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Introduction to the special issue "Climate and marine justice – debates and critical perspectives"

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Abstract. This special issue (SI) shows that environmental justice perspectives are especially useful for analysing current socio-ecological conflicts. These perspectives help to bridge epistemological and ontological gaps in inter- and transdisciplinary settings and promote normative and justice-oriented discussions on environmental struggles within and beyond the academy. Currently, the following two interrelated environmental crises and their impacts regularly make headlines: climate change and the impacts of the unsustainable use of the oceans. Still, for a large part of the global population – not only but especially in the Global North – both crises remain abstract, mainly becoming visible through news coverage of plastic waste in the oceans, storm surges and droughts, and through documentaries on sea-level rise and the destruction of ecosystems. However, the destruction of marine and coastal habitats and the effects of climate change are increasingly affecting people's daily lives. The effects of climate change, pollution, and marine resource overuse are creating serious disruption to livelihoods and leading to new socio-ecological conflicts and new claims. This SI aims to reflect and explore climate and marine narratives, environmental knowledge claims, multiple ontologies, climate change adaptation, and the spatial and temporal shaping of socio-ecological struggles for climate and marine justice in more detail. Furthermore, it takes up current strands of climate and marine justice scholarship and explores avenues for further research.

1 Introduction

There are two interrelated environmental crises and their impacts that regularly make headlines, namely climate change and the impacts of the unsustainable use of the oceans. Still, for a large part of the global population – not only but especially in the Global North – both crises remain abstract, mainly becoming visible through news coverage of plastic waste in the oceans, storm surges and droughts, and through documentaries on sea-level rise and the destruction of ecosystems. However, global warming, shrinking fish populations, ocean pollution, and the coastal transformations caused by industry, port development, and tourism already affect coastal communities and marine species across the globe. All of these issues, but also society's responses, namely environmental policies and climate change adaptation and mitigation measures, raise new questions of justice and demand new solutions. The ongoing and rather unsuccessful attempts to reduce greenhouse gas emissions and to end the degradation of oceans and coasts themselves illustrate a crisis, which is termed the "crisis of crisis management in global environmental politics" (Brand and Wissen, 2012:547). The oceans, in this context, are not only framed as being at risk, but they are also increasingly turned into an apparent solution to the multiple socio-ecological crisis that characterizes the "capitalocene" (Moore, 2017). The exploitation of deep-sea resources (Schmidt and Rivera, this SI) and the development of new greenhouse gas storages in ocean biomass and deep-sea rock formations (blue carbon) might indeed expand the lifespan of our current growth-oriented development model, but it will also create additional risks for oceans, climate, and socio-ecological relationships. Furthermore, the climate and ocean crises and the various environmental and climate policy measures have strong justice implications that will be discussed in this special issue (SI).

Most contributions to this SI were presented at the international kick-off conference of "Narratives and practices of environmental justice" (cf. Hein and Dünckmann, 2020) of the Network for Environmental Justice (EnJust) that took place in Kiel, Germany, in June 2019. The EnJust network provides a space for joint inter- and transdisciplinary research and activism to achieve a just transformation towards sustainability. For us, a just transformation is a strategically and politically initiated process that takes social and environmental justice and the root causes of injustice into account. Based on Bennett et al. (2019:4), we stress the need to consider "recognitional, procedural, and distributional justice [. . .] during transformations towards sustainability". We view the environmental justice perspective as being especially useful for bridging epistemological and ontological gaps in inter- and transdisciplinary settings and to promote normative and justice-oriented discussions on environmental struggles within and beyond the academy. The contributions of this SI reflect these normative aims and explore narratives, environmental knowledge claims, multiple ontologies, climate change adaptation, and the spatial and temporal shaping of socio-ecological struggles for climate and marine justice.

2 Environmental justice

The academic concept of environmental justice initially emerged from students, workers, and members of the African American civil rights and racial justice movement in the USA, who were protesting against toxic landfills in the early 1980s. Their main concern was that many landfills and toxic waste dumps were located in areas with a large share of African American, Native American, and Hispanic residents (Bullard, 1994; Cutter, 1995; Flitner, 2003; Schlosberg and Collins, 2014; Hein and Dünckmann, 2020). Today, the environmental justice movement can be considered as being a global grassroots movement that consists of many community-based organizations involved in struggles for clean air and water, as well as struggling against extractivism, gentrification, and land and green grabbing (Anguelovski and Martínez-Alier, 2014).

Environmental justice is a well-developed concept and framework particularly used by human geographers, political scientists, environmental ethicists, sociologists, and public health and legal scholars, as well as increasingly in inter- and transdisciplinary contexts. Most popular are tripartite conceptualizations of justice (Schlosberg, 2009; Walker, 2009, 2012), which distinguish between distributional and procedural aspects and recognition. Distributional justice refers to the spatial distribution of environmental risks and benefits. People living in the proximity of polluting industrial complexes, highways, or airports and in places that are vulnerable to anthropogenic climate change are often affected by environmental risks in disproportional ways. In contrast, people living close to urban green spaces might benefit from better air quality and the recreational values of green spaces. Procedural justice is linked to the decision-making process influencing the distributional effects of environmental risks and, more broadly, of environmental policies. A just procedure should allow for full and meaningful participation of potentially impacted actors (e.g. Walker, 2012; Schlosberg, 2004). Justice of recognition, in contrast, refers to the acceptance of individual group members as being full and equal partners in social interactions (Schlosberg, 2009; Walker, 2009, 2012; Hein and Dünckmann, 2020). As Fraser (2000) points out, recognition is a reciprocal social relation based on status equality. In recent years, scholars further expanded recognitional justice by highlighting that knowledge itself is neither objective nor neutral (Weißermel and Chaves, 2020). and that, to achieve justice, it is important to acknowledge the knowledge and belief systems of marginalized actors.

Moreover, environmental justice scholarship has recently dealt with epistemic justice on different scales and in many parts of the globe (Mendes Barbosa and Walker, 2020). In this vein, Fricker (2007, 2016) identifies two different forms of injustice in her seminal work on epistemic justice. First, testimonial injustice refers to prejudice of actors and operates "specifically in the hearer's judgement of credibility" (Fricker, 2016:162). It blocks the "flow of knowledge" between actors, leads to marginalization, and downgrades the knowledge claims of actors that are affiliated with ethnic and/or class characteristics which the hearer considers less legitimate (Fricker, 2016:162). Second, hermeneutical injustice refers to situations of injustice where marginalized actors are not able to raise their concerns because they cannot align and translate their concepts to comply with dominant Western epistemology (Fricker, 2016; see also Weißermel and Chaves, 2020; Mendes Barbosa and Walker, 2020).

In the following, we briefly introduce current critical debates on climate and marine justice. These two concepts largely emerged from the broader debate on environmental justice. They are, thus, comparatively new concepts and have been less discussed and explored than environmental justice. Against this backdrop, it is the aim of this SI to shed more light on the various facets of climate and marine justice and to illustrate how these two concepts enrich current and future debates and research on just transformations. We relate climate and marine justice to political processes on different scales and to ongoing debates in academia. Furthermore, we take up the discussion on knowledge and power and argue that these are the centre of current debates on marine and climate justice. Knowledge and power asymmetries, as many of the contributions to this SI show (cf. Alba et al., 2020; Mendes Barbosa and Walker, 2020; Fünfgeld and Schmid, 2020; Ruiz-de-Oña Plaza, 2020), are deeply intertwined with epistemic and ontological injustices in environmental and climate governance. Finally, the articles of this SI and avenues for future research are presented.

3 Climate justice

The concept of climate justice emerged in the late 1990s and early 2000s. As a concept and objective, it links activists and scholars working on the unequal impacts of climate change and the socially differentiated impacts of climate policy instruments, such as carbon markets and adaptation planning (Burnham et al., 2013). In the USA, the concept became well known after Hurricane Katrina in 2005, which drastically illustrated aspects of racial discrimination in extreme weather events (Schlosberg and Collins, 2014). In the UN Framework Convention on Climate Change (UNFCCC), justice has always been a controversial and contested element (Okereke and Coventry, 2016; Ruiz-de-Oña Plaza, 2020). Even the initial foundation of the convention can be considered as an outcome of attempts by developing countries to increase the procedural justice of the emerging climate regime in the late 1980s and early 1990s (Okereke and Coventry, 2016). Initially, climate change was mainly framed as a scientific problem and, therefore, discussed in the Intergovernmental Panel on Climate Change (IPCC), which was founded for this purpose by the United Nations Environmental Programme (UNEP) and the World Meteorological Organization (WMO) in 1988. Developing countries argued successfully in favour of shifting the discussion to the UN General Assembly and considered the UNFCCC, which was established in 1992, as being a negotiation forum to address injustices in the global economic system (Okereke and Coventry, 2016).

UN climate negotiations from Kyoto (1997), via Bali (2007) and Durban (2011), to Paris (2015) were always shaped by justice discussions. This is reflected in debates on the implications of the concept of common but differentiated responsibility, on the historical responsibility of industrialized countries, on financial transfers from the north to the south to support adaptation to climate change, and, more recently, on "loss and damage" (Ciplet et al., 2013; Lyster, 2017; Okereke and Coventry, 2016). Moreover, political ecologists, climate justice scholars, and activists highlight the justice implications of climate change politics and interventions. This is true of adaptation (cf. Alba et al., 2020; Fünfgeld and Schmid, 2020; Mendes Barbosa and Walker, 2020) and mitigation measures, such as market-based mechanisms for reducing greenhouse gas emissions like the Clean Development Mechanism and REDD+, and it is also relevant for the rights of indigenous and peasant communities to have self-determination, development, and livelihoods (Schroeder and McDermott, 2014; Hein, 2019; Corbera and Brown, 2010; Smits and Middleton, 2014).

Uneven exposure to the impacts of anthropogenic climate change and climate policies, as Newell and Mulvaney (2013:133) argue, is "often not accidental and unintentional, but rather a product of a particular way of organizing production and its constitutive social relations". It follows patterns of inclusion and exclusion along the lines of wealth and domination that are well known. It seems that the mechanisms "of prioritisation and exclusion" (Eriksen et al., 2015:526) display the same rationalities in different social and political settings all over the world. Economically powerful actors drive the agendas of climate politics and interventions on the ground (Klepp and Chavez-Rodriguez, 2018). It is, therefore, of tremendous importance to avoid further "disadvantages by approaches to address climate change which reproduce or exacerbate existing inequalities [leading to] triple injustices" (Krause, 2018:509) or leading to situations of "triple exposure" (Hein and Kunz, 2018).

4 Marine justice

In contrast to climate justice, the concept of marine justice is rather recent and seeks to link up the vast interdisciplinary scholarship of marine studies with environmental justice scholars and activists (Martin et al., 2019; Widener, 2018). The idea that a justice lens and, in particular, inter- and transdisciplinary justice research help to unravel, identify, and address multiple, often layered, inequities and injustices in coupled socio-ecological relationships is pervasive and also key to the more recent and critical ocean sustainability science (Bennett, 2018; Armstrong, 2020; Saunders et al., 2020). Oceans and coastal regions are increasingly threatened, destroyed, or degraded by human behaviour such as overfishing, marine pollution, coastal erosion, and the unsustainable extraction of marine resources, as well as by anthropogenic climate change and its impacts on ocean temperature increase, sea-level rise, acidification, and ocean deoxygenation (IPCC, 2013, 2018; UN, 2017a). As Martin et al. (2019) point out, since the 1980s, environmental justice and marine studies have developed separately and formed their own independent and crucial strands at the crossroads of social movements, policy, and academic research. Both strands historically revolve around issues such as pollution, power relations, participation, knowledge production, and the unevenly distributed benefits and burdens, yet with different points of departure (Martin et al., 2019). Environmental justice originated, as sketched above, from the reactions of residents in African American, Native American, and Hispanic communities, who were the most adversely affected by the economic and ecological degradation. In contrast, marine justice studies emerged from taking a more critical stance towards equity and the undemocratic and arbitrary decision-making processes that relate to excessive exploitation of marine resources, habitat degradation, and other activities negatively impacting the inextricable interconnectedness between humans and oceans. While oceans, amongst others, supply freshwater and oxygen and moderate the Earth's climate, coastal communities, indigenous people, and small-scale fishers rely on oceans for food, health, culture, transportation, identity, and wellbeing (UN, 2017a). Hence, understanding the human dimensions (e.g. beliefs, attitudes,

ontological and epistemological backgrounds, and power dynamics) of ocean change is essential to evidence-based and fair decision-making across marine-related fields, including deep-seabed mining (cf. Schmidt and Rivera, 2020), coastal fisheries (cf. Bopp and Bercht, 2021), oil exploration (Widener, 2018), marine spatial planning (Saunders et al., 2020), coastal adaptation (Alba et al., 2020), and marine conservation (Asseva, 2017).

Without doubt, as illustrated above and as this SI reflects, concerns about inequities in human–ocean relationships, such as inequitable access to marine resources and exposure to flooding (Alba et al., 2020), are growing, and the concept of marine justice is gaining momentum in science, ocean governance, policymaking, and activist circles. Nonetheless, research, awareness, and the adoption of marine justice are still in their infancy. In line with Bennett (2018), Armstrong (2020), and Menton et al. (2020), we argue that greater attention and resources must be dedicated to issues of marine justice to promote a just and equitable pathway towards ocean sustainability. Who suffers most from hurricanes and coastal erosion, and who benefits from deep-sea mining? Who should be included in decision-making about marine protected areas (MPAs), and whose (indigenous and local) knowledge should be recognized in adaptation strategies? With storms intensifying, sea levels rising (IPCC, 2018; UN, 2017a), and demands for deep-sea minerals and blue carbon set to develop in the future (UN. 2017a), questions like these will become even more important and urgent. Therefore, it is inevitable that justice is a vital consideration when addressing such issues. The following example of the Sustainable Development Goals (SDGs) demonstrates how policymakers tend to fail to consider issues of justice and perpetuate unjust constellations in the move towards global sustainability.

5 The SDGs – a missed opportunity for making justice issues more explicit?

In 2015, the United Nations (UN) adopted a collection of 17 SDGs, as part of the UN 2030 Agenda for Sustainable Development, which set out a 15-year plan to reach the goals. Crucially, SDG 14 refers exclusively to the ocean, aiming to "conserve and sustainably use the oceans, seas and marine resources for sustainable development" (UN, 2015:23). Notwithstanding the fact that, for the first time, oceans and seas are explicitly on the global sustainability agenda, the targets related to SDG 14 fall short of delivering on marine justice. For example, SDG 14.7 strives to increase the economic benefits to Small Island Developing States (SIDS) and Least Developed Countries (LDCs) from the sustainable use of marine resources by 2030, including through sustainable management of fisheries, aquaculture, and tourism. By giving attention to the needs of the Global South, this target could be a tremendously important step toward narrowing global inequalities. However, as Armstrong (2020) outlines, SDG 14.7 fails to define whether progress is to be identified by a country's gains relative to the rest of the world or relative to developed countries in particular. This lack of specification risks widening inequalities in the ocean economy. Following Armstrong (2020), other shortcomings arise from the failure of SDG 14 to engage with the underlying reasons behind inequalities in the ocean economy, specify appropriate principles for the fair distribution of ocean-related benefits and burdens, and point out the fragmentation of current ocean governance and its impediment to the implementation of justice and sustainability.

Similar to SDG 14, the first-ever United Nations Ocean Conference, held in New York in 2017 to discuss and urge the implementation of SDG 14, remained minimalist and unspecific about issues of marine justice and how to progress towards just human–ocean relationships. The conference's declaration, entitled "Our Ocean, Our Future: Call for Action" (UN, 2017b), acknowledges that each country, especially LDCs and SIDS, faces specific challenges and that different national capacities should be considered in the pursuit of sustainable oceans. Furthermore, all relevant stakeholders, including local communities, indigenous people, women, and youth, need to be involved and the issue of gender equality addressed in the implementation of SDG 14. However, marine justice, and environmental justice more broadly, are not currently incorporated in the language and vision of the SDGs. Rather, the targets are defined as "aspirational" (UN, 2015:13), while "escape clauses" (Easterly, 2015:323), such as "each government setting its own national targets" (UN, 2015:13), exempt all 193 governments from fulfilling the SDGs, including SDGs 13 and 14. This also reflects a broader shift away from regulatory public policy to voluntary arrangements by state and non-state actors for global sustainability (Kuyper et al., 2018; Otten et al., 2020).

In this light, we stress the urgent need for a more coordinated local and global effort to enhance ocean sustainability and explicitly address insights from the marine justice sciences in ocean policies, governance, and practices. The second United Nations Ocean Conference, which was originally scheduled to take place in 2020 in Lisbon and has been indefinitely postponed due to the COVID-19 pandemic, and the upcoming United Nations Decade of Ocean Science for Sustainable Development (2021–2030; UN, 2019) thereby provide significant opportunities to build on sustainability commitments and give greater value and weight to marine and linked climate justice concerns.

Although climate action has its own sustainable development goal (SDG 13), taking "urgent action to combat climate change and its impacts" (UN, 2015:23) is integral to all dimensions of inclusive, sustainable development. The introduction to the 2030 Agenda includes the ambitious pledge that "no one will be left behind" (UN, 2015:1) and that "we will endeavour to reach the furthest behind first" (UN, 2015:3). However, as with SDG 14, this is not part of the spe-

cific language of SDG 13, which is rather silent on the concept of climate justice, injustices within and between countries, and justice-sensitive processes of climate action. For example, in terms of procedural justice and recognition, it is decisive that all parts of a community are embraced in decision-making about climate mitigation and adaptation, including indigenous people, the youth, people with disabilities, LGBTQ+ communities, and all other marginalized groups that are likely to be excluded from decision-making. Therefore, precise language for the implementation of the SDGs is needed in local institutions and organizations to stress the importance of procedural justice and climate justice more broadly and to specify unambiguously how climate justice is to be accomplished. Otherwise, the SDGs risk failing in their most important point, i.e. to be inclusive and to tackle the rapid changes of our times in a social as well as ecological manner.

6 Knowledge and power: towards epistemic justice and ontological pluralism

The articles in this SI differ substantially in methodology and, in part, also in their epistemological paradigms, from critical realist to constructivist or post-constructivist approaches. Nonetheless, they all argue for an integrative and pluralist understanding of socio-ecological relations and seek to overcome human–nature dichotomies. In politicizing socio-ecological conflicts and investigating the meanings and structural causes of conflicts, the articles of this SI contribute to what Kaika (2018:1714) calls "a scholarship of presence" in multiple and creative ways. In line with Kaika (2018), we understand a scholarship of presence to be an inspiration to investigate environmental and climate justices and systemic injustices based on a relational understanding of marine socio-natures. This implies overcoming the ontological divide between nature and society and focusing research on how nature and society co-produce one another and form complex networks and relationships (Hinchliffe, 2007). In the articles of this SI, we see the potential for a new approach that links methodological, normative, and conceptual questions. This involves contributing to a just transformation that fosters the overcoming of an exclusively modernist and technically driven understanding of socio-ecological relations and of solutions for sustainable change (Nightingale et al., 2020). Moreover, especially the empirical research and engagement on the ground demonstrated in the SI articles can provide vivid examples of how scholarship on climate and marine justice contributes to the development of new narratives that inspire a socio-ecological transformation of the Anthropocene. The authors of this SI relate to a critical reading of Anthropocene terminology that does not erase but underlines differential human responsibilities and intersectional discrimination (Mathews, 2020).

One question that is gaining traction in the climate and marine justice literature and in public debates on climate science is the question of how to further integrate and accept epistemological and ontological pluralism in science and also in policies for socio-ecological transformation and interventions, such as, for example, climate change adaptation measures. It becomes more and more obvious that technological fix solutions and the greening of the economy will not be enough to adapt to a rapidly changing environment or to radically reduce emissions. This problem of "framing" (Nightingale et al., 2020; Alba et al., 2020) that represents the socio-ecological crisis as a series of technological issues that can be solved by environmental "management" and technological innovation is even more relevant for the societal effects of climate change and just transformation.

The interpretive power of the natural and engineering sciences in the interdisciplinary climate sciences is currently overwhelming. Our common future (Muraca, 2020) is mostly represented in scenarios and models. They mainly suggest technological solutions and technological visions to solve the climate crisis. There is a lack of transparency and discussion about the political implications, for example, of the Representative Concentration Pathways (RCPs) of the IPCC or of the way in which thinking up more radical solutions, such as degrowth, is prevented by the frameworks of these models (Beck and Mahony, 2017). In the sense of justice as recognition, ontological politics, conflicts, and pluralism are probably the latest frontier of environmental justice scholarship. Recent studies on Latin America (e.g. Ruiz-de-Oña Plaza, 2020; Weißermel and Chaves, 2020), Turkey (Yaka, 2020), Australia (Barcan, 2020), and New Zealand (Winter, 2020) show the importance of recognizing the "ontological nature" (Blaser, 2009; Ruiz-de-Oña Plaza, 2020) of environmental injustices. Some environmental injustices cannot be explained by unravelling dissents on knowledge production, the power asymmetries, and the political economy at play as they are ultimately rooted in "multiple realities" or, in Blaser's (2013:547) words, in "conflicts involving different assumptions of what exists". So, what options do we have to tackle the urgent need for ontological and epistemological pluralism for a socio-ecological transformation?

Drawing inspiration from a "scholarship of presence" (Kaika, 2018:1714), an active presence or involvement in local and global socio-ecological struggles helps to understand multiple ontologies and to achieve epistemic justice. We embrace the various ways in which people with different (knowledge) backgrounds are producing and defending their environments across the world. This situated and, at the same time, relational approach challenges the "coloniality of knowledge" (Ruiz-de-Oña Plaza, 2020; Fünfgeld and Schmid, 2020; Alba et al., 2020) and takes different forms of knowledge and various modes of being in the world seriously. We want to encourage our social scientist colleagues to respond to these thoughts and movements and to become more involved in the discussion about a restructuring of sci-

ence within society and not leaving the debate on the societal effects of climate change and the ecological crisis to our natural science colleagues.

7 The contributions of this special issue

This SI brings together six diverse articles that elaborate on various aspects of climate and marine justice and combine conceptual debates with empirical fieldwork in Italy, Brazil, Mexico, Guatemala, India, and Norway.

Making a case for marine justice and the need to leave unsustainable coastal protection pathways, *Rossella Alba*, *Silja Klepp*, and *Antje Bruns* underline how useful the environmental justice perspective is for tackling many of the challenges of the socio-ecological crisis and linked scholarship in their intervention article "Environmental justice and the politics of climate change adaptation – the case of Venice". Used as an analytical tool both for more obvious struggles on distribution and participation and for subtler injustices and conflicts regarding epistemological hegemonies, environmental justice gives us the opportunity to re-view, decentre and systematically re-address socio-ecological conflicts. The authors deal with recent climate change adaptation politics in Venice and the mega-project Mo.S.E. (Experimental Electromechanical Module; MOdulo Sperimentale Elettromeccanico in Italian), a system of movable mega-gates in the lagoon. Mo.S.E. also symbolizes decades of struggle about how to best protect Venice from flooding and a corruption scandal of historic proportions. Based on the analysis of the discussions and politics that shaped the planning and building of Mo.S.E., which is also a symbol of gigantic technical solutions for climate change adaptation, Alba, Klepp, and Bruns call for a transformative research agenda that is also directed at changing our work as scientists. This research agenda fosters multiple epistemologies and takes local knowledge and the involvement of populations seriously. They argue that the analysis and discussion of political aspects and the values involved in the planning and realization of adaptation interventions such as Mo.S.E. must be put centre stage.

The call to re-politicize climate change adaptation is also taken up by *Luciana Mendes Barbosa* and *Gordon Walker* in their article "Epistemic injustice, risk mapping and climatic events: analysing epistemic resistance in the context of favela removal in Rio de Janeiro". Connections of knowledge and power in risk assessments and epistemic injustice are illustrated and analysed in a compelling way in this contribution. The article enriches the growing scholarship on climate change adaptation, including risk assessments, by studying climate change adaptation as a new tool of governance in several ways. The focus of the empirical case study in Rio de Janeiro is the objects and practices of risk governance, such as expert reports and risk mapping. Based on these powerful methods of risk management and climate change adaptation, favela dwellers are building and coordinating resistance to disaster risk displacement. In order to beat the official actors and policies of the municipality at their own game, they have organized a network of counter-expertise, building their epistemic resistance on technical reports that include practical local knowledge and that are challenging the epistemic authority of satellites and of the experts of the city. Mendes Barbosa and Walker show us the complexity of knowledge and power in climate and risk governance, the strong relationship between procedural and epistemic justice, and the necessity of developing more just and inclusive climate change adaptation interventions.

Hartmut Fünfgeld and *Benedikt Schmid* also take up the different justice implications of climate change adaptation in their contribution "Justice in climate change adaptation planning: conceptual perspectives on emergent praxis". Against the background of notable financial investment in climate change adaptation over years to come, approaches to increasing our understanding of the justice implications of adaptation planning and decision-making are becoming an urgent social and ethical responsibility. By drawing on critical transformation research, Fünfgeld and Schmid present a flexible and justice-sensitive analytical framework for integrating theories and perspectives of justice and transformation into research on climate change adaptation planning and into policy and practice. The authors argue that current climate adaptation measures are mainly designed to tackle concrete, biophysical climate impacts in a specific geographic area and largely ignore the broader social implications of climate change, as well as the political dimensions of (normative) planning and its outcomes. Fünfgeld and Schmid's contribution offers a valuable pathway for bringing debates on adaptation planning, distributional and procedural justice and recognition, adaptive capabilities, and socio-ecological transformation, while considering different spatial, temporal, and socio-political aspects of planning praxis. Their integrative and problem-oriented discussion contributes to growing reflection on just adaptation and usefully paves the way for a more critical stance on adaptation planning in localized contexts.

Oscar Schmidt and *Manuel Rivera* take a critical look at narrativity, conflict, and marine justice in debates on deep-seabed mining (DSM) in their paper "No people, no problem – narrativity, conflict, and justice in debates on deep-seabed mining". The resources of the world's oceans are attracting ever more interest. Land-based resources are limited, and proponents of DSM argue that Earth metals are needed in many key technologies and are indispensable for meeting global demand for metals arising from urbanization and population growth. However, the precise impacts of DSM on marine ecosystems are still largely unknown. In the context of growing political and economic interest in DSM, Schmidt and Rivera raise the important question of justice implications and the possible opportunities and risks of mining that shape the preparations for DSM which are often neglected.

The results of their discourse analysis show that DSM is commonly narrated solely as an apolitical, technocratic, and noncritical process, concealing its immense potential for social and environmental conflict and injustices. In conclusion, the authors argue that, in contrast to the prevailing "narratives of promise" (Schmidt and Rivera, 2020:140), i.e. the promise of wealth and globally fair distribution of resources, other more critical and justice-related narratives on DSM are required that demonstrate the negative consequences of DSM for human-ocean relationships.

Based on ethnographic research, *Celia Ruiz-de-Oña* investigates the constitutive elements of climate and environmental justice movements in the border region of Guatemala and Chiapas (Mexico) in her article "Between divine and social justice: emerging climate-justice narratives in Latin American socio-environmental struggles". Her contribution fills a significant gap in the environmental and climate justice literature as she demonstrates the relevance of religious feelings and religious narratives from Latin American liberation theology for the justice claims of social movements. Ruiz-de-Oña investigates the Movement for the Defence of Life and Territory (MODEVITE) in Chiapas, Mexico, and the council of Maya Mam in Guatemala. The two movements understand the current socio-ecological crisis as being multi-scalar, affecting the entire "human brotherhood" (Ruiz-de-Oãa Plaza, 2020:412) and the local, which is at risk in the context of neo-extractivism, autocratic rule and the violence of state actors and paramilitary groups. As a response, they suggest alternative ways to relate to Mother Earth and argue for more than human environmental justice. Thereby, the movements on both sides of the border build on religious dogmas such as the Laudato si', the second encyclical of Pope Francis, to reject the necropolitics of neoliberal capitalism and call for socio-ecological justice, autonomy, and radical democracy. Her contribution advances the conceptualization of environmental and climate justice by incorporating religious feelings in the classical tripartite approach and argues for a contextualized and pluralist reading of justice which is able to challenge the "coloniality of knowledge".

Judith Bopp and *Anna Lena Bercht* outline the necessity of, and benefits for, scholars and practitioners alike to acknowledge different notions and experiences of time in climate and marine justice debates. Their contribution "Considering time in climate justice" is based on qualitative field research on farming communities in Tamil Nadu in southern India and fishing communities on the Lofoten islands in northern Norway. They show how temporalities of climate change (e.g. rapid and slow-onset changes) affect the rhythms, rituals, health, and caring practices of the farmers and fishers. The authors illustrate how climatic changes lead to "accumulated temporal effects". Climate change has an impact on the arrival and extent of the monsoon in Tamil Nadu and on the migration patterns of the northeast Atlantic cod *(Gadus morhua)* and, thereby, affects the seasonal practices of farmers and fishers and their livelihoods, including their physical and psychological health. Bopp and Bercht conclude that the explicit consideration of time in climate justice research helps to provide a deeper understanding of the root causes of vulnerabilities and injustices beyond spatial, cultural, and political economy dimensions.

8 Avenues for further research

The contributions to this SI demonstrate the strengths of normative perspectives on socio-ecological change and conflict. We argue that a deeper understanding of the root causes of structural injustices, as displayed by the present SI articles, provides important lessons for scholars and other stakeholders (e.g. decision makers, activists, and non-governmental organizations) in the broader field of sustainability studies. The multiple crises of global capitalism that we face, including the climate crisis and degradation of the oceans, are ultimately rooted in unjust social conditions (Hein and Dünckmann, 2020). To contribute to a just transformation by scholarship and activism, we argue for joint struggle and further research and debates along the following themes.

First, we argue in line with Blythe et al. (2018) for a politicization of sustainability studies and for transformative policies that acknowledge the need for an "eco-social turn" (Krause, 2016:142) and address the equity dimensions of "green" innovations (Krause, 2016:142). This requires deconstructing transformation as the "new buzzword" (Klepp and Chavez-Rodriguez, 2018:23) or the "rising star" (Brand, 2016:504) across disciplines and ideologies by investigating the environmental justice implications of the policies framed as being "transformative" and the power structures influencing policy design. As policy design is deeply intertwined with the state, we suggest engaging more critically with the state's role in socio-ecological transformations. A better understanding of how unjust societal power relations condense into different state apparatuses and, subsequently, influence the formulation of policies could complement the dominant tripartite conceptualization of environmental justice (Hein and Dünckmann, 2020).

Second, power and political economy are often deeply intertwined with epistemic injustices and unequal ontological politics. As Blaser (2009) and Ruiz de Oña Plaza (2020) show, environmental struggles often have a strong ontological dimension. Consequently, it is sometimes insufficient to identify and tackle the knowledge–power dimensions of environmental conflict. Nature, in dominant Western epistemology, often remains "only nature" that can be exploited, developed, and protected by humans. This does not include other belief systems where rivers, mountains, and animals are conceived as being persons or other beings (Blaser and de la Cadena, 2018) nor does it include different approaches where "nature and society make one another" (Hinchliffe, 2007:8–9). So far, most scholarship on climate and marine justice do not explicitly deal with the different ways of enacting with

and conceiving nature. We argue, however, that such ontologies of nature have a strong influence on how policies are developed, how knowledge claims are made, and how conflicts are solved (Carolan, 2005; Blaser, 2013; Blaser and de la Cadena, 2018; Hinchliffe, 2007, 2008).

Third, drawing on Bopp and Bercht's (2021) reflections and findings, we further claim that a time lens can make injustices visible in the marine and climate context which would otherwise remain hidden, unexplored, and unresolved. Considering the temporal embeddedness of the settings of vulnerable people and their measures in reaction to climate and ocean change opens a dimension beyond the spatial, socio-cultural, or socio-political dimensions that climate and marine justice scholarship has mostly focused on.

Fourth, taking up approaches of the arts and creative methods proves especially useful in our attempts to achieve "ontological pluralism" (Nightingale et al., 2020:345) in our studies and discourses on socio-ecological relations. Ontological pluralism will help us to tackle discursive frames that separate us from our environments and will make our studies and, hopefully, related policies on marine justice more inclusive. Inspired by artistic interventions and lively discussions at our EnJust kick-off conference on such innovative and expressive methodologies, we are convinced that the arts and creative methods can help us to explore different socio-ecological imaginaries and understandings of a good, sustainable future and to foster dialogue amongst different epistemic and ontological cultures. These often participatory and co-creative modes of knowledge production based on, for example, the visual arts (photography, video making, and painting), storytelling, or conceptual arts are able to meet the epistemological, ontological, and political challenges associated with more relational modes of thinking and doing research (Hawkins et al., 2015). Arts-based research methods are especially valuable to produce "multifaceted knowledge" (van der Vaart et al., 2018:16) in times of socio-ecological crisis. They provide opportunities to link global issues such as climate change to local interpretations, and they foster community resilience and collective action for transformation by bringing different "epistemic communities" (Adler and Haas, 1992:367) into dialogue (van der Vaart et al., 2018).

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