SOCIETYNOW

FOOD IN A CHANGING CLIMATE

Alana Mann

FOOD IN A CHANGING CLIMATE

SocietyNow

SocietyNow: short, informed books, explaining why our world is the way it is, now.

The SocietyNow series provides readers with a definitive snapshot of the events, phenomena and issues that are defining our twenty-first century world. Written by leading experts in their fields, and publishing as each subject is being contemplated across the globe, titles in the series offer a thoughtful, concise and rapid response to the major political and economic events and social and cultural trends of our time.

SocietyNow makes the best of academic expertise accessible to a wider audience, to help readers untangle the complexities of each topic and make sense of our world the way it is, now.

Poverty in Britain: Causes, Consequences and Myths
Tracy Shildrick

The Trump Phenomenon: How the Politics of Populism Won in 2016
Peter Kivisto

Becoming Digital: Towards a Post-Internet Society
Vincent Mosco

Understanding Brexit: Why Britain Voted to Leave the European Union
Graham Taylor

Selfies: Why We Love (and Hate) Them
Katrin Tiidenberg

Internet Celebrity: Understanding Fame Online
Crystal Abidin

Corbynism: A Critical Approach
Matt Bolton

The Smart City in a Digital World
Vincent Mosco

Kardashian Kulture: How Celebrities Changed Life in the 21st Century
Ellis Cashmore

Reality Television: The TV Phenomenon that Changed the World
Ruth A. Deller

Digital Detox: The Politics of Disconnecting
Trine Syvertsen

The Olympic Games: A Critical Approach
Helen Jefferson Lenskyj

This page intentionally left blank

Praise for *Food in a Changing Climate*

> *Food in a Changing Climate* could not be more timely, as Covid-19 has revealed the enormous institutional vulnerabilities of the existing food system while the Black Lives Matter movement is propelling a long overdue reckoning with the insidiousness of racial capitalism. With impressive grounding in international scholarship, Alana Mann asks her readers to attend to the complex ecologies, cultures and political economies in which food is entwined and commit to a food politics that does not shy away from the difficult questions.
>
> *–Julie Guthman, Professor of Social Sciences, University of California Santa Cruz*

> Don't be fooled, this compact book speaks volumes to the civilizational crisis facing our societies – and to the strategies that can help us put our food systems back on track. *Food in a Changing Climate* brings together a wide range of data, information and expert opinion – as well as ancient wisdom – for a trenchant analysis of our dysfunctional capitalist food system. Can we feed the world with GMOs? Will fake meat cool the planet? Is the Blue Revolution the answer to overfishing? Alana Mann bravely takes on these issues in clear, no-nonsense language. Uncompromisingly honest, this book is a must-read for students of food studies and food activists seeking the facts

and the language to speak truth to the power in our food system.

–Eric Holt-Giménez, Former Executive Director of Institute for Food and Development Policy/Food First

Wielding the food lens brilliantly, Alana Mann issues a wake-up call to the plunder of life-worlds and ecosystems at this geological tipping point. Her comprehensive account of planetary and species damage by industrial food, now intensifying claims to a future of lab-grown nutritionism, is exceptional. She brings her remarkable communication skills to critique the corporate scientism of food engineering and the urgency of restoring sovereignty to diverse food cultures in the illiberal shadow of standardisation. *Food in a Changing Climate* is a disturbing reminder of the plantation-like mindsets and practices of a globalized food system, and the need to replace it with an ethical world in which many worlds may fit sustainably.

–Philip McMichael, Professor of Global Development, Cornell University

FOOD IN A CHANGING CLIMATE

BY

ALANA MANN

The University of Sydney, Australia

emerald PUBLISHING

United Kingdom – North America – Japan – India
Malaysia – China

Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2021

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-83982-725-9 (Print)
ISBN: 978-1-83982-722-8 (Online)
ISBN: 978-1-83982-724-2 (Epub)

ISOQAR certified Management System, awarded to Emerald for adherence to Environmental standard ISO 14001:2004.

Certificate Number 1985
ISO 14001

INVESTOR IN PEOPLE

For the food and health workers

This page intentionally left blank

CONTENTS

This page intentionally left blank

ACRONYMS

ADM	Archer Daniels Midland
AFF	Alliance for Fair Food
AFM	Alternative Food Movement
AGRA	Alliance for a Green Revolution in Africa
AMR	antimicrobial resistant
ANAP	National Association of Small Farmers (Cuba)
AoA	Agreement on Agriculture
AOSIS	Alliance of Small Island States
ATSIA	Aboriginal and Torres Strait Islander Australians
CAFO	Concentrated Animal Feeding Operation
CCD	Colony Collapse Disorder
CDC	Centers for Disease Control and Prevention
CI	Conservation International
CIC	Consorzio Italiano Compostatori
CIW	Coalition of Immokalee Workers
CM	Cerrado Manifesto

CSA	Community Supported Agriculture
CSM	Civil Society Mechanism
DDT	Dichlorodiphenyltrichloroethane
ENSO	El Niño–Southern Oscillation
EOD	Earth Overshoot Day
FAO	Food and Agriculture Organisation
FDA	Food and Drug Administration
FIAN	Food First Information and Action Network
FSC	Federation of Southern Cooperatives (US)
FTA	Free Trade Agreement
GBR	Great Barrier Reef
GBRMPA	Great Barrier Reef Marine Park Authority
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GHG	Greenhouse Gases
GMO	Genetically Modified Organism
GRSB	Global Roundtable on Sustainable Beef
HFCS	High Fructose Corn Syrup
ICTs	Information Communication Technologies
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
ISI	Import Substitution Industrialisation
ISKN	Indigenous Seed Keepers Network

JIT	Just-In-Time
KFC	Kentucky Fried Chicken
LNG	liquefied natural gas
MACAC	Farmer to Farmer Agroecology Movement (Cuba)
MINT	Minimum-Input No-Till agriculture
MSC	Marine Stewardship Council
MST	Movimento dos Trabalhadores Rurais Sem Terra (Brazil)
NAFSN	New Alliance for Food Security and Nutrition
NCD	Noncommunicable disease
NFU	National Farmers Union (Canada)
OECD	Organisation of Economic Cooperation and Development
PCFS	The Peoples' Committee for Food Sovereignty
PETA	People for the Ethical Treatment of Animals
PICT	Pacific Island Countries and Territories
POPs	Persistent Organic Pollutants
PPE	personal protective equipment
PRAI	*Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources*
RSPO	Roundtable on Sustainable Palm Oil
R&D	Research and Development
SAP	Structural Adjustment Program
SOFI	State of Food Security and Nutrition report
SoyM	Soybean Moratorium

TEK	Traditional Ecological Knowledge
TNC	Transnational Corporation
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WCFS	World Committee for Food Security
WEIRD	Western, Educated, Industrial, Rich, Democratic
WFP	World Food Programme
WTO	World Trade Organisation
WWF	World Wildlife Fund

ACKNOWLEDGEMENT OF COUNTRY

This book was written on the land of the Gadigal People of the Eora Nation, the coastal people of the area we now call Sydney. I acknowledge the traditional custodians of the lands on which I live and pay my respects to ancestors and elders, past and present. I honour Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to the land, waters and seas.

This land was never ceded.

This page intentionally left blank

ACKNOWLEDGEMENTS

In 2020 Earth Overshoot Day (EOD) landed on August 22, according to the Global Footprint Network. This is the day on which our consumption of natural resources met the Earth's ecosystem's capacity to renew across the entire calendar year.

It was a good year for the planet – carbon dioxide emissions from fossil fuel use were lowered. We logged timber at a lower rate, we traveled less. There was a 9.3% reduction in our Global Ecological Footprint compared to the same period in the previous year, 2019, when EOD fell on July 29.

But to come close to breaking even, we need to go back to consumption levels of 1970, when EOD fell on December 29.

This book joins a chorus of voices that have been demanding, for decades, that we take action to curb our impact on the environment. You include scholars, activists, and ordinary people. It is your work, your stories, and your ideas that make up this book. Thank you for sharing them. Any errors of interpretation are mine.

It is a rare privilege to be asked to write on such an important topic. I thank Jen McCall at Emerald for inviting me to contribute to a series that shares impactful, transformative research with a wide audience.

I am also indebted to University of Sydney graduates Drew Rooke and Justine Landis-Hanley who provided me with brilliant research support and access to their provocative thinking. To Drew, thank you also for your masterful editorial guidance, which kept me on track.

1

WE DIDN'T START THE FIRE

AN UNEASY STORY

Every year hundreds of *gestores de encomiendas* or 'parcel managers' transport millions of US dollars in cash and goods between El Salvador and the United States. This exchange, between those who fled El Salvador's 12 year civil war (1979–1992) and those who remain behind, fuels a 'reflective nostalgia' in which certain foods play a central role- *pupusas* (stuffed tortillas), *maíz blanco* (white corn), *frijoles de seda* (silk beans), *miel de caña* (sugarcane honey) and traditional unsalted *queso fresco*, a fresh farmers' cheese. One courier says 'what flourishes most, or what is above all else, is that feeling, those desires to want to eat and feel Salvadoran flavour, Salvadoran food' (cited in Anastario, 2019, p. 57).

These longings demonstrate how eating, one of our earliest and most instinctual behaviours, evokes memory and emotion, especially a sense of belonging.

> *Food is fellowship. Food is also nostalgia; our earliest meals can seed a sweet tooth, spoil an appetite, or*

> *instil a craving later in life. The barrier between taste and memory is paper thin.*
>
> (Giggs, 2020, p. 215)

For the expatriate Salvadorans, familiar foods connect soil, crops, livestock and labour in an extension of local agricultural and social practices. Traditional healing teas and other plant-based remedies recall everyday care-taking behaviours and are essential to those without access to health care.

Food is central to the processes of dispossession, migration, transplantation and consumption that have literally transformed bodies, cultures and environments throughout the world, throughout history. Its countless stories are propelled by endless appetites. For coffee, tomatoes, chillies, pineapples, bananas, sugar and maize, only some of the foods that have created empires and triggered revolutions. The 'Columbian exchange' (Crosby, 2003) entirely transformed parts of Africa, Asia and Europe, driving industrialisation and expansion. King Sugar and other monocrops brought incredible wealth to a few, and misery to many, in a process Eduardo Galeano describes as the 'pumping of blood from one set of veins to another; the development of the development of some, the underdevelopment of others' (1971, p. 83). The reliance on singular staples created famines from Ireland to India, leading to a Green Revolution based on genetically modified seeds, agri-chemicals and fossil fuels which are now directly responsible for climate change. In response, the colonial project continues in a land and resource grab justified by a sustainable development paradigm that now includes 'green' biofuels in its agenda for expansion. Under the racialised double-standard of development, the appropriation of resources and embodied labour from the Global South to high-income nations continues; in 2015, a net total of over 10 billion tonnes of materials and 370 billion hours

of human labour (Hickel, 2020). This is the blood that continues to flow from the open veins of the Global South where 'resource rebels' (Martínez-Alier, 2003) who rely on and steward the environment for their livelihoods not only fight for their own survival but also that of the planet against 'a fossil fuelled imperialist drive for control and power over resources' (Wedge cited in Hayman, 2018, p. 82).

It is naïve to deny awareness that a food system built on extraction and exploitation was bound to fail; after all history shows us 'colonists might come to conquer but in the end they struggle with the inevitable impact their environment and situation will have on them' (Behrendt, 2016, p. 193). The evolution of global foodways is not an easy story. We know that 'stories are powerful tools and can be even more powerful weapons in the hands of malignant narcissists' (Yunakporta, 2019, p. 129). Told straight, the story of food in a changing climate challenges the 'inequalities, alienation, and violence inscribed in modernity's strategic relations of power and production' (Moore, 2015, p. 170) – the same forces naturalised in the popular Anthropocene narrative.

BREADBASKETS AND BASKETCASES

As I write, the world is reeling. The no longer so novel pathogen COVID-19 defies containment across cities and continents. Global food supply chain vulnerabilities are foregrounded as farmers and processors grapple to understand 'who needs what, who has what' to avoid farm closures and prevent food waste. Fresh milk is flowing down drains, thousands of animals are being culled and fruits and vegetables are rotting in fields and shipping containers (Cagle, 2020). Our newly crowned 'essential' food and farmworkers, many already engaged in campaigns for decent wages, fair

working conditions and basic safety, are now challenged to socially distance with a shortage of personal protective equipment (PPE) if they can work at all (Arantini, 2020; IPES-Food, 2020). People are panic-buying in even the most affluent cities around the world, where rising unemployment is driving a demand for food banks which have never remedied endemic food insecurity (Power, Black, & Brady, 2020). Even more dire is the impact of the pandemic on nations already experiencing acute food insecurity because of a lethal combination of conflict, macroeconomic crisis, weather-related shocks and pest invasions. These include Afghanistan, Pakistan, Northern Nigeria and the Democratic Republic of the Congo (DRC), and much of East Africa where the worst locust invasion in 70 years is decimating crops and livestock feed (Smith & Kayama, 2020). Yemen, the most food insecure nation in the world with 53% or 15.9 million citizens in crisis, is at Catastrophe (Phase 5) level after three years of civil war. We lack data for many other countries, such as Iran and the Philippines (Ghosh, 2020), where the virus is used as an opportunity for regimes to crackdown on personal freedoms.

Rising food prices can be directly attributed to the impacts of movement restrictions and illness on local markets and the unavailability of agricultural labour, but the roots of the problem extend much deeper. The pandemic has exposed the fragility of a food system built to rely on interconnected and complex global supply chains that facilitate trade between nations. Based on the logics of comparative advantage, the 'free' trade regime dictates that countries can import all the food they need if that is cheaper than growing it at home. For example, if Egypt can't grow wheat as cheaply as they do around the Black Sea, it should import a large amount of wheat from Russia to supplement its own small harvest in feeding its population. That works well when harvests are

high and conditions for transport are optimal but not so well when extended droughts in Russia lead to higher prices, financial speculation on harvests and stockpiling of grain by competing nations. Russia has a history of imposing restrictions and taxes on wheat, and following destructive droughts in 2010 completely banned trade, contributing to the Arab Spring uprisings. Climate change was a decisive spanner in the works of the global food trade well before the pandemic hit.

A glaringly obvious impact of food dependency, highlighted by the pandemic, is that when supply chains fail, people starve. If local farmers stop growing, their families don't eat, and without jobs they cannot buy food. Put simply, for all the advantages of specialisation in growing, processing and distributing specific foods, the efficiencies gained come at the expense of social goals including food security, the need to preserve livelihoods and the protection of the environment (Clapp, 2020). Our obsession with efficiency has decimated local and diverse food economies in many parts of the world by closing down small farms, regional abattoirs and farmers markets, eroding local resilience. Now, without adequate inventories and regional self-sufficiency, our cities are 'nine meals from anarchy' when crisis strikes (Fraser, 2020).

To maximise profits and keep costs low, food corporations have applied the principles of 'just enough, just in time', balancing supply and demand. Disruptions like closed borders, trade and visa restrictions, and limited distribution channels expose the precarious nature of this just-in-time (JIT) model. In policy terms, our food system is 'locked in' to the point where 'social forces and decisions can reinforce a lack of change or compound failure'. As such, rather than sustaining us as we grapple with COVID-19 'how the food system operates is a significant threat to the ecosystem's future and humanity's within that' (Lang, 2020, p. 197).

This book was always going to be about the need to adapt our food behaviours in response to societal collapse driven by climate change. The coronavirus has added a new urgency to this narrative. Climate change interacts with and exacerbates existing inequities including those in our health systems. Through the pandemic lens, we witness how the most vulnerable are those most affected by the virus and its profound economic impacts – the elderly, people of colour, the jobless, the refugees of failed states on which we have little or no data regarding infections and deaths. In 2014, the World Health Organisation (WHO) warned that the most significant health risks and impacts of climate change would not be experienced equally among nations, regions or groups of people within metropolitan areas (WHO, 2014). The cracks are showing as countries with poorly resourced health systems, and those with the highest rates of inequality, are crippled by the pandemic. Societal collapse has arrived. And with it a renewed focus on not just our food systems but the way we live.

FACING THE DRAGON

I started writing this book in the midst of a more local, but as personally devastating, national tragedy – the worst bushfire season in living memory. As a child in mid-70s rural Australia, my class was set the book *February Dragon*. Author Colin Thiele perfectly captured the terror of a community faced with an uncontrollable bushfire. In 2019, the dragon came early, invited by climatic changes including extended drought and the positive Indian Ocean Dipole which is contributing to acute food insecurity across East Africa (Marsham, 2020). Between October and January, more than 150 bushfires

burned across Australia. Firefighters were unable to contain 64 of these, in some cases for months. Only heavy downpours were able to tame the flames. More than 18 million hectares burned, including 1.3 million of agricultural land and 1% of all vineyards. Over one billion animals and 34 people were killed, and thousands of properties razed. A further 445 deaths were attributable to smoke from the bushfires (Wahlquist, 2020). While the flames may have ceased the grief has not; as a nation, we are still in mourning.

The Australian bushfire season of 2019/2020 is a lesson in political paralysis and policy failure for a rapidly warming world. It incinerated much of but, astonishingly, not all of the doubt, apathy and indifference about climate change retained by policymakers and the powerful elite in Australia and around the world. Coupled with the devastating impacts of the pandemic, it feels like collapse has begun, and the time to embrace what Jem Bendell (2018) calls 'deep adaptation' has arrived.

In 2018, when this concept went viral with his paper *Deep adaptation: A map for navigating climate tragedy*, it exposed the ultimate inconvenient truth – societal collapse, defined as the end of familiar modes of sustenance, security, pleasure, identity, meaning and hope, is inevitable. Arguably, Bendell's view is supported by the Intergovernmental Panel on Climate Change (IPCC) declaration of a climate emergency in which we have perhaps 10 years to stall a tipping point or 'precipice' (Ord, 2020) that leads to catastrophe, and possibly human extinction.

According to the latest climate science, global warming is more rapid and severe than previously anticipated. Particularly at threat is worldwide food security, and with it well-being and social stability. Climate change is predicted to lead to a decrease in food production. Tropical zones will move from optimal growing conditions for cereal crops like rice and corn into

extreme and prolonged summer temperatures. This will cause drops in productivity in areas where the bulk of malnourished people already live. Growing seasons will likely get longer in temperate zones as climate warms but any gains will be offset by extreme weather events like Australia's bushfires, which followed the longest drought in living memory.

Climate-related droughts across the globe this decade alone have caused drops in wheat production of 33% in Russia, 19% in the Ukraine, 14% in Canada and 9% in Australia (Vidal, 2013). The disruption of immense ocean currents is already impacting on fisheries which are increasingly exploited for the protein needs and shifting tastes of a global population expected to reach nearly 10 billion by 2050. To feed this population sustainably, the World Resources Institute claims we need to close three gaps: a 56% food gap in 'crop calories'; a 593 million hectare 'land gap' (an area twice the size of India); and an 11 gigaton greenhouse gas (GHG) mitigation gap between anticipated agricultural emissions in 2050 and the target level we need to hold global warming below two degrees Celsius and avoid catastrophic climate impacts (Ranganathan, Waite, Searchinger, & Hanson, 2018). With half the Earth's surface already under production for food and even more for fuel crops, we are running out of land – a problem exacerbated by rising seas. A one-foot rise in sea level is sufficient to consume Tuvalu, Kiribati and the Maldives in the Pacific, Kivalina in the Arctic and coastlines around the world from Miami to Mumbai. By 2100, seas are expected to rise three feet (Mann & Toles, 2016). Storm surge is a major risk to health and food supply in urban areas, particularly where critical infrastructure is situated on the coast. Hurricane Sandy proved the vulnerability of low-lying coastal areas in New York, pouring 1.6 billion gallons of untreated sewage into local waterways. The peninsula Hunt's Point, the poorest congressional district in the United States and the source of