undermining the coastal biodiversity in Kutch.

This dispossession is also bolstered by how these landscapes have been framed as unproductive or a wasteland. In the Wasteland Atlas of India, large areas of Kutch that include scrub savannahs, grasslands, saline flats, and mangroves have been classified as wasteland, undermining the rich diversity of this ecosystem (Pardikar 2021). This goes back to the archaic colonial practice where non-revenue-generating lands (especially non-agricultural lands) were often labelled as wasteland (Srivastava and Mehta 2021). In 2005, the Government of Gujarat passed a resolution allowing for leasing 'wastelands' up to 2,000 acres for 20 years to corporations and commercial farmers. This framing has created several instances of resource injustice and ill-being for local herders. The decline of these so-called 'wastelands', which in reality are grazing lands, has increased the sedentarisation of pastoralists and has led to a loss of their identity (Duncan and Agarwal 2017; Srivastava and Mehta 2017). Several Jat herders have now left pastoralism for low-paid and insecure jobs in the industries. More recently, this discursive framing has also facilitated the diversion of commons towards 'green' projects. For instance, in 2020, Gujarat cleared a land allotment for a 41,500MW (megawatts) renewable energy park (solar and wind) in Kutch, which is now being developed as a 'wind energy exploitation zone'. Farmers and herders have been protesting because these zones restrict their access to commons and forest resources (*Indian Express* 2021).

The case of Kutch reveals how epistemic and cognitive injustice, cemented over decades through colonial and post-colonial discourses around pastoralism and drylands, has given way to multiple forms of harm. The unmeasurable and symbolic qualities around 'wastelands', pasture, and mangroves that are linked to the identity and wellbeing of pastoralists remain either hidden or are labelled as unproductive (Kohli and Menon 2016), while state and industry-driven programmes succeed in both depleting and privatising the commons and marginalising pastoralism in Kutch. This was also revealed in a PhotoVoice initiative with Jat women whose narratives captured the impacts of the capitalist transition in Kutch. The focus on women brought to light powerful images of the 'invisible' care economy that sustains the pastoral system on a day-to-day basis. More importantly, in contrast to the dominant framings of climatic uncertainty in the form of high temperatures, erratic patterns of rainfall and sea-level rise, the PhotoVoice method revealed more embodied, socially and culturally embedded experiences of uncertainty that are often undervalued and overlooked by traditional forms of research and top-down policy processes. For example, women in the PhotoVoice group in Jimlivand (a coastal hamlet in Kutch) captured multiple ways in which they relate to the environment and the challenges they face. They mentioned how the drying up of wells because of rising salinity has increased their household chores or how the destruction of mangroves by salt industries also means that they have to spend more time picking leaves



Jat women picking mangrove leaves in Jimlivand, Kutch.  
Photographer: PhotoVoice group, Jimlivand.

---

(the main source of fodder in the summer months; see photo, above) as these commons are getting depleted due to industrial pollution (Srivastava and Mehta 2021).

In recent times, alliances between civil society and local people are attempting to preserve the pastoral identity and challenge the categories of 'unproductive' and 'wasteland' associated with pastoralism and pastoral landscapes. The non-governmental organisation (NGO) Sahjeevan is working closely with the pastoral communities to revive their indigenous systems and restore the native habitats, food stocks, and grazing routes of the kharai camels. To protect the mangrove landscapes, Kachchh Unt Uchherak Maldhari Sangathan (KUUMS, the union of camel pastoralists) along with Sahjeevan has used legal routes to mobilise against industries, demanding an injunction on encroachments and environmental degradation (Smitha 2018) through the creative use of the Forest Rights Act, which recognises the rights of indigenous communities to forests and landscapes (Srivastava and Mehta 2021). In 2018, KUUMS approached the National Green Tribunal (NGT) and managed to secure a stay order and also to get the creeks, which had been blocked by the industries, reopened for mangrove regeneration (Rahman 2019).

More recently, through the efforts of Sahjeevan and KUUMS, camel-rearing is said to be witnessing a revival. KUUMS has partnered with Amul dairy to mainstream camel milk production and supply. The underlying hope is that these initiatives will lead to the achievement of twin goals: preservation of the kharai-mangroves coexistence as well as livelihood improvement, bringing wider benefits to the pastoral community.

These practices are countering the 'official' and received wisdom regarding pastoralism and drylands on many fronts while also using innovative methods and alliances to counter the pressures that threaten to disrupt pastoralist practices and lifestyles. They also enhance biodiversity in the drylands and improve overall resilience to climatic shocks and stressors.

### **5 Effecting change through women's mobilisation in the Indian Sundarbans**

The Indian Sundarbans form a complex and climatically vulnerable ecosystem that traverses India and Bangladesh. Islanders there have experienced devastating impacts of cyclones and flooding and are at risk of rising sea levels (IPCC 2014). They have to contend with these multiple challenges, as well as poverty and socio-political and economic marginalisation, which are all underlying contributors to their vulnerabilities to climate and environmental change (Ghosh, Kjosavik and Bose 2021). But amid these frequent climatic events and somewhat expected changes, the social and economic landscape of the islands has changed rapidly with the infusion of globalised systems of providing 'solutions' to localised problems like salinity intrusion. The agro-business lobby, with its emphasis on high-yielding variety (HYV) seeds, has introduced and supported agri-system services like fertilisers and insecticides (Nath *et al.* 2021). The lobby's stronghold over the market has marginalised the smallholder farmers and their indigenous variety seeds as well as their traditional knowledge of the ecosystem. In parallel, these emerging business lobbies have hijacked the political space, drowning out the voices of marginal islanders who live under the constant threat of submergence.<sup>9</sup> These interests have also worked in favour of commissioning coastal infrastructures such as embankments, that undermine the local solutions of erecting bundhs and mangrove planting (Mukhopadhyay 2009).

The livelihood uncertainties due to climate change and changing political economy are creating cascading vulnerabilities for the islanders, and in particular for the women of the Sundarbans. Following Cyclone Aila (2009), the islands have witnessed a continuous out-migration of young men who migrate to other Indian states in search of work. Unlike their male counterparts, the women are restricted from leaving the islands due to cultural and patriarchal norms (Ghosh *et al.* 2018). This climate change-induced rupture in the social fabric has made visible the conditions of landless rural women who are now further burdened with complementing their husbands' uncertain remittance income through hazardous jobs such as crab-catching in addition to their household and childcare duties. For example, in the Sundarbans, about two million people are directly or indirectly dependent on the resources (for forest-based produce, fishing, and so on) for their livelihoods; and the forests protect the lives and properties of the adjacent population from tidal surges and tropical cyclones (Ghosh and Roy 2022). However, mainstream conservation



Women from the Indian Sundarbans presenting their demands to policy officials through a PhotoVoice presentation.

Photographer: © Lokmata Rani Rashmoni Mission

discourses and practices leverage the degradation narrative to limit access and mobility of the local population (Vivekanandan 2021). In addition, the issue of ownership of the meagre family land which continues to be vested with the male members provides a complex background where obstruction of climate justice intersects with gender justice to further push back women's inclusion.

It is in this contested landscape that 80 women, belonging to different caste and religious groups in the Sundarbans, provided a grounded and subjective representation by articulating their struggles and demands through photo stories in front of local leaders and policymakers. As part of two projects,<sup>10</sup> women across the three most geographically remote areas in the Sundarbans – Namkhana, Patharpratima, and Kultoli block – of South 24 Parganas district, came together to document the challenges they faced and to demand for change (see photo, above). Women in this PhotoVoice group lived in highly precarious areas, which were regularly flooded and buffeted by cyclones. All had young children and made their living primarily from fishing and crab-collecting. They were trained on the use of the camera equipment to create their own photo stories. They selected group leaders and held fortnightly group meetings to discuss the story they wanted to tell, the issues they most wanted to highlight, and the photos to take that would best illustrate those problems.<sup>11</sup> This PhotoVoice initiative revealed vernacular expressions of not only climate uncertainties around cyclones, high tides, and the lack of freshwater supplies in the Sundarbans. It also raised critical questions about equity and access to resources and poor service provision (such as health care, education, and lack of roads), which often become invisible in mainstream discourses.

For example, one participant noted: 'Unless there is a big cyclone and loss of lives, livestock, land, and property, the media does not come [here]. Through this process, we are trying to voice the everyday uncertainties that we have to deal with'.<sup>12</sup>

Their claims of justice, identity, and wellbeing from their perspective were articulated to the local policy implementers at the *panchayat* (village council) and block level including the officials of the Sundarbans Development Board (see photo on page 112). Through this initiative, they not only achieved improvements in local infrastructure such as safe drinking water provision, but they also revealed how PhotoVoice instilled a sense of empowerment and agency. For example, one participant stated: 'We should do these action initiatives [PhotoVoice] more often so that we can raise our voices and talk about our problems to the concerned people [*sic*]'.<sup>13</sup>

This unique process of gendered articulation in the remote islands of the Sundarbans through a participatory process of mobilisation also brings forth issues of distributive justice and recognition of plural forms of knowledge to address systems of power and inequity. It also demonstrates how consciousness and collective organisation can lead to the active creation of agency and voice. This initiative also provided vital perspectives on how social and environmental justice often does not work from a macro policy level, where the daily struggles and concerns of the local communities often get silenced. Inherent in this approach is the promotion of transformative justice where women advocates focused on how vulnerability to climate change reflects various structural injustices in society, such as the exclusion of poor communities (who are often also the landless) from their traditional climate-resilient livelihoods like artisanal fishing, honey collection, and crab collection, and how climate justice must explicitly address these structural power imbalances.

### **6 Claiming the coast in Mumbai**

'Koli' is an umbrella term referring to a cluster of artisanal fishing castes in coastal Mumbai, in the state of Maharashtra. This small-scale indigenous fishing community has long been subjected to displacement and loss of livelihoods as a consequence of rapid urban growth, infrastructure projects, and blue growth initiatives in the Arabian Sea (Chouhan, Parthasarathy and Pattanaik 2016; Bose *et al.* 2018). More recently, climate change has brought new uncertainties and vulnerabilities by exposing Koli fishing villages to storm surges, sea-level rise, coastal erosion, and frequent storms and cyclones. For example, Cyclones Nisarga (2020) and Tauktae (2021) caused significant damage to boats, jetties, and fishing equipment. Koli fisher associations have been demanding compensation for their losses similar to that provided to farmers affected by drought, cyclones, or extreme precipitation events (Johari 2021). These claims addressed to the state government in part emanate from

the fishers' own research documenting the increasing frequency and intensity of tropical storms in the Arabian Sea (Senapati and Gupta 2015). They are also part of long-term struggles to resist encroachments and the loss of livelihoods in coastal fishing villages in the Mumbai urban region. These struggles against real estate projects, new urban expansion, and infrastructure projects reflect deep vulnerabilities and contestations around commons, customary property rights, the right to livelihoods, and ecological degradation that have exacerbated flood risks and biodiversity loss. It is against this ongoing process of marginalisation and injustice that several projects in the Mumbai region seek to map the processual aspects of claims and contestation involving coastal small-scale fishers as we describe below.

Koli fishers practise small-scale fishing using mechanised and non-motorised boats and diverse gear to fish close to the shoreline, and in creeks and coastal wetlands. Increasing marginalisation, overfishing, and competition from commercial trawlers have forced them to go further out to sea for fishing, putting them at significant risk from extreme climate events (Adam *et al.* 2021). The Kolis, however, are not passive victims and have frequently expressed their agency to mitigate their multiple vulnerabilities. Across the districts of the Mumbai Metropolitan Region, fisher associations (National Fishworkers Forum, the Akhil Maharashtra Machhimar Kruti Samiti, Boat Owners Association, and several fisher cooperatives) have launched several protest movements and struggles, filed cases in courts and at the NGT, and petitioned diverse state agencies.

Broadly, Koli fishers formulate their concerns in terms of rights-based discourses. Justice claims focus on their customary rights to coastal commons, some of which are enshrined in law, and recourse to other kinds of citizenship claims around education, health, livelihoods, and disaster impacts. For example, fishers in the Palghar district have documented how their vulnerabilities and loss of livelihoods affect the health and education of women and children. In a well-known case filed before the NGT by fishers of Uran in Navi Mumbai, the fishers successfully argued for compensation for resource commons, forced a recognition of ecological flows in impact assessment, and brought to light the unscientific and illegal implementation of Coastal Regulation Zone norms (Parthasarathy 2016; Bose *et al.* 2018; Parthasarathy and Chouhan 2020). These claims not only reflect a vernacular understanding of ecosystems, habitats, environmental flows, and climate change that are often ignored in state responses and strategies (Senapati and Gupta 2015; Parthasarathy 2016). They also highlight the large-scale neglect of Koli spaces and concerns in government plans. For example, the initial Mumbai Development Plan for 2037 failed to include koliwadas (i.e. Koli settlements) on the maps or in the Climate Action Plan, and thus largely neglects the climate change impacts, uncertainties, and vulnerabilities of Kolis and koliwadas.

Ongoing struggles around the coastal road project<sup>14</sup> also reflect both an intransigence on the part of state agencies to recognise the short- and long-term vulnerabilities of Koli fishers from a bottom-up perspective, and the significance of vernacular practice-based knowledge when it comes to understanding the complex relationship between infrastructure projects, climate change, coastal transformation, and fisher livelihoods in the Mumbai region. Our research in koliwadās and recent press reports reveal that fishers are also beginning to gain an understanding of the relationship between uncertainties unleashed by climate change (particularly cyclones, sea-level rise, and storm surge), and the continuing ecological marginalisation induced by neoliberal growth imperatives, especially coastal infrastructure projects. For example, a PhotoVoice project we conducted in Uran village<sup>15</sup> (facing the brunt of a major port, transport, oil and gas, and airport projects) showcased the high level of reflexivity among the Koli fishers, by offering a 'grounded exploration of the marginalised lived experience'. It alerted us to a 'critical positioning' of individual experiences within the wider community in the given socio-political context (Bose *et al.* 2018: 76). It revealed a bottom-up awareness of urban environmental issues (such as land grabs and prohibition in fishing areas), which is not just framed in terms of local contexts but also directly offered an enhanced sense of the fishers' relationship and dependence on ecological habitats for their livelihoods and wellbeing (see photo on page 116). This ecological dependence and the significance of ecological flows adversely impacted by sea-level rise and infrastructure projects especially came through in the significant struggle of the Uran fishers in the NGT which accepted the justice claims of the Kolis based on their assessment of the ecology and environment, rather than the logic of the state. The researchers and local civil society organisations worked with Koli leaders to build this reflexive understanding of ecological flows and interdependence between environmental integrity, justice claims, and livelihoods.

A similar observation is made in our work with Koli women who have historically enjoyed financial autonomy and decision-making power, and who now aspire to go back to a time when they had a significant role in household and community affairs. For example, in our stakeholder workshops and interviews with Koli women, a constant refrain of the older women was about their autonomy, empowerment, and quality of life in previous decades and a steady degeneration of their status within the household and declining incomes in recent years. Despite this, the women we spoke to in Versova Koliwada exhibited both resolve and ability in coping with the compounded impacts of climate change, marginalisation, and the Covid-19 pandemic in the past few years. Hence, as we have argued elsewhere (Adam, Parthasarathy and Narayanan 2018), addressing issues of justice in the context of climate uncertainty and marginalisation driven by urban development requires a different kind of governance,



Koli women complaining of poor fish catch and declining fish species due to changing weather patterns and industrial pollution in Uran village. Photographer: Uran PhotoVoice group.

'a strategic, adaptation-focused, and communicative urban governance framework that emphasises both reducing risk and strengthening social justice' (*ibid.*: 1).

The ongoing Occupy protests<sup>16</sup> on the sea and inland against the coastal road project in Mumbai's Worli Koliwada reflect this very well. Such pushbacks using local cosmologies against narrow technical understandings of the environment by the state agencies are also seen in other protests against infrastructure development projects such as the Shivaji Memorial project, port and thermal power projects in Palghar, and real estate projects across the urban region. These struggles also reflect an extensive use of scientific research findings and knowledge aided by sensitive civil society activists and academics. These processual aspects of claims-making indicate faith in democratic and legal strategies but may also reflect powerlessness to act in other ways to prevent the further marginalisation of the Kolis.

## 7 Conclusion

In this article, we have demonstrated how climate variability and emanating uncertainties have intersected with top-down, state-and/or corporate-led projects. Their narrow and technocentric approach to climate and environmental concerns has produced multiple forms of injustice for local pastoralists, fishers, and islanders in marginal environments in India: recognitional injustice (denigration of local knowledge and value), procedural injustice (top-down policies and programmes such as infrastructure development or energy parks which exclude their voice and concerns), and distributive injustice (inequitable impacts of top-down interventions). More importantly, as demonstrated in the case of Kutch, so-called 'green development' projects

are reproducing a similar trajectory by leveraging the same problematic discourses on harm and degradation, thus marginalising the very communities that are set to lose the most from climate-induced loss and damage. Thus, we argue that 'just' climate action requires centring the voices and concerns of these communities by adopting a vernacular lens instead of retrofitting these climate actions within top-down global discourses. In the cases we have presented, local communities are asserting bottom-up agency, pushing back against dominant framings of their landscapes and environments while mobilising for alternative livelihoods in the face of climatic shocks and struggles.

A vernacular lens not only allows for the inclusion of voices of marginal communities but also centres their tacit and embedded experiences as well as their material aspirations. Using this lens would require focusing on the politics of framing, advocating a plurality of assessment pathways, and embracing the uncertainties within climate-society relationships. Through the PhotoVoice initiative, we demonstrate how hidden and alternative perspectives are brought to the fore through creative practices while highlighting the need to address the power imbalances that prevent alternative ways of valuation and epistemic diversity that are so urgently required for realising transformative climate justice. Recognising and enabling the agency of the vulnerable and marginalised people is crucial for resisting and reframing these discourses and practices; these methods provide a way to mainstream these peoples' concerns and engender alternate imaginaries of the state as demonstrated by all three cases. Beyond this, giving expression to and amplifying the voice of local communities are also key to articulating justice concerns that arise from exposure to climate risks. This can also facilitate the integration of their livelihood concerns into legal-environmental frameworks and development priorities as demonstrated by the attempts being made in Mumbai and Kutch. Furthermore, creative alliances between civil society, sympathetic state actors, and local communities also offer pointers to how social change can be facilitated. This can be done by bringing together diverse and sometimes conflicting perspectives and aspirations within local communities, presenting a platform for voicing concerns, and actively carrying out research to produce evidence for alternative pathways to climate justice.

In conclusion, the current drive for climate solutionism may ring hollow if the voices and experiences of the most marginalised people remain absent from the processes. Such activities must be accompanied by larger structural changes within dominant production and consumption patterns. Without structural changes, these patterns will both reproduce unsustainable practices and marginalise the poorest populations who have very little to no voice in deciding and shaping these so-called solutions.

## Notes

- \* This *IDS Bulletin* was funded and produced as part of the IDS Strategic Research Initiative on Climate and Environmental Justice.
- † This article draws on previous and ongoing research by the authors under the following projects: TAPESTRY (Transformation as Praxis: Exploring Socially Just and Transdisciplinary Pathways to Sustainability in Marginal Environments), which is funded by the Belmont Forum and NORFACE (New Opportunities for Research Funding Agency Cooperation in Europe) Joint Research Programme on Transformations to Sustainability, which is co-funded by the Economic and Social Research Council (ESRC), International Science Council (ISC), Japan Science and Technology Agency (JST), the Research Council of Norway (RCN), and the European Commission through Horizon 2020 under grant agreement No. 730211; ANTICIPATE (Anticipating Futures: Forecasting and Climate Preparedness for Co-Located Hazards in India – British Academy Project No. KF400251); Greenmentality (Norges forskningsråd, project No. 235449); Climate Change, Uncertainty and Transformation (Norges forskningsråd, project No. 250975); and the ESRC STEPS Centre (ES/I021620/1).
- 1 Shilpi Srivastava, Research Fellow, Institute of Development Studies, UK.
- 2 Shibaji Bose, visual research methods consultant, India.
- 3 Devanathan Parthasarathy, Professor, Indian Institute of Technology Bombay, India.
- 4 Lyla Mehta, Professor, Institute of Development Studies, UK, and Visiting Professor, Noragric, Norwegian University of Life Sciences, Norway.
- 5 See **Uncertainty from Below project website**; **Climate Change, Uncertainty and Transformation project website**; **Tapestry project website**.
- 6 Interview, September 2016.
- 7 *Ibid.*
- 8 Interview, October 2016.
- 9 Field Journal (Bose December 2021).
- 10 Climate Change, Uncertainty and Transformation project as well as the Future Health Systems project.
- 11 Field Journal (Bose November 2016).
- 12 PhotoVoice participant, Namkhana, September 2017.
- 13 PhotoVoice participant, Kultoli, September 2017.
- 14 Refers to the construction of an eight-lane, 22.2km-long freeway that would run along Mumbai's western coastline.
- 15 PhotoVoice project in Uran Koliwada was launched in January 2017.
- 16 The Kolis, primarily from Worli Koliwada on the west coast of Mumbai, have held a series of occupations on land and sea since September 2020, to disrupt the construction of a stretch of the Coastal Road. They take the form of Koli fishers occupying the coastal construction sites on land and sea, and by use of small fishing boats. The protests target an

interchange to connect the Coastal Road with the southern end of the Bandra–Worli Sea Link, as the current design of the interchange disrupts Koli fishing routes.

## References

- Adam, H.N.; Parthasarathy, D. and Narayanan, N.C. (2018) **'Transforming Urban Governance to Manage Uncertainty and Climate Change in Mumbai, India'**, *IDS Policy Briefing* 148, Brighton: Institute of Development Studies (accessed 7 October 2022)
- Adam, H.N.; Movik, S.; Parthasarathy, D.; Narayanan, N.C. and Mehta, L. (2021) 'Climate Change and Uncertainty in India's Maximum City, Mumbai', in L. Mehta, H.N. Adam and S. Srivastava (eds), *The Politics of Climate Change and Uncertainty in India*, London: Routledge
- Aggarwal, M. (2021) **'India Takes the "Office Order" Route to Environmental Clearance for Businesses'**, *Quartz India*, 10 February (accessed 16 February 2022)
- Aggarwal, M. (2020) **'Mega Renewable Energy Park in Kutch Could Have Potentially Adverse Environmental Impact'**, *Mongabay*, 22 September (accessed 16 January 2022)
- Agrawal, A. and Saberwal, V.K. (2004) **'Whither South Asian Pastoralism? An Introduction'**, *Nomadic Peoples* 8.2: 36–53 (accessed 26 August 2022)
- Álvarez, L. and Coolsaet, B. (2020) **'Decolonizing Environmental Justice Studies: A Latin American Perspective'**, *Capitalism Nature Socialism* 31.2: 50–69, DOI: 10.1080/10455752.2018.1558272 (accessed 26 August 2022)
- Barney, K. (2009) **'Laos and the Making of a "Relational" Resource Frontier'**, *Geographical Journal* 175.2: 146–59 (accessed 26 August 2022)
- Bharwada, C. and Mahajan, V. (2007) *Mangroves and Maldharis of Kutch: Understanding Coastal Pastoralists' Dependence on Mangroves*, Vadodara: Gujarat Ecology Commission
- Bose, S.; Ghosh, U.; Chauhan, H.K.; Narayanan, N.C. and Parthasarathy, D. (2018) **'Uncertainties and Vulnerabilities among the Koli Fishers in Mumbai: A Photo Voice Study'**, *Indian Anthropologist* 48.2: 65–80 (accessed 26 August 2022)
- Boyd, E. *et al.* (2021) **'Loss and Damage from Climate Change: A New Climate Justice Agenda'**, *One Earth* 4.10: 1365–70, DOI: 10.1016/j.oneear.2021.09.015 (accessed 26 August 2022)
- Carruthers, D. (1996) 'Indigenous Ecology and the Politics of Linkage in Mexican Social Movements', *Third World Quarterly* 17.5: 1007–28
- Chakraborty, R. and Sherpa, P.Y. (2021) **'From Climate Adaptation to Climate Justice: Critical Reflections on the IPCC and Himalayan Climate Knowledges'**, *Climatic Change* 167: 49, DOI: 10.1007/s10584-021-03158-1 (accessed 26 August 2022)
- Chouhan, H.A.; Parthasarathy, D. and Pattanaik, S. (2018) 'Urban at the Edges: Mumbai's Coastline Urbanisms', in J. Mukherjee (ed.), *Sustainable Urbanization in India. Exploring Urban Change in South Asia*, Singapore: Springer

- Chouhan, H.A.; Parthasarathy, D. and Pattanaik, S. (2016) 'Coastal Ecology and Fishing Community in Mumbai', *Economic and Political Weekly* 51.39: 48–57
- Contreras, G.; Srivastava, S. and Shen, W. (2021) **Putting Climate Justice at the Heart of Net Zero**, IDS Opinion, blog, 27 September (accessed 1 February 2022)
- Damodaran, V.; D'Souza, R. and Dey, S. (2021) 'Uncertainty and Environmental Change: Kutch and the Sundarbans as Environmental Histories of Climate Change', in L. Mehta, H.A. Adam and S. Srivastava (eds), *The Politics of Climate Change and Uncertainty in India*, London: Routledge
- Dubash, N.K. (2012) *Handbook of Climate Change and India: Development, Politics and Governance*, Oxford: Earthscan
- Duncan, J. and Agarwal, M. (2017) ' "There is Dignity Only with Livestock": Land Grabbing and the Changing Social Practices of Pastoralist Women in Gujarat, India', in B. Bock and S. Shorthall (eds), *Gender and Rural Globalization: International Perspectives on Gender and Rural Development*, Boston MA: CABI Publishing
- Eriksen, S. et al. (2021) '**Adaptation Interventions and their Effect on Vulnerability in Developing Countries: Help, Hindrance or Irrelevance?**', *World Development* 141: 105383, DOI: 10.1016/j.worlddev.2020.105383 (accessed 26 August 2022)
- Fairhead, J.; Leach, M. and Scoones, I. (2012) '**Green Grabbing: A New Appropriation of Nature?**', *Journal of Peasant Studies* 39.2: 237–61, DOI: 10.1080/03066150.2012.671770 (accessed 26 August 2022)
- Figueroa Helland, L.E. and Lindgren, T. (2016) '**What Goes Around Comes Around: From the Coloniality of Power to the Crisis of Civilization**', *Journal of World-Systems Research* 22.2: 430–62, DOI: 10.5195/jwsr.2016.631 (accessed 26 August 2022)
- Fischer, F. (2002) *Citizens, Experts, and the Environment: The Politics of Local Knowledge*, Durham NC: Duke University Press
- Forsyth, T. and Sikor, T. (2013) '**Forests, Development and the Globalisation of Justice**', *Geographical Journal* 179.2: 114–21, DOI: 10.1111/geoj.12006 (accessed 26 August 2022)
- Ghosh, S. and Roy, S. (2022) 'Climate Change, Ecological Stress and Livelihood Choices in Indian Sundarban', in A. Enamul Haque, P. Mukhopadhyay, M. Nepal and M.R. Shammin (eds), *Climate Change and Community Resilience*, Singapore: Springer
- Ghosh, U.; Bose, S. and Bramhachari, R. (2018) **Living on the Edge: Climate Change and Uncertainty in the Indian Sundarbans**, STEPS Working Paper 101, Brighton: Institute of Development Studies (accessed 26 August 2022)
- Ghosh, U.; Kjosavik, D.J. and Bose, S. (2021) 'The Certainty of Uncertainty: Climate Change Realities of the Indian Sundarbans', in L. Mehta, H.N. Adam and S. Srivastava (eds), *The Politics of Climate Change and Uncertainty in India*, London: Routledge
- Huff, A. and Orenge, Y. (2020) 'Resource Warfare, Pacification and the Spectacle of "Green" Development: Logics of Violence

- in Engineering Extraction in Southern Madagascar', *Political Geography* 81: 102195
- Indian Express (2021) '**Kutch Villagers Protest Against Installation of Windmills**', 6 August (accessed 17 February 2022)
- IPCC [Intergovernmental Panel on Climate Change] (2021) *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge, UK and New York NY: Cambridge University Press
- IPCC (2014) **Climate Change 2014: Synthesis Report**, Geneva: Intergovernmental Panel on Climate Change (accessed 26 August 2022)
- Johari, A. (2021) '**Mumbai's Koli Fishermen Face a Perfect Storm: Climate Change, Cyclones, and Illegal Fishing**', *Scroll.in*, 4 July (accessed 26 August 2022)
- Kashwan, P. (forthcoming) *Climate Justice in India: Volume 1*, Cambridge: Cambridge University Press
- Kohli, K. and Menon, M. (2016) '**The Tactics of Persuasion: Environmental Negotiations Over a Corporate Coal Project in Coastal India**', *Energy Policy* 99: 270–6, DOI: 10.1016/j.enpol.2016.05.027 (accessed 26 August 2022)
- Kukreti, I. (2017) '**Ease of Doing Business Comes at an Environmental Cost**', *Down to Earth*, 2 November (accessed 1 February 2022)
- Kymlicka, W. (2001) *Politics in the Vernacular: Nationalism, Multiculturalism, and Citizenship*, Oxford: Oxford University Press
- Lakoff, G. (2010) '**Why it Matters How We Frame the Environment**', *Environmental Communication* 4.1: 70–81, DOI: 10.1080/17524030903529749 (accessed 26 August 2022)
- Martin, A. et al. (2020) '**Environmental Justice and Transformations to Sustainability**', *Environment: Science and Policy for Sustainable Development* 62.6: 19–30, DOI: 10.1080/00139157.2020.1820294 (accessed 26 August 2022)
- Mehta, L. (2005) *The Politics and Poetics of Water: Naturalising Scarcity in Western India*, New Delhi: Orient Longman
- Mehta, L. and Srivastava, S. (2019) '**Pastoralists Without Pasture: Water Scarcity, Marketisation and Resource Enclosures in Kutch, India**', *Nomadic Peoples* 23.2: 195–217, DOI: 10.3197/np.2019.230203 (accessed 26 August 2022)
- Mehta, L.; Adam, H.N. and Srivastava, S. (2022) *The Politics of Climate Change and Uncertainty in India*, London: Routledge
- Mehta, L. et al. (2021) '**Transformation as Praxis: Responding to Climate Change Uncertainties in Marginal Environments in South Asia**', *Current Opinion in Environmental Sustainability* 49: 110–17, DOI: 10.1016/j.cosust.2021.04.002 (accessed 26 August 2022)
- Mehta, L. et al. (2019) '**Climate Change Uncertainty from "Above" and "Below": Perspectives from India**', *Regional Environmental Change* 19: 1533–47, DOI: 10.1007/s10113-019-01479-7 (accessed 26 August 2022)

- Mukhopadhyay, A. (2009) *Cyclone Aila and the Sundarbans: An Enquiry into the Disaster and Politics of Aid and Relief*, Kolkata: Mahanirban Calcutta Research Group (accessed 18 February 2022)
- Narayanan, N.C. and Fernandes, D. (2016) *Institutionalizing a Climate of Injustice: Ethical Considerations in Climate Change Policy in India*, report submitted to Centre for International Climate and Environmental Research, Oslo (CICERO)
- Nath, A.; Samanta, S.; Banerjee, S.; Danda, A.A. and Hazra, S. (2021) 'Threat of Arsenic Contamination, Salinity and Water Pollution in Agricultural Practices of Sundarban Delta, India, and Mitigation Strategies', *SN Applied Sciences* 3: 560, DOI: 10.1007/s42452-021-04544-1 (accessed 26 August 2022)
- Newell, P.; Srivastava, S.; Naess, L.O.; Torres Contreras, G.A. and Price, R. (2021) 'Toward Transformative Climate Justice: An Emerging Research Agenda', *Wiley Interdisciplinary Reviews: Climate Change* 12.6: e733, DOI: 10.1002/wcc.733 (accessed 26 August 2022)
- Panda, A. (2016) 'Exploring Climate Change Perceptions, Rainfall Trends and Perceived Barriers to Adaptation in a Drought Affected Region in India', *Natural Hazards* 84: 777–96, DOI: 10.1007/s11069-016-2456-0 (accessed 26 August 2022)
- Pardikar, R. (2021) 'As India Maps Wasteland, Environmentalists Debate Definition', *Third Pole*, 10 February (accessed 23 February 2021)
- Parthasarathy, D. (2018) 'Inequality, Uncertainty, and Vulnerability: Rethinking Governance from a Disaster Justice Perspective', *Environment and Planning E: Nature and Space* 1.3: 422–42, DOI: 10.1177/2514848618802554 (accessed 26 August 2022)
- Parthasarathy, D. (2016) 'Claims, Evidence, and Legal-Scientific Fictions: Contesting the Commons and Ecological Regimes in the Mumbai Region', paper presented at the Thinking with Evidence, Seeking Certainty: Making Truth Conference on Law and Social Sciences Research Network, New Delhi, 10–12 December
- Parthasarathy, D. and Chouhan, H.A. (2020) 'New Coastal Claims and Socio-Legal Contestations in Mumbai: Artisanal Fishers and the Problematic of the Urban Environment', in M. Rao (ed.), *Reframing the Environment: Resources, Risk and Resistance in Neoliberal India*, London: Routledge India
- Rahman, A.P. (2019) 'Swimming Camels, Mangrove Islands of Kutch Face Mounting Challenges', *Mongabay*, 9 January (accessed 17 February 2022)
- Robbins, P. (1998) 'Authority and Environment: Institutional Landscapes in Rajasthan, India', *Annals of the Association of American Geographers* 88.3: 410–35, DOI: 10.1111/0004-5608.00107 (accessed 26 August 2022)
- Schlosberg, D. and Collins, L.B. (2014) 'From Environmental to Climate Justice: Climate Change and the Discourse of Environmental Justice', *Wiley Interdisciplinary Reviews: Climate Change* 5: 359–74, DOI: 10.1002/wcc.275 (accessed 26 August 2022)

- Scoones, I. (2021) **COP26: Two Worlds Talked Past Each Other – Or Never Even Met**, STEPS Centre Blog, 10 November (accessed 16 February 2022)
- Sen, A. (1993) 'Capability and Wellbeing', in M. Nussbaum and A. Sen (eds), *The Quality of Life*, Oxford: Clarendon Press
- Senapati, S. and Gupta, V. (2015) 'Climate Change and Fishing: Analysing Fishermen's Viewpoint', *International Journal of Ecological Economics and Statistics* 36.4: 81–94
- Smitha, R. (2018) **'To Save Mangroves, Kutch's Camel Breeders Take to the Internet'**, *DNA*, 17 May (accessed 24 December 2019)
- Srivastava, S. and Mehta, L. (2021) **'The Social Life of Mangroves: Neoliberal Development and Mangrove Conservation in the Changing Landscape of Kutch'**, *Environment and Planning E: Nature and Space*, DOI: 10.1177/25148486211045360 (advance online publication) (accessed 26 August 2022)
- Srivastava, S. and Mehta, L. (2017) *The Social Life of Mangroves: Resource Complexes and Contestations on the Industrial Coastline of Kutch, India*, STEPS Working Paper 99, Brighton: STEPS Centre
- Srivastava, S.; Mehta, L. and Naess, L.O. (2022) **'Increased Attention to Water is Key to Adaptation'**, *Nature Climate Change* 12: 113–14, DOI: 10.1038/s41558-022-01277-w (accessed 26 August 2022)
- Srivastava, S.; Mehta, L.; Naess, L.O.; Bhatt, M.R. and Kumar, V.V. (2021) 'Between the Market and Climate Change: Uncertainty and Transformation in Kutch', in L. Mehta, H.N. Adam and S. Srivastava (eds), *The Politics of Climate Change and Uncertainty in India*, London: Routledge
- Sullivan, S. (2013) **'Banking Nature? The Spectacular Financialisation of Environmental Conservation'**, *Antipode* 45.1: 198–217, DOI: 10.1111/j.1467-8330.2012.00989.x (accessed 26 August 2022)
- Sultana, F. (2021) **'Critical Climate Justice'**, *Geographical Journal* 188.1: 118–24, DOI: 10.1111/geoj.12417 (accessed 26 August 2022)
- UN News (2021) **'IPCC Report: "Code Red" for Human Driven Global Heating, Warns UN Chief'**, 9 August (accessed 1 February 2022)
- Vedwan, N. and Rhoades, R.E. (2001) **'Climate Change in the Western Himalayas of India: A Study of Local Perception and Response'**, *Climate Research* 19.2: 109–17, DOI: 10.3354/cr019109 (accessed 26 August 2022)
- Visvanathan, S. (2005) 'Knowledge, Justice and Democracy', in M. Leach, I. Scoones and B. Wynne (eds), *Science and Citizens*, London: Zed Books
- Vivekanandan, J. (2021) **'Scratches on Our Sovereignty?: Analyzing Conservation Politics in the Sundarbans'**, *Regions and Cohesion* 11.1: 1–20, DOI: 10.3167/reco.2021.110102 (accessed 26 August 2022)

This page is intentionally left blank