1 Introduction

Resource scarcity between conflict and cooperation

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Why scarcity and cooperation?

As indicated by its title, this is a book about the relationship between what are perceived to be scarce natural resources and the tendency for access to them to lead to international conflict or cooperation. It is apparent from our reading of existing literature and from the contributions to this book that experts are often situated in positions that find little opportunity to engage or interact outside of academic disciplines or geographically and resource-specific practice. This diversity of forms and levels of engagement with resource scarcity and its implications for international relations poses particular problems when one attempts to provide a summary, but insightful, overview to those with more general interests in scarcity or politics. This book—in its structure and content—is the result of just this sort of exercise, having roots in the organisation of the 2014 University of Otago Foreign Policy School, an annual conference directed at early career staff from the New Zealand Ministry of Foreign Affairs and Trade. It was soon apparent that the invited speakers (many of whom are contributors to the following chapters) did not always share a similar epistemology or ontology in their treatment of scarcity, as its use ranged from that of a physical reality to an element of discourse. Whereas the implied lack of cohesion might have laid the framework for a failed conference, participants emerged with a strong sense of the common theme regarding the potential to engage or move towards cooperative relations in response to scarcity, irrespective of how it was conceived. It is on this premise that we organised the book as a collation of outwardly disparate manifestations and interrogations of 'scarcity' with the intention of directing our readers' attention to the potential for international collaboration.

On one hand, the scarcity of resources and the likelihood of such scarcity leading to international conflict (economic, political or military) is a common feature of public discourse and speculation. On the other, the potential for scarcity (or perceptions thereof) to initiate forms of international collaboration or cooperation is a much less common element of how we understand the world. This seems to us to be an unfortunate situation. Existing examples of international cooperation around such resources as fresh water, biodiversity conservation and

ocean fisheries suggest that a common concern for the viability of a resource that extends beyond political boundaries can provide the basis for peaceful interactions among otherwise competing countries. It is just such positive examples that provide hope for a world that is defined less by bellicose confrontation over essential resources and more by a shared interest in the ability for greater equality in access to those resources and their societal benefits to facilitate cooperation—and potentially even peace.

In the remainder of the introduction, we will provide an explanation of the pathway we have navigated in assembling this collection. It will begin with a brief engagement with some of the literature on resource scarcity and its part in international relations. This review necessarily begins with—and is dominated by—the vast literature on the threats of scarcity to humanity more generally and its potential to initiate conflict between and within countries. It concludes with more recent literature on successful experiments with collaboration and coordination of resource access and use where the location and benefits of the resource extend beyond political boundaries. We suggest that our navigation of this literature helps us to get to grips with the diverse perspectives of scarcity (some more overtly stated than others) found in the chapters from our contributors. It also provides the rationale for the division of the book into three parts. This includes providing roughly parallel chapters, which present the potential tensions related to a situation of scarcity and specific examples of cooperation. We will conclude with an invitation to read the book as a whole in order to develop a broader understanding of scarcity and its relevance to international relations.

Scarcity and conflict

The predominance of the linkage between instances of resource scarcity and potential conflict is by no means surprising. In a global context framed by increasing attention to environmental issues and concerns with readily appreciated international implications and the heightened economic and political competition among nations, scarcity portends an unavoidable escalation in tensions among already hostile or would be hostile actors. Examples from the Middle East and Central Asia provide vivid examples of the potential for access to oil and natural gas to lead to armed conflict and to create situations in which regional and global powers insert themselves with the likelihood of for wider scale conflict. Conflict over resources is not limited to military confrontation, with indications that the dominance of supply and processing chains can be used to impose economic pressure and constraints on competing economies (see the chapters on rare earth minerals and phosphorus in this volume). In yet other contexts, the perception of potential scarcity can lead to continued or renewed exertion of colonial forms of exploitation in the Global South as demonstrated in the 'land grabbing' investments that divert the productive capacity of large tracts in Africa, South America and elsewhere to meet consumption demands in the Global North. These are all well documented and publicised

instances of conflict that grab public attention—especially to the extent that they elicit spectres of global war, hidden economic agendas and exacerbated inequalities between global haves and have nots. This association between scarcity and conflict is deeply embedded on our social consciousness.

By comparison, the achievements in cooperative efforts to manage and regulate resources receive less attention. This is probably most notable in the case of fresh water where the resource crosses the borders of countries that, often, already experience tensions due to cultural, religious or ideological differences. Whereas conflicts over resources are presented as potentially escalating to even higher levels, the efforts at cooperation are commonly seen as tenuous at best given the underlying tensions involved. In this context, there is little expectation that cooperation is a viable and sustainable response to scarcity.

The relative emphasis on the association between resource scarcity and conflict is also a feature of the academic literature. In this case, the argument revolves around the assumption that social relations are strongly influenced by competition and any form of scarcity will exacerbate existing tensions between countries or among class, cultural or ethnic divisions within countries. This position is commonly based on theorised impacts of projected scarcity or on more vivid case studies of conflict in which resource scarcity is identified as a contributing factor. A less recognised literature on the potential for scarcity to galvanise pursuit of peaceful relations has been constructed within peace and conflict studies, which focus on the need for common goals and benefits as the basis for facilitating cooperation.

Scarcity (and environmental degradation) as a threat to security

The association between resource scarcity and social conflict and strife has an ancient history. It is common for such treatments of scarcity to reflect political economic perspectives with the assumption of competitive relations between political rulers and nation states (at an international scale) or social groups such as class, race or religion (at a regional scale). Implicit to this perspective is the expectation that increasing demand for resources (attributable to population growth, changing consumer preferences, etc.) will outpace supply and generate tensions around access to and availability of resources that can only be addressed from the perspective of a zero-sum game. The assumption that any gains by one group of resource users necessarily involve a loss among others creates the circumstances in which conflict becomes an inevitable feature.

In more recent and current debates, this conception of scarcity has become more tightly focused, most notably through the framing introduced by the British clergyman and economist Thomas Malthus and his warning that, if left unchecked, population growth would outstrip food production and lead to catastrophe and societal collapse. In 1798, Malthus anonymously published his prophetic thesis under the title, *An Essay on the Principles of Population*, in which

he identified three principles of population. The first two principles stipulate that the population cannot grow without the necessary means of subsistence, and that growth will take place when such means become available. Malthus saw these principles as established ideas, which he attributed to Adam Smith, David Hume and others. His main contribution in the *Essay* was the third principle, where he argued that population growth stays in check vis-à-vis the means of subsistence 'by the periodical or constant action of misery or vice' (Malthus, 1798: 144). For Malthus, this is inevitable because population, which grows exponentially, will always outpace increases in food production, which can only grow linearly. Checks will thus come into play and these can be either 'positive', such as higher mortality rates, or preventative, in the form of birth control. Both, nevertheless, necessitate misery or vice (Winch, 2013).

The resultant view of scarcity as a natural law is also known as the 'scarcity postulate' and is rooted in classical liberalism and classical economics, with which Malthus was affiliated. The scarcity postulate positions scarcity as a nearly ubiquitous condition affecting human society. It recognises the social dimension of human needs and desires, but sees their pursuit as rational and socially desirable. This view of scarcity, which underpins the field of economics, is essentially a modern conceptualisation. Periods during which vital resources were scarce are common historical events; but, prior to modernity, these were often anticipated and provision could be made to mitigate their effect by diverse means, including cooperation and conflict. These scarcities were furthermore perceived as spatially and temporally confined, in comparison to modern representations of scarcity as an omnipresent condition that encompasses all aspects of human life and wellbeing (Xenos, 1987). Thus, modern scarcity, where need and desire are inseparable and where the spread of desire is pivotal for sustaining society, is manifested in a paradoxical relationship between abundance and scarcity. An ever-accumulating society has more and more, but cannot fulfil its ever-increasing desires, which in turn propel even greater accumulation. This paradox of modernity, Xenos (1987; 2010) argues, results in a society living with perpetual scarcity.

In spite of the shared philosophical roots of the Malthusian principles and classical economics, over the latter decades of the twentieth century a notable division developed between neo-Malthusian and neoclassical economic theories and their proponents. At that time, nearly 200 years had passed since Malthus's gloomy prophesy in which substantial population growth did eventuate but without outpacing food production. For neoclassicists this was evidence of the ability of the free market—and its signalling mechanism of price related to supply and demand—to efficiently allocate resources and incentivise innovation so that Malthusian misery is largely avoided. For neo-Malthusians, in contrast, Malthus's prediction still looms large as a Cassandra syndrome; that is, Malthus may have got the timing wrong but the essence of his prediction stands. Neo-Malthusians, therefore, maintain that overpopulation will lead to resource scarcity and environmental degradation, and subsequently to competition and conflict. The market, they posit, has not been able to avoid the

environmental damage caused by the accelerating production needed to meet humanity's growing needs and desires. Their conclusion is that there are limits to growth. In spite of the notable differences between these perspectives, both apply similar philosophical underpinnings regarding the inevitability of scarcity in their policy recommendations (Matthaei, 1984).

Thomas Homer-Dixon (1999), a notable proponent of the resource scarcity–conflict nexus, identified three main positions in the ongoing debate around the outcomes of environmental scarcity. Neo-Malthusians, as noted above, still propagate the idea that having finite natural resources means there is a limited capacity for sustaining human society, which, if exceeded, will result in poverty and social unrest. Economic optimists are a second group that includes neoclassical economists and others who believe in the capacity of efficient markets and functioning institutions to effectively 'guide' conservation, substitution and investment so that capacity limits are not exceeded. Homer-Dixon calls the third group in the debate the 'distributionists.' This group believes that the real issue involves unequal and inadequate distribution of resources and wealth, and thus poverty and inequality should be seen as causes of population growth and resource depletion, and not their result. This view, which was relatively influential in the Global South during the 1970s and 1980s and particularly popular among Marxists, has had less purchase since then. Homer-Dixon recognised that this typology, while useful, carries the risk of oversimplification. Nonetheless, these positions became so entrenched that the debate became sterile.

Frerks, Dietz and van der Zang (2014) contend that the binary between the pessimism of the neo-Malthusians and the optimism of neoclassical economics no longer dominates debates around resource scarcity as they have in the past. Rather, these authors suggest that it has become widely accepted that environmental degradation and resource scarcity may be contributing factors to conflicts, but that such conflicts are rarely solely resource-driven. This position essentially combines elements of the otherwise distinctive perspectives of the neo-Malthusians, economic optimists and the distributionists. For example, such an approach accepts that, in a particular case, degradation could be a result of conflict, and not the other way around, while also recognising the importance of strong institutions for environmental management and peacebuilding. But, even if such a convergence between the different positions has indeed taken place, it does not automatically render the previous typology redundant. Having a more nuanced approach towards instances of scarcity and conflict is important, but it is often still possible to identify a commentator's worldview or ideological inclination. The debate may thus have become less sterile, and we share the sentiment that '[i]nstead of overarching theories, there is presently a need for contextualised knowledge, and complexity needs to be explicitly acknowledged' (Frerks, Dietz and van der Zang, 2014: 14), but as the chapters in this volume suggest, Homer-Dixon's (1999) typology still provides a useful analytical tool for assessing dominant views within the debate.

Notwithstanding the argument in the literature that the debate around environmental or resource scarcity has become more nuanced and context specific, it is the association of scarcity with conflict, violence and insecurity that has for a long time been the more visible facet of the debate. The relationship between resource scarcity and conflict has been well recognised and has received extensive attention, especially in the fields of international relations, environmental studies and security studies (Dinar, 2011). That the combination of scarce resources and growing population is a threat to national security and human wellbeing is largely taken for granted; it is merely common sense. One notable example is Homer-Dixon's (1999) *Environment, Scarcity, and Violence*, which analyses links between environmental scarcity and violent conflict and predicts that violent conflict is likely to become more common as access to renewable resources becomes increasingly scarce. Michael Klare's (2001) *Resource Wars* is a similar example, in which he argues that increased demand for resources, coupled with shortages and contestation over ownership, is likely to create new pressures leading to conflict. Neighbouring countries who share resources are at a higher risk of such tensions escalating into conflict. More recently, Klare (2012) extended his analysis of resource competition in *The Race for What's Left*. Whereas the race for resources often involves commercial corporations, '[f]or nation-states', Klare (2012: 214–215) argues, 'the fight for resources has equally high stakes: those that retain access to adequate supplies of critical materials will flourish, while those unable to do so will experience hardship and decline.' Another notable author linking natural resources with violence is Philippe Le Billon (2004; 2005). Unlike Homer-Dixon (1999), Le Billon does not dedicate much attention to the concept of scarcity, but his focus on the role of natural resources as an underlying factor in war and violent conflict is similar.

Scarcity as an impetus for peacebuilding

In contrast to arguments that associate scarcity with conflict, another set of authors suggests that scarcity (especially around shared resources) can be a catalyst for peace (Brock, 1991; Carius, 2012). This literature approaches scarce resources from the perspective of peacebuilding, that is, with the examination of projects and policies promoting peaceful relations among international or domestic actors who are otherwise in conflict. It is also largely populated by applied, as opposed to theoretical, analysis with the objective of providing recommendations for more successful promotion of peace in the context of scarcity. The underlying argument is that a shared interest in the current and future benefits of access to resources—or ecosystem services deriving from them—provides a basis for engagement within which cooperation is a more viable and advantageous response than conflict. Currently, the most common areas for such peacebuilding involve transboundary management of water, nature conservation parks and international or global governance agreements.

Whereas observers such as Homer-Dixon, Klare and Le Billon interpret the access to surface and groundwater in water scarce regions as a likely

point of contention that can (or inevitably will) trigger conflict, there is emerging evidence of collaboration in such situations. Perhaps the most notable examples involve progress in efforts to develop cooperative governance and management arrangements between otherwise belligerent groups in the Middle East. Kramer (2008) reports on the progress and achievements of the Regional Water Data Banks and Good Water Neighbors projects involving participants from Israel, Jordan and the Palestinian community. She identifies significant areas of cooperation around the allocation of water in the region. In addition to these projects, in his review of mechanisms and practices leading to successful peacebuilding efforts, Carius (2012) lists similar efforts in the Nile and Okavango River Basins in Africa and there is a growing literature on collaborative governance of the Mekong Basin in Southeast Asia (Jacobs, 2002). While these reviews of the achievements associated with transboundary water management emphasise the potential for appreciable positive outcomes and benefits to both regional societies and environment, Zeitoun et al. (2014) caution that the narrow focus on cooperation may overlook the ability for some participants to exploit their relative power to negotiate agreements that favour their position in comparison to weaker neighbours.

A further area of emphasis for peacebuilding is nature conservation, highlighted by the development of peace parks located in areas of contested resource access or transboundary regions (often in the context of challenges to national sovereignty). In making a claim for the relationship between nature conservation and debates about scarcity, Ali (2007a) states that scarcity should be viewed as being measurable in terms of quality—that is, a degraded resource is also a source of scarcity—as well as quantity. In that context, Matthew et al. (2002) review a series of case studies in which conservation efforts have been used to mitigate tensions around poverty and resource access in areas of highly biodiverse tropical rainforest. From the case studies, contributors to the book offer insight to policies and practices with the potential to reduce tensions caused by restraints on land and resource use imposed through conservation, while also identifying income potential for local communities through managed exploitation and ecotourism. Similar connections between biodiversity conservation and shared benefits for locally impacted communities are identified in parks that traverse international boundaries (Ali, 2007b). In his introduction to a collection of peacebuilding case studies, Ali (2007a) argues that the potential for conservation to facilitate peaceful relations is often sidelined by the more dominant theoretical arguments linking environmental issues to conflict. While not in evidence in the literature, the cautions identified by Zeitoun et al. (2014) are likely as much in play in the development of international peace parks.

A further arena for international cooperation around resources lies in the growing number of international treaties and agreements related to the governance of resources, including such diverse agreements as the Montreal Protocol (to mitigate the scarcity of ozone), the Convention of Biological Diversity, Regional Fisheries Management Organisations (see Jollands and Fisher, this volume) and

the Intergovernmental Panel on Climate Change (IPCC) negotiated climate change mitigation agreements. Such agreements demonstrate the power of scarcity (whether understood as actual or created) to impel more collaborative actions among international participants. That said, the extent to which the negotiation of international agreements is frequently reliant on the willingness of a small number of more powerful states (including the US, China, and large European powers), and often pivots around the recognition of 'special conditions' in weaker countries of the Global South, points to similar issues of power inequalities as noted above.

Alternative approaches to understanding scarcity

Beyond perspectives that emphasise the peacebuilding potential of actual or perceived scarcity, there are numerous other approaches that seek to challenge the dominant view of an inevitable relationship between resource scarcity and conflict. In contrast to the fear-inducing Malthusian approach, growing numbers of commentators are promoting the idea of scarcity as a socially constructed concept, exposing the ability of powerful groups (e.g. government and industry) to craft certain resources as scarce, while simultaneously promoting their own interests by offering political or commercial solutions to the 'scarcity problem' (see, for instance, Lyla Mehta's chapter in this volume).

Notably, from a political ecology perspective, scholars such as Theisen (2008) and Bretthauer (2015), suggest that evidence in favour of Malthusian-inspired claims about a causal relationship between resource scarcity and conflict is inconsequential. In their work, they have identified other factors such as poor governance, corruption, institutional instability and other location-specific and structural conditions as confounding variables in the spurious relationship between resource scarcity and conflict. For instance, Peluso and Watts (2001: 5) argued that 'violence [is] a site-specific phenomenon rooted in local histories and social relations yet connected to larger processes of material transformation and power relations.' Deepening these findings, Bretthauer's (2015) research—a comparison of 31 resource-scarce countries, in which 15 displayed high levels of armed conflict and 16 were conflict free—shed light on some of the specific social, economic and political conditions under which violence or conflict are likely to occur. She concluded that the absence of education—or what she called 'low levels of ingenuity'—is the most significant necessary condition for conflict, followed by high levels of dependence on agriculture and excessive poverty (Bretthauer, 2015: 604–605). Moreover, challenging the view of the economic optimists, Bretthauer (2015) noted that a low or no conflict outcome was more strongly associated with lower reliance on agriculture than with economic development.

There has been much criticism of market solutions to 'the scarcity problem' that have been proposed in the form of resource substitution, technological innovation, increased investment, labour intensification and all manner of 'efficiencies' packaged as 'development' or 'progress'. As discussed earlier,

rampant resource exploitation in the name of growth or prosperity, coupled with an exponential increase in the world's population, led to a momentary revival of Malthusian-esque trepidation in the 1970s. However, unlike the earlier phase of panic about running out of resources, new anxieties were articulated around the long-term consequences of soaring levels of pollution and environmental degradation. Meadows et al. (1972), authors of the widely-publicised *Limits to Growth* (LtG) thesis, referred to these outcomes as 'negative feedback loops' in the global system. According to them, unchecked population growth and resource depletion could lead to 'a sudden and uncontrollable collapse' of the global system, which would ultimately scupper the positive feedback loops of capital expansion and population growth (Meadows et al., 1972: 158).

Critics of the LtG thesis censured its seemingly woeful conclusions, arguing that it was possible to introduce measures to 'weaken the loops or to disguise the pressures they generate so that growth can continue' (Meadows et al., 1972: 157). However, Meadows et al. were firm in their view that '[s]uch means may have some short-term effect in relieving pressures caused by growth, but in the long run they do nothing to prevent the overshoot and subsequent collapse of the system' (p. 157). Unlike the pessimistic and over-deterministic overtones of Malthusian claims, the LtG thesis contained a message of hope; a call to action that could potentially avert disaster. Meadows et al. (1972: 24) argued that

> [i]t is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future. The state of global equilibrium could be designed so that the basic material needs of each person on earth are satisfied and each person has an equal opportunity to realize his or her individual human potential.

The term, 'equilibrium' alludes to the possibility of encouraging economic development without overshooting the earth's limited carrying capacity (see Randers, 2000). However, this concept failed to impress policymakers and captains of industry in the western world, who equated it with stagnation. Nevertheless, in 1986, when the Brundtland Commission (renamed the World Commission on Environment and Development in 1987) repackaged this idea as 'sustainable development', it soon became ubiquitous. The commission defined the term as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987: 43). The resemblance to the term 'equilibrium' is clearly discernible, but in the early 1990s it was 'sustainable development' that became the 'watchword for international aid agencies, the jargon of development planners, the theme of conferences and learned papers, and the slogan of developmental and environmental activists' (Lélé, 1991: 607).

Despite extensive uptake of the word, conceptual fuzziness and myriad interpretations continue to hamper efforts to achieve the stated objectives

of sustainable development. In the minority are those who regard sustainable development as a contradiction in terms; an impossible objective, as well as those who have tended to (mis)interpret 'sustainable' as 'sustained'. For example, Nigerian academic Francis Idachaba (1987: 18) claimed in an address to the World Bank's seventh symposium on the agriculture sector, that '[s]ustainability in agricultural development . . . refers to the ability of agricultural systems to keep production and distribution going continuously without falling. It refers to how agricultural growth and development can be sustained into the future.' When challenged by an audience member about his lack of consideration for the environment, Idachaba responded with a suggestion that environmental concerns—while understandably a preoccupation of the developed world—were 'second generation problems that tend to give way to more immediate concerns' in the developing world (Hopcraft, 1987: 54).

Notwithstanding these outliers, Robinson (2004) has grouped the majority of the perspectives of environmentalist responses to resource scarcity into two camps (see Table 1.1). The first regards sustainable development as compatible with growth, while the second bases its views on the critical assumption that development is not synonymous with growth. It follows, then, that the first camp endorses technical fixes as part of the solution to scarcity, while the second promotes value change as the way forward. Robinson (2004: 372) also noted the first group's preference for the term 'sustainable development', while the second camp tended to use 'sustainability', entirely dropping the notion of 'development' because of its conflation with growth. Robinson (2004: 371) admitted that his typology was 'suggestive, not definitive', but even so, contrasting the views in this way highlights the vexed and contested nature of sustainable development as an approach to dealing with resource scarcity.

Several commentators have condemned the hijacking of the term 'sustainable development' by government officials and industry representatives, who seem intent on ramping up growth efforts under the guise of sustainable development. Critics have labelled their efforts variously as 'market environmentalism' (Anderson and Leal, 1991; Bailey, 2007), 'cosmetic environmentalism' or 'fake greenery' (Robinson, 2004: 374), 'green neoliberalism' (Bakker, 2010) or 'green capitalism' (Heartfield, 2008; Tienhaara, 2014), which Prudham (2009: 1595) defines as 'a set of responses to environmental change and environmentalism that relies on harnessing capital investment, individual choice, and entrepreneurial innovation to the green cause.' Such a view, promoted by the 'technical fixers', is distinctly at odds with the 'value changers', who

Table 1.1 Forms of environmentalist response

	Technical fix	*Value change*
Natural area management	Conservation (utilitarian)	Preservation (romantic)
Pollution and resources	Technology (collective policies)	Lifestyles (individual values)
Preferred language	Sustainable development	Sustainability

Source: Robinson (2004: 372)

distinguish between development and growth. For example, as Daly (1990: 1) explained, 'growth is quantitative increase in physical scale, while development is qualitative improvement or unfolding of potentialities. An economy can grow without developing, or develop without growing, or do both or neither.'

While the *sustainable development* approach implies some degree of growth, *sustainability* sits more comfortably with the idea of what Meadows et al. (1972) referred to as a non-growth equilibrium state. This notion—also known by the term 'steady-state economy'—has some purchase among environmentalists in the US today. However, it has been dismissed in certain European circles, where a strategy of 'degrowth' is being promoted (Martínez-Alier et al., 2010). Pioneered in 1971 by French economist and statistician Nicholas Georgescu-Roegen, 'degrowth' has recently been resurrected by European scholars and activists. Despite ostensible parallels with the LtG thesis—particularly with regard to the shared disdain for the solutions proposed by the economic optimists—Georgescu-Roegen's disagreement with the notion of a steady-state economy became increasingly apparent (Levallois, 2010). For him, the only viable response to resource scarcity lay in 'retracting consumption levels in countries such as the US which he understood was already consuming excessively' (Martínez-Alier et al., 2010: 1743). It is clear that proponents are not proposing degrowth as a *global* strategy to address resource scarcity and environmental degradation, but instead are suggesting that 'Southern countries or societies, where ecological impacts are low relative to their biocapacity, [be allowed] to increase their material consumption and thus their ecological footprint' (ibid.). The mutually influential relationship between the burgeoning scholarly literature on degrowth and the increasingly energetic degrowth movement, signals a new, and potentially quite exciting, direction with regard to resource scarcity. Although not pursued in this book, it is a line of thinking and action that centres global inequality in the scarcity debate and questions what the world might look like if there were 'prosperity without growth' (Jackson, 2017) in advanced economies.

Overview of chapters

As noted above, the contributions to the book have been purposefully organised in order to reflect the tensions and the hopefulness attributed to resource scarcity both in the academic literature and policy orientations. We look to achieve this by arranging the contributions into three parts based on their treatments of scarcity. Part I specifically challenges readers to rethink their conceptions of scarcity in a manner that eliminates the sense of inevitable conflict. Parts II and III are intended to offer paired accounts of scarcity in particular resource categories—agriculture, mining, fresh water and marine—framed in terms of the tensions that develop or the examples of cooperation achieved. The contributions to these parts are neither wholly alarmist nor uncritically optimistic; but each pair allows readers to gaze over the edge of the abyss,

while also glimpsing the safe (if perhaps indistinct) footholds and pathways for navigating the crossing. As a whole, the contributors propose a more hopeful engagement among the world's nations as they pursue the economic and social benefits derived from natural resources while maintaining the ecological processes on which they depend.

The presentations of scarcity within the contributions vary significantly, highlighting the diverse professional backgrounds of our contributors—from academics to policy analysts, consultants and activists. As a result, the book does not offer a coherent theoretical treatise on the relevance of specific elements or aspects of scarcity. We suggest, however, that the diverse voices, styles of argument and focuses of analysis more accurately represent the breadth of engagements with scarcity in our global society—and the collection has value precisely because it forces each of us to confront scarcity in its multiplicity of meanings, implications and applications.

Contributors to Part I use the examples of water (Mehta, Chapter 2) and regional energy pools (Lindström, Granit and Rosner, Chapter 3) to re-evaluate the concept and boundaries of 'scarcity'. Both chapters challenge the scarcity postulate, where scarcity is regarded as a universal and permanent condition that underlies human existence. These two chapters are quite different in their approach to scarcity, which is telling of the epistemological and ontological diversity that can be found in this volume. The explicit conceptual analysis of scarcity that is presented in Chapter 2 reflects a critical approach prevalent in the social sciences, while the more implicit understanding of scarcity in Chapter 3 is more typical of a practice-oriented public policy approach. Lyla Mehta's chapter in this collection is a continuation of her critique of scarcity as a seemingly meta-level value-neutral reasoning for actions that, in effect, are laden with ideological dispositions. Mehta focuses on fresh water as an example of a renewable resource that is often being portrayed as dangerously scarce. This dominant discourse on water scarcity tends to emphasise economic problems and (market-led) solutions that are of importance to powerful groups over social, cultural and political concerns. Mehta promotes a critical lens that incorporates elements from both post-structural deconstruction and structuralist Marxist analysis.

The chapter by Andreas Lindström, Jakob Granit and Kevin Rosner examines regional energy cooperation as a strategy for achieving sustainable economic development and peace through the formation of stronger ties among neighbouring countries. The increasing demand for a stable supply of electricity has prompted transboundary cooperation in areas where energy resources are unevenly distributed. The authors note the potential for 'regionalism' and regional collaboration to generate political, economic and social benefits. They also emphasise deregulation and the mechanisms of the market as being instrumental for achieving a transboundary energy pool. Scarcity appears in this chapter, not as a theoretical concept, but in the form of constraints on electricity production imposed by costs of infrastructure and demands for alternative energy sources.

The chapters in Part II address some of the key tensions resulting from scarcity and the potential for response. As they demonstrate, scarcity of a natural resource may be influenced by various physical as well as socio-political factors, of which limited supply and growing demand are only two. In Chapter 4, Stuart White and Dana Cordell examine tensions surrounding the increasing global demand for phosphorus (phosphate rock), a non-renewable natural resource with a relatively low profile in popular debates about resource scarcity. This is in spite of phosphorus being an essential element for plant growth and thus for agriculture production and global food supply. In this chapter, the authors outline the key issues concerning this resource, including its sensitive geopolitical context and the absence of an international governance framework. The authors maintain that phosphorus is not scarce solely because there is a fixed amount of it in the earth's crust, but rather because of a number of factors affecting supply and demand that combine to limit its availability. The authors argue that because phosphorus security is directly linked to food security, and because there are many stakeholders involved, there is a dire need to establish an international body to coordinate collaborative solutions.

In Chapter 5, Kuntala Lahiri-Dutt focuses on the logic and practice of extractivism (as opposed to a particular natural resource), which refers to the accelerated exploitation of resources for fast economic growth. Under neoliberalism, extractivism is often framed and legitimised through discourses of crisis and scarcity. These concepts are perceived as politically shaped and as reflecting a materialist worldview where natural resources and human needs are closely related. The chapter draws attention to the effects of this economic logic and strategy on peasants, who, in many countries in the Global South, have become artisanal, small-scale miners. Through their mining activities, they have—to varying degrees—contributed to the degradation of the environment on which they depend for subsistence. The peasant-miners operate at the margins of the mining industry, often as part of the informal economy, and tend to be ignored.

Doug Hill adopts a multi-scalar lens in Chapter 6 to examine how issues of water security in South Asia have been understood and constructed by different stakeholders. The discursive rationale for the use and management of water in this region commonly preferences a particular notion of scarcity and security that privileges a supply-side approach in the form of a volumetric understanding of water, and ignores other possible understandings. The particular geopolitics of the Indus Basin adds another layer of complexity, where water security is deemed to be of national importance to both India and Pakistan, who share the basin. Hill also mentions the secrecy around water data, which shuts down debate and obstructs possible alternative actions that may entail greater cooperation between stakeholders. He acknowledges the region's history of international and intra-national disputes over water, but calls for alternative understandings of water that do not solely serve the interests of powerful groups in the name of national security.

Chapter 7, by Todd Capson, examines the scarcities associated with the degradation of marine environments, including fisheries, as an important source of protein for many people. As with fresh water, marine resources may not be confined within a single political territory and are thus of interest to a broader range of stakeholders. Capson argues that the sustainability of this resource in the face of growing demand and environmental pressures necessitates transboundary cooperation and bold action, such as the formation of marine protected areas. Scarcity enters the discussion in its most conventional economic form as the result of demand exceeding a limited supply. Capson does not, however, regard it as a universal or permanent situation and posits sustainable management as the opposite of scarcity. However, high and growing demand will result in higher prices, with increasing numbers of consumers being unable to enjoy this resource. Scarcity, therefore, may refer to the quantity of fish stock available in the ocean or to the availability of these stocks for human consumption. The two are closely interrelated but not identical.

In Part III, our contributors shift to a more explicit focus on the potential for scarcity to act as the impetus for collaboration and a de-escalation of the tensions identified in Part II. The chapters reflect some of the existing work on peacebuilding noted above in relation to transboundary water management, but also extend the scope to a broader set of resources, including food, rare earth minerals and marine fisheries. In addition, they draw attention to the diverse forms and scales of coordination that use scarcity as a means to organise collaborative action across political, cultural and social boundaries. As a whole, they offer hopeful perspectives on resource use and access, which—while tempered by real world challenges—help to belie the inevitably of conflict.

Alana Mann addresses the concept of food scarcity as a threat to food security at both local and global scales in Chapter 8. She argues that the efforts of La Via Campesina to champion the capacities and rights of small-scale agricultural producers internationally is rooted in a vision of promoting increased self-sufficiency for societies and cultures. These efforts are encapsulated in the concept of food sovereignty, which promotes the right for self-determination in food production and consumption. Food sovereignty also involves the implicit rejection of a focus on scarcity and hunger in international food policy, with a concerted emphasis on the productive capacity of small farmers. The potential of La Via Campesina's efforts is apparent in its ability to draw together diverse peoples (from Latin America, to Africa, Asia, Europe and North America) and interests (across social strata, gender positions and other subjectivities).

Whereas the consumption of food is a shared experience that can lead to mutual interest in promoting socially and culturally appropriate means of production, Chapter 9 exposes the tendency for consumption of high-tech electronic goods to lead to the concentration of access. In this chapter Elliot Brennan shows that the potential for collaboration is more tenuous, emerging from realisation that control over the supply chain for rare earth minerals—which are, in fact, not physically scarce—has severe consequences for mineral

dependent economies. In this case, scarcity has had implications for conflict, but it has also provided the impetus for the development of alternative sources (through recycling and new mining areas), resources (through substitution) and demand. Because of the dispersed nature in which rare earth minerals are distributed globally, these solutions offer the potential for collaboration, especially among those countries less endowed with their own reserves.

In Chapter 10, David Tickner focuses more squarely on the role of international relations and diplomats in promoting transboundary management of water resources. He argues that the foreign policy community can raise awareness of the need for collaboration by focusing on the ecosystem health of rivers and the associated benefits to human and environmental wellbeing. He suggests further that greater collaboration is an achievable goal, which can be facilitated through a set of 'six streams' of interventions. The implication of the model for improved collaboration around water management is that scarcity is not alleviated through conflict, but can certainly be mitigated through shared governance focused on the ecological role of rivers beyond the quantity of water they contain.

The emphasis on the potential for international diplomacy to enable cooperative governance of scarce resources is also apparent in Chapter 11 by Victoria Jollands and Karen Fisher. In their case, the scarcity of the resource (tuna species) is the result of its furtive nature (many tuna species traverse large expanses of ocean) and the accelerating demand in the marketplace. As the pressures of exploitation have impacted on the availability and size of the tuna fisheries, there is growing awareness of the need to regulate the activities of the fishing boats. Rather than a source of conflict among large and wealthy consuming nations, Jollands and Fisher demonstrate how these characteristics have facilitated the empowerment of the small South Pacific island states that have banded together to enable collaborative governance of fisheries. The experiences of these efforts points to both the potential and the challenges of cooperation related to resource scarcity.

The value and significance of diverse views on scarcity

As a whole, the contributions to this book offer a distinctive insight into the role of scarcity in the relations among social actors who share an interest in and a desire to exploit a natural resource. Whereas, individually, the chapters may orient attention to specific resources, they do not provide an encyclopaedic introduction to the scarce resources of the world. Similarly, none of the contributors offers an all-encompassing explanation of or solution to conflicts related to contested resource access. They do, however, introduce a variety of engagements with and uses of scarcity as a localised reality, a dispersed or geographically uneven constraint on unfettered demand, a strategically created bottleneck on supply, or a more universal manipulation of access and regulated exploitation. These encounters with scarcity shift attention away from the myopic focus on market forces and allocation, and encourage us to

recognise more fully the social nature of the tensions and opportunities that are associated with our shared dependence on resources that are not readily accessible to all. We are confident that, read as a collection, this book will persuade readers to pursue cooperation—across the boundaries of disciplines, professions and institutional positions as well as those of nation states and social divisions—as a mechanism for more equitable and sustainable exploitation of resources that simultaneously mitigates tensions.

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