Introduction

Feeding the World in Times of Climate Change

This book starts with the assumptions that hunger is a problem and that climate change is exacerbating it. A central question, therefore, is: how do we feed the world in times of climate change? Another important premise is that international law is implicated in addressing hunger in the face of climate change and might therefore provide part of the answer to feeding the world. There is, however, not one single understanding of exactly what kind of problem hunger is and exactly how climate change affects hunger. Depending on how the problem of hunger is understood, possible solutions to it differ. International law plays a role not only in devising solutions to the problem of climate change-induced hunger, but also in constructing the very narratives of hunger that inform the problem in the first place.

This book aims to reveal how international law reinforces prevailing narratives of hunger that shape possible approaches to feeding the world in times of climate change. Two prevailing and seemingly contradictory narratives of hunger are identified here: the dominant neoliberal narrative that focuses on increasing food production and the oppositional, and aspirational, food sovereignty narrative that emphasizes access to and distribution of food. The forthcoming chapters will demonstrate how distinct areas of international law contribute to constructing and reinforcing each of the narratives. Ultimately, I argue that the narratives of hunger in international law, despite their apparent opposition to each other, are based on the same set of underlying assumptions about hunger and climate change. They are thus inherently narrow and limit the ways of feeding the world that are considered possible.

1 Climate Change, Hunger, and International Law

Agriculture is highly dependent on climate and the agricultural sector is particularly vulnerable to changes in climate. Droughts, increased precipitation, higher average temperatures, and changes in soil salinity that

are associated with current climate change affect what kind of food is produced, how much food is produced, and where it is produced. Agriculture in some regions of the world – for instance, parts of Russia, Canada, and Scandinavia – may well benefit from rising average temperatures that might make it possible to grow crops that were previously unable to grow in these cold climates. Many regions of the world, however, are already suffering and will continue to suffer from climate change's adverse impacts on agriculture. The fifth and latest assessment report by the Intergovernmental Panel on Climate Change (IPCC) includes a chapter on food security and food production systems. The authors emphasize the variable impacts of climate change on food production across regions, noting: 'For the major crops (wheat, rice, and maize) in tropical and temperate regions, climate change without adaptation will negatively impact production for local temperature increases of 2°C or more above late-20th-century levels.'[1]

The projected effects of climate change on food production have a direct impact on the availability and quality of food, which in turn affects hunger. Recently published research in *The Lancet* predicts that climate change, through its effects on the availability and quality of food, will cause more than half a million deaths worldwide by 2050.[2] The regions that will be most affected are those that are already the most vulnerable to changes in climate and are moreover the least capable of adapting, including sub-Saharan Africa and parts of Asia. While it is difficult to predict with certainty the consequences of climate change on overall global food production, there is little doubt that climate change is already having and will continue to have devastating impacts on agricultural production in certain regions of the world. The direct impacts of climate change on food production, coupled with such indirect effects as rising prices, have prompted renewed and heightened attention to hunger as an urgent global problem.

International actors, including United Nations (UN) agencies and non-governmental organizations (NGOs), are increasingly taking note

[1] John R. Porter et al., 'Food Security and Food Production Systems', in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2013), 488.

[2] Marco Springmann et al., 'Global and Regional Health Effects of Future Food Production under Climate Change: A Modelling Study', *The Lancet* 387 (2016). See also: Damian Carrington, 'More than Half a Million Could Die as Climate Change Impacts Diet – Report', *The Guardian*, 3 March 2016.

of the effects that climate change has on hunger. The UN Special Rapporteur on the Right to Food, Hilal Elver, has stated that climate change 'poses severe and distinct threats to food security'.[3] The World Food Programme (WFP) underscores that the impacts of climate change 'increas[e] the risk of hunger'.[4] Other reports echo this view, suggesting that climate change will exacerbate global hunger and even that it may become a 'leading cause of hunger'.[5] A 2017 UN report on global food security and nutrition presents climate change as one of the reasons for the increase in world hunger, in addition to conflict.[6] Such reports translate into coverage of climate change and hunger in the media. These news stories assert that climate change 'will worsen hunger' and that climate change will increase instances of hunger, especially in those parts of the world that are already the most vulnerable and the least able to adapt.[7] The general message is that climate change is exacerbating global hunger.

The growing scientific evidence of climate change's negative effects on agriculture and hunger informs international law and policy. The Preamble of the Paris Agreement on climate change stipulates that states party to it '*recogni[ze]* the fundamental priority of safeguarding food

[3] United Nations Office of the High Commissioner for Human Rights, 'Climate Change Poses Major Threat to Food Security, UN Expert Warns', 3 November 2015. www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?LangID=E&NewsID=16702.

[4] World Food Programme, 'How Climate Change Affects Hunger'. www.wfp.org/climate-change.

[5] Action against Hunger, 'Climate Change Could Become a Leading Cause of Hunger: Without Mitigation Strategies, the Number of Undernourished Is Estimated to Rise by 24 Million by 2050', 29 November 2011. www.actionagainsthunger.org/blog/climate-change-could-become-leading-cause-hunger. See also: Martin Parry et al., *Climate Change and Hunger: Responding to the Challenge* (Rome: World Food Programme, 2009).

[6] Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), UN International Children's Emergency Fund (UNICEF), World Food Programme (WFP), and World Health Organization (WHO), *The State of Food Security and Nutrition in the World 2017: Building Resilience for Peace and Food Security* (Rome: FAO, 2017). See also the WHO news release about this report: World Health Organization, 'World Hunger on the Rise Again, Driven by Conflict and Climate Change, New UN Report Says', 15 September 2017. www.who.int/mediacentre/news/releases/2017/world-hunger-report/en/.

[7] Ben Block, 'Climate Change Will Worsen Hunger, Study Says', WorldWatch Institute. www.worldwatch.org/node/6271; Leah Samberg, 'World Hunger Is Increasing Thanks to War and Climate Change', *The Conversation*, 18 October 2017; Oliver Milman, 'Climate Change Could Make 175 Million More People Go Hungry, Report Says', *The Guardian*, 4 December 2015; Daniel Wesangula, 'Climate Change Is Putting 12 Million People at Risk of Hunger on the Horn of Africa: Oxfam', *Reuters*, 26 April 2017.

security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change'.[8] States that attended the 23rd meeting of the Conference of the Parties (COP23) to the UN Framework Convention on Climate Change (UNFCCC), which took place in November 2017 and was the first COP meeting after the Paris Agreement entered into force, agreed to work on issues relating to climate change and agriculture.[9] This was a significant outcome of the conference, as agriculture – which both substantially contributes to the greenhouse gas emissions that cause climate change and is vulnerable to its impacts – has long been a thorny issue in negotiations. Notwithstanding the evident significance of climate change for the agricultural sector, food and agriculture did not play a central role in previous climate change negotiations and agreements.[10] With the inclusion of references to food security and hunger in the Paris Agreement and an agreement among states parties to discuss the links between climate change and agriculture, there is hope that these issues will take up a more prominent position in international climate change law and policies.

With the recognition of climate change's adverse effects on hunger comes the question of how this problem can best be addressed. Neither hunger nor changes in climate are novel occurrences, even though climate change is currently taking place much faster than at any time before in human history. Previously existing conceptions of hunger shape how the problem of hunger in the context of climate change is constructed and the types of solutions, including legal solutions, that are devised.

2 Perspectives on Hunger: Production versus Access

'History', as historian James Vernon tells us, 'cannot escape hunger'.[11] Hunger is by no means a new phenomenon. Vernon goes on to write that

[8] Paris Agreement, adopted at 21st session of the Conference of the Parties, 12 December 2015, FCCC/CP/2015/L.9/Rev.1.

[9] United Nations Framework Convention on Climate Change, Subsidiary Body for Scientific and Technological Advice, 47th session, Bonn, 6–15 November 2017, Agenda item 7: Issues Relating to Agriculture, FCCC/SBSTA/2017/L.24/Add.1.

[10] CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), 'Agriculture Is Integrated into the Paris Agreement', CCAFS Outcome Case, 2016.

[11] James Vernon, *Hunger: A Modern History* (Cambridge, MA: Harvard University Press, 2007), 1.

'hunger's perpetual presence and apparently unchanging physical characteristics belie the way in which its meaning, and our attitudes towards the hungry, change over time'.[12] While hunger lingers, our understanding of hunger evolves. Frances Moore Lappé and Joseph Collins note that 'how we understand hunger determines what we think are its solutions'.[13] This assertion, although ostensibly simple and obvious, is rarely taken into account expressly in discussions about hunger.

This book tells a story about hunger, and, more specifically, a story about the role of international law in devising ways to feed the world in times of climate change. Before delving into that story, I will present two contemporary understandings of global hunger named for Thomas Malthus and Amartya Sen: a Malthusian understanding that focuses on the availability of food and is more in line with the neoliberal narrative of hunger, and a Senian understanding that focuses on access to food and is more in line with the food sovereignty narrative of hunger. While we must acknowledge that these thinkers wrote in different times, and that their work went far beyond a simple dichotomy of 'availability' versus 'access', both of their central ideas are still popular and relevant in contemporary discussions about hunger.[14]

Malthus, an eighteenth-century British cleric and scholar, was centrally concerned not with hunger, but rather with the issue of population growth and its limitations as a result of finite subsistence resources. His thinking has nevertheless been, and continues to be, pertinent to understanding hunger. Malthusian theory is grounded on the belief that hunger is a natural consequence of a growing population in combination with inadequate food supplies. According to Malthus, two postulates determine the incidence of hunger: one is that food is necessary for survival; the second is that people will continue to reproduce.[15] Malthus's contention was that a population, when unchecked, grows in a

[12] Vernon, *Hunger*, 2. See also: Sarah Millman and Robert W. Kates, 'Toward Understanding Hunger' in *Hunger in History: Food Shortage, Poverty and Deprivation*, ed. Lucile F. Newman and William Crossgrove (Oxford: Basil Blackwell, 1989).

[13] Frances Moore Lappé and Joseph Collins, *World Hunger: Twelve Myths*, 2nd ed. (London: Earthscan, 1998), 4.

[14] See: Anne Orford, 'Food Security, Free Trade, and the Battle for the State', *Journal of International Law and International Relations* 11 (2015): 10–15.

[15] Thomas Robert Malthus, *An Essay on the Principle of Population*. 1st ed. (London: J. Johnson, 1798), Chapter I. The book is available online at www.esp.org/books/malthus/population/malthus.pdf, © Electronic Scholarly Publishing Project, 1998.

geometrical ratio, whereas food for human subsistence grows in an arithmetic ratio.[16] In his famous work, *An Essay on the Principle of Population*, he writes that there are two kinds of mechanisms that curb population growth so that it stays within the limits of subsistence: positive checks, which increase the death rate, and negative checks, which decrease the birth rate.[17] Hunger is one example of a positive check, meaning that people die of hunger when a population grows faster than its food supply. Actively controlling population growth to prevent widespread hunger is an example of a negative check. Malthusian theory tends to be understood as faulting the hungry for their hunger, with its implication that if you do not wish to be hungry, you should stop reproducing and expanding the human population beyond what the available food supplies can support.[18]

Malthus's ideas about forcibly limiting population growth and blaming the hungry themselves have been roundly criticized.[19] Since Malthus's time, the world population has grown many times over and there is still more than enough food produced globally to feed everyone.[20] The Ethiopian famine was a landmark in the modern perception of hunger, highlighting the flaws in Malthusian thinking. Although there was enough food available globally, by 1973 this famine had caused over 300,000 deaths by starvation and signalled that *access* to food must be improved.[21] Hunger is neither a natural nor an inevitable phenomenon; human actions and systems make some regions and people more vulnerable to hunger, regardless of the worldwide availability of food.

Unlike the Malthusian understanding of hunger, the influential work of contemporary development economist Amartya Sen views hunger as resulting primarily from the deprivation of the hungry, rather than a lack of food. Sen has famously written that 'starvation is the characteristic of some people not having enough to eat. It is not the characteristic of there

[16] Malthus, *An Essay on the Principle of Population*, Chapter I.
[17] Malthus, *An Essay on the Principle of Population*, Chapter III.
[18] John R. Butterly and Jack Shepherd, *Hunger: The Biology and Politics of Starvation* (Hanover, NH: Dartmouth College Press and University Press of New England, 2010), 12.
[19] See, for example: Chris Williams, 'Are There Too Many People? Population, Hunger, and Environmental Degradation', *International Socialist Review* 68 (2010).
[20] See, for instance: Eric Holt-Giménez et al., 'We Already Grow Enough Food for 10 Million People . . . and Still Can't End Hunger', *Journal of Sustainable Agriculture* 36 (2012).
[21] Butterly and Shepherd, *Hunger*, 11–15.

being not enough food to eat.'[22] Sen holds that political and economic systems are essential to creating an enabling environment in which all people are able to access the necessary food for subsistence.[23] Improving people's economic situations and ensuring democratic governance will, according to Sen, lead to better access to and distribution of food, and thus reduce hunger and starvation. Hunger is ultimately not caused by technical limitations in production and availability, but primarily by political and economic limitations that impede some people's access to available food.

Even though Malthusian perceptions of hunger have been proven wrong over centuries, discussions about climate change and hunger still emphasize food availability and the need to increase production. The growing world population features in these discussions, with some more explicitly arguing that overpopulation causes climate change and puts a strain on already scarce resources and others referring more implicitly to feeding a growing world population.[24] The understanding that hunger is caused not primarily by the physical problem of lack of food, but rather by the political problem of lack of access to and equitable distribution of food, predates current discussions about climate change and hunger – yet, evidently the Malthusian view of hunger still has power. I do not mean to suggest that food availability and global population are irrelevant to hunger, but instead to point out that the political dimensions of hunger are still all too often relegated to secondary considerations in favour of focusing on Malthusian questions of how much food for how many people, as this book will demonstrate.

The Malthusian and Senian understandings of hunger form the broader context within which perceptions of hunger in the face of climate change take shape. As we will see, prevailing approaches to feeding the world in times of climate change reflect these dominant, general understandings of hunger.

[22] Amartya Kumar Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford: Oxford University Press, 1981), 1.
[23] Liz Young, *World Hunger* (London: Routledge, 1996), 5–6.
[24] See, for instance: Judith Stephenson, Karen Newman, and Susannah Mayhew, 'Population Dynamics and Climate Change: What Are the Links?' *Journal of Public Health* 23 (2010); Population Action International, 'Why Population Matters to Climate Change', 2011. https://pai.org/wp-content/uploads/2012/02/PAI-1293-Climate-Change_compressed.pdf.

3 So-Called Climate-Ready Seeds as a Possible Adaptation Strategy

So-called climate-ready seeds are genetically engineered to be resistant to certain climatic conditions associated with climate change – including drought, higher average temperatures, and increased soil salinity. These seeds are intended primarily to maintain or to increase food production in the face of adverse climatic conditions. In this sense, climate-ready seeds fall in line with a Malthusian understanding of hunger that emphasizes the availability of food and the need to increase food production. These genetically engineered seeds are strongly promoted by some, including, notably, the seed corporations that are most active in research and development for these new technologies, but also fiercely criticized by others, particularly by civil society organizations representing the interests of small farmers in developing countries. Criticisms of climate-ready seeds include arguments in line with a Senian understanding of hunger, namely that increasing food production is not going to feed the world unless we also heed the question of who has access to these seeds and who will benefit from them.

This book examines different approaches to feeding the world in times of climate change under the label 'narratives of hunger'. How is climate change-induced hunger understood as a problem? And, consequently, what kinds of solutions are devised to tackle this problem? Climate-ready seeds serve here as a sort of vector through which to study two narratives of hunger. While the dominant neoliberal narrative promotes climate-ready seeds as a means to feed the world in times of climate change, an opposing food sovereignty narrative rejects climate-ready seeds. The neoliberal narrative is broadly in line with a Malthusian understanding of hunger, and the food sovereignty narrative with a Senian understanding of hunger.

Although climate-ready seeds are just one particular example, debates about them reflect and shed light on larger developments in the field of global hunger and the global food system. The leading Malthusian perspective is not limited to promoting these seeds as a possible climate change adaptation strategy, but rather reflects a broader prevailing understanding of global hunger and how the global food system should be governed. Likewise, the opposition to purportedly climate-resilient seeds reveals broader discontent with the dominant understanding of global hunger and global food governance as primarily a technical matter of food production. In this book, I analyze the narratives of hunger through the lens of food regime theory, an analytical tool which attempts

to understand the strategic role of agriculture in global governance. The promotion of climate-ready seeds exemplifies the dominant neoliberal food regime, while the opposition to climate-ready seeds exemplifies food sovereignty movements that resist the neoliberal regime. The two narratives of hunger that guide this exploration are thus labelled the 'neoliberal narrative of hunger' and the 'food sovereignty narrative of hunger'.

This book aims to reveal how international law reinforces both the neoliberal and food sovereignty narratives of hunger. I study three areas of international law in particular, as they are relevant in discussions about climate-ready seeds. First, I examine how international climate change law, a relatively new area of international law, contributes to shaping and reinforcing perceptions of hunger and approaches to feeding the world. Next, I turn to intellectual property law, focusing especially on the heated disputes over the application of patent rights to climate-ready seeds. Finally, I analyze human rights law – perhaps the most obvious international legal solution to global hunger with its specific focus on the human right to food. Each of these areas of international law are relevant in discussions about climate-ready seeds, inform the two narratives of hunger, and, ultimately, contribute to devising answers to the question of how to feed the world in times of climate change.

4 The Role of International Law in Feeding the World

In February 2013, in the midst of my doctoral research, I attended an event at the office of DLA Piper in London, entitled 'Can the Law Save the Environment?'.[25] The event was organized by the Coalition for an International Court for the Environment.[26] The primary purpose of the event, as I understood it, was to discuss ways in which international law could be framed to hold actors accountable for causing harm to the environment. The representation of law as a kind of saviour got my attention. The Australian Centre for Climate and Environmental Law at the University of Sydney organized a 2010 conference titled 'Resilience and Climate Change: Law's Responses' that framed the role of law in similar wording. The University of Sydney posted a news story about the

[25] Stakeholder Forum for a Sustainable Future, 'Feb 7 Event: Can the Law Save the Environment', 10 January 2013. www.stakeholderforum.org/sf/index.php/news/505-feb-7-event-can-the-law-save-the-environment.

[26] 'ICE Coalition: Creating the International Court for the Environment'. http://icecoalition.org/.

conference with the headline: 'How the law can help save the environment.'[27] Comparable phrases such as 'Tackling climate change through law'[28] and 'The Role of Law in Adapting to Climate Change'[29] can be found in policy and academic settings.

In a common understanding of its function, law, including international law, is supposed to provide rules, regulations, procedures, and a means of enforcement in order to solve problems. These problems can range from a breach of contract in labour law to a divorce in family law, and can also include global and environmental issues. Whatever the problem and whatever type of law is relevant to it, the prevalent presumption is that law can provide some sort of solution. Of course, much more sophisticated and varied understandings of law and its functions are available and have been explored, for instance, in the critical legal studies and deconstructivism literature in international law.[30] But, while there is undoubtedly space for diverse perceptions of the function of law, the mainstream understanding of law is still a positivist one: law offers solutions to manifest problems. The event that I attended and the other examples provided previously reflect this dominant understanding of law.

This conception of international law as a solution is evident in the attempt to address hunger and climate change as global problems. There is hardly any area in international law that does not in some way – more or less directly – deal with questions of hunger and climate change.[31] States party to the International Covenant on Economic, Social, and Cultural Rights (ICESCR) recognize, in Article 11(2), 'the fundamental

[27] The University of Sydney, 'How the Law Can Help Save the Environment', 24 August 2010. http://sydney.edu.au/news/84.html?newsstoryid=5486.

[28] Elaine McArdle, 'Tackling Climate Change through Law, Policy', *Harvard Gazette*, 25 April 2014.

[29] Jan McDonald, 'The Role of Law in Adapting to Climate Change', *Climate Change* 2 (2011).

[30] See, for instance: Jean D'Aspremont, *Formalism and the Sources of International Law: A Theory of the Ascertainment of Legal Rules* (Oxford: Oxford University Press, 2011), 110.

[31] For some examples of how international law relates to questions of global hunger, see: Anne Saab, 'An International Law Approach to Food Regime Theory', *Leiden Journal of International Law* 31 (2018). For different areas of international law as they relate to climate change, see: Rosemary Rayfuse and Shirley V. Scott, eds, *International Law in the Era of Climate Change* (Cheltenham: Edward Elgar, 2012).