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Global environmental change II: Political economies of vulnerability to climate change

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Abstract

Vulnerability to climate change is, at its core, a question of political economics, albeit this is never stated. Using a political-economic perspective, this progress report reads recent studies on climate change vulnerability. It reads the studies as illuminating the dynamics at work in the relationship between vulnerability conceptions, vulnerability-causing institutions, and people with vested interests in vulnerability. It draws attention to studies that cast doubt on the concept of vulnerability while showing how vulnerable people may exert agency in navigating the complex web of interrelated institutions that determine how they will adapt to climate change. In addition, the study showcases studies that follow how influential groups and organisations that make people vulnerable are changing to fit in, taking up the cause of the vulnerable, removing politics from the issue, and advocating for financial and market innovations to fix the problem. Political and economic institutions are surviving and even thriving in this climate change era, thanks to these practices, while the most vulnerable people are bearing the brunt of the consequences.

Keywords: adaptation, markets, power, risk, the state

I Introduction

Societal susceptibility to climate change is discussed in this paper via the lens of political economy. Recently, there has been a more deliberate application of political economic theories to explain the (re)workings of power in response to the hazards posed by climate change. These theories have long been present in this area of study, but they have never been formally recognised. A long-standing inquiry, "What is political economy?" is prompted by this. Human geography, like the majority of social sciences, takes a rather different tack when it comes to the intricate history of political economy. Because of this, determining the fundamental principles of the tradition is a half-hearted and unfinished task.

physical activity (Payne, 2006). However, there are three main points that the majority of political economics studies cover. One issue is trying to explain how the state and markets work together as interdependent institutions whose respective responsibilities in distributing resources (such as products, services, rights, and opportunities) are always up for debate and only temporarily

settled. Second, the importance of ideas, interests, and institutions as catalysts for societal transformation is emphasised. The third point is that it's important to clarify the consequences of societal transformation across demographics (and, in the context of geography, across space) (Sen, 1985; Hall, 1997; Blyth, 2002).

It is possible to say that political economy study is both "critical" of the status quo and creative in its pursuit of new realities. Many modern researchers continue to sadly ignore the productive orientation, despite its utmost evidence in feminist political economics (Gibson-Graham, 1996; Peterson, 2004). The research highlighted in this progress report are significant because they challenge and attempt to reveal previously held beliefs or assumed processes that make people more susceptible to climate change, or that claim to encourage adaptation without really reducing vulnerability. In a later study, we will take a look at studies that advocate for new political economics to help with climate adaption and justice, which are more focused on facilitating or productive solutions.

This all-encompassing political this report's three main parts classify vulnerability literature as either pertaining to concepts, institutions, or interests, with an eye towards the economy. The area of political economy makes extensive use of this tripartite analytical framework, which provides much-needed structure to the otherwise chaotic subject. According to this theoretical framework, ideas are seen as building the issues that need solving, impacting how actors see their own interests, and being used to guide and direct solutions. According to Hall (1997), Campbell (1998), Allen (2003), Be'land (2009), and MacKinnon et al. (2009), institutions are socially produced mechanisms that regulate the behaviour of individuals and groups. Interests, on the other hand, are the wants of actors, both individuals and groups, that they attempt to resolve through the dissemination of ideas and the creation of institutions. Since most research on vulnerability has focused on institutions, that is where this paper focuses its attention.

the studies that address the manner in which concepts and priorities both cause and mitigate climate change.

II The idea of vulnerability

While there is some critical study on vulnerability and adaptation to climate change, the concept of vulnerability is often taken for granted. Idea construction, actor perception of interest, and the use of ideas to appeal to, manage, and inform solutions all need reflexivity (Allen, 2003). Like all concepts, the concept of vulnerability travels across boundaries and social networks inscribed in discourses, doctrines, epistemes, and ideologies (Peck and Theodore, 2015). When seen from a poststructuralist perspective, the concept does certainly pose serious problems. One prominent definition is that of "the pro-pensity or predisposition to be adversely affected," as put forward by the Intergovernmental Panel on Climate Change. Many things come together to form vulnerability, such as being easily hurt or having little ability to deal with difficult situations or change (Matthews, 2018: 560). Numerous powerful (and well-intentioned) interpretations

of the term centre on a "deficit of ability to cope and adapt," defining it as a condition of "defencelessness," "weakness," and "powerless-ness" (Chambers, 1989; Hewitt, 1997). Vulnerability, by definition, fails to take into account the findings of a large body of critical social science literature that demonstrates that individuals are seldom helpless; rather, they constantly engage in acts of resistance and even the most helpless among us have 'weapons' (Foucault, 1977; Scott, 1985; Allen, 2003). This conceptual dedication to helplessness has four consequences for vulnerability's place in the political economy. To start, risk assessments are more likely to highlight absences than presences; for example, they may use measures of insufficiency like low literacy rates or power outages to illustrate this point.

partners in marriage (Arora-Jonsson, 2011; Tschakert et al., 2013; Turner, 2016). Instead than focusing on enhancing natural capabilities, these studies often propose solutions that aim to fix shortcomings. For instance, it has long been believed that tiny islands are more susceptible to the effects of climate change due to their lack of land mass, economy, human capital creation, and revenue (Dommen, 1980). Despite climatic and sea-level changes, colonisation, slavery, nuclear testing, pandemics, and wars, island peoples have managed to settle and maintain their societies and cultures for several thousand years. It is only recently that this history of collaborative action and adaptation has been acknowledged (Cameron, 2012; Hayward et al., 2019). When outside parties see islands through a vulnerability lens, they are more likely to suggest solutions to problems that may never be solved and that have never been important. According to Barnett and Campbell (2010), these solutions often neglect long-standing social practices, institutions, and technology in favour of more recent ones. The coastal communities of Bangladesh are only one example of many "the vulnerable" groups that face similar logics of lack and misguided solutions (Alam et al., 2011). This is not to discount research that acknowledge the agency of vulnerable populations; in fact, such studies provide valuable insights. For instance, Eriksen and Lind (2009), Nielsen and Vigh (2012), and Ribot (2010) look at how politically connected, economically disadvantaged, and mobile communities in Africa's drylands have weathered the drought. Alternatively, research on how islanders react to claims about their vulnerability and displacement reveals that they reinterpret these claims in a nuanced and, at times, overt manner, which allows them to regain agency in the face of climate change. A farbotko

as well as Lazrus (2012) and Rudiak-Gould (2014). Actually, vulnerability is a tool that vulnerable groups can use to their advantage. They can use it to draw attention to the need to decrease emissions, advocate for more effective adaptation practices, find other ways to help, build their identity, or gain political legitimacy (Webber, 2013; Rudiak-Gould, 2014; Hirsch, 2015). The second effect of seeing vulnerability as a lack of capability is that studies tend to focus on "the vulnerable" and the immediate social and environmental contexts in which they find themselves. However, according to a number of recent articles, vulnerability is more of a product of intricate power dynamics than of random chance (Eriksen et al., 2011; Ribot, 2014; Nalau et al., 2015). However, studies seldom concentrate on the perpetrators, organisers, creators, or victims of violence, political oppressors, or primitive accusers who

purposefully and deliberately provoke the uneasiness of others. Here, the concept of vulnerability tends to draw more emphasis to the helplessness of the weak than to the power of the guilty. The most illuminating sensitivity studies often reveal a clear correlation between the susceptibility of some and the safety of others (Taylor, 2013). For instance, Ajibade and colleagues (2013) state that gendered dynamics, such as domestic violence and abuse, contribute to women's disproportionate susceptibility to floods in Lagos. Cameron (2012), Walker et al. (2014), and Bordner (2019) are among the research that suggest colonialism's legacies construct vulnerability and impede adaptation. Drought has a disproportionate impact on smallholder farmers in agricultural systems because influential producers and financiers shape market changes to their benefit (Taylor, 2013; Warner et al., 2018). Land acquisition for purportedly environmental reasons increases the vulnerability of the dispossessed, according to many research on "green grabbing." (Chun et al., 2018; Dunlap and Fairhead, 2014; Bigger and Nei-mark, 2017). According to Verhoeven (2011), the Khartoum government is fully responsible for the alleged climate conflicts and resulting vulnerabilities in the Sudan. Similarly, Mahmud and Prowse (2012) and Sovacool (2018) found corruption and nepotism to be factors in the social vulnerability of Bangladeshis to climate change. Thirdly, since powerlessness is a hallmark of fragility, "the vulnerable" become a blank slate onto which capitalism and colonialism may impose their will (Rebotier, 2012; Paprocki, 2018). Naturally, it also perpetuates the power and invincibility of those who build the world as a web of susceptible locations and individuals (Barnett and Campbell, 2010). Since the powerless cannot, by definition, address their own powerlessness, remedies can only ever be implemented by powerful institutions and people on behalf of the vulnerable. To achieve this goal, we must engage in what is often referred to as "adaptation." However, a large body of research on the topic argues that adaptation is either maladaptive or very slightly lessens the impact of climate change on the most vulnerable populations. According to several sources, including Nagoda (2015), Webber (2016), Atteridge and Remling (2018), Goldman et al. (2018), and Warner et al. (2018), the liberal-capitalist institutional complex is the root cause of climate change and the unequal distribution of the risks that come with it. "Adaptation" and "resilience" are often seen as solutions to these problems.

A crippling feeling of catastrophism and growing pessimism over the future are fueled by helplessness, which is the fourth consequence of vulnerability as a distinguishing trait. Pervasive tales of society's collapse increasingly permeate popular culture and the media, with the vulnerable serving as both symbols and main characters (Manzo, 2010; Bettini, 2013). The irony is that these stories really acknowledge the agency of the helpless, but just in their roles as disaster and contagion agents brought about by their inescapable decline into vice and migration. The idea that climate change will cause significant losses is becoming more commonplace, and many argue that it is 'too late' because solutions cannot be based on the idea that vulnerable people can resist environmental change (Hulme, 2020). This is the most harmful way that the powerful who produce large amounts of carbon dioxide may ignore the agency of the most vulnerable members of society. It is argued that there is no longer any use in attempting to decrease emissions or aid adaptation if the most

vulnerable cannot save themselves and it is 'too late' to rescue them. All civilizations experience heightened future anxiety as a result of this catastrophic event, which also has the potential to solidify a new geopolitical environment characterised by division and danger (Gibson et al., 2019). It is undeniable that climate change poses a grave threat to humanity. It is also true that some groups are more vulnerable than others, partly due to the limited options available to them for risk management. Recognising that liberal climate guilt may lead to framings of the vulnerable, which in turn might entail actions that reproduce the power dynamics they want to remove, is crucial. This also doesn't mean that vulnerability is a broken idea. It is important for those portraying climate change victims to remember that these people are still human and have the power to create the life they want for themselves. Simultaneously, analysis and remedies should more often centre on the agency of individuals responsible for creating and maintaining vulnerability.

III Institutions that create vulnerability

Many studies on climate change vulnerability have concentrated on institutions, which is prevalent in the political economy that explains a great deal of social phenomena. Organisations control how people act by outlining norms for proper behaviour and then enforcing them through official (generally accepted, bureaucratic and legal) and informal (specifically accepted, cultural and custody) channels (Helmke and Levitsky, 2004). According to MacKinnon et al. (2009), these processes and norms help to stabilise conflicting interests and limit the extent of change. While they undergo change in reaction to novel concepts, methods, and tools, they remain stable when players adhere to established norms.

The Chicago School of natural disasters and Amartya Sen's entitlement theory have been cited in several vulnerability research studies (Adger, 2006; Donovan, 2017; Ford et al., 2018). Although these theoretical frameworks continue to form the basis of social vulnerability research, there has been substantial interdisciplinary work in the last decade that has uncovered the interconnected, relational, and even teleconnected nature of vulnerability (Adger et al., 2009; Eakin et al., 2009; Cameron, 2012; Taylor, 2013; Turner, 2016). Factors such as age and life course, class, culture, disability, gender, migrant status, and access to property are some examples of how institutions interact to build axes of difference that structure vulnerability in important but not necessarily deterministic ways.

The institutions that organise vulnerability have been considered as if they would remain relatively stable in a changing environment in vulnerability research until recently. Certainly, compared to the rate of change in the climate and the interconnected ecological and social factors, many institutions that influence vulnerability are route dependent and thus rather slow to alter.

societal structures (Barnett et al., 2015; Munck af Rosenscho¨ ld et al., 2014). However, climate change poses serious threats to the efficacy and legitimacy of several of these institutions, notably those that connect the state and markets together. Either more stringent risk regulation or the expansion of neoliberal policies may result from this (Swyngedouw, 2010). So far, the data points to the later reactions being the more common, as will be explained in the next section.

IV The responses of vulnerable interests

There is a wealth of information on the institutions that generate vulnerability in the widely accepted literature on vulnerability. But up until recently, there was a lot of focus on figuring out who benefits from these institutions and how vulnerability, along with the remedies of "resilience" and "adaptation," may work. When it comes to vulnerability, many groups influence institutions to suit their own (not necessarily exclusive) interests. This includes companies, politicians, communities of concern, and non-governmental organisations (NGOs) (Blyth, 2002). The results of these conflicts between interests show themselves as institutional favouritism and the dominance of particular views. The notion of vulnerability and the institutional responses to vulnerability in climate change are politically significant because they affect a wide variety of players, from multinational reinsurance firms to volunteer fire departments. More recent research has started to detail how the interests that create social vulnerability might employ "adaptation" to their advantage. Not only does this help them escape the legitimacy-threatening consequences of admitting their participation in societal fragility, but it also helps them breed.

“Warner et al., 2018” states. To keep themselves relevant in a world where "development" is less of a realistic and intellectually viable project, some in the development industry have taken to focusing on climate change adaptation and vulnerability (Mikulewicz and Taylor, 2019). It would seem that growth is taking a back seat to climate change adaptation, especially with the ever-increasing amounts of money being suggested for the latter. For instance, as an illustration, the signatories to the Paris Climate Change Agreement in 2016 committed to allocating $50 billion year towards adaptation efforts. This sum is equivalent to one-third of the total official development assistance (ODA) that is now available. Despite climate change financing being ostensibly "new and additional" to ODA, it is likely that it comes at the cost of some of these other programmes. Weisser et al. (2014) and Webber (2016) are cited. Even though grants have made up the bulk of climate change funding up to now, loans and private sector financing are being touted as essential for covering adaptation expenses (Khan et al., 2019). This is a prime illustration of how capital can adjust to climate change risks; however, the financialization of adaptation puts profits at risk for polluters and investors and will likely increase vulnerability through privatised assets and debt (Christophers, 2018). This reimagining of development in the face of climate change is about more than simply money, however. In low- and middle-income nations, the development bank network has solidified its position as the go-to source for financing adaptation to climate change. Weisser et al. (2014) notes that this involves laying the groundwork for financial instruments like the Green Climate Fund and the Global Environmental Facility, as well as for the system of institutions that carry out climate change "projects" in nations.

References: Webber (2015), De Roeck (2019), and Mikule-wicz and Taylor (2019). According

to Webber (2016), De Roeck (2019), and Goh (2019), the transformational ideas and practices that could arise from more horizontal exchanges among 'vulnerable' countries are instead stifled by the institutionalisation of adaptation as a system of vertical flows of money, ideas, and people. Furthermore, similar to development financing, adaptation cash is not always able to reach the nations who really need it, and when it does, the impact is limited. Donors and agencies may prioritise appearing to act above all else, which can lead to maladaptive situations like states receiving funding for adaptation despite their lack of competence (Alam et al., 2011; Webber, 2013; Nagoda, 2015; Weiler et al., 2018).

There is an emphasis on infrastructure initiatives to lessen vulnerability, which is associated with the developmentalism of adaptation. Florsheim and Dettinger (2007), McEvoy and Wilder (2012), Barnett et al. (2013), and Malm (2013) all highlight sea-walls and levee banks, desalinization plants, water transfer systems, and land reclamation as potential solutions to mitigate climate risks. Such projects are preferred over more politically risky regulatory responses to environmental change, such as sea-walls, which are more likely to be maladaptive and unfair (Cooper and McKenna, 2008; Kay, 2012). However, they allow governments to clearly show they are responding to environmental change. Additionally, engineering solutions are the most beneficial to capital interests. If one follows the money, they will notice that these solutions concentrate wealth at the top, in contrast to more nuanced approaches that may include solutions rooted in nature, improved land use planning, or innovative rules and regulations for design (Barnett et al., 2013). Indeed, development banks, the EU, the Green Climate Fund, and numerous governments are all helping to foster an area of adoption practice that is seeing rapid growth: leveraging private investments to make public and private goods more resilient (Bisaro and Hinkel, 2018; Remling, 2018). Researchers have started to uncover the contradiction between adaptation responses that assume economically rational actors will adapt given the right information and market conditions and the way climate change primarily poses a profound risk to public goods, requiring stronger regulation and collective action. This line of thinking is based on earlier critiques of neoliberal environmentalism (McCarthy and Prudham, 2004; Castree, 2008). (Manuel-Navarrete, 2010; Goldman et al., 2018; Remling, 2 A revitalization of collective action is necessary to find a solution to climate change since it poses a serious threat to public goods such as biodiversity, social justice, public health, and water security. To be more specific, most responses to climate change have been characterised by a depoliticization of the issue and a strengthening of the neoliberal response along with its associated institutions and interests. This is in contrast to the expectation that climate change would serve as the catalyst for a Polanyian counter-movement (Manuel-Navarrete, 2010; Prudham, 2013; Swyngedouw, 2013; Wright and Nyberg, 2017; Christophers, 2018; Remling, 2018; Warner et al., 2018). The rising privatisation of information about climate threats and the financialization of climate risks via expansions and innovations in insurance markets are two areas where geographers have effectively investigated this.

Capital is intrinsically adaptable, as shown by studies of insurance and reinsurance businesses, who have taken measures to mitigate the risks that climate change brings to their business model. To what degree has insurance ever decreased

Controversy has long surrounded the concept of susceptibility to hazards. According to Johnson (2010) and O'Hare et al. (2016), the current approach of selling premiums based on fear distorts people's perceptions of risks and encourages them to take more risks than they really do. New concerns, product developments, and reinsurance options like disaster bonds have all been ushered in by the arrival of climate change, which has magnified the model and its consequences. Despite failing to lessen net vulnerability or the vulnerability of those most at risk, these actions maintain insurance's value (Grove, 2012; Johnson, 2014; Christophers, 2018). In an effort to improve risk assessment and management via insurance, some practices shift the burden of risk onto other people in the insurance pool or onto subsequent generations. Additionally, they continually deflect focus from the deeper shifts that would be required to acknowledge a world that is both more dynamic and more dangerous (Swyngedouw, 2010; Clark, 2011). Knowledge of the hazards associated with climate change is becoming more useful and, thus, more susceptible to alteration as awareness of these concerns increases. Public science agencies and consulting firms are trying to make a profit by curating information from publicly funded climate change research and selling it to private clients as "cli-mate services" (Randalls, 2010; Webber and Donner, 2017; Keele, 2019; Nost 2019). Market players vulnerable to climate risks should be prepared to pay a premium for unique climate data because, in principle, such data improves competitiveness in a changing environment. Actually, climate consultancy has grown into a multi-billion dollar business worldwide. However, in reality, governments are the most common purchasers of contained climate data, suggesting that consultancies and private climate science firms are making money off of the gap between publicly-funded research and private sector efforts.

government agencies requesting weather data (Keele, 2017). The effects of climate change information exclusion and enclosure are multi-faceted. On one hand, it allows the wealthy to insulate themselves from the exclusion (and potentially heightened vulnerability) of others. On the other hand, it takes money away from publicly available science for the public good and puts it into enclosed knowledge about risks to private interests. Additionally, it undermines the accuracy of climate information by avoiding peer review and makes weather derivatives markets possible (Randalls, 2010; Webber and Donner, 2017; Keele. 2019; Nost, 2019). Once again, the commercialization of climate data exemplifies how the wealthy are profiting from the climate crisis, ignoring or even harming the people who are most vulnerable. Finally, it would be irresponsible of critical academics not to acknowledge that researchers conceal a self-interest in the vulnerability issue. Concern for the well-being of current and future generations of humans and other species is, without a question, what drives climate change researchers. Having said that, it is also a fascinating and practical area of study that opens doors to funding and publishing possibilities. As

a result, climate change research needs to address an ethical question by considering how vulnerable populations are portrayed in papers and grants, as well as who benefits and who loses from these rhetorical plays. Other important questions include how researchers differentiate between their roles as knowledge producers and agents of change, and how to strike a balance between focusing on problems rather than solutions, as well as learning with and for people at risk rather than just about them. Geographers are increasingly calling for a more liberatory and productive science-society dialogue on climate change, and they want their field to lead the way in showing how research has to evolve in terms of both aim and methodology (Head and Gibson, 2012).

published in 2012 by O'Brien, 2013 by Castree, 2016 by Head, and 2018 by Goldman et al.

V Conclusion

A complex web of ideologies, organisations, and special interests has coalesced to gain power at the price of humanity and our home planet, hastening the process of climate change. Much of the literature aims to describe this concept of vulnerability as an injustice, and it is amplified by the system's inequities in that it puts people who are least responsible for climate change at the greatest danger from its repercussions. However, being vulnerable is not a new or obvious concept. This object has both symbolic and material impacts; it portrays locations not as centres of power but as locations of catastrophic disjunctures caused by unchangeable structural drives, rather than as centres of contingent and optimistic continuities. Simultaneously, the same political and economic institutions and interests that make people more susceptible to climate change are in danger of becoming vulnerable to it, as it threatens both their legitimacy and the capacity to remain in power. Recent work in the field of political economy has focused on the adaptation strategies of influential institutions and interests, illuminating how they are using the plight of the vulnerable as their own, removing politics from the adaptation agenda, and advocating for financial and market innovations to mitigate climate risk.

References

Adger WN (2006) Vulnerability. *Global Environmental Change* 16(3): 268–281.

Adger WN, Eakin H and Winkels A (2009) Nested and teleconnected vulnerabilities to environmental change. *Frontiers in Ecology and the Environment* 7(3): 150–157.

Ajibade I, McBean G and Bezner-Kerr R (2013) Urban flooding in Lagos, Nigeria: Patterns of vulnerability and resilience among women. *Global Environmental Change* 23(6): 1714–1725.

Alam K, Shamsuddoha M, Tanner T, Sultana M, Huq MJ and Kabir SS (2011) The political economy of climate resilient development planning in Bangladesh. *IDSBulletin* 42(3): 52–61.

Allen J (2003) *Lost Geographies of Power*. Malden, MA:Blackwell.

Arora-Jonsson S (2011) Virtue and vulnerability: Discourses on women, gender and climate change. *GlobalEnvironmental Change* 21(2): 744–751.

Atteridge A and Remling E (2018) Is adaptation reducing vulnerability or redistributing it? *Wiley Interdisciplinary Reviews: Climate Change* 9(1): e500.

Baldwin A (2012) Orientalising environmental citizenship: Climate change, migration and the potentiality of race. *Citizenship Studies* 16(5–6): 625–640.

Barnett J and Campbell J (2010) *Climate Change and Small Island States*. London and New York: Earthscan.

Barnett J, Evans L, Gross C, Kiem A, Kingsford R, Palutikof J, Pickering C and Smithers S (2015) From barriers to limits to climate change adaptation: Path dependency and the speed of change. *Ecology and Society* 20(3): 5.

Barnett J, O'Neill S, Waller S and Rogers S (2013) Reducing the risk of maladaptation in response to sea-level rise and urban water scarcity. In: Moser S and Boykoff M (eds) *Toward Successful Adaptation: Linking Science and Practice in Managing Climate Change Impacts*. London: Routledge, 37–49.

Béland D (2009) Ideas, institutions, and policy change. *Journal of European Public Policy* 16(5): 701–718.

Bettini G (2013) Climate barbarians at the gate? A critique of apocalyptic narratives on 'climate refugees'. *Geo- forum* 45: 63–72.

Bigger P and Neimark BD (2017) Weaponizing nature: The geopolitical ecology of the US Navy's biofuel pro- gram. *Political Geography* 60: 13–22.

Bisaro A and Hinkel J (2018) Mobilizing private finance for coastal adaptation: A literature review. *Wiley Interdisciplinary Reviews: Climate Change* 9(3): e514.

Blyth M (2002) *Great Transformations: Economic Ideas and Institutional Change in the Twentieth Century*. Cambridge: Cambridge University Press.

Bordner A (2019) Climate migration and self-determination. *Columbia Human Rights Law Review* 51(1): 183–248.

Cameron ES (2012) Securing Indigenous politics: A critique of the vulnerability and adaptation approach to the human dimensions of climate change in the Canadian Arctic. *Global Environmental Change* 22(1): 103–114.

Campbell JL (1998) Institutional analysis and the role of ideas in political economy. *Theory and Society* 27(3): 377–409.

Castree N (2008) Neoliberalising nature: The logics of deregulation and reregulation. *Environment and Planning A* 40(1): 131–152.

Castree N (2016) Geography and the new social contract for global change research. *Transactions of the Institute of British Geographers* 41(3): 328–347.

Chambers R (1989) Editorial introduction: Vulnerability, coping and policy. *IDS Bulletin* 20(2): 1–7.

Christophers B (2018) Risking value theory in the political economy of finance and nature. *Progress in Human Geography* 42(3): 330–349.

Clark N (2011) *Inhuman Nature: Sociable Life on a Dynamic Planet*. London: SAGE.

Cooper JAG and McKenna J (2008) Social justice in coastal erosion management: The temporal and spatial dimensions. *Geoforum* 39(1): 294–306.

De Roeck F (2019) Governmentality and the climate-development nexus: The case of the EU Global Climate Change Alliance. *Global Environmental Change* 55: 160–167.

Dommen E (1980) Some distinguishing characteristics of island states. *World Development* 8: 931–945.

Donovan A (2017) Geopower: Reflections on the critical geography of disasters. *Progress in Human Geography* 41(1): 44–67.

Dunlap A and Fairhead J (2014) The militarisation and marketisation of nature: An alternative lens to 'cli- mate-conflict'. *Geopolitics* 19(4): 937–961.

Eakin H, Winkels A and Sendzimir J (2009) Nested vulnerability: Exploring cross-scale linkages and vulner- ability teleconnections in Mexican and Vietnamese coffee systems. *Environmental Science & Policy* 12(4): 398–412.

Eriksen S and Lind J (2009) Adaptation as a political process: Adjusting to drought and conflict in Kenya's drylands. *Environmental Management* 43(5): 817–835.

Eriksen S, Aldunce P, Bahinipati CS, Martins RDA, Molefe JI, Nhemachena C, O'Brien K, Olorunfemi F, Park J, Sygna L and Ulsrud K (2011) When not every response to climate change is a good one: Identifying principles for sustainable adaptation. *Climate and Development* 3(1): 7–20.

Farbotko C and Lazrus H (2012) The first climate refu- gees? Contesting global narratives of climate change in Tuvalu. *Global Environmental Change* 22(2): 382–390.

Florsheim JL and Dettinger MD (2007) Climate and floods still govern California levee breaks. *Geophysical Research Letters* 34(22).

Ford JD, Pearce T, McDowell G, Berrang-Ford L, Sayles JS and Belfer E (2018) Vulnerability and its discon- tents: The past, present, and future of climate change vulnerability research. *Climatic Change* 151(2): 189–203.

Foucault M (1977) *Discipline and Punish: The Birth of the Prison*. New York: Pantheon Books.

Gaskin CJ, Taylor D, Kinnear S, Mann J, Hillman W and Moran M (2017) Factors associated with the climate change vulnerability and the adaptive capacity of peo-ple with disability: A systematic review. *Weather, Cli-mate, and Society* 9(4): 801–814.

Gibson K, Haslam N and Kaplan I (2019) Distressing encounters in the context of climate change: Idioms of distress, determinants, and responses to distress in Tuvalu. *Transcultural Psychiatry* 56(4): 1363461519847057.

Gibson-Graham JK (1996) *The End of Capitalism (as We Knew It): A Feminist Critique of Political Economy*. Minneapolis: University of Minnesota Press.

Johnson L (2010) Climate change and the risk industry: The multiplication of fear and value. In: Peet T, Rob-bins P and Watts M (eds) *Global Political Ecology*. London: Routledge, 185–202.

Goh K (2019) Flows in formation: The global-urban net-works of climate change adaptation. *Urban Studies*: DOI: 10.1177/0042098018807306.

Goldman MJ, Turner MD and Daly M (2018) A critical political ecology of human dimensions of climate change: Epistemology, ontology, and ethics. *Wiley Interdisciplinary Reviews: Climate Change* 9(4): e526. Grove K (2012) Preempting the next disaster: Catastrophe insurance and the financialization of disaster manage-ment. *Security Dialogue* 43(2): 139–155.

Hall P (1997) The role of interests, institutions, and ideas in the comparative political economy of the industria- lized nations. In: Lichbach MI and Zuckerman AS (eds) *Comparative Politics: Rationality, Culture and Struc-ture*. Cambridge: Cambridge University Press, 174–207.

Hayward B, Salili DH, Tupuana'i LL and Tualamali'i' J (2020) It's not 'too late': Learning from Pacific small island developing states in a warming world. *Wiley Interdisciplinary Reviews: Climate Change* 11(1): e612.

Head L (2016) *Hope and Grief in the Anthropocene: Re-conceptualising Human–Nature Relations*. London and New York: Routledge.

Head L and Gibson C (2012) Becoming differently mod- ern: Geographic contributions to a generative climate politics. *Progress in Human Geography* 36(6): 699–714.

Helmke G and Levitsky S (2004) Informal institutions and comparative politics: A research agenda. *Perspectives on Politics* 24(2): 725–740.

Hewitt K (1997) *Regions of Risk: A Geographical Intro-duction to Disasters*. London: Routledge.

Hirsch E (2015) 'It won't be any good to have democracy if we don't have a country': Climate change and the politics of synecdoche in the Maldives. *Global Envi- ronmental Change* 35: 190–198.

Hulme M (2020) Is it too late (to stop dangerous climate change)? *An editorial. Wiley Interdisciplinary Reviews: Climate Change* 11(1): e619.

Hunsberger C, Work C and Herre R (2018) Linking cli- mate change strategies and land conflicts in Cambodia: Evidence from the Greater Aural region. *World Devel-opment* 108: 309–320.

Huynh PT and Resurreccion BP (2014) Women's differ-entiated vulnerability and adaptations to climate- related agricultural water scarcity in rural Central Vietnam. *Climate and Development* 6(3): 226–237.

Johnson L (2014) Geographies of securitized catastrophe risk and the implications of climate change. *EconomicGeography* 90(2): 155–185.

Kay RC (2012) Adaptation by ribbon cutting: Time to

understand where the scissors are kept. *Climate and Development* 4(2): 75–77.

Keele S (2017) *Outsourcing adaptation: Examining the role and influence of consultants in governing climate change adaptation*. Doctoral dissertation, Melbourne, School of Geography, University of Melbourne.

Keele S (2019) Consultants and the business of climate services: Implications of shifting from public to private science. *Climatic Change*. DOI: 10.1007/s10584-019-02385-x.

Khan M, Robinson SA, Weikmans R, Ciplet D and Roberts JT (2019) Twenty-five years of adaptation finance through a climate justice lens. *Climatic Change*. DOI: 10.1007/s10584-019-02563-x.

Krawchenko T, Keefe J, Manuel P and Rapaport E (2016) Coastal climate change, vulnerability and age friendly communities: Linking planning for climate change to the age friendly communities agenda. *Journal of Rural Studies* 44: 55–62.

Leichenko R and Silva JA (2014) Climate change and poverty: Vulnerability, impacts, and alleviation strategies. *Wiley Interdisciplinary Reviews: Climate Change* 5(4): 539–556.

MacKinnon D, Cumbers A, Pike A, Birch K and McMaster R (2009) Evolution in economic geography: Institutions, political economy, and adaptation. *Economic Geography* 85(2): 129–150.

Mahmud T and Prowse M (2012) Corruption in cyclone preparedness and relief efforts in coastal Bangladesh: Lessons for climate adaptation? *Global Environmental Change* 22(4): 933–943.

Malm A (2013) Sea wall politics: Uneven and combined protection of the Nile Delta coastline in the face of sea level rise. *Critical Sociology* 39(6): 803–832.

Manuel-Navarrete D (2010) Power, realism, and the ideal of human emancipation in a climate of change. *Wiley Interdisciplinary Reviews: Climate Change* 1(6): 781–785.

Manzo K (2010) Imaging vulnerability: The iconography of climate change. *Area* 42(1): 96–107.

Matthews JBR (ed.) (2019) Annex I: Glossary. In: Masson-Delmotte V, Zhai P, Poürtner HO, Roberts D and Skea J (eds) *Global Warming of 1.5◦C: An IPCC Special Report on the impacts of global warming of 1.5◦C above pre- industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Chicago: Intergovernmental Panel on Climate Change.

McCarthy J and Prudham S (2004) Neoliberal nature and the nature of neoliberalism. *Geoforum* 35(3): 275–283.

McEvoy J and Wilder M (2012) Discourse and desalination: Potential impacts of proposed climate change adaptation interventions in the Arizona–Sonora border region. *Global Environmental Change* 22(2): 353–363.

Mikulewicz M and Taylor M (2019) Getting the resilience right: Climate change and development policy in the 'African age'. *New Political Economy*. DOI: 10.1080/13563467.2019.1625317.

Munck af Rosenschöld J, Rozema JG and Frye-Levine LA (2014) Institutional inertia and climate change: A review of the new institutionalist literature. *Wiley Interdisciplinary Reviews: Climate Change* 5(5): 639–648.

Nagoda S (2015) New discourses but same old development approaches? Climate change adaptation policies, chronic food insecurity and development interventions in northwestern Nepal. *Global Environmental Change* 35: 570–579.

Nalau J, Preston B and Maloney MC (2015) Is adaptation a local responsibility? *Environmental Science and Policy* 48: 89–98.

Nielsen JØ and Vigh H (2012) Adaptive lives. Navigating the global food crisis in a changing climate. *Global Environmental Change* 22(3): 659–669.

Nost E (2019) Climate services for whom? The political economics of contextualizing climate data in Louisiana′s coastal Master Plan. *Climatic Change*. DOI: 10.1007/s10584-019-02383-z.

O'Brien K (2013) Global environmental change III: Closing the gap between knowledge and action. *Progress in Human Geography* 37(4): 587–596.

O'Hare P, White I and Connelly A (2016) Insurance as maladaptation: Resilience and the 'business as usual' paradox. *Environment and Planning C: Government and Policy* 34(6): 1175–1193.

Orlove B, Roncoli C, Kabugo M and Majugu A (2010) Indigenous climate knowledge in southern Uganda:

The multiple components of a dynamic regional system. *Climatic Change* 100(2): 243–265.

Paprocki K (2018) Threatening dystopias: Development and adaptation regimes in Bangladesh. *Annals of the American Association of Geographers* 108(4): 955–973.

Payne A (2006) The geneology of new political economy. In: Payne A (ed.) *Key Debates in New Political Economy*. Abingdon: Routledge, 1–10.

Peck J and Theodore N (2015) *Fast Policy*. Minneapolis: University of Minnesota Press.

Peterson VS (2004) *A Critical Rewriting of Global Political Economy: Integrating Reproductive, Productive and Virtual Economies*. Abingdon: Routledge.

Prudham S (2013) Men and things: Karl Polanyi, primitive accumulation, and their relevance to a radical green political economy. *Environment and Planning A* 45(7): 1569–1587.

Randalls S (2010) Weather profits: Weather derivatives and the commercialization of meteorology. *Social Studies of Science* 40(5): 705–730.

Rebotier J (2012) Vulnerability conditions and risk representations in Latin-America: Framing the territorializing urban risk. *Global Environmental Change* 22(2): 391–398.

Remling E (2018) Depoliticizing adaptation: A critical analysis of EU climate adaptation policy. *Environmental Politics* 27(3): 477–497.

Ribot J (2010) Vulnerability does not fall from the sky: Toward multiscale, pro-poor climate policy. In: Mearns R and Norton A (eds) *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World*. Washington, DC: The World Bank, 47–74.

Ribot J (2014) Cause and response: Vulnerability and climate in the Anthropocene. *Journal of Peasant Studies* 41(5): 667–705.

Rudiak-Gould P (2014) Climate change and accusation: Global warming and local blame in a small island state. *Current Anthropology* 55(4): 365–386.

Scott J (1985) *Weapons of the Weak: Everyday Forms of Peasant Resistance*. New Haven: Yale University Press.

Sen A (1985) Well-being, agency and freedom: The Dewey Lectures 1984. *The Journal of Philosophy* 82(4): 169–221.

Smucker TA, Wisner B, Mascarenhas A, Munishi P, Wangui EE, Sinha G, Weiner D, Bwenge C and Lovell E (2015) Differentiated livelihoods, local institutions, and the adaptation imperative: Assessing climate change adaptation policy in Tanzania. *Geoforum* 59: 39–50.

Sovacool BK (2018) Bamboo beating bandits: Conflict, inequality, and vulnerability in the political ecology of climate change adaptation in Bangladesh. *World Development* 102: 183–194.

Swyngedouw E (2010) Apocalypse forever? *Theory, Culture & Society* 27(2–3): 213–232.

Swyngedouw E (2013) The non-political politics of climate change. *ACME: An International Journal for Critical Geographies* 12(1): 1–8.

Taylor M (2013) Climate change, relational vulnerability and human security: Rethinking sustainable adaptation in agrarian environments. *Climate and Development* 5(4): 318–327.

Tschakert P, Van Oort B, St. Clair AL and LaMadrid A (2013) Inequality and transformation analyses: A complementary lens for addressing vulnerability to climate change. *Climate and Development* 5(4): 340–350.

Turner MD (2016) Climate vulnerability as a relational concept. *Geoforum* 68: 29–38.

Verhoeven H (2011) Climate change, conflict and development in Sudan: Global neo-Malthusian narratives and local power struggles. *Development and Change* 42(3): 679–707.

Walker BLE, López-Carr D, Chen C and Currier K (2014) Perceptions of environmental change in Moorea, French Polynesia: The importance of temporal, spatial, and scalar contexts. *GeoJournal* 79(6): 705–719.

Warner BP, Childers DL, Kuzdas C and Stocks G (2018) Smallholder adaptation to drought in Costa Rica's crony capitalist rice economy. *Development and Change* 49(6): 1392–1421.

Webber S (2013) Performative vulnerability: Climate change adaptation policies and financing in Kiribati. *Environment and Planning A* 45(11): 2717–2733.

Webber S (2015) Mobile adaptation and sticky experiments: Circulating best practices and lessons learned in climate change adaptation. *Geographical Research* 53(1): 26–38.

Webber S (2016) Climate change adaptation as a growing development priority: Towards critical adaptation scholarship. *Geography Compass* 10(10): 401–413.

Webber S and Donner SD (2017) Climate service warnings: Cautions about commercializing climate science for adaptation in the developing world. *Wiley Interdisciplinary Reviews: Climate Change* 8(1): e424.

Weiler F, Klöck C and Dornan M (2018) Vulnerability, good governance, or donor interests? The allocation of aid for climate change adaptation. *World Development* 104: 65–77.

Weisser F, Bollig M, Doevenspeck M and Müller-Mahn D (2014) Translating the 'adaptation to climate change' paradigm: The politics of a travelling idea in Africa. *The Geographical Journal* 180(2): 111–119.

Wright C and Nyberg D (2017) An inconvenient truth: How organizations translate climate change into business as usual. *Academy of Management Journal* 60(5): 1633–1661.