



Published
in association
with the European
Association of Social
Anthropologists
(EASA)
VOLUME 42

ETHNOGRAPHERS OF POWER

A Political Anthropology of Energy

Edited by
Tristan Loloum, Simone Abram
and Nathalie Ortar

ETHNOGRAPHIES OF POWER

EASA Series

Published in Association with the European Association of Social Anthropologists (EASA)

Series Editors: Jelena Tošić, University of St. Gallen; Sabine Strasser, University of Bern; Annika Lems, Max Planck Institute for Social Anthropology, Halle

Social anthropology in Europe is growing, and the variety of work being done is expanding. This series is intended to present the best of the work produced by members of the EASA, both in monographs and in edited collections. The studies in this series describe societies, processes and institutions around the world and are intended for both scholarly and student readership.

Recent volumes:

42. ETHNOGRAPHIES OF POWER

A Political Anthropology of Energy

Edited by Tristan Loloum, Simone Abram and Nathalie Ortar

41. EMBODYING BORDERS

A Migrant's Right to Health, Universal Rights and Local Policies

Edited by Laura Ferrero, Chiara Quagliariello and Ana Cristina Vargas

40. THE SEA COMMANDS

Community and Perception of the Environment in a Portuguese Fishing Village

Paulo Mendes

39. CAN ACADEMICS CHANGE THE WORLD?

An Israeli Anthropologist's Testimony on the Rise and Fall of a Protest Movement on Campus

Moshe Shokeid

38. INSTITUTIONALISED DREAMS

The Art of Managing Foreign Aid

Elżbieta Drażkiewicz

37. NON-HUMANS IN AMERINDIAN SOUTH AMERICA

Ethnographies of Indigenous Cosmologies, Rituals and Songs

Edited by Juan Javier Rivera Andía

36. ECONOMY, CRIME AND WRONG IN A NEOLIBERAL ERA

Edited by James G. Carrier

35. BEING-HERE

Placemaking in a World of Movement

Annika Lems

34. EXPERIMENTAL COLLABORATIONS

Ethnography through Fieldwork Devices

Edited by Adolfo Estalella and Tomás Sánchez Criado

33. BACK TO THE POSTINDUSTRIAL FUTURE

An Ethnography of Germany's Fastest-Shrinking City

Felix Ringel

*For a full volume listing, please see the series page on our website:
<https://www.berghahnbooks.com/series/easa>*

ETHNOGRAPHIES OF POWER

A Political Anthropology of Energy

*Edited by Tristan Loloum,
Simone Abram and Nathalie Ortar*



berghahn
NEW YORK • OXFORD
www.berghahnbooks.com

First published in 2021 by
Berghahn Books
www.berghahnbooks.com

© 2021 Tristan Loloum, Simone Abram and Nathalie Ortar

All rights reserved. Except for the quotation of short passages for the purposes of criticism and review, no part of this book may be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system now known or to be invented, without written permission of the publisher.

Library of Congress Cataloging-in-Publication Data

Names: Loloum, Tristan, editor. | Abram, Simone, editor. | Ortar, Nathalie, editor.
Title: *Ethnographies of power : a political anthropology of energy* / edited by Tristan Loloum, Simone Abram and Nathalie Ortar.
Description: New York, N.Y. : Berghahn Books, 2021. | Series: EASA series ; 42 | Includes bibliographical references and index.
Identifiers: LCCN 2020051924 (print) | LCCN 2020051925 (ebook) | ISBN 9781789209792 (hardback) | ISBN 9781800730380 (ebook)
Subjects: LCSH: Power resources—Social aspects. | Energy consumption—Social aspects. | Energy industries—Social aspects. | Power (Social sciences)
Classification: LCC HD9502.A2 E86 2021 (print) | LCC HD9502.A2 (ebook) | DDC 333.79—dc23
LC record available at <https://lcn.loc.gov/2020051924>
LC ebook record available at <https://lcn.loc.gov/2020051925>

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library



This work is published subject to a Creative Commons Attribution Noncommercial No Derivatives 4.0 International license.

The terms of the license can be found at <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

For uses beyond those covered in the license, contact Berghahn Books.

The electronic open access publication of *Ethnographies of Power* has been made possible through the generous financial support of the Swiss National Science Foundation.

ISBN 978-1-78920-979-2 hardback
ISBN 978-1-80073-038-0 open access ebook

Contents

<i>List of Figures</i>	vii
<i>Acknowledgements</i>	ix
Introduction. Politicizing Energy Anthropology <i>Tristan Loloum, Simone Abram and Nathalie Ortar</i>	1
Chapter 1. Southern Spectrums: The Raw to the Smooth Edges of Energopower <i>Raminder Kaur</i>	24
Chapter 2. Ecuadorian Amazonia amidst Energy Transitions <i>Chris Hebdon</i>	52
Chapter 3. Nepal's Water, the People's Investment? Hydropolitical Volumes and Speculative Refrains <i>Austin Lord and Matthäus Rest</i>	81
Chapter 4. Energopolitics in Times of Climate Change: Productive and Unproductive Politics of Energy Infrastructures in Poland <i>Aleksandra Lis</i>	109
Chapter 5. The Earth Is Trembling and We Are Shaken: Governmentality and Resistance in the Groningen Gas Field <i>Elisabeth N. Moolenaar</i>	133

Chapter 6. Delving at the Core of Everyday Life – Between Power Legacies and Political Struggles: The Case of Wood-Burning Stoves in France <i>Nathalie Ortar</i>	156
Afterword. People Thinking Energetically <i>Leo Coleman</i>	180
<i>Index</i>	195

Figures

1.1	Idinthikarai village next to the Kudankulam Nuclear Power Plant in Tamil Nadu, India.	25
1.2	Wind turbines outside the nuclear power station in Kudankulam.	32
1.3	Dr S.P. Udayakumar, the main coordinator of the People's Movement Against Nuclear Energy, 2012.	35
1.4 and 1.5	People at a solidarity cultural event in Idinthakarai in 2012.	39
1.6	Portraits of Anthony John (Manapadu), Sahayam Francis (Idinthakarai), J. Roslin (Idinthakarai) and C. Rajasekar (Kudankulam), who died due to their protests against the Kudankulam Nuclear Power Plant.	40
2.1	The regions of Ecuador.	53
2.2	The national shield of Ecuador.	57
2.3	Estimated distribution of lands (in grey) considered relatively empty in 1982.	59
2.4	High-voltage electric lines in Ecuador in 2013, before the <i>cambio</i> .	64

- 3.1 Government officials and hydropower developers discuss future paths to 10,000 MW during the final session of the Power Summit, December 2016. 83
- 3.2 The construction site of the Arun-3 hydropower project in Nepal, November 2019. 96
- 3.3 Employees from the Upper Tamakoshi Hydropower Project present a young girl from the project-affected area with a receipt for the shares that her mother purchased in her name – all citizens from the district of Dolakha were eligible to purchase shares, regardless of their age. Dolakha, July 2018. 101

Acknowledgements

The editors would particularly like to thank the participants in the Energy Anthropology Network (EAN). EAN has made great strides in its first few years in consolidating discussions around energy anthropologies, and we are particularly grateful for the enthusiastic support of its members and to the EASA committee for supporting the foundation of the network. We should like to thank the participants in the EAN panel at the Milan EASA conference for their contribution to getting this volume off the ground.

We would also like to thank the anonymous reviewers who gave us such helpful advice and constructive comments to improve the volume, as well as thanks to the editors at Berghahn Books and the former EASA series editor, Aleksandar Bošković, for his timely encouragement and guidance.

Introduction

Politicizing Energy Anthropology

Tristan Loloum, Simone Abram and Nathalie Ortar

A political anthropology of energy starts from the position that energetic infrastructures are pivots for sociopolitical inquiry. They facilitate the contours of the state and local communities, both in their material existence and in their projection of imaginaries into the future and into a global environment. Not only is energy at the core of many economic interests, geopolitical struggles and international relations, but energy technologies are also central to modernist ideologies and neoliberal narratives. A political anthropology approach is one that can begin to unpack such tightly knitted sociomaterial and sociotechnical forms, tracing the links between material forms, concepts and ideologies and elaborating the forms of power that are thereby enabled or inhibited.

Ethnographies of Power compiles topical case studies and analysis of contemporary entanglements of energy materialities and political power. Based on original contributions with a strong ethnographic sensibility, it revisits some of the classic anthropological notions of power by questioning the role of energetic infrastructures and their current transformations in the consolidation, extension or subversion of modern political regimes. The choice of an ethnographic approach follows the intention to move away from large abstract explanatory theories and conceptual generalizations by attending to the contextual particularities of ‘energopolitical regimes’ (Rogers 2014). In doing so, we also seek to emphasize subaltern or alternative voices that are often overshadowed in energy debates by hegemonic discourses based on expert knowledge, technocentric thinking and other forms

of authority. The cases presented here unravel the arrangements of technological infrastructures, institutions and discourses of truth on which ‘energopolitical’ regimes are built, showing how energy implicates citizens and subjects in multiple relations of power that affect their political identity, sense of belonging, territorial anchorage, collective emotions, knowledge, conceptions of the future, and their access to states and to human rights.

The political reflections gathered in this volume fit within what Dominic Boyer (2015) calls a third generation of energy studies in the social sciences. According to this characterization, the first generation of energy anthropology studies was marked by the work of Leslie White (1943, 1949, 1959), who reinterpreted evolutionist theory in the light of thermodynamics (the correlation between energy concentration and entropy), leading him to consider energy capacity as a key factor for human life and progress. The second generation emerged in the 1970s and 1980s from ‘Michigan Anthropology’ and leading figures like Richard N. Adams (1975, 1978), Roy Rappaport (1975) and Laura Nader (1980, 1981), who applied White’s approach of energy and culture to more open and complex societies, while turning away from the ambition of building a general theory of energy and human development. Their ethnographic studies insisted on the socioenvironmental impacts of resource extraction and energy infrastructure (Coronil 1997; Sawyer 2004) and the rights of indigenous communities (Robbins 1980, 1984; Kruse et al. 1982; Jorgensen 1990). Significantly, Nader’s work on the governance of energy spurred her to define an approach to studying the powerful that she called ‘studying up’ (1972), helping to refocus anthropological attention on the exercise of power in modern states and corporations, as well as the subaltern and colonial subjects who were then more commonly of interest in anthropological research (with notable exceptions such as Richards and Kuper (1972); see also Gusterson (2008)). Since then, studies of the powerful, experts, elites or technocrats have become increasingly visible in anthropological libraries, and the question of studying up itself has been recast as a need to study across class, wealth, economic or other hierarchies (Stryker and González 2014). ‘The state’ is a relatively illusory concept, as Abrams pointed out (1988), and its presence can equally be understood through the experiences of those engaging with or suffering from its effects and services. Hence, the studies in this volume focus primarily on secondary state effects rather than those directly employed by states, yet for all that, they are studies of state power.

Both of the earlier generations of energy anthropology identified by Boyer emerged in moments of energetic vulnerability and transition: White published his works on energy and cultural progress when nuclear energy was emerging, while the second generation emerged during the oil crisis amid criticism of oil imperialism. A third generation, fuelled by multiple environmental crises (climate change, the Anthropocene), epistemological turns (ontological turn, infrastructural turn, Science and Technology Studies, Actor-Network Theory, posthumanism) and energetic challenges (the post-carbon era, nuclear phase-out, renewable energy, decentralized systems), has emerged in the last decade or two with a renewed set of field sites and theoretical frameworks (Strauss, Rupp and Love 2013; Love and Isenhour 2016; Smith and High 2017; Szeman and Boyer 2017; Günel 2018; High and Smith 2019). Although fossil fuels remain a fertile ground of scholarship (Ferguson 2005; Mason 2005; Wenzel 2006; Reed 2009; McNeish and Logan 2012; Huber 2013; Appel, Mason and Watts 2015; Barak 2015; Rogers 2015, Weszkalnys 2015; LeMenager 2016), as well as electricity and the grid (Bakke 2016; Özden-Schilling 2016; Coleman 2017; Abram, Winthereik and Yarrow 2019), a growing set of literature looks at renewables from an anthropological perspective (Jacobson 2007; Henning 2008; Krauss 2010; Love and Garwood 2011; Cross 2013; Argenti and Knight 2015; Franquesa 2018; Boyer and Howe 2019; Watts 2019). A proliferation of new energy technologies, decentralized systems and alternative forms of consumption is conducive to analytical exploration, political critique and conceptual diversification. This book therefore provides continuity to a range of social science studies seeking to overcome epistemological barriers to thinking politically about energy.

Politicizing Energy

Invisibility and depoliticization are the first obstacles to thinking critically about energy systems. Except when they malfunction (Rupp 2016; Kesselring 2017), energy infrastructures are often taken for granted and are assumed to be a socially neutral process of technological development (Pink 2011; Larkin 2013; Gupta 2015), depoliticized through expert discourses and routine ‘anti-politics’ (Ferguson, 1990). Other obstacles are conceptual and semantic: the concept of ‘energy transition’ has aroused increasing interest over the last decade both as a technological challenge and a political label. Mette High and Jessica

Smith argue that the ‘overarching frame of “energy transitions” has narrowed the scope of how anthropologists understand and engage with the ethical dilemmas posed by energy’ (2019: 11). For them, presuming or advocating an energy transition towards renewables by casting fossil fuels as necessarily immoral ‘precludes understanding the ethical logics at play in those distributed assemblages and hinders our ability to engage with and respond to them’ (ibid.). Yet we should not be misled by the dominant debates around energy transitions to assume that these necessarily imply political transition. In Chapter 2 in this volume, Chris Hebdon demonstrates amply how the same colonial mechanisms and mentalities have followed the extractive energy politics of Ecuador’s Amazonian territories from oil to wind exploitation (see also Howe and Boyer 2015).

The very choice of the term ‘transition’ may also depoliticize its real implications by downplaying the turmoil and conflict caused by energetic uncertainty. Unlike ‘crises’, ‘revolutions’ and ‘mutations’, which can be structural, critical or violent, transitionist imaginaries suggest a gentle, gradual, consensual change. Caroline Kuzemko (2016) unpacks the forms of depoliticization to highlight a number of strategies that remove certain aspects of national energy systems from public debate and democratic institutions. This political concealment occurs through the transfer of issues from government to technocratic circles, arm’s-length bodies, experts, judicial structures (governmental depoliticization); from the public to the private sphere and to ‘market forces’ (societal depoliticization); or through a discursive framing of issues such as nonproblems (denial) or as problems that fall under a realm of necessity where human agency and contingency are denied (discursive depoliticization).

In contrast, following trends in science and technology studies (Leigh Star 1999; Barry 2013), energy anthropologists have called particular attention to be paid to the political dimensions of energy infrastructures as contours of the state (Meehan 2014) and sites of expression for dominant ideologies, collective subjectivities and socioenvironmental contestations. The anthropology of the state has itself been reoriented away from formal state institutions towards socially embedded processes and mundane practices through which the state is formed, performed and reproduced (Abram and Weszkalnys 2013). Analysing power and politics through diverse daily practices – including energy production sites, working infrastructures, consumption settings and energy bureaucracies – is a novel way to approach the porous, constructed and processual nature of the state.

Energizing Politics

Boyer's conceptual proposal of a Foucauldian-inspired 'energopower' offers a stimulating framework for the anthropological inquiry into energy. Building on Foucault's concept of biopower (the management of life and population), he advocates an 'alternative genealogy of modern power' (Boyer 2015: 325), arguing that 'there could have been no consolidation of any regime of modern biopower without the parallel securitization of energy provision and synchronization of energy discourse' (ibid.: 327). Energopower, the harnessing of fuel and electricity for social purposes, can take a variety of forms, referred to as 'energopolitics' (Boyer 2014: 7). Energopolitics differ from other forms of energy (geo)politics in the sense that the close intricacy of energy and power transcends the scope of actors, strategies and decisions by involving knowledge and discourses, practices and emotions. If energy politics are a matter of governance, energopolitics are a matter of governmentality. Central to this definition is the power/knowledge nexus and indirect government through conduct of conduct. This includes social and cultural projects (Rogers 2014), Public Relations and Corporate Social Responsibility (or corporate ethics) strategies (Knudsen 2018), tourism initiatives (Loloum 2019), art exhibitions (Evans 2015) and film productions (LeMenager 2016) sponsored by energy corporations. Probably because oil has been the most pervasive source of energy in Western lifestyles and consumer culture, 'petrocultures' (Szeman 2019) have been a significant field of enquiry for anthropologists and cultural critics interested in the conjunctions of energy, culture and power. While supposedly forming a 'soft' version of energopower, the cultural politics of energy nonetheless contribute to the growing influence of big corporations in Western imaginaries and other aspects of social life. Energy infrastructure is thus about culture and knowledge (expert discourses, state or corporate categorizations, scientific or technical truths about energy) as much as it is about energy provision, and the coalescence of knowledge, culture, material property, finance, political power and technology always contains the potential to control and dominate (Foucault 1980; Nader 2010; Howe 2014; Kester 2016).

The chapters in this volume also push beyond energopolitics towards plural economies of knowledge and power, incorporating experiences of energy that people identify as political, but that are not biopolitical in the strict sense. In questioning the generalizing move of energopolitics, Raminder Kaur and Leo Coleman (this volume) reopen traditional political concepts like (post)colonialism, vio-

lence, citizenship, statecraft, nationalism, the ‘good life’, future, hope and uncertainty. In Chapter 1, Kaur engages more directly with the concept of energopower when discussing the relationship between energy infrastructure deployment and the politics of death. With reference to Achille Mbembe (2001) and Giorgio Agamben’s (1995) debate over biopower as a form of ‘thanatopolitics’ or ‘necropolitics’, she examines how the politics of nuclear power generation becomes a necropolitics of the state, bringing violence and death to poor communities that are located adjacent to nuclear installations. In doing so, she reminds us that energopower is not only about managing human life through infrastructure, but occasionally about brutally displacing, discursively dehumanizing, or even killing subpopulations who are considered detrimental to national energy sovereignty. In the Afterword, Coleman invites us to a ‘wider project of a political anthropology of energy’ by paying attention to other (metaphorical) meanings of energy in contemporary Western societies and beyond: Aristotle’s *energía*, the Vedic concept of *agni*, the Chinese *qi* or the ‘vital energy’ described by indigenous people in Latin America (Gudeman 2012). These multiple ontologies of energy indicate the existence of alternative epistemic spaces (Chapman 2013) that should be examined within a genealogical analysis of energopower. Indeed, current discussions over energopolitics do not seem to have processed the recent (posthumanist) debates over the ontological nature of biopower (Rose 2007; Povinelli 2016). Just as Elizabeth Povinelli (2016) problematizes biopower not as the governance of life and the tactics of death, but rather as a set of discourses, affects and tactics to shape the difference between Life and Non-Life (geontopower), one could conceptualize energopower as the governance of the ontological difference between energy and nonenergy, provincializing Western definitions of energy by problematizing the very idea of modern energy in its social and historical context.

The electric grid in particular is emblematic of the kind of ‘infrapolitics’ (Scott 2008; Luque-Ayala and Silver 2016) deployed through energy infrastructure. Since the end of the nineteenth century, electricity has been instrumental in the shaping of Western states, cities and lifestyles (Hughes 1983; Nye 1999), as well as a ‘foundational apparatus upon which the experience of modernity has been constituted’ (Boyer 2015: 532). Associated with technological progress, the good life and social order, electrification has been central to the dissemination of modernist ideologies and Western lifestyles across the Global South, extensively promoted by corporate actors, non-governmental organizations (NGOs) and international organizations

(Shove 2003; Winther 2010; Coleman 2017). Electricity has legitimizing effects; it comes to incarnate the benevolence (Kirschner and Power 2019) or neglect (Cross 2019) of the state towards its citizens. Access to electric modernity has given markets access to new customers, incorporating populations into the capitalist economy whilst endorsing new types of behaviour and consumption habits (Labban 2012: 389). And this brings with it a host of future imaginaries that come to redefine understandings of what the state might be and what role it may legitimately play, as Austin Lord and Matthäus Rest in Chapter 3 in this volume amply demonstrate.

At the same time, disconnection, or lack of connection, or the refusal to be connected also constitute a political relation that is effected through sociomaterial practices. In Chapter 6 in this volume, Nathalie Ortar shows how French rural families may limit their dependence on state-owned services by maintaining their use of wood-fired stoves in the home. This enables them to think about historical continuity, alternative nonmodernist futures and their potential to hold the state at bay. The power of grid connection or nonconnection may therefore be a factor in territorial and social cohesion, ‘a maker of groups and a generator of political and economic difference among groups and individuals’ (Shamir 2013: 6). The gridding of relations has consequences for the distribution of political power, reinforcing the centralization of power and accumulation of wealth around those (from local bodies to foreign actors) who control resources and decision-making processes, allowing them to instrumentalize connection and disconnection for pork-barrel politics (Baker, Newell and Phillips 2014), colonization or political turmoil (Suliman-Jabary Salamanca 2011).

Energy Statecraft and Political Ordering

Political structures are materialized through other energy infrastructures too, as well as through electrical grids; Chris Hebdon’s, Aleksandra Lis’ and Elisabeth Moolenaar’s chapters in this volume (Chapters 2, 4 and 5 respectively) offer three dimensions to this observation. Energy anthropologists have observed that the deployment of energy infrastructure is often related to the appearance of new forms of governance (pace Scott 1998), but also to new political imaginaries of nationhood and a wider transformation in the scope and rationale of state presence. Özden-Schilling’s work among electricity traders in downtown Boston and West Virginia farmers

turned anti-transmission lines activists undermines the uneven geographies of the electric grid, which is almost always governed remotely, from urban centres out according to city-centred models of economies of scales (Özden-Schilling 2019; see also Hughes 1983). In contributing to the making of the rural/urban/suburban divide, the expansion of electricity's transmission infrastructure also gives rise to new senses of belonging and an emergent (energo)political consciousness that crosscut political ('red versus blue') and social class divides (Özden-Schilling 2019). Multisited ethnography is a powerful tool for energy anthropologists, as it allows them to understand how transmission lines, hydroelectric infrastructures or pipelines are experienced upstream and downstream. By circulating from policy-making centres to places of implementation, they can better identify the unexpected repercussions of national or international policies and standards when reaching communities within specific territorial and cultural contexts (Johnson 2019: 72).

'Energy statecraft' often refers to the art of conducting state affairs, both domestic and international, as a means to guarantee access to energy resources or, conversely, the art of using energy infrastructure and resources as a means to consolidate state authority (Daugaard 2017). The costs of constructing electric infrastructures are usually high, often debt-financed, and delays between initiation of the project and actual production of electricity are long, allowing very few organizations other than state companies to embark on such investments. In foreign policy, energy statecraft consists of using energy resources as a means to get one or more international actors to do what they would otherwise not do by manipulating or exploiting their fundamental need for energy security, whether coercively (through embargos, sanctions, etc.) or cooperatively (through economic exchange, cultural diplomacy, etc.). Poland's participation in EU greenhouse gas (GHG) reduction mechanisms, for example, was key to the internal politics of the changing Polish party politics, but also framed its international manoeuvres in relation to corporations too (Lis, Chapter 4 in this volume).

Questions of energy sovereignty can be seen most vividly in the explicit use of threats to withhold fuel or power, such as Russia used against the Baltic states (Grigas 2013). But they can also be recognized in flows of energy that do not respect national borders or international geopolitical strategies, such as the capture of hydrological flows in the Mekong valley (Jensen 2019) or the 'volumetric politics' of Nepalese political ambitions around hydropower (Lord and Rest, Chapter 3 in this volume). Energy sovereignty here moves beyond

questions of state borders and resources to include new ‘geo-metrics’ (Elden 2013) of power, often directly inspired by measurements of energy.

Moving Citizens and the Future

Ethnographic approaches to energy allow anthropologists to understand how infrastructures affect emotions and subjectivity at both the collective and the individual level, as shown by Moolenaar in Chapter 5 in this volume. Resource extraction and techno-infrastructure have direct consequences for people’s identity and wellbeing because they interfere with the integrity of their environment and landscape, their social relationships, and their health and self-perception (Knox 2017). In the case of conventional natural gas drilling earthquakes in the Netherlands, Moolenaar notes that ‘the symptoms people are suffering from in Groningen can be understood as social trauma and a cultural specific symptomology to express distrust, unsafety, uncertainty, and social rupture’ (Chapter 5 in this volume). These effects can result from the process of energy production or resource extraction, or from the politicolegal events that precede or succeed them (licensing, consultations, litigation and compensation).

The development of energy infrastructure affects the state–citizen relationship in many ways. Timothy Mitchell (2011) has exposed the links between carbon-based fuels and the changing forms of democracy, insisting on the essential contribution of coal infrastructure (railways, industrial cities, working-class districts, etc.) to the political agency of workers and their struggles for better rights. These struggles were subsequently jeopardized in the switch to oil as a core global fuel: it was much more fluid, more distant, less labour-intensive, often managed by authoritative countries aligned (or alignable) with Western imperialist interests and less susceptible to organized labour tactics of strikes. Other anthropological works on oil-producing states, like Fernando Coronil’s ‘Magical State’ on Venezuela (Coronil 1997) or Elana Shever’s ‘Resources for Reform’ on Argentina (Shever 2012) show the contrasting effects nationalization and neoliberal reforms can have on the relationship between the citizenry and the state. Now, though, evidence of climate change, the development of renewables and governmental alignments towards an energy transition have created new spaces for political resistance, participation and innovation. These emerging ‘energy citizenships’ include concerns for off-grid systems, the setting up of community renewable energy

projects, collective ownership and alternative funding of power infrastructures, equity and justice in energy access, climate change, policies and protests over (non)renewables and ‘smart’ technologies. For example, Lord and Rest’s concept of ‘shareholder citizenship’ (Chapter 3 in this volume) is evocative of the changing public-private-people configurations on which current energy projects stand. Decentralized energy systems open up other sets of questions on how existing political structures will be reworked between resource-consuming centres and resource-producing peripheries.

Several case studies developed in this volume reveal how energy resources and infrastructure – whether existing or projected – can generate ‘hopes, desires, and aspirations of citizens’ (Weszkalnys 2016: 161) and ‘saturate people’s conceptions of time and the future’ (Ferry 2016: 185). As such, energy forms part of an ‘economy of anticipation’ (Cross 2015) in which sociotechnical imaginaries are instrumentalized to draw attention away from the present and build ‘national narratives of a desirable future’ (Lis, Chapter 4 in this volume). As Lord and Rest (Chapter 3 in this volume) put it, ‘these performances and re-enactments of future prosperity become rhythmic *refrains*, a discursive tool for coordinating an assemblage of territorial motifs, spatializing state practices and affective orientations to the future’.

An Overview of the Chapters

The aim of this volume is to map out the varieties of politics that are engaged through energy, from citizenship practices to energopolitical statecraft, to the multiple symbolic, material and expert practices that result in unevenness and inequalities in the development of and access to energy. The chapters present a wide range of sites for energy anthropology: from gas extraction, to projects for new green transport solutions, to flows of remittances and water. The chapters cover a broad geographical range, although there is a significant focus on Europe. Returning anthropological attention to the homeland of energy-intensive and imperializing industrial politics reflects a contemporary theoretical trend consisting of deconstructing the taken-for-granted existence of the material infrastructure and reconsidering the grammar of relations between humans and nonhumans within Western societies, where ontologies of nature have long divided Man and Nature into separate categories. Doing a political anthropology of energy ‘at home’ (Peirano 1998) is also a way to

return critical ethnographic thinking to a historical centre for energy systems.

Focusing on the nexus around a nuclear power plant in construction in the south Indian peninsula, in Chapter 1, Raminder Kaur revisits Dominic Boyer's concept of 'energopower' in a postcolonial context, where modern governmentality is entwined with direct and authoritarian state action inherited from colonial regimes. Kaur analyses the paramilitary presence and extra policing by the state following the construction of a nuclear power plant and its hostile reception among local communities. Her analysis shows how the politics of electricity generation apply differentially to varied constituencies marked by local, national and transnational power relations, provisions and sites through, along and against the grid. In doing so, her approach reminds us of the brutal materialities that often accompany state energy projects, whether nuclear or not. Displacement and oppression have been integral to large hydropower projects too, from the Aswan Dam onwards (Scudder 2005). Christine Folch's study of the connections between the Itaipú Dam and Stroessner's dictatorship in Paraguay (2013) reveals how the dictatorship's secret police used the Itaipú Dam as an apparatus to violently repress all opposition. Kaur argues that this goes beyond the realm of a neutral 'energopower', insisting on the significance of the 'raw politics of energy' or 'necro – (energo)power'. These, she claims, represent different 'spectrums' of political power deployed at the edges of the Western world: from indirect government *dispositifs* in the Global North (expert knowledge, community management, corporate social responsibility, soft power, etc.) to necropolitics in remote communities in the South.

The theme of colonization reappears in Chapter 2 by Chris Hebdon about the experience of the Oriente, a historically marginalized region of the Ecuadorian Amazon. Hebdon explores the political ecologies of energy statecraft in Latin America, identifying periods of extractivist practices in the *Oriente*, from dashed hopes of gold to agrarian colonialism, corporate oil drilling and hydropower megaprojects. Linking these episodes, he finds the structural persistence of inequality and marginalization, despite changes in government and 'conceptual shifts' in energy governance. After decades of dependency on oil subsidies, Rafael Correa's Energy Transition Plan aimed to increase national hydroelectric capacities and electricity consumption, but resulted in a significant rise in energy costs for users and a new hydrocolonial push towards the *Oriente*. Despite a 'conceptual transition' consisting of phasing out 'fictive energy' (oil subsidies)

and connecting energetic sovereignty to the indigenous notion of ‘good living’, a lack of broader-than-economic language prevented the transition from subverting the infrastructural logics of ‘unequal exchange relations within and beyond Ecuador’.

In Chapter 3, Austin Lord and Matthäus Rest explore the narratives of anticipated hydropower development in Nepal. Unlike work that looks only at the ‘impacts’ of major infrastructure, Lord and Rest pay particular attention to the nationalist assertions, popular speculation and ‘resource affects’ (Weszkalnys 2016) produced by what is marketed as ‘Nepal’s Water, the People’s Investment’, an ambitious state programme aiming to ‘securitize’ hydropower through dam construction and citizen shareholding. One of the key aspects of hydropolitics in Nepal is that it moves ‘beyond two-dimensional representations of sovereignty to define territorial ambitions in terms of volumes’, as if securing Nepal’s energetic future meant literally securing the hydraulic volumes within its mountains. These hydronationalist refrains are coupled with cohesive oratorical visions of time. This attention to the dynamic effects of hydraulic promises situates Lord and Rest’s work within a growing field of ethnographic interest at the crossroads of energy humanities and future anthropology. They show how the future is constructed by technicians, corporate actors and politicians through a shared ‘energy imagination’ that aims to secure future autonomy. Narrating this future is crucial to reproducing ‘a discursive regime that emphasizes both the liminality of the present and the abundance of the imagined resource future’. The present vanishes before a future that must be secured, despite the risks it appears to entail.

In comparison, in the Global North, Aleksandra Lis in Chapter 4 offers a broad reflection on the politics of carbon dioxide reduction infrastructure in post-EU accession Poland. She outlines three successive discursive moments in Poland’s climate and energy politics: (i) the discourses produced about carbon dioxide during the negotiation of the new EU Emissions Trading System (ETS) Directive proposed by the European Commission to amend the existing carbon market in Europe; (ii) those produced around the construction of a carbon capture and storage installation in Bełchatów, the biggest power plant in Poland, built as a response to the EU’s climate change policy; and (iii) the plans of the new conservative government of Poland to develop electromobility as a national response to climate change. The intertwined imaginaries of energy infrastructure and electromobility are here linked to discourses of national pride and economic autonomy. Through these discursive realities developed by

the state and the corporate sector, Lis problematizes the normalization of (economic and national) productivity in energy policies. She also reveals how infrastructures are brought into existence or fail to be constructed as a result of material and symbolic experimentation.

In Chapter 5, Elisabeth Moolenaar addresses colonization within European countries, which provides an interesting comparator to the internal colonization reported by Raminder Kaur in her chapter. Moolenaar's chapter introduces the energy controversies of a marginalized region – Groningen in the Netherlands – and the claim that it is treated as a 'resource colony' by political and economic elites. Her study unpacks local narratives regarding gas extraction in the Netherlands and describes the struggles surrounding corporate social responsibility, resource sovereignty and conservation. This case study illustrates how communities of resistance experience and navigate entanglements of governmentality, economic interests and environmental concerns. Moolenaar's ethnographic material indicates that the cracks and fissures appearing in buildings in the Groningen region bear witness to deeply embedded social, economic and political divisions. These materialities of ruin give rise to accusations of political corruption, with the state being seen locally as the primary beneficiary of gas proceeds. The sociohistorical context of Groningers' cultural and political marginalization takes on a new meaning in the wake of seismic events induced by conventional natural gas extraction. The narratives of Groningers not only reveal a sense of loss of security but also a growing distrust of central government, unveiling their attitudes towards region and nation. Moreover, the chapter describes how new political imaginaries and subjectivities among Groningers have spurred political and social debate regarding who should benefit from and who should decide on energy production, and what forms of energy production (and their respective consequences) are acceptable in the region.

Hebdon, Moolenaar and Kaur share an analytical understanding of 'internal colonialism', a pattern of subordination of a differentiated population within a dominant state (Pinderhughes 2011). All three chapters highlight how sections of the territories and the populations living there are perceived to have been sacrificed for the benefit of urban, political and economic centres. For Hebdon, the Oriente continues to be an internal energy colony, despite the change of regime and indigenous mobilizations. In Groningen, one of the poorest regions of the Netherlands, the development of conventional natural gas drilling has led people to feel like 'second-class citizens' and to question whether a national sense of shared wealth, wellbeing, sov-

ereignty and citizenship still has meaning. And Kaur shows a similar pattern where over time, protesters' claims to legitimate citizenship have been revoked, with police and paramilitary sieges, ambushes and countless arrests occurring. In each case, internal colonialism for energetic purposes follows a common and familiar pattern: the prior classification of given areas as 'underdeveloped', 'depressed' or 'useless' (i.e. versions of the colonial 'tabula rasa') to justify their use as a production or an extraction site and the transformation of the people's relationship with the environment.

Yet each chapter also illustrates resistance to this pattern. Nathalie Ortar's ethnographic account of energy consumption habits in Chapter 6 also demonstrates a modest form of resistance to state co-option of energy practices. She explores the relationship between national energy legacies, national policies towards new energy politics to meet international goals and household politics. What policy-makers call the 'demand-side response' offers a new set of questions and fields for anthropologists. Following energy policies into the home allows anthropologists to understand what energy consumption practices (like laundry, cooking and cleaning) actually mean and how they intertwine with other intimate economies (cf. Shove 2003; Pink 2004; Pink et al. 2015). Ortar's study among French rural and suburban families explores the social and cultural thickness of energy choices. While energy networks often seal social contracts that prove hard to untie (Johnson 2016), a close examination of daily heating practices allows Ortar to understand the alternative energy paths that people take despite the strong path dependency of national energy systems. Ironically, the dominant path is challenged within the state itself by the need to meet European energy goals, a climate challenge that has also encouraged the return of wood as a significant source of domestic energy. The close attention Ortar gives to individual energy choices reveals the complex bricolage of values and experiences that make up energy choices. Her concrete description of heating practices opens up a space to think about energy practices as a residue of multiple and often contradictory legacies inherited from the state, the family, communities and material infrastructures.

Ortar's analysis thereby resonates with Hebdon's exploration of histories and path dependencies in opening up unexpected energy potentials. They both address questions of inertia in energy policies and the capacity of individuals and groups to invent new energy practices. Both chapters show how energy in its various political ecological contexts shapes 'the social field of action so as to render some kinds of behaviour possible, while making others less possible or im-

possible' (Wolf 1990: 587). They also open up the blackboxed problem of how to overcome the 'inevitability syndrome' (Nader 2004) built through past political choices and hegemonic technological knowledge.

Leo Coleman's Afterword offers a brilliant synthesis of current anthropological debates around energy and power, invoking the many reasons why energy has become more and more relevant to contemporary political anthropologists. In dialogue with the different chapters, he pushes Dominic Boyer's concept of energopolitics further by exploring concepts like work and productivity, death and waste as key aspects of energopower. He points out that many ethnographic accounts of political struggles over energy are not strictly biopolitical and move beyond the register of critique. This concluding chapter also addresses some of the areas otherwise less present in this volume, such as the metaphorical meanings of the word 'energy' in Western culture or the difficulty in thinking about climate change as a political object when the focus of energy debates is almost always framed within national terms. As Coleman rightly observes, almost all ethnographies of power are understood in relation to political struggles and citizen responses at the national level, which seems illustrative of the current movement of national closure in which energy securitization is key.

Conclusion

As the chapters in this volume demonstrate, energy is proving to be a truly fertile field of enquiry and theoretical debate that renews our understanding of the state, international relations and political power in all its forms. Energy is pervasive in political subjectivities and questions of national sovereignty. While neoliberal deregulations, oil-mediated deterritorialization and global climate crisis seem to transcend nation-states, the chapters contained in this volume remind us of the persistence of energy legacies at the national scale (national grids, nationalized industries, regulations, nationalist narratives, etc.) and the continued relevance of the state as a scale of analysis for energy conflicts.

What is specifically political about the ethnographic accounts of energy gathered here? These chapters all work against the grain in the way that they give voice to those often silenced within energy debates and they highlight the interfering currents that cut across the repressive dynamics emerging along the grids. They share an application

of critical anthropological analyses that ‘seek to show not only the fallibility of expertise and the faith it places in technology, but also the inventiveness and possibilities of lay knowledge’ (Johnson 2019: 74). They re-situate energetic power within broader social and cultural contexts, and in broader historical and geographical scales. In doing so, the authors open up energy landscapes that are more inclusive of diverse groups of people, allowing for solidarity and community in a way that is often denied by existing infrastructures, and offering the potential to be compatible with current environmental challenges.

Energy’s importance for political theory equally lies in its ability to frame competing perceptions of the future. State and technical languages can dispossess populations, offering elusive promises or inhibiting the articulation of fears. One of the most important roles of anthropologists in this setting is to deconstruct hegemonic narratives while reclaiming energy futures as a matter for public debate. Epistemological vigilance over the concepts used to think critically about energy is part of the anthropological method of critique: description is always a located political account. But it is not enough to describe what is to be critiqued; we should also criticize the mental mechanisms and conceptual routines that allow the reproduction of hierarchical orders, colonial forces and social inequalities (Strathern 1992). Lastly, knowledge-making in anthropology is both empirical and creative. Producing alternative accounts and counterhegemonic narratives of energy field sites (Haraway 2016; Watts 2019) can be regarded as a form of public engagement towards other futures and as a way for anthropologists to make a difference in the world. This volume represents a step in this direction and we hope that it will encourage others to engage in this crucial field.

Acknowledgements

The authors would like to acknowledge the support of the Swiss National Science Foundation (SNSF) for the open access publication (10BP12_198018) and the French National Research Agency (ANR).

Tristan Loloum is Associate Professor at the School of Social Work, University of Applied Sciences and Arts of Western Switzerland, HES-SO Valais-Wallis. His research on energy and society explores the role of culture and politics on the public understanding of power infrastructure and climate change.

Simone Abram is Professor of Anthropology at Durham University (UK). She is also a director of the Durham Energy Institute. With Nathalie Ortar, she founded the EASA Energy Anthropology Network in 2016. She was recently co-editor of *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures* (2019).

Nathalie Ortar is Senior Researcher in anthropology at the ENTPE in Lyon (France). Her research interests focus on the meaning of dwelling as well as on the consequences of energy transition in daily life and its moral and symbolic implications.

References

- Abram, S., and G. Weszkalnys. 2013. *Elusive Promises: Planning in the Contemporary World*. New York: Berghahn Books.
- Abram, S., B.R. Winthereik and T. Yarrow (eds). 2019. *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures*. London: Bloomsbury.
- Abrams, P. 1988. 'Notes on the Difficulty of Studying the State', *Journal of Historical Sociology* 1(1): 58–89.
- Adams, R.N. 1975. *Energy and Structure: A Theory of Social Power*. Austin: University of Texas Press.
- . 1978. 'Man, Energy, and Anthropology: I Can Feel the Heat, But Where's the Light?', *American Anthropologist* 80: 297–309.
- Agamben, G. 1995. *Homo Sacer: Sovereign Power and Bare Life*. Stanford: Stanford University Press.
- Appel, H.C., A. Mason and M. Watts (eds). 2015. *Subterranean Estates: Life Worlds of Oil and Gas*. Ithaca, NY: Cornell University Press.
- Argenti, N., and D.M. Knight. 2015. 'Sun, Wind, and the Rebirth of Extractive Economies: Renewable Energy Investment and Metanarratives of Crisis in Greece', *Journal of the Royal Anthropological Institute* (NS)21: 781–802.
- Baker, L., P. Newell and J. Phillips. 2014. 'The Political Economy of Energy Transitions: The Case of South Africa', *New Political Economy* 19: 791–818.
- Bakke, G. 2016. *The Grid: The Fraying Wires between Americans and Our Energy Future*. New York: Bloomsbury.
- Barak, O. 2015. 'Outsourcing: Energy and Empire in the Age of Coal, 1820–1911', *International Journal of Middle Eastern Studies* 47: 425–45.
- Barry, A. 2013. *Material Politics. Disputes along the Pipeline*. Hoboken, NJ: Wiley Blackwell.
- Boyer, D. 2014. 'Energopower: An Introduction', *Anthropological Quarterly* 87: 309–34.

- . 2015. 'Anthropology Electric', *Cultural Anthropology* 30(4): 531–39.
- Boyer, D., and C. Howe. 2019. *Wind and Power in the Anthropocene*. Durham, NC: Duke University Press.
- Chapman, C. 2013. 'Multinatural Resources: Ontologies of Energy and the Politics of Inevitability in Alaska', in S. Strauss, S. Rupp and T. Love (eds), *Cultures of Energy: Power, Practices, Technologies*. Walnut Creek: Left Coast Press, pp. 96–109.
- Coleman, L. 2017. *Moral Technology: Electrification as Political Ritual in New Delhi*. Ithaca, NY: Cornell University Press.
- Coronil, F. 1997. *The Magical State: Nature, Money, and Modernity in Venezuela*. Chicago: University of Chicago Press.
- Cross, J. 2013. 'The 100th Object: Solar Lighting Technology and Humanitarian Goods', *Journal of Material Culture* 18(4): 367–87.
- . 2015. 'The Economy of Anticipation: Hope, Infrastructure, and Economic Zones in South India', *Comparative Studies of South Asia, Africa and the Middle East* 35(3): 424–37.
- . 2019. 'No Current: Electricity and Disconnection in Rural India', in S. Abram, B.R. Winthereik and T. Yarrow (eds), *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures*. London: Bloomsbury, pp. 65–82.
- Dalgaard, K.G. 2017. *The Energy Statecraft of Brazil: The Rise and Fall of Brazil's Ethanol Diplomacy*. Brasília: Fundação Alexandre de Gusmão.
- Elden, S. 2013. 'Secure the Volume: Vertical Geopolitics and the Depth of Power', *Political Geography* 34: 35–51.
- Evans, M. 2015. *Artwash: Big Oil and the Arts*. London: Pluto Press.
- Ferguson, J. 1990. *The Anti-politics Machine: 'Development', Depoliticization and Bureaucratic Power in Lesotho*. Minneapolis: University of Minnesota Press.
- . 2005. 'Seeing Like an Oil Company: Space, Security, and Global Capital in Neoliberal Africa', *American Anthropologist* 107(3): 377–82.
- Ferry, E. 2016. 'Claiming Futures', *Journal of the Royal Anthropological Institute* 22(S1): 181–88.
- Folch, C. 2013. 'Surveillance and State Violence in Stroessner's Paraguay: Itaipú Hydroelectric Dam, Archive of Terror', *American Anthropologist* 115: 44–57.
- Foucault, M. 1980. *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977*, C Gordon (ed.). New York: Pantheon Books.
- Franquesa, J. 2018. *Power Struggles: Dignity, Value, and the Renewable Energy Frontier in Spain*. Bloomington: Indiana University Press.
- Grigas, A. 2013. *The Politics of Energy and Memory between the Baltic States and Russia*. Aldershot: Ashgate.
- Gudeman, S. 2012. 'Vital Energy: The Current of Relations', *Social Analysis* 56: 57–73.
- Günel, G. 2018. 'New Perspectives on Energy: A Review Essay', *PoLAR: Political and Legal Anthropology Review*, 14 May.

- Gupta, N. 2015. 'An Anthropology of Electricity from the Global South', *Cultural Anthropology* 30(4): 555–68.
- Gusterson, H. 2008. 'Studying up Revisited', *PoLAR: Political and Legal Anthropology Review* 20(1): 114–19.
- Haraway, D.J. 2016. *Tentacular Thinking: Anthropocene, Capitalocene, Chthulucene, in Staying with the Trouble: Making Kin in the Chthulucene*. Durham, NC: Duke University Press.
- Henning, A. 2008. 'Temporal Landscapes of Public Good: Negotiating Solar Collectors among Ancient Remains', *Social and Cultural Geography* 9(1): 27–40.
- High, M.M., and J.M. Smith. 2019. 'Introduction: The Ethical Constitution of Energy Dilemmas', *Journal of the Royal Anthropological Institute* 25: 9–28.
- Howe, C. 2014. 'Anthropocenic Ecoauthority: The Winds of Oaxaca', *Anthropological Quarterly* 87(2): 381–404.
- Howe, C., and D. Boyer. 2015. 'Aeolian Politics', *Distinktion: Scandinavian Journal of Social Theory* 16(1): 31–48.
- Huber, M. 2013. *Lifeblood: Oil, Freedom, and the Forces of Capital*. Minneapolis: University of Minnesota Press.
- Hughes, T. 1983. *Networks of Power: Electrification in Western Society, 1880–1930*. Baltimore: Johns Hopkins University Press.
- Suliman-Jabary Salamanca, O. 2011. 'Unplug and Play: Manufacturing Collapse in Gaza', *Human Geography* 4(1): 22–37.
- Jacobson, A. 2007. 'Connective Power: Solar Electrification and Social Change in Kenya', *World Development* 35: 144–62.
- Jensen, C.B. 2019. 'Can the Mekong Speak? On Hydropower, Models and "Thing-Power"', in S. Abram, B.R. Winthereik and T. Yarrow (eds), *Electrifying Anthropology*. London: Bloomsbury, pp. 121–37.
- Jorgensen, J.G. 1990. *Oil Age Eskimos*. Berkeley: University of California Press.
- Johnson, C. 2016. 'District Heating as Heterotopia: Tracing the Social Contract through Domestic Energy Infrastructure in Pimlico, London', *Economic Anthropology* 3(1): 94–105.
- . 2019. 'Anthropology and Energy Policy', in M. Ozawa, J. Chaplin, M. Pollitt, D. Reiner and P. Warde (eds), *In Search of Good Energy Policy*. Cambridge: Cambridge University Press, pp. 69–75.
- Kalicki, J.H., and D.L. Goldwyn. 2005. 'Introduction: The Need to Integrate Energy and Foreign Policy', in J.H. Kalicki, and D.L. Goldwyn (eds), *Energy and Security: Towards a New Foreign Policy Strategy*. Baltimore: Johns Hopkins University Press/Woodrow Wilson Center Press, p. 9.
- Kesselring, R. 2017. 'The Electricity Crisis in Zambia: Blackouts and Social Stratification in New Mining Towns', *Energy Research & Social Science* 30: 94–102.
- Kester, J. 2016. 'Conducting a Smarter Grid: Reflecting on the Power and Security behind Smart Grids with Foucault', in A. Beaulieu, J.H. de Wilde

- and J.M.A. Scherpen (eds), *Smart Grids from a Global Perspective: Bridging Old and New Energy Systems*. New York: Springer, pp. 197–217.
- Kirschner, J., and M. Power. 2019. ‘Electrification and the Everyday Spaces of State Power in Postcolonial Mozambique’, in S. Abram, B.R. Winthereik and T. Yarrow (eds), *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures*. London: Bloomsbury, pp. 139–59.
- Knox, H. 2017. ‘Affective Infrastructures and the Political Imagination’, *Public Culture* 29(2): 363–84.
- Knudsen, S. 2018. ‘Is Corporate Social Responsibility Oiling the Neoliberal Carbon Economy?’, *Ethnos* 83(3): 505–20.
- Krauss, W. 2010. ‘The “Dingpolitik” of Wind Energy in Northern German Landscapes: An Ethnographic Case Study’, *Landscape Research* 35: 195–208.
- Kruse, J., J. Kleinfeld and R. Travis. 1982. ‘Energy Development on Alaska’s North Slope: Effects on the Inupiat Population’, *Human Organization* 41(2): 95–106.
- Kuzemko, C. 2016. ‘Energy Depoliticization in the United Kingdom: Destroying Political Capacity’, *British Journal of Politics and International Relations* 18(1): 107–24.
- Labban, M. 2012. ‘Preempting Possibility: Critical Assessment of the IEA’s World Energy Outlook 2010’, *Development and Change* 43(1): 375–93.
- Larkin, B. 2013. ‘The Politics and Poetics of Infrastructure’, *Annual Review of Anthropology*, 42(October): 327–43.
- Leigh Star, S. 1999. ‘The Ethnography of Infrastructure’, *American Behavioral Scientist* 43(3): 377–91.
- LeMenager, S. 2016. *Living Oil: Petroleum Culture in the American Century*. New York: Oxford University Press.
- Loloum, T. 2019. ‘Touring the Nuclear Sublime: Power Plant Tours as Tools of Government’, in S. Abram, B.R. Winthereik and T. Yarrow (eds), *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures*. London: Bloomsbury, pp. 181–99.
- Love, T., and A. Garwood. 2011. ‘Wind, Sun and Water: Complexities of Alternative Energy Development in Rural Northern Peru’, *Rural Society* 20: 294–307.
- Love, T., and C. Isenhour. 2016. ‘Energy and Economy: Recognizing High-Energy Modernity as a Historical Period’, *Economic Anthropology* 3: 6–16.
- Luque-Ayala, A., and J. Silver. 2016. *Energy, Power and Protest on the Urban Grid: Geographies of the Electric City*. London: Routledge.
- Mason, A. 2005. ‘The Condition of Market Formation on Alaska’s Natural Gas Frontier’, *Focaal* 46: 54–66.
- McNeish, J.-A., and O. Logan (eds). 2012. *Flammable Societies: Studies on the Socio-economics of Oil and Gas*. London: Pluto.
- Mbembe, A. 2001. *On the Postcolony*. Berkeley: University of California Press.

- Meehan, K. 2014. 'Tool-Power: Water Infrastructure as Well Springs of State Power', *Geoforum* 57: 215–24.
- Menga, F., and E. Swyngedouw. 2018. *Water, Technology and the Nation-State*. New York: Routledge.
- Mitchell, T. 2011. *Carbon Democracy: Political Power in the Age of Oil*. New York: Verso.
- Nader, L. 1972. 'Up the Anthropologist: Perspectives Gained from Studying up', in D. Hymes (ed), *Reinventing Anthropology*. New York: Pantheon Books, pp. 284–344.
- . 1980. *Energy Choices in a Democratic Society*. Washington DC: National Academy of Sciences.
- . 1981. 'Barriers to Thinking New about Energy', *Physics Today* 34(9): 99–104.
- . 2004. 'The Harder Path-Shifting Gears', *Anthropological Quarterly* 77(4): 771–91.
- Nader, L. (ed). 2010. *The Energy Reader*. Oxford: Wiley-Blackwell.
- Nye, D.E. 1999. *Consuming Power: A Social History of American Energies*. Cambridge, MA: MIT Press.
- Özden-Schilling, C. 2016. 'The Infrastructure of Markets: From Electric Power to Electronic Data: Infrastructure of Markets', *Economic Anthropology* 3: 68–80.
- . 2019. 'Grid Country', *Journal for the Anthropology of North America* 22: 118–20.
- Peirano, M.G.S. 1998. 'When Anthropology Is at Home: The Different Contexts of a Single Discipline', *Annual Review of Anthropology* 27: 105–28.
- Pinderhughes, C. 2011. 'Towards a New Theory of Internal Colonialism', *Socialism and Democracy* 25(1): 235–56.
- Pink, S. 2004. *Home Truths: Gender, Domestic Objects and Everyday Life*. Oxford: Berg.
- . 2011. 'Ethnography of the Invisible', *Etnologia Europaea: Journal of European Ethnology* 41(1): 117–28.
- Pink, S., J. Postill, Y. Strengers, A. Stempel and N. Astari. 2015. *Laundry Lives* (documentary). Retrieved 6 March 2020 from <https://www.laundrylives.com>.
- Povinelli, E.A. 2016. *Geontologies: A Requiem for Late Liberalism*. Durham, NC: Duke University Press.
- Rappaport, R. 1975. 'The Flow of Energy in Agricultural Society', in S. Katz (ed.), *Biological Anthropology: Readings from Scientific American*. San Francisco: W.H. Freeman, pp. 371–87.
- Reed, K. 2009. *Crude Existence: Environment and the Politics of Oil in Northern Angola*. Berkeley: University of California Press.
- Richards, A., and A. Kuper 1972. *Councils in Action*. Cambridge: Cambridge University Press.
- Robbins, L. 1980. *The Socioeconomic Impacts of the Proposed Skagit Nuclear Power Plant on the Skagit System Cooperative Tribes*. Bellingham: Lord and Associates.

- . 1984. 'Energy Developments and the Navajo Nation: An Update', in J. Jorgensen (ed.), *Native Americans and Energy Development*. Boston, MA: Anthropology Resource Center.
- Rogers, D. 2014. 'Energopolitical Russia: Corporation, State, and the Rise of Social and Cultural Projects', *Anthropological Quarterly* 87(2): 431–52.
- . 2015. *The Depths of Russia: Oil, Power, and Culture after Socialism*. Ithaca, NY: Cornell University Press.
- Rose, N. 2007. *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century*. Princeton: Princeton University Press.
- Rupp, S. 2016. 'Dynamics of Disruption in New-York City Blackouts', *Economic Anthropology* 3: 106–18.
- Sawyer, S. 2004. *Crude Chronicles: Indigenous Politics, Multinational Oil, and Neoliberalism in Ecuador*. Durham, NC: Duke University Press.
- Scott, J. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.
- . 2008. *Domination and the Arts of Resistance: Hidden Transcripts*. New Haven: Yale University Press.
- Scudder, T. 2005. *The Future of Large Dams: Dealing with Social, Environmental and Political Costs*. London: Earthscan.
- Shamir, R. 2013. *Current Flow: The Electrification of Palestine*. Stanford: Stanford University Press.
- Shever, E. 2012. *Resources for Reform: Oil and Neoliberalism in Argentina*. Stanford: Stanford University Press.
- Shove, E. 2003. *Comfort, Cleanliness and Convenience: The Social Organization of Normality*. Oxford: Berg.
- Smith, J., and M.M. High. 2017. 'Exploring the Anthropology of Energy: Ethnography, Energy and Ethics', *Energy Research & Social Science* 30: 1–6.
- Strathern, M. 1992. *Reproducing the Future: Essays on Anthropology, Kinship and the New Reproductive Technologies*. Manchester: Manchester University Press.
- Strauss, S., S. Rupp and T. Love (eds). 2013. *Cultures of Energy: Power, Practices, Technologies*. London: Routledge.
- Stryker, R., and R. González (eds). 2014. *Up, Down, and Sideways: Anthropologists Trace the Pathways of Power*. Oxford: Berghahn Books.
- . 2019. *On Petrocultures: Globalization, Culture, and Energy*. Morgantown: West Virginia University Press.
- Szeman, I., and D. Boyer (eds). 2017. *Energy Humanities: An Anthology*. Baltimore: Johns Hopkins University Press.
- Watts, L. 2019. *Energy at the End of the World: An Orkney Islands Saga*. Cambridge, MA: MIT Press.
- Wenzel, J. 2006. 'Petro-Magic-Realism: Towards a Political Ecology of Nigerian Literature', *Postcolonial Studies* 9(4): 449–64.
- Weszkalnys, G. 2015. 'Geology, Potentiality, Speculation: On the Indeterminacy of First Oil', *Cultural Anthropology* 30(4): 611–39.

- . 2016. 'A Doubtful Hope: Resource Affect in a Future Oil Economy', *Journal of the Royal Anthropological Institute* 22(S1): 127–46.
- White, L. 1943. 'Energy and the Evolution of Culture', *American Anthropologist* 45(3): 335–56.
- . 1949. *The Science of Culture: A Study of Man and Civilization*. New York: Farrar, Straus and Giroux.
- . 1959. *The Evolution of Culture: The Development of Civilization to the Fall of Rome*. New York: McGraw-Hill.
- Winther, T. 2010. *The Impact of Electricity: Development, Desires and Dilemmas*. New York: Berghahn Books.
- Wolf, E.R. 1990. 'Distinguished Lecture: Facing Power – Old Insights, New Questions', *American Anthropologist* 92(3): 586–96.

1

Southern Spectrums

The Raw to the Smooth Edges of Energopower

Raminder Kaur

I love to dance in tune with the beat of drums and good music. But now I dance with all my energy to the tune of songs like ‘Velkave Velkave Anukulaye ethirku makkal poraattam velkave. . .’ [‘Win, Win, People’s power against nuclear power’] that a brother from Kudankulam village made against the KKNPP [Kudankulam Nuclear Power Plant]. It fills my mind with the determination that on no account should the plant be established here or anywhere in the world. If I can stop the plant with my legs and hands, I will keep on dancing forever so that the world will not see any more Chernobyls, Fukushimas, Hiroshima and Nagasaki. I think that there is enough knowledge in the world to decide to stop this.

—Cited in ‘With Love from Idinthakarai’, 8 August 2012¹

This is the view of Ignatius, a young boy from a coastal village called Idinthakarai in the peninsular region of the south Indian state of Tamil Nadu. He was caught up in the struggle against a nuclear power plant in the neighbouring village, Kudankulam, that saw its acme from 2011 to 2014, with thousands of people protesting against the development only a couple of kilometres from their homes (Figure 1.1).

Ignatius is one of the more confident and outspoken of the children who reside in the village. Others too joined him in the chorus – girls and boys, women and men, from coastal, rural and urban locales



Figure 1.1. *Idinthikarai village next to the Kudankulam Nuclear Power Plant in Tamil Nadu, India.* © Raminder Kaur.

across the nation, especially those based in regions where other nuclear reactors had been earmarked for construction. To a greater or lesser extent, support also extended to international circles, despite the fact that there were national security hurdles among other limitations when mobilizing ‘transnational activist networks’ (Edelman 2001) on the nuclear issue (Kaur 2019).

For many of those based in Idinthakarai, their struggle was not specifically against electricity or development, nor was it merely a symptom of a ‘not in my back yard’ (NIMBY) sentiment. Rather, their appeal was for a less costly, environmentally damaging and potentially dangerous form of electricity production and distribution that was complementary to their lives, rather than the authoritarian conduct, regulations and militarization that accompanied the construction of a nuclear power plant.

Boyer makes an incisive and influential proposal about the need to highlight the politics of electricity in contemporary social analyses. He affirms that ‘[e]lectropolitics infuse governance’ (Boyer 2015: 534) when discussing how electricity informs modern subjectivities – in a neologism, energopower (Boyer 2011). He elaborates: ‘modalities of ‘biopower’ (the management of life and population) today depend in crucial respects upon modalities of energopower (the harnessing of electricity and fuel) and vice versa’ (Boyer 2014:

309). In the process, energy and related infrastructures become imbricated in subtle, smooth and what become rational forms of capillary power. However, Boyer appears to overlook the fact that in the Global South, we continue to have a case of modern *governmentality* entwined with more direct and authoritarian *government* that follows on from colonial regimes. The hangover of British imperial control layered with a promising democratic constitution and new procedural mechanisms to do with transparency and accountability are the hallmarks of the postcolonial Indian state. Its particularities owe to the exclusionary mechanisms of colonial government, an apparatus that has carried over into the contemporary era in what has been termed by Alavi (1982) as an ‘overdeveloped state’. This has come with ‘a twilight zone of multiple, indeterminate configurations of power and authority’ (Hansen and Stepputat 2006: 302) that draws upon the colonial conjunction of brute force, despotism and lawlessness, along with the exercise of liberal ideas about rights and the rule of law that developed in India in response.

Such circumstances raise my main contention: energopower, as Boyer and others have proposed, is overly derived from Foucault’s (1991) proposals for modern biopolitics.² Thus conceived, it applies more to urban and metropolitan populations far removed from sites of electricity production. By metropolitan, I refer to a nexus of ‘grid governmentalities’ located largely in the Global North, but also extending to relatively affluent and grid-connected urban centres across the Global South. As Gupta observes with respect to the modern lifestyles of the emergent middle classes in India, there is a strong case to be made for ‘the colonization of their imagination of the future’ by the ‘rich citizens of the global North’ (2015: 566).³ While the notion of modern governmentality applies to the Global North and elite urban contingents in the Global South, it is on its own insufficient to account for the violence and authoritarianism that attends energy infrastructures at other ends of the grid.

Boyer’s oversight with respect to the raw or rough edges of energopower is surprising, considering that the Mexican isthmus of his fieldwork site has also seen the rise of violent tensions and uprisings around the development of gigantic wind turbines (2014: 324–25). The energy produced on the isthmus is primarily to serve industrial corridors and metropolitan hubs in Mexico and across the border in the United States. Their installation has not come without repression and resistance against the marketization and militarization of the region (Dunlap and Fairhead 2014). Such violent contexts appears to be an oversight in Boyer’s theorization, for he is well aware of the po-

litical authority of centralized grid systems, just as he is of ‘the rights of indigenous communities, environmental impacts, and resource exploitation’ that have marked the anthropological study of energy (Boyer 2014: 313) and the prospect of ‘carbon modernity’s accelerating death-bringing in the name of enfueling human life’ (ibid.: 318). Indeed, he emphasizes that ‘biopower in southern Mexico is, for good or for ill, an often forgotten partner in the transactions between old and new regimes of energopower’ (ibid.: 325; see also Dunlap 2018a, 2018b).

With respect to the nuclear issue, on the one hand, there is an accentuated collusion between the state and nuclear departments and organizations where both state and atomic energy took on the role of a fetish (see Abraham 1998). Elsewhere, I have elaborated on this unyielding nexus of state-corporate-military power that implanted itself in the south Indian region as the ‘nuclear state’ (Kaur 2013a; see also Jungk 1979). On the other hand, there are discrepant inscriptions on the populace, as Chatterjee suggests for regions characterized by vast economic discrepancies, where the marginalized ‘are only tenuously and even then ambiguously and contextually, right-bearing citizens in the sense imagined in the constitution’ (2004: 38). As a consequence, their views are either suppressed altogether or are only taken on board as a procedural matter with the staging of public hearings where officials record, log and file the hearing, leaving a paper trail as to its evacuated execution (Kaur 2013a; see also Sharma and Gupta: 2006: 13–14).

The strong overdeveloped state is therefore attendant with what could be described as a relatively weak and ‘underdeveloped civic space’ (although this is not to pose civic space in the Global North as the normative standard). Large swathes of the Indian populace are not decreed citizens in the sense of participating in what could be called ‘civil society’ and, moreover, as Chatterjee (2004) describes, constitute an arena of ‘political society’ consisting of subaltern populations such as Dalit (historically known as Untouchable), tribal, fishing and farming communities. Although the rigidity of this civil-political binary is arguable, the sociogeographical extremities of the metropolitan-marginal spectrum are undeniable – a marginal that might be physically located in the urban context, as with slum dwellings, or distantly removed from it in terms of rural, forest and coastal hinterlands. Correspondingly, a manner of provisions including electricity – widely backed up by home-based diesel electric generators when needed – flow relatively smoothly for certain contingents, but not so much for others who are only marginally inscribed into modern biopolitical technologies of power.

Energopower as it applies to the postcolonial state then needs to take on board a more discrepant, twilight character. It needs to be qualified for differentials in the equation between energy and politics as it applies to divergent contexts – a complex that I refer to as ‘southern spectrums’ in the title of this chapter. The diffuse and indirect nature of the grid governmentalities discussed by Boyer both oppose and mask or deflect from a series of direct and authoritarian government exacted on others, the ‘smooth’ with respect to the ‘rough’ or ‘raw’. The spectrums of violence therefore extend along the grid, from governmental dispositions concentrated in the North (aimed at replacing the brutality of physical violence through measures to do with knowledge-making, community management and ‘soft power’) to the ‘raw power’ of necropolitics that is rabid among marginalized and remote communities concentrated in the hinterlands.

While according to Foucault (1991), the modern state organizes and affirms the lives of populations in biopolitics, following Mbembe (2001), necropolitics departs from it by emphasizing the centrality of death to the organization of sociopolitical life. The latter is a return to archaic notions of sovereignty, but, as Mbembe reminds us, pugnaciously continues in the modern era in a relation of dependence. Montenegro, Pujol-Tarrés and Posocco note that ‘necropolitical logic enact[s] a politics of death in the name of vitality that defines which lives are worth protecting and which are deemed disposable’ (2017: 143). In the case of nuclear power plants in India, biopolitics is centred on relatively affluent and comfortable urbanites. Necropolitics marks the marginalized who are deemed incidental and even dispensable to this mainstream narrative – the likes of low caste-class slum-dwellers, peasants, and fishing and tribal communities.⁴

On a related point, *nuclear* biopower channels Boyer’s ‘conceptual lens’ on energopower (2014: 326) in another direction by highlighting how the science of nuclear energy has entered into the micromanagement of our everyday lives, often invisibly.⁵ Nuclear biopower is not only to do with the provision, distribution and governance of electricity, but also fans out to encompass medical science, X-ray diagnostic applications and studies, agricultural developments, irradiated food and other goods, industrial radiography and building and road construction material. While radioactivity might appear in our natural environment, nuclear biopower is about how it has been siphoned and scattered by specialists of different orders into diverse operations to control and enhance the lives of populations as a purported manageable byproduct of a (national) good. These activities have themselves become normalized with re-

spect to the individual, community and/or country's growth, power and protection.⁶

Nuclear *necropower* as opposed to *biopower* reverses the optics. By focusing on the deathly underside, alter worlds are emphasized (see Pitkanen and Farish 2018). Mbembe (2001) develops the concept not through a focus on life worlds, but 'death-worlds' to refer to conditions of colonization, slavery and apartheid in which people are subjected to a status of 'living death' under technologies of destruction, or what he terms 'necropower'. From this perspective, death conditions may emerge by way of technologies that, on the one hand, claim to be life-enhancing, but, on the other hand, can be revealed to be life-destroying (Kaur 2012a). In the case considered here, the supposed smooth operations of nuclear science are disrupted to create death conditions for those who have little to benefit from them.⁷ The project of life enhancement by generating electricity and other goods through nuclear power for metropolitan and industrial hubs comes with huge somatic and political risks for those living around and objecting to nuclear power stations, a deathly biopolitics. So whereas biopolitics is 'to make life and to let die' as Foucault might have it, necropolitics is 'to make die and let live' (2004: 247). The latter is not an archaic form of government, for it has persisted into the modern era along with biopower. In the Idinthikarai case, the lives of those who dissented were death-dispensable to the life power of urban and industrial needs located miles away.

In the rest of this chapter, I elaborate on postcolonial nuclear statecraft followed by views from the margins rather than metropolitan or state actors, as the latter receive more than their fair share in the coverage of nuclear issues in India. I highlight how fishing and farming communities and allied activists around the Kudankulam Nuclear Power Plant have become the 'bare life' (Agamben 1995) for metropolitan and corporate or industrial interests for more electricity. The marginalized then become the often silenced 'sacrifice' to ideas about the nation's development and progress onto which the raw politics of energy is exacted.⁸ What Boyer's energopower excludes from its focus is how biopolitics also has its darker underside, where supposedly life-enhancing technologies might lead to a living death when seen from other perspectives. Accordingly, energopower need to be qualified: from Foucauldian notions of governmentality that corresponds most closely with Boyer's energy politics to more direct authoritarianism in what I have called the raw politics of energy – in an adaptation of both Boyer and Mbembe – necro-energopower with its overlapping modalities of death conditions.

Great Divides

The 1990s marked the rise of a new era in the Indian political economy with the onslaught of neoliberal policies and the rapid growth of transnational/multinational ventures and consumer society. Development projects were also being pursued at breakneck speed as deals were struck up and down the country tied to a larger mission to make India a regional superpower. It was a decade where economic liberalization began to wreak havoc on the lives of the poor and dispossessed, and where the judicial and political system became more under the sway of multimillion-dollar development projects (see Nilsen 2012; Kaur 2020), as well as being a period in which, along with Pakistan, India declared itself a nuclear weapons state (Abrahams 1998; Bidwai and Vanaik 1999). With these developments came a thirst for power, electricity being the torch that would lead the way to development and regional, if not global supremacy.

Although the Indian government seeks to develop a diversity of energy pathways, the exorbitant costs of nuclear expansion are to the detriment of enhancing alternative forms of energy. The nuclear option became heralded as the primary way to increase bulk power: catering literally to the shortage of electricity supplies as well as purportedly dealing with the excesses of climate change (see Kakodkar 2005; Kaur 2011; Ramana 2013), while nurturing all along, as the sub-continental metaphor goes, a political and economic tiger.

These plans are very much based on grand top-down Nehruvian or statist models adapted for a neoliberal age – that is, the Indian state has not entirely relinquished to market-driven forces; rather, it continues to have a strong hand orchestrating various bodies including police, (para)military and surveillance agencies in their market-led endeavours. ‘Big development’ (Vanaik 2000) as it applies to nuclear infrastructure remains monolithic and state-centric, but is now enmeshed in widening national and transnational corporate ties. The state has adapted its centrality to engineering development plans in a context of market reforms, where the latter has a considerable influence on governmental policy, practice and process (see Ramana 2013; Kaur 2020). In this changing configuration of national–global relations, local lives in peninsular India matter little when flattened in what Jain describes as the ‘immortal timeline’ of globalizing capital (2013: 49).

With respect to nuclear energy, the changes are signalled by a number of national and transnational/multinational arrangements to build nuclear power plants across the country in the wake of the India–US civilian nuclear agreement signed in 2005 and the waiver

of the Nuclear Suppliers Group (NSG) in 2008. This waiver enables India to trade with the now forty-eight members of the NSG, even though it is not a signatory to the Treaty on the Non-Proliferation of Nuclear Weapons (1970). The accord was upheld with India's pledge to maintain its voluntary moratorium on nuclear tests, not to share nuclear material and technologies with others, and to permit International Atomic Energy Agency (IAEA) inspection of fourteen of India's twenty-two reactors in a phased manner.

Even though the history of the Kudankulam Nuclear Power Plant goes back to earlier decades, its development was picked up only at the turn of the millennium. The plant is an India–Russia collaboration, first announced under Congress leadership, and signed by the countries' two premiers, Mikhail Gorbachev and Rajiv Gandhi, on 20 November 1988. This agreement was then shelved, only to be revisited a decade later. After a revised agreement on loan interest, repayments in dollars and rearrangements regarding the spent fuel and radioactive waste to be kept in India in 2001, construction of the nuclear plant began soon after (see Ramana 2013: 86–88 and 279–92).

The planning itself of nuclear plants engraves a national necropolitics. The constructions are invariably located in the vicinity of those populations and regions deemed 'disposable' – in this case, regions populated largely by fishing and farming communities and well away from the density of metropolitan hubs. The entry and entrenchment of nuclear and bureaucratic elites from the powerful cities of the north to this southern peninsular – representing central government in collaboration with foreign powers and corporations (in this case, the Russian Federation's Atomsroyexport) – has proved to be an oppressive force in people's lives in the vicinity of Kudankulam.

Before the 1980s, Kudankulam used to be a fairly insignificant and relatively impoverished inland village. By the turn of the millennium, it was indelibly marked on India's nuclear map. With minimal compensation to landowners, about 929 hectares of land were taken for the project and another 150 hectares for the township, Anuvijay, located about 10 kilometres away further down the coastline (Moorty 2000). One of the most ironic features is how relatively uninterrupted flows of electricity are largely due to the wind farms that have been erected by companies like Suzlon and Prem throughout this district, principally to supply the nuclear plant and Anuvijay residents (Figure 1.2.).

By the turn of the millennium, security, intelligence and related operations tagged this region to the central state. The gates to the nuclear plant and township are now akin to national border secu-



Figure 1.2. *Wind turbines outside the nuclear power station in Kudankulam.*
© *Raminder Kaur.*

rity. Central Industry Security Forces, with their signature berets and camouflage uniforms, patrol the imposing fence and gate. There is a board at the gate to the plant reminding viewers and visitors alike that this is a prohibited zone and that any offence will be punishable under the Atomic Energy Act 1962 (section 33) and the Officials Secret Act 1923 (section 9/19). Along with a neat picture of the nuclear plant with the caption, ‘Government of India Enterprise’, the edge of the main Kudankulam junction is surrounded by a small clinic, a medical store, an orthopaedic hospital, a newly built police station and various other small shops and tea stalls. A bulbous white Ambassador car with blacked-out windows would be constantly stationed at the corner, presumably carrying officers from the Intelligence Bureau to keep an eye on visitors or any suspicious activities. By 2011, this sparse surveillance was bulwarked with cordons of security forces, paramilitary and police when local resistance against the plant came to a volatile head (Kaur 2012b).

People in the peninsular region felt that they were hinterland underdogs for power interests emerging in large cities to the north. One local fisherman despaired while resigning himself: ‘We have to sacrifice ourselves for the nation. The greater good is for the nation.’ By comparison, his friend was bitter about this enforced sacrifice: ‘We are like guinea pigs [for the nation] and are forced to suffer.’ The

need for electrical power was a driving need for ‘city people’ as he put it, but not necessarily them. A medical expert elaborated on these metropolitan–margins divisions: ‘The people there were brainwashed into thinking that they will get more electricity through the plant. So there was more support for it than here.’

Residents added that those in distant cities have little understanding of local issues in the hinterlands (see Moolenaar, Chapter 5 in this volume). Any of these so-called ‘outsiders’ did not care for they had much to profit from the plant. Manick, a youth worker from the town of Nagercoil located about 30 kilometres away from the nuclear power plant, stated:

This is all happening here because of power crisis in Delhi which is dictating the terms here. India seems to have an energy crisis and nuclear is the answer without enough investment and research in alternative energy sources – due to the Brahmanic lobby.

Caste attached itself to class and regional divisions, as summed up by Manick’s term ‘Brahminic lobby’. On further discussion with him, he clarified that this lobby is not specifically about Brahmins exclusively – traditionally associated with those endowed with sacred learning in the hierarchical caste system – but high-caste ‘outsiders’ in general. Their predominance in the modern nuclear state might be described as neo-Brahminism. On a parallel note, Ramana describes the nuclear enclave as part of an elite priesthood (2003: 207), noting in particular that the structure of the Department of Atomic Energy is hierarchical and not conducive to dissent. As with arguments about whiteness (see Dyer 1997), the discourse refers to the institutional power of neo-Brahmanic hegemony rather than suggesting that Brahmins are inherently powerful, as is implicit in accounts of the caste system (see Berreman 1971).

It is true that nuclear departments are not open to quotas for low caste Indians – officially termed Backward and Scheduled Castes – being exempt as part of ‘scientific and technical posts’.⁹ In their sub-contracted operations on the ground, there appears to be an utter disregard for the poor who work as daily labourers in the nuclear industry, exposing them to various health hazards – a situation that is comparable to the racial necropolitics that Davies (2018) identifies for petrochemical pollution in the African-American dominated town of St James in Louisiana. In a variation of Goldberg’s (2009) term, neo-liberal racism – one that promises equality and social inclusion while at the same time contributing to the passive extermination of racial minorities – here we have a case of neo-Brahmanic elitism where pas-

sive extermination is rooted in trenchant caste-class hierarchies and fears of the numerical expansion of the poor. Krishnan expands how this elitism comes with a murderous impulse where they would quite happily look the other way if the ‘masses’ were ‘disappeared’:

This self-imposed distance between the middle class and the ‘masses’ sometimes partakes of a genocidal impulse, as is indexed in many milieus – everyday expressions of desire for a country with a smaller population; the occasional wild-eyed scheme for secession from the rest of India by momentarily prosperous enclaves such as the IT sector in Bangalore or parts of Mumbai or Gujarat or Punjab; the oft expressed idea that it may not have been a bad thing if Sanjay Gandhi [the son of prime minister, Indira Gandhi] had had a relatively freer hand for a few more years back in the mid-1970s [with his family planning and sterilization programmes]; urban planning schemes that fantasise bypassing slums through freeways, subways, hovercraft and helicopters – but is more often indicated by a simple wish for the masses to simply, magically, disappear. (Krishnan 2006: 2327)

Krishnan goes on to identify a liberal discourse trenchant among nuclear experts as well. With his analysis of the atomic scientist Rammanna’s autobiography, *Years of Pilgrimage*, he concludes that he too ‘loves the masses in the abstract but detests each one of them individually’ (Krishnan 2006: 2329). In the neoliberal era, it would seem that even the abstract love for the masses has virtually disappeared.

Neo-Brahmanism characterizes many of the powerful institutions that are seen to constitute the fulcrum of national security and where reservations are not in place, as with high security think tanks, intelligence bureaus, nuclear agencies and the like. In Krishnan’s view, it is as if ‘upper castes are uniquely fit to govern India and any dilution of their presence could only mean an impoverishment of quality’ (2006: 2328).

Almost 3,000 kilometres away, New Delhi, the site of central government and symbolic of the tyranny of the north in particular, was seen as too cut off from this southern peninsula. Interlocutors spoke of it as if it were a different planet – one associated with wealth, business and enterprise, comfort, capital and pomposity, where it was deemed that about half of the population was complacent and conservative government servants. The highly electrified metropole represented the epitome of a hunger for power, literal and metaphorical, that was all too evident among people removed from the toils and troubles of mining for atomic minerals and nuclear expansion in rural, tribal and coastal areas of the subcontinent. According to Manick, their thinking on this peninsular region was as follows:

For them if it provides power, it is justified . . . Before this [construction of the plant], nobody bothered us. They weren't interested in this place. It was just the end of India for them.

Some people in the region directly compared the encroachment of a 'nuclear grid government' as a form of neocolonialism, where their lives were oppressed and their rights abrogated as was the case under the British in the colonial era. S.P. Udayakumar, convenor of the People's Movement Against Nuclear Energy (PMANE) that was based in Nagercoil and Idinthikarai, describes the phenomena as 'nu-colonization (nuclear + colonization)' (see Figure 1.3).¹⁰



Figure 1.3. *Dr S.P. Udayakumar, the main coordinator of the People's Movement Against Nuclear Energy, 2012. © Raminder Kaur.*

To similar ends, a leaflet from 2002 by the Nagercoil-based Conservation of Nature Trust given to me by its chairman, Dr Samuel Lal Mohan, declared:

The Russians may be happy over the pact as it will boost its dollar hungry economy with an inflow 360 crore of US dollars (Rs 173,000 crores) work as this is entrusted to 300 industrial units in Russia which will manufacture parts for the VVER-1000 Reactors. It is like the manufacture of cloth in Manchester, England for India in the pre-independent India. The much-publicized job opportunity [*sic*] for the local labourers is only a mirage.¹¹

The inequities of colonial exploitation of India's resources and manpower were likened to the current scenario, where Russian technology was bought by Indian authorities at exorbitant costs that were then borne financially and environmentally by the Indian government and, by extension, Indian citizens.

In a meeting that preceded my fieldwork period from 2006, Lal Mohan, crystallized the collusion between Indian and foreign metropolitan elites in literature that he published and circulated in the region as follows:

The Atomic Energy Commission officials sitting in New Delhi, Bombay, Chennai or Moscow do not understand the ground realities of failed crops and the poverty of stricken farmers . . . Further an amendment is suggested in the Kyoto Protocol (which prescribes reduction of Carbon emission by 5% of 1990 level) that building of Nuclear Power Plants, in poor and underdeveloped countries by the G-7 countries like the USA, the UK, Canada, Russia and Japan, as an effort to reduce Green House Gases like Carbon-di-oxide [*sic*]. The global environment fund and [International] Monetary Fund and World Bank may support such funding for building Nuclear Reactors at the instance of the USA. So Russia may utilize this 'Pro-Environment' or 'Environment friendly' funds of G-7 countries to build Nuclear Power Plants in India, and escape the Kyoto Protocol by the back door. We should not fall prey to the international game played on the poor countries by the rich countries. For shorter goals let us not sacrifice our precious environment.¹²

Local residents felt they were pitched in an uphill battlefield that had taken on vastly global dimensions to do with climate change compulsions. As Dunlap and Fairhead (2014) argue, terms such as 'green', 'sustainable', 'clean' and 'climate-friendly' have become part of a worldwide vocabulary to legitimate extractive, exploitative and/or toxic industries. On this global platform of self-legitimacy, nuclear power plants were rebranded as 'green' and 'clean'.

At a meeting that I attended in 2006 with about twenty people including fishermen and women, farmers, conservationists, doctors, teachers and other community leaders, Udayakumar elaborated on the power dynamics in much blunter terms:

Religious leaders are sell-outs. Political leaders are idiots. Business leaders are into money-making and that's it . . . It's an issue about poverty and powerlessness. It is the poor people who will be most affected. They do not know what's going on. Powerless people are more vulnerable. The middle classes can run away to another town or city.

Promises made by nuclear authorities about more development and electricity for the region might have seduced some in the early days, but many became convinced that their health and livelihoods were not worth the price that had to be paid. The 'abundance of jobs' mantra became despised as a myth as there was little employment in the nuclear plant itself for local people after its construction was complete – the first reactor was commissioned in 2013 followed by the second in 2016. All the other nuclear bounty deliverables were undermined as well: more electrical power (but this was less so for the region and mainly for distant cities and industries); roads and related infrastructure (but these were primarily for the nuclear plant and its employees); and a financial and business boom (but this was highly temperamental and when the plant is operating and radiation levels increase, there could be less interest in the area for investors).

Development with its electrified political grid of governmentality brought less of the fruits of modernity in terms of 'goods'. Instead, as Beck (1992) maintains, many of my interlocutors based in the region reflected on how it introduced what would be better summed up as 'bads': the fear of contamination, the loss of livelihood, and a keen sense of repression clearly evidenced in nuclear authorities' indifference about local grievances and the increased surveillance, policing and militarization of the region to the relentless beat of national development and energy security.

'Development Kills'

By mid-2012, the state machinery clamped down on the village of Idinthakarai where PMANE has had its base from 2011 to 2014 (PMANE Struggle Committee 2016). Over time, PMANE protesters' claim to legitimate citizenship was revoked with police and paramil-

itary sieges, ambushes and countless allegations and arrests in order to suppress dissent. As their movement got bigger and their appeals grew louder, they progressively became reduced to ‘bare life’ (Agamben 1995) – a designated exclusion and dehumanization of those who are at the margins and/or choose to dissent even when peaceful protest was technically permitted in a democratic constitution.

The death conditions that were created around the nuclear power plant can be viewed in terms of three overlapping modalities: first, the use of ‘quick-fire’ state violence, such as shooting at people who protest against state plans or through the hiring of henchmen to enact violence against dissenting individuals, their families and/or their property; second, death conditions were through ‘sociopolitical deaths’ brought on by state neglect and the inflicting of punitive strategies of intimidation, harassment and demonization designed to malign and outcast key protagonists; and, third, nuclear necropolitics was vindicated silently through ‘slow violence’ (Nixon 2011; Rose Johnston 2011; Hecht 2018) with an encroaching death where nuclear industries subjected communities to a life of uncertainty, exploitation and environmental hazards (see Figure 1.4). The latter came with the invisibility of gradual ecocide that might accompany contact with radioactive material or through the radionuclide emissions from reactors in general that enter the food chain and the DNA of neighbouring residents, a substantial percentage of whom will succumb to genetic mutations, disease and death over the ensuing decades (see Churchill 2003; Alexis-Martin and Davies 2017; Davies 2018). The onslaught of such developments inscribed people into ‘the necropolitics of radiation’ (Kohso 2011). As one person summarily dismissed it on a paper hat at an anti-nuclear cultural event in Idinthakarai in 2012: ‘Development kills’ (see Figure 1.5).

As a blatant sign of the first modality of death in the hands of law enforcement agencies, Anthony John was shot by the police in a nearby town during a solidarity protest in nearby Tuticorin after the police and paramilitaries blockaded those in Idinthakarai in March 2012 (see Figure 1.5). Other earlier deaths of anti-nuclear protesters at the hands of paragons of the state were of one other man, Ignatius, who was killed in a police firing at an anti-nuclear march in 1988 when the plant was first announced. This toll in south India is on top of the deaths of other anti-nuclear protesters in other parts of India. For instance, forty-year-old activist Irfan Qazi died in 2011 when a police officer driving a four-wheel drive Sumo SUV rammed into his scooter close to the site proposed for the Jaitapur Nuclear Power Plant in Maharashtra, with the French company, Areva, now



Figures 1.4 and 1.5. *People at a solidarity cultural event in Idinthakarai in 2012.*
© Raminder Kaur.

replaced by EDF (Viju 2010). In all cases, the authorities denied culpability.

Other protesters were killed through state neglect after they were arrested and put in prison, or through intimidating actions that led to accidental deaths (an explanation also given for some of the deliber-

ate attacks cited above). Sahayam Francis was a father of three young children who fell from a height after Indian Coast Guard surveillance planes dived within a few metres above protesters' heads in 2012. He was watching those engaged in civil disobedience in Idinthakarai who were standing in a chain in the waves on the beach for *jal satyagraha*: following Mohandas Karamchand Gandhi's anti-colonial campaigns, *jal satyagraha* alluded to the 'truth force' embodied in people and the sea (see Hardiman 2003; Nilsen 2012).

J. Roslin was a woman in her sixties who died shortly after spending time in jail for peaceful protest in 2012 under the charge of 'Waging War against the Government of India' (see Figure 1.6). She had a severe illness that led to her further deterioration in prison. She was released on bail and was asked to sign into a Madurai police station every week, an overland journey that took five to six hours over 200 kilometres away from her home. Shortly after being released on bail, she succumbed to her illness.

People were both saddened and incensed, believing her death was yet another outcome of 'state vengeance'. As the conservationist Nityanand Jayaraman reports:

Roslin is a victim of neglect, and the vengeance of a state that views the very holding of a contrary opinion on nuclear power as a crime warranting imprisonment under harsh sections.¹³



Figure 1.6. Portraits of Anthony John (Manapadu), Sahayam Francis (Idinthakarai), J. Roslin (Idinthakarai) and C. Rajasekar (Kudankulam), who died due to their protests against the Kudankulam Nuclear Power Plant. © Raminder Kaur.

The sheer stress of protesting against a mammoth power took its toll. Elsewhere, elderly farmers died due to the stress of a sit-in since 2010 against land acquisition plans for the Gorakhpur Nuclear Power Plant in the blazing heat of Haryana: Ishwar Singh Siwach, Bhagu Ram and Ram Kumar (Sundaram 2011).

These death conditions were combined with life-destroying strategies that extended to people's lives and livelihoods. For those known to be living in Idinthakarai, a number of coercive and punitive measures were adopted. By the time of the escalated anti-nuclear struggle at Kudankulam in 2012, more than 55,000 people had been charged in about 170 First Information Reports, charges of a cognizable offence, from the nearest police station to KKNPP in Tirunelveli District.¹⁴ Of these, about 8,000 were accused of 'sedition' and 'waging war against the state', allegations that carry with it the prospect of a death penalty (Janardhanan 2012). Typically, a few names would be mentioned in any charge followed by a number anywhere between 2,000 and 4,000 other supporters to add to the list of named individuals. The exact figures have vacillated along with the prevarications of officials.

In the aftermath of police charges, many protesters were financially and psychologically destroyed by legal fees and constant trips to either attend court hearings or, if they were on bail, periodically report to police stations as far away as Madurai. To turn up at a hearing was more often than not to hear that the case had been adjourned and a date set for a new hearing. Stupefying to say the least, court cases drawn out over months and years were like an albatross around their necks, tied to policing prerogatives to extinguish dissent. Defendants became puppets to larger machinations as lawyers – if they showed up at all – debated right from wrong in an excruciatingly slow Indian judiciary. The process itself was the punishment (see Human Rights Watch 2016).

For a defendant to not attend court in what many considered to be unjust and distorted charges in the first place was to risk further punishment. R.S. Mugilan, a member of the PMANE Struggle Committee, was himself arrested in September 2017 for ignoring a series of court summons. A determined environmentalist to the core, Mugilan continues to be harassed to this day (Ananth 2018). To add misery to the outrage, those who are in pre- or post-trial custody atrophy with unwarranted isolation, beatings, substandard food, unhygienic conditions and swarms of mosquitoes as if nature too is conscripted as mercenaries.¹⁵ Women in prison face the added burden of being vulnerable to sexual assault, the suspicion of which alone was a merciless social poison if and when they are released (see Sen 2014; Vaid 2016).

Some people were even revoked of their citizenship quite literally when passports were impounded, new ones were not issued and old ones were not renewed. This was particularly problematic for those fishermen who needed to travel abroad for work and training. It also posed a problem for activists who wanted to travel, even if they did not technically need a passport. For instance, travel to the neighbouring country Nepal ordinarily does not require a passport for an Indian citizen. But when Udayakumar was at the airport in New Delhi in September 2014 in order to attend a United Nations Special Rapporteur on Human Rights Defenders meeting in Kathmandu, he was not able to board the plane and instead was taken away for questioning (Shubhomoy and Sudhakar 2014).

A more invisible deathly spectre was by way of the violence of slow ecocide to do with radionuclide emissions released into the environment by a nuclear power plant, the rise of the sea-water temperature due to the discharge of water coolant that would disturb and possibly contaminate sea life and, as a consequence, further jeopardize fishermen's livelihoods. This was akin to a 'future present death', where present concerns were exacerbated by the anxiety of likely prospects. Exposure to the high background radiation in the neighbouring district of Kanyakumari is deemed to be 'higher than the world average value reported by UNSCEAR [United Nations Scientific Committee on the Effect of Atomic Radiation] (2000)' (Ajithra et al. 2017: 33). This is exacerbated by the sand mining of monazite sands on the southern coast – an alpha-radiation emitter that can be processed for a thorium-based nuclear fuel cycle – a subject that has been explored at length elsewhere (see Kaur 2013b). High levels of radiation have predisposed the population to a high rate of genetic mutation and related diseases. Having nuclear reactors in the region would undoubtedly increase the ionizing radiation levels (Cardis et al. 2015), a realization that further fuelled the anti-nuclear movement in India, which by 2014 was contained, demonized and eventually crushed by draconian measures adopted by the nuclear state (see Banerjee 2015).

Smooth Operators, Rough Operations

In his reminiscences, Gupta observed that 'for a large share of India's population, life off the grid was the normal condition of everyday life' (2015: 559). He added an important query, albeit with little of an answer:

The question is how new technologies can make the quality of life higher without reproducing the steps taken by the growth of the carbon economy, and the forms in which electricity has been historically incorporated into the lives of people. (Ibid.: 565)

The evidence so far shows that electricity has not been smoothly incorporated into the lives of all people. There are not only internal hierarchies to take on board in any one locality, but also their intersection with external hierarchies in terms of wider national and transnational geopolitics. Boyer's proposal for energopower as 'electricity already works us' (2015: 531) needs to be qualified first with due consideration to those who are not so reliant on uninterrupted supplies of energy, where life on a smooth grid is not the norm, as Gupta points out. But Gupta's observation does not go far enough. There is also, to lead to the second point, the need to consider those who are brought into biopolitics at the expense of others who lie in the twilight zone between the civil and the political, metropolitan and marginal, welfare and warfare, as I have highlighted in this chapter with a delineation of nuclear necro-energopower. This leads to my third main point in terms of metropolitan and global inequities that entrench the repression of marginalized communities in the Global South when it comes to large-scale power developments entailing transnational treaties and trade: energopower is not without fracture or friction (see Tsing 2005).

While I appreciate Boyer's point about non-nuclear, low-carbon energy as a potential 'threat to grid' – a view that allies with PMANE activists but not all including those disenfranchised communities under the wings of large-scale wind farms in Mexico (Dunlap 2018a, 2018b) – it also needs to be emphasized that what Boyer refers to as the 'soft hum of electric currents' (2015: 532) represses a loud, interruptive and abrasive raw politics that spans a tangled skein across local, national and transnational scales. This chapter brings the hammer to the hum. The wires are not always neatly hidden away behind the smooth walls of energopower biopolitics; rather, they can become (re)routed, ruptured, exposed and even dangerous live wires that can create a spectrum of death conditions.

Being at the brunt of the raw politics of energy in south India has led to a struggle against what McMurtry (1998) has described as the 'cancer-stage of capitalism' quite literally. With its globalizing and mutating market paradigms, global capitalism has multiplied into several carcinogenic eruptions and metastases that may even be decoupled from commercial logic such that alternative visions and

autonomous lives become hard to realize. This ‘cancer stage’ has become the prevailing rationality of our times that we often take for granted. However, many residents in the embattled vicinity of the Kudankulam Nuclear Power Plant saw through this governing logic. They believed that with ‘nuclear capitalism’, the political, social, electrical, ecological and the corporeal were all too worryingly entwined. The contaminated phase of the global political economy has led to a myriad of death conditions with the extreme repression of their lives and could indeed manifest itself in all too critical conditions in terms of somatic cancer-stage pathologies.

It was the rejection of a repressive ‘grid government’ that compelled many to defy the nuclear power plant in south India in favour of peaceful lives unencumbered by the darker side of grid governmentalities. After all, my interlocutors could see that the electricity was not to power them, but to power other interested parties. Electricity did not work them; it worked others. Instead, the marginalized have had to suffer in view of an array of state, corporate and metropolitan interests for a rapidly liberalizing and growing economy. Their experience has compelled many to assert that they need energy technologies that are complementary to their lives and ecology, and even to reject modernity or grid governmentalities. As a young fisherwoman from Idinthikarai stated, ‘we do not need electricity if we have to pay for it with our lives’.

Acknowledgements

The ethnographic fieldwork was conducted over a protracted period of time – spanning a year in 2006, to five periods of month-long fieldwork up until 2018. At certain points from 2012 to 2014, I was not able to visit the village Idinthakarai, where PMANE was then based, due to sporadic police and paramilitary clampdowns, and so had to rely on online communication and postings made by my interlocutors. The early part of the research was funded by the Economic and Social Research Council grant (2006–8). My sincere thanks to my interlocutors and supporters who made this research possible; to those who provided feedback when I presented the original paper at the panel ‘Power Legacies, Energy Futures: Governmentalities along the Grid’ at the European Association of Social Anthropology Conference in Milan in 2016; and to Tristan Loloum for his helpful comments on the chapter. The usual provisos apply.

Raminder Kaur is Professor of Anthropology and Cultural Studies at the University of Sussex. She is the author of *Atomic Mumbai: Living with the Radiance of a Thousand Suns* (2013); *Kudankulam: The Story of an Indo-Russian Nuclear Plant* (2020); and *Performative Politics and the Cultures of Hinduism* (2003/5). She is coauthor of *Adventure Comics and Youth Cultures in India* (2018) and *Diaspora and Hybridity* (2005). She is also coeditor of five other books.

Notes

1. Cited in ‘With Love from Idinthakarai’, 8 August 2012, compiled by Anitha S. based on her interaction with children in Idinthakarai, Tamil Nadu, south India. Retrieved 16 July 2020 from <http://www.dianuke.org/with-love-from-idinthakarai>. I reproduce Anitha S.’s account, a local researcher and environmentalist, as she was conducting fieldwork at a time that overlapped with my own. Due to the urgency of the matter, she was compelled to post them online as soon as she had written them up. Similarly, statements by my interlocutors from the PMANE Struggle Committee and the website *DiaNuke* were posted online to transmit their views as soon as possible by Michael Pushparayan and P.K. Sundaram respectively. The latter is also the website developer, editor and writer of *India Resists*. This is in addition to literature provided to me by another of my interlocutors, Dr Samuel Lal Mohan, that is cited in this chapter. See Kaur (2019) on *multi-situated* fieldwork combining offline and online engagements as opposed to Marcus’ *multisited* fieldwork (1995) to question the paradigm of proximity and artificial authenticity attributed to on-the-ground fieldwork (viewed as ‘thick evidence’) as against their mediations through other channels (seen as ‘thin’ and biased; see Postill 2013).
2. This is not to overlook cases of necropolitics in the Global North, as has transpired with nuclear plant accidents and pipeline violence in the United States, Canada and in the sea (see Matsen 2011). Nevertheless, governmentality remains idealized as the main tributaries of energopower in the North. Thanks to Tristan Loloum for this point.
3. For a discussion on the complex of Indian middle classes, see Varma (1998), Mazzarella (2005) and Brosius (2010).
4. By comparison, in the Global North, nuclear companies take particular care of neighbouring communities precisely because they are the ones that they most need to convince. This they do through measures to do with public relations, corporate social responsibility, sponsorship, training programmes, environmental and community management, and so forth (but see Wynne 2011). While cursory measures to do this are evident in India, various ruses are in place so that local opinion is evaded or repressed in a more blatant manner (see Kaur 2013b).

5. On a different argument about ‘biological citizenship’ as it applies to the health claims of victim-survivors of the Chernobyl nuclear disaster, see Petryna (2002).
6. An indiscriminate side-effect of nuclear biopower are consequences to do with excessive radiation that can debilitate, and the *longue durée* impact of atmospheric, sea and underground nuclear tests that we have all had to live with. It might therefore be argued that nuclear biopower is interwoven with nuclear necropower.
7. For a psychoanalytical interpretation of nuclear necropolitics, see Schwab (2014).
8. On how notions of ‘sacrifice’ apply to the contiguous state of Kerala, see Abraham (2012: 115–17).
9. See Mohanty 2020. See also <https://citizenmatters.in/facts-reservations-ews-sc-st-obc-government-court-9719> (last accessed 6 October 2020).
10. See Vishwanath (2009). See also Kuletz, who refers to the phenomenon as ‘nuclear colonialism’ (1998: xviii), Churchill (2003: 103) and Masco (2006: 101) on ‘radioactive colonization’ of the lands of indigenous communities in the United States, and Navajo activists describing it as ‘radioactive colonialism’ as reported by Hecht (2012: 177).
11. ‘Why the Kudankulam Nuclear Power Project Near Kanyakumari – A Few Objections’, 2002 leaflet, Nagercoil, Conservation of Nature Trust.
12. ‘Seminar on the Impact of Kudankulam Nuclear Power Plant on Pechiparai Dam and Its Health Hazards’ publicity, 18 August 2001, Nagercoil, Conservation of Nature Trust.
13. ‘Koodankulam: Jailed Idinthakarai Woman Dies for Want of Timely Treatment’, 21 December 2012. Retrieved 16 July 2020 from <http://www.indiaresists.com/koodankulam-jailed-idinthakarai-woman-dies-for-want-of-timely-treatment>.
14. Retrieved 16 July 2020 from <http://www.theweekendleader.com/Causes/1201/quiet-resistance.html>.
15. <https://www.facebook.com/amirtharaj.stephen/videos/pcb.10155258388737202/10155258380312202/?type=3&theater> (retrieved 16 July 2020). On the prevalence of torture, see Kaur (2018).

References

- Abraham, I. 1998. *The Making of the Indian Atomic Bomb*. London: Zed Books.
- . 2012. ‘Geopolitics and Biopolitics in India’s High Natural Background Radiation Zone’, *Science, Technology and Society* 17(1): 105–22.
- Agamben, G. 1995. *Homo Sacer: Sovereign Power and Bare Life*. Stanford: Stanford University Press.
- Ajithra, A.K., et al. 2017. ‘Assessment of Natural Radioactivity and Associated Radiation Indices in Soil Samples from the High Background Radi-

- ation Area, Kanyakumari District, Tamil Nadu, India', *Radiation Protection and Environment* 40(1): 27–33.
- Alavi, H. 1982. 'State and Class under Peripheral Capitalism', in H. Alavi and T. Shanin (eds), *Introduction to the Sociology of 'Developing' Societies*. New York: Monthly Review Press, pp. 289–307.
- Alexis-Martin, B., and T. Davies. 2017. 'Towards Nuclear Geography: Zones, Bodies, and Communities', *Geography Compass* 11(9). <https://doi.org/10.1111/gec3.12325>.
- Ananth, M.K. 2018. 'Environmental Activist Mugilan Begins Indefinite Fast in Palayamkottai Central Prison', *The Times of India*, 8 January. Retrieved 16 July 2020 from http://timesofindia.indiatimes.com/article/show/62414922.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst.
- Banerjee, E. 2015. 'The Radioactive Silence around Kalpakkam', *Pensieve*, 15 April. Retrieved 16 July 2020 from <https://banerjeeesha.wordpress.com/2015/04/15/the-radioactive-silence-surrounding-kalpakkam>.
- Beck, U. 1992. *Risk Society: Towards a New Modernity*, M. Ritter (trans.). London: Sage.
- Berremen, G.D. 1971. 'On the Nature of Caste in India: A Review Symposium on Louis Dumont's Homo Hierarchicus: The Brahmanical View of Caste', *Contributions to Indian Sociology* 5(1): 16–23.
- Bidwai, P., and A. Vanaik. 1999. *South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament*. New Delhi: Oxford University Press.
- Boyer, D. 2011. 'Energopolitics and the Anthropology of Energy', *Anthropology Newsletter* May: 5–7.
- . 2014. 'Energopower: An Introduction', *Anthropological Quarterly* 87(2): 309–33.
- . 2015. 'Anthropology Electric', *Cultural Anthropology* 30(4): 531–39.
- Brosius, C. 2010. *India's Middle Class: New Forms of Urban Leisure, Consumption and Prosperity*. New Delhi: Routledge.
- Cardis, E., et al. 2005. 'Risk of Cancer after Low Doses of Ionising Radiation: Retrospective Cohort Study in 15 Countries', *BMJ* 331(7508): 77–83.
- Chatterjee, P. 2004. *The Politics of the Governed: Reflections on Popular Politics in Most of the World*. New York: Columbia University Press.
- Churchill, W. 2003. *Acts of Rebellion: The Ward Churchill Reader*. New York: Routledge.
- Davies, T. 2018. 'Toxic Space and Time: Slow Violence, Necropolitics, and Petrochemical Pollution', *Annals of the American Association of Geographers* 108(6): 1537–53.
- Dunlap, A. 2018a. 'Counterinsurgency for Wind Energy: The Bú Hioxo Wind Park in Juchitán, Mexico', *Journal of Peasant Studies* 45(3): 630–52.
- . 2018b. 'The "Solution" is Now the "Problem": Wind Energy, Colonization and the "Genocide-Ecocide Nexus" in the Isthmus of Tehuantepec, Oaxaca', *International Journal of Human Rights* 22: 550–73.

- Dunlap, A., and J. Fairhead. 2014. 'The Militarization and Marketization of Nature: An Alternative Lens to "Climate-Conflict"', *Geopolitics* 19: 937–61.
- Dyer, R. 1997. *White: Essays on Race and Culture*. London: Routledge.
- Edelman, M. 2001. 'Social Movements: Changing Paradigms and Forms of Politics', *Annual Review of Anthropology* 30: 285–317.
- Foucault, M. 1991. *Discipline and Punish: The Birth of the Prison*. London: Penguin.
- . 2004. *Society Must Be Defended: Lectures at the Collège de France, 1975–76*, A. Fontana and M. Bertani (eds), D. Macey (trans.). London: Penguin.
- Goldberg, D.T. 2009. *The Threat of Race: Reflections on Racial Neoliberalism*. Malden, MA: Wiley Blackwell.
- Gupta, A. 2015. 'An Anthropology of Electricity from the Global South', *Cultural Anthropology* 30(4): 555–68.
- Hansen, T.B., and F. Stepputat (eds). 2006. *Sovereign Bodies: Citizens, Migrants and States in the Postcolonial World*. Princeton: Princeton University Press.
- Hardiman, D. 2003. *Gandhi: In His Time and Ours*. New Delhi: Permanent Black.
- Hecht, G. 2018. 'Interscalar Vehicles for an African Anthropocene: On Waster, Temporality, and Violence', *Cultural Anthropology* 33: 109–41.
- . 2012. *Being Nuclear: Africans and the Global Nuclear Trade*. Cambridge, MA: MIT Press.
- Human Rights Watch. 2016. 'Stifling Dissent: The Criminalization of Peaceful Expression in India', 24 May. Retrieved 16 July 2020 from <https://www.hrw.org/report/2016/05/24/stifling-dissent/criminalization-peaceful-expression-india>.
- Jain, L.S. 2013. *Malignant: How Cancer Makes Us*. Berkeley: University of California Press.
- Janardhanan, A. 2012. '8,856 "Enemies of State": An Entire Village in Tamil Nadu Lives under Shadow', 12 September. Retrieved 16 July 2020 from <http://indianexpress.com/article/india/india-news-india/kudankulam-nuclear-plant-protest-sedition-supreme-court-of-india-section-124a-3024655>.
- Johnston, B.R. (ed.). 2011. *Life and Death Matters: Human Rights, Environment, and Social Justice*. New York: Routledge.
- Jungk, R. 1979. *The Nuclear State*, E. Mosbacher (trans.). London: John Calder.
- Kakodkar, A. 2005. 'Energy in India for the Coming Decades', *Proceedings of an International Ministerial Conference on Nuclear Power for the 21st Century* 38(25). Retrieved 16 July 2020 from https://inis.iaea.org/search/search.aspx?orig_q=RN:38056572.
- Kaur, R. 2011. 'A "Nuclear Renaissance", Climate Change and the State of Exception', *TAJA: The Australian Journal of Anthropology* 22(2): 273–77.

- . 2012a. ‘Nuclear Martyrs and Necropolitics’, *Countercurrents*, 16 September. Retrieved 6 July 2020 from <http://www.countercurrents.org/kaur160912.htm>.
- . 2012b. ‘Nuclear Power vs People Power’, *Bulletin of the Atomic Scientists*, 9 July. Retrieved 16 July 2020 from <https://thebulletin.org/2012/07/nuclear-power-vs-people-power>.
- . 2013a. ‘Sovereignty without Hegemony: The Nuclear State, and a “Secret Public Hearing” in India’, *Theory, Culture and Society* 30(3): 3–28.
- . 2013b. ‘The Power and Limits of Numbers: An Ethnography of a Survey on Background Radiation and Health’. *ASA Online: Journal of Association of Social Anthropologists* 7. Retrieved 16 July 2020 from https://www.theasa.org/publications/asaonline/articles/asaonline_0107.shtml.
- . 2018. ‘India’s Silent Acceptance of Torture Has Made It a “Public Secret”’, *EPW Engage*, 6 September. Retrieved 16 July 2020 from <https://www.epw.in/engage/article/indias-silent-acceptance-torture-has>.
- . 2019. ‘The Digitalia of Everyday Life: Multi-situated Anthropology of a Virtual Letter by a “Foreign Hand”’, *HAU: Journal of Ethnographic Theory* 9(2): 299–319.
- . 2020. *Kudankulam: The Story of an Indo-Russian Nuclear Power Plant*. New Delhi: Oxford University Press.
- Kohso, S. 2011. ‘The Age of Meta/Physical Struggle’, *Fieldsights*, 26 July. Retrieved 16 July 2020 from <https://culanth.org/fieldsights/the-age-of-meta-physical-struggle>.
- Krishnan, S. 2006. ‘The Bomb, Biography and the Indian Middle Class’, *Economic and Political Weekly* 10: 2327–31.
- Kuletz, V. 1998. *The Tainted Desert: Environmental Ruin in the American West*. Hove: Psychology Press.
- Marcus, G.E. 1995. ‘Ethnography in/of the World System: The Emergence of Multi-sited Ethnography’, *Annual Review of Anthropology* 24: 95–117.
- Masco, J. 2006. *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico*. Princeton: Princeton University Press.
- Matsen, B. 2011. *Death and Oil: A True Story of the Piper Alpha Disaster on the North Sea*. New York: Pantheon.
- Mazzarella, W. 2005. ‘Indian Middle Class’, in R. Dwyer (ed.), *South Asia Keywords*. Retrieved 16 July 2020 from www.soas.ac.uk/south-asia-institute/keywords/file24808.pdf.
- Mbembe, A. 2001. *On the Postcolony*. Berkeley: University of California Press.
- McMurtry, J. 1998. *The Cancer Stage of Capitalism*. London: Pluto.
- Mohanty, B.K. 2020. ‘Scientific and Technical Posts still exempt from Quota Rule’, *The Telegraph*, 19 March. Retrieved 16 July 2020 from <https://www.telegraphindia.com/india/scientific-and-technical-posts-still-exempt-from-quota-rule/cid/1684073>.

- Montenegro, M., J. Pujol-Tarrés and S. Posocco (eds). 2017. 'Bordering, Exclusions and Necropolitics', *Qualitative Research Journal* 17(3): 142–54.
- Moorthy, D.N. 2000. 'Living with Nuclear Power', *The Indian Express*, 16 February.
- Nilsen, A.G. 2012. *Dispossession and Resistance in India: The River and the Rage*. New Delhi: Routledge.
- Nixon, R. 2011. *Slow Violence and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press.
- Petryna, A. 2002. *Life Exposed: Biological Citizens after Chernobyl*. Princeton: Princeton University Press.
- Pitkanen, L., and M. Farish. 2018. 'Nuclear Landscapes'. *Progress in Human Geography* 42(6): 862–80.
- PMANE Struggle Committee. 2016. *PMANE Letters and Press Releases (April 2012–January 2014)*. Idinthakarai: People's Movement against Nuclear Energy.
- Postill, J. 2013 'Democracy in an Age of Viral Reality: A Media Epidemiography of Spain's Indignados Movement', *Ethnography* 15: 51–69.
- Ramana, M.V. 2003. 'La Trahison des Clercs: Scientists and India's Nuclear Bomb', in M.V. Ramana and C. Rammanohar Reddy (eds), *Prisoners of the Nuclear Dreams*. New Delhi: Orient Longman, pp. 206–44.
- . 2013. *The Promise of Power: Examining Nuclear Energy in India*. New Delhi: Penguin.
- Schwab, G. 2014. 'Haunting from the Future: Psychic Life in the Wake of Nuclear Necropolitics', *The Undecidable Unconscious: A Journal of Deconstruction and Psychoanalysis* I: 85–101.
- Sen, A. 2014. 'Slaps, Beatings, Laughter, Adda, Puppet Shows: Naxal Women Prisoners in Calcutta and the Art of Happiness in Captivity', in Raminder Kaur and Parul Dave-Mukherjee (eds), *Arts and Aesthetics in a Globalizing World*. London: Bloomsbury, pp. 119–34.
- Sharma, A., and A. Gupta (eds). 2006. *Anthropology of the State: A Reader*. Oxford: Blackwell.
- Shubhomoy, S., and, P. Sudhakar. 2014. 'Udayakumar Stopped from Flying to Nepal', *The Hindu*, 17 September. Retrieved 16 July 2020 from <http://www.thehindu.com/news/national/tamil-nadu/udayakumar-stopped-from-flying-to-nepal/article6418652.ece>.
- Srikant, P. 2009. 'Koodankulam Anti-nuclear Movement: A Struggle for Alternative Development?' *Working Paper* 232. Bangalore: Institute for Social and Economic Change.
- Sundaram, P.K. 2011. 'Farmers Mourn Their Third Martyr in Anti-nuclear Power Struggle, Pledge against Another Fukushima (Fatehabad, India)', 21 September. Retrieved 16 July 2020 from <http://www.dianuke.org/farmers-anti-nuclear-struggle-fatehabad-fukushim>.
- Tsing, A. 2005. *Friction: An Ethnography of Global Connection*. Princeton: Princeton University Press.
- Vaid, M. 2016. *The Ant in the Ear of an Elephant*. New Delhi: Rajpal and Sons.

- Vanaik, A. 2000. 'Ideologies of the State: Socio-historical Underpinnings of the Nuclearization of South Asia', paper presented at the workshop *Nuclear Understandings: Science, Society and the Bomb in South Asia*, Dhaka, Bangladesh, 17 February.
- Varma, P. 1998. *The Great Indian Middle Class*. New Delhi: Viking Publishers.
- Vishwanath, C.K. 2009. 'National Convention on "The Politics of Nuclear Energy and Resistance"', 4–6 June. Retrieved 16 July 2020 from <http://www.mail-archive.com/greenyouth@googlegroups.com/msg08208>.
- Viju, B. 2010. 'Jaitapur Boils after Activist's Death', *The Times of India*, 19 December. Retrieved 16 July 2020 from <https://timesofindia.india.com/city/mumbai/Jaitapur-boils-after-activists-death/articleshow/7125307.cms>.
- Wynne, B. 2011. *Rationality and Ritual: Participation and Exclusion in Nuclear Decision-Making*. Abingdon: Routledge.

Ecuadorian Amazonia amidst Energy Transitions

Chris Hebdon

Introduction

After ten years of energy transition policies centred on slowly eliminating fossil fuel subsidies, in October 2019 the Ecuadorian government abruptly announced a rupture. In order to meet the conditions of billions of dollars in International Monetary Fund (IMF) loans, energy subsidies would be immediately ended and prices would rise to global market levels. Within a few days, citizens had blockaded every major road in the country and less than a week later, the government was forced to temporarily flee the capital. Upon its return, it entered into negotiations on live TV with Ecuador's Andean and Amazonian indigenous leaders who had been the key force behind the nationwide protests. After four hours of contentious debate, mediated by a United Nations facilitator, at around midnight the President agreed to abandon the IMF measures and reinstate the subsidies, thus meeting the indigenous leaders' demands and preventing the government's collapse.

Why did indigenous movements lead these pro-subsidy protests? Why would Amazonians, being those living at the epicentre of Ecuador's oil industry, join and indeed lead these protests with their Andean colleagues? And what went wrong with Ecuador's energy transition such that it would culminate in this kind of catastrophic failure? This chapter gives an ethnographic assessment, and a brief history, of what led to these events.



Figure 2.1. *The regions of Ecuador: Galapagos (Galápagos), Coast (Costa), Andes (Sierra) and Amazon (Oriente) regions.* © Chris Hebdon.

Four Shades of ‘Gold’

The East is not only a direction. The Amazonian Region is a reality. The Spanish searched for *El Dorado*, we Ecuadorians have found it. The black gold of petroleum, the green gold of the jungle, and the blue gold of the rivers constitute our *El Dorado*. So the soldiers and missionaries sensed it by painting the hopes of their hearts in their own blood. That’s how we all feel in marching decisively to work on Amazonian colonization. (Vasconez Salvador 1977: i)

The first sections of this chapter are titled in terms of yellow, green, black and blue ‘golds’, language used by the once brigadier general and government minister Colonel Oliverio Vasconez Salvador, as quoted in the epigraph above. Vasconez Salvador, who served as Minister of Agriculture and Ranching during the military dictatorship of President Guillermo Rodríguez Lara, presided over the largest expansion of outsider colonization into the Oriente in Ecuador’s history, only a few years after oil pumping took off in the early 1970s. His reference to Ecuadorian Amazonia in terms of ‘golds’ represents a dominant, and pervasive, view of the Oriente as a reserve of resources (see e.g. Plaza 1949). The first sections of this chapter read against the grain of Vasconez Salvador’s ‘golds’ to identify what lay within and beyond the scope of this long-dominant mode of ontologizing the Oriente (see also Gaechter 2007).

These sections about ‘golds’ contextualize the energy transition policies that the Ecuadorian government launched in 2007 and that broke down in 2019. These policies, called the *cambio de la matriz energética* (the shift of the energetic matrix, or *cambio* for short),

together constituted a plan to substitute electricity generated by fossil fuels with hydroelectricity, enough to meet more than 90% of Ecuador's projected demand. This chapter sets the *cambio* within a broad social and historical context focused on the Ecuadorian Amazon, and uses this case to assess the boundaries of the *cambio*'s energy transitions thinking.

The later sections of this chapter connect up Ecuador's case with broader questions about energy transitions and the anthropology of energy. In the conclusion, I consider the implications of Vasconez Salvador's depiction of the Oriente as a font of economic value or 'gold' rather than other kinds of value. I argue that thinking of energy as a source of money was a central, and limiting, dogma of the *cambio*. This metaphorical mapping of money, energy and resources thwarted and clouded out other kinds of energy thinking (e.g. ecological and thermodynamic) and practices (e.g. indigenous agroforestry, and distributed solar photovoltaics). Drawing from these threads, I argue that anthropologists should carefully examine how *multiple concepts of energy* are involved in energy politics in any social context.

Yellow: Bullion, Colonies and Labour

La Región Amazónica Ecuatoriana, commonly known within Ecuador as the *Oriente* (East) or *Oriente Ecuatoriano* (Ecuadorian East), is the largest of Ecuador's four regions (the Galapagos, Coast, Andes and Amazon), constituting 46% of the country's landmass. It is the region with the lowest population density, ranging from 0.5% of the country's population when Ecuador became an independent republic in 1830 to around 5% today (Delaunay et al. 1990). It is also the traditional homeland of ten indigenous linguistic groups that are legally recognized today as nationalities – Kichwa, Shuar, Achuar, Shiwiar, Cofán, Siona, Secoya, Sapara, Andoa and Waorani – that together composed the majority population of the region until the mid-twentieth century. Since the 1960s, the region has been the centre of Ecuador's fossil fuels industry, as well as the home of increasingly well-organized indigenous social movements (Sawyer 2004). Amazonia in Ecuadorian history has been considered to be a source of wealth – of labour, land, oil, hydroelectricity and, more abstractly, the nation's economic future. Over the past five centuries, Ecuadorian Amazonia has generally been treated as a 'zone of extraction' (Bunker 1985) for the state, settler-colonists, missionaries and multinational corporations, among others.

Much as the ambiguous name ‘the Middle East’ came from a non-local (Alfred Thayer Mahan, a US military officer), the name ‘Oriente’ speaks to extra-local power relations and begs the question: ‘East of where?’ As it was judged from the Andes and the Coast, the Amazon was ‘the East’. This had little to do with physical distance, as the Oriente begins less than 30 miles from the capital city of Quito; rather, it has to do with the normative ways in which the Oriente has been considered socially or ‘structurally distant’ (Evans-Pritchard 1940), and, in identity, less Ecuadorian than other regions. The region inspired hopes for loot and riches, but seldom has it been seen as a source of knowledge and culture – of new ideas as much as new resources, even when the region *did* contribute new ideas. Instead, the dominant idea – and one implicit in Vasconez Salvador’s quote – has been that the region needed to be made Ecuadorian (Fischer 2015) by becoming ‘real’ to non-Amazonians.

Since the sixteenth-century Spanish colony, explorers hoped the Oriente might contain the fabled city of gold, *El Dorado* (Hecht and Cockburn 1990). While no such place was ever found, the region did yield some gold and continues to do so today (Taylor 1989: 24). Yet it was those *searching* for wealth who brought the most disruption. Missionaries have been ceaseless outside agents in the region. Jesuit ‘reductions’ and *encomiendas* sought to concentrate Amazonian populations in pursuit of indigenous labour and knowhow. Slavery, debt peonage and other forms of labour coercion were common (Ford 2017). In the eighteenth and nineteenth centuries, extractive economies were formed around tobacco, vanilla, cacao, plant resins, agave, cinchona, tagua and sarsaparilla (Taylor 1989: 41). From the late 1800s until the 1920s, a rubber boom – driven largely by downstream Peruvian and Brazilian merchants, and linking up to a commodity chain that reached to London and New York – came and went with major consequences for the Oriente and little to no control by the Ecuadorian government, in part because it had expelled the Jesuits following the Liberal Revolution (del Pilar Gamarra 1996). Moreover, throughout these centuries, and for government, merchant and church officials alike, indigenous evasion, flight and rebellion were constant decentralizing forces (Muratorio 1987; Porras 1979).

‘Toward the end of the 18th century’, as the historian Ayala Mora (2003: 206) noted, ‘the Oriente was [seen as] a distant territory almost without administrative connection with the State, inhabited by indigenous peoples who had not submitted, into which but few adventurers ventured.’ Although the Amazon abuts the Andes and begins less than 30 miles away from Quito, the Oriente in the nineteenth century

was, as the historian Esvertit-Cobes described, almost ‘completely unknown in the rest of Ecuador’ (2008: 15). And as documented by Fischer (2016), most of what was written about the Oriente was by outsiders, many of whom had never visited it. Ecuadorian historian and statesman Federico González Suárez felt the separation between the Oriente and the rest of Ecuador to be so great that in his *General History of Ecuador* (1890: 10), he concluded that the region ‘has its own history which had to be told separately, because the events that took place in that region had no influence on the life of Ecuadorian society during the colonial period, nor contributed anything to its prosperity, nor to its decadence’ (Cobes 2001: 544).

This notion of the Oriente as a world apart has persisted up to the present day. As the poet and missionary Leonir Dall’Alba noted of popular attitudes in the late twentieth century:

We proclaim with pride that ‘We are an Amazonian country. It is we who discovered the great [Amazon] river!’ But the pride stays within that grandiloquence. For almost every Ecuadorian the Amazonian East is the last place that they would choose to live, and they look with a certain contempt or with a certain compassionate admiration on those who are born and live there. . .

The Oriente is looked down upon and unknown. Despite it being constituted by a varied range of climates, altitudes, vegetation, places of occupation and means of travel, everything is seen under a cliché of diluvian rains, unbearable humidity, sweltering heat, impenetrable jungle, savage people, tigers, anacondas, mosquitos, fast rivers without bridges, and lack of all comforts. (1992: 429)

Such ways of seeing the Ecuadorian Amazon through simplistic clichés of *lack* and *distance* reflects indifference, on the one hand, and, on the other hand, reticence to learn from and engage ‘eye to eye’ (Nader 2010) with Amazonian people and environments – a colonizing attitude running throughout the Ecuadorian *longue durée*. To become more Ecuadorian, the Oriente seemed required to yield golds.

Ecuador’s national shield (*escudo nacional*) at the centre of the country’s flag – approved by Congress in 1900 when the Oriente’s population was still majority indigenous – is a striking example of this sense of structural distance and hierarchy. In the foreground, the shield shows a steamboat floating in the Pacific waters of the port city of Guayaquil, Ecuador’s biggest commercial centre. In the mid-ground, the gulf’s waters rush downhill from mount Chimborazo, Ecuador’s tallest peak and a symbol of Andean civilization. As José Almeida Vinueza has noted, the shield paints an image of a natural



Figure 2.2. *The national shield of Ecuador (Commons 2010). Used under Creative Commons CCO 1.0.*

‘brotherhood and unity’ between the Andes and the Coast, imagining their shared cultural predisposition towards ‘modernity’ (Almeida Vinueza 1994: 204). Tellingly, neither the Galapagos nor the Amazon appears in the shield.

‘The graphic demarcation of the Amazon is particularly serious’, Almeida Vinueza continued. ‘It is a world that is “behind”, and despite its contiguity only appears virtually as the negation and dissonance of the national frontispiece’ (1994: 204). The shield contrives ‘a concept of country with its back to the Amazon . . . [a concept that has been] built up since colonial times that painted the Oriente as “savage”, “inhospitable”, and “empty”, [and] as the antithesis of “modernity”’ (ibid.: 205). Revealingly, Amazonians polled by the anthropologist Suzana Sawyer all thought that the national shield showed just the opposite: the Amazon River emanating from the Andes (Sawyer 2004: 38–39). For them, it was illogical that the national shield did not picture, or indeed feature, the Oriente.

The lack of state attention to, and control over, the Oriente has long been a cause of worry and embarrassment too (Fischer 2015). No moment coalesced these ambivalent feelings more than the 1941

invasion of Ecuador by Peru, resulting in the loss for Ecuador of over 200,000 square kilometres of the Oriente, a concession that was finalized in 1998 after nearly sixty years of militarization and intermittent war. It was, in part, events like these that spurred Ecuadorian efforts to colonize the Amazon with non-Amazonians.

Green: Land and Agriculture

There are many kinds of uneconomical agriculture. A typical case in our countries is ‘swidden’ . . . It is an ‘agriculture’ in which the farmer . . . plants . . . something for his most precarious existence without effectively contributing anything to the national economy. (Eichler 1983: 1)

Dreaming of converting the Amazon forest into a land of farms and industry, Ecuador passed its first colonization laws in 1850 and 1861. The 1861 law asserted ‘That the Republic abounds in unused, fertile and rich lands’ and invited ‘immigrants from Europe and the United States to colonize Ecuadorian lands’ (Alvarado 1953: 11). A few years earlier, Ecuador had attempted to sell parts of the Oriente to British creditors in order to settle debts. In 1911, the government signed a contract with the *Compañía Franco-Holandesa* for the settling of a colony and building of a railroad, which was thwarted by Peru (Taylor 1989: 47). Other colonization programmes – such as a programme for constructing an Andean-Amazonian railway – were also initiated before failing. All these colonization programmes reflected an entrenched desire to move the region’s economy away from the social power of indigenous labour and, in the process, to try and undermine autonomous indigenous futures.

Peruvian aggression from the mid-nineteenth to mid-twentieth centuries, as well as economic problems in highland Ecuador, further spurred Ecuadorian interest in defending and colonizing the Oriente. Initiatives from 1964 to 1994 – the period of agrarian reform and colonization (*reforma agraria y colonización*) – focused on making available for Ecuadorian settlers the supposed ‘green gold’ of rich and fertile ‘empty’ Amazonian lands (*tierras vacías*) (Barsky 1984).

Ecuadorian Amazonians are among the world’s most sophisticated forest farmers. Thus, the sleights of hand and tricks of mind used to make their agriculture illegible and seemingly ‘uneconomical’, as Eichler asserts in the epigraph at the start of this section, are notable. During this era of agrarian reform and colonization, statistics of land appropriations from the Ecuadorian Institute for Agrarian Reform



Figure 2.3. *Estimated distribution of lands (in grey) considered relatively empty in 1982 (redrawn from Delaunay et al. 1990: 61).*

and Colonization (IERAC) almost invariably did not count ‘empty’ lands as having undergone ‘agrarian reform’ (IERAC 1972). Indigenous lands were represented as having never been cultivated. When indigenous inhabitants of these so-called ‘empty’ lands ultimately attained land titles from IERAC, even they were counted as ‘colonists’ (Gondard and Mazurek 2001: 24).

This political myth of empty lands turned on the fiction of indigenous Amazonians being hunters and gatherers who do not practise agriculture. However, in fact, *all* of the Amazonian groups in Ecuador are expert practitioners of swidden, or shifting-field, agroforestry. Historical ecological studies have demonstrated widespread landscape transformation in the Amazon from swidden agroforestry over

thousands of years, amounting to the construction of a vast and sophisticated ‘cultural forest’ (Balée 2013). In Ecuador, many ‘empty lands’ were, in fact, past and often recent sites of swidden cultivation (Macdonald 1979, 1999; Rudel and Horowitz 1993).

IERAC sometimes did give title to swidden lands, but their criteria revealed their biases (Macdonald 1995; Whitten 1976). For example, to receive land titles, plots had to be kept deforested and producing cash crops or cattle for around five years (Macdonald 1979). IERAC’s ideal was permanently deforested field agriculture producing taxable cash crops. However, once cut and burned or mulched, swidden fields, and for good ecological reasons, are seldom farmed for more than two or three years before cultivation is shifted to another location and the plot is left to regrow forest – a process not of deforestation, but of a cycling flow of forest degradation and re-gradation (Ford and Nigh 2016; Fox et al. 2000).

This distorting squint biasing people against indigenous agroforestry still continues today. National land use maps label swidden lands as ‘natural forest’, ‘pasture’ or ‘undifferentiated miscellaneous’ (MAGAP/MAE 2013), all inadequate categories. National development planning does not reference swidden (SENPLADES 2013). Only at the local level in majority indigenous towns has some public policy value been shown for swidden gardening (Grijalva et al. 2011; Gobierno Autónomo Descentralizado de Napo 2017; Vizcaíno 2009).

The notion of needing a deforested Amazon to create ‘green gold’ turned on the fiction of rich Amazonian soils. But the region’s jungle soils degrade quickly if deforested and continuously farmed (Rudel and Horowitz 1993). While this had been well known since the works of Villavicencio (1858) and Wolf (1892) and repeated by Ecuadorian President Galo Plaza (1949), the agrarian reform and colonization programme rejected and ignored these scientific arguments about the nutrient poverty of Amazonian soils in favour of reviving the dream of ‘aggrandizing and enriching the country by means of colonization’ (Alvarado 1953: 17).

However, wanting the region’s forests to be something they are not could only be sustained for so long. In subsequent decades, settler farms routinely failed (Rudel and Horowitz 1993). And while settler families did become the majority population for the first time in the Oriente’s history by the mid-1970s, indigenous social movements in the 1990s achieved greater than expected land claims and also managed to end the agrarian reform and colonization programme (Sawyer 2004).

Black: Oil and Territory

Oil companies came to the Oriente in the 1920s, although Ecuador's oil boom, for reasons that have spurred much intrigue, did not begin until the early 1970s. Oil industry colonization since the 1970s has highlighted long-accumulating strains in non-Amazonian and Amazonian Ecuadorian relations, and particularly how indigenous Amazonians had well begun to consolidate a critique of the limitless logic of development as the search for golds.

Oil companies completed the first paved road into the Oriente, as well as its first airport, in the 1940s. On 26 July 1972, Ecuador's first barrel of oil was paraded through the streets of Quito in a day of celebration to 'sow the oil'. Here we see a weaving together of green and black golds, as the Amazon was to be 'planted' with oil, thus setting up a frame that encouraged the invisibilization of indigenous land uses such as swidden agroforestry. Accordingly, in 1973, a rewrite of the agrarian reform and colonization law intensified land expropriation just as oil took off in the northern Oriente (Cepek 2012).

One way in which Ecuador's oil was made to benefit citizens and businesses was through state subsidies on all fossil fuels, inaugurated in 1978. A no-exceptions subsidy, it ramified through virtually every aspect of Ecuadorian life, from plane, bus, taxi and private automobile travel to electricity, heating, food and beyond. In 2018, Ecuadorian gasoline at \$1.48 was three times cheaper than the worldwide average of \$4.46; a 15 kilogram tank of Liquefied Petroleum Gas (LPG) cost \$1.60 compared with more than \$23.00 in neighbouring Colombia. These subsidies have had broad popularity and nationwide protests have met all past governmental attempts to eliminate them.

For indigenous Amazonians travelling between downriver villages and upriver urban areas, these subsidies are important. They make bus and taxi travel less expensive. They help make it cheaper to, if owned, fill the tanks of outboard canoe engines, chainsaws and electric generators. LPG cheaply powers portable gas cookstoves. Yet while nearly all Ecuadorians have reaped the benefits of these low fossil fuel prices, Amazonian Ecuadorians have faced the consequences of oil drilling, extraction, transport and contamination in ways that other citizens have not. For most Amazonians, 'black gold' overlapped with and compounded rather than resolved issues from 'green' and 'yellow gold' periods. However, indigenous social movement organizing in the 1970s, 1980s and 1990s constituted an increasing force in Ecuadorian politics, one that has gone on to change the dynamics of the entire country.

National Indigenous Movements

The Amazonian *Runa* (Kichwa-speaking) community of Sarayaku's experiences offer an example of how such organizing occurred and affected larger currents in Ecuadorian society. Sarayaku – a village in Pastaza province about four hours downriver from the regional capital Puyo – is home to around 300 Runa families. During the land grabs of the agrarian reform and colonization era, Catholic Church officials in the village recommended that Runa residents go with the government's offer: 50-hectare parcels per family and the ceding of their lands on one side of the Bobonaza River to settler-colonists. Runa residents felt that this giveaway to the settler colonists was unfair and worried that the 'cracks' or interstitial areas between IERAC-titled parcels could act as channels for future state and colonist intervention and division of the community (Sirén 2004: 134–36). Residents created the Centro Alama de Sarayaku (the Sarayaku Centre of Friends) in 1979 to advocate for Runa priorities in IERAC's titling of land parcels. However, after a more than a decade of little success negotiating with IERAC, the Centro Alama began to advocate instead, and much more radically, for an unparcelized global title under Runa self-government. Soon, Sarayaku went on to found the Organization of Indigenous Peoples of Pastaza (OPIP), which eventually incorporated all the indigenous nationalities of Pastaza Province under one umbrella (Silva Charvet 2003), and locally it formed its first town government unaffiliated with the church: TaYJaSaRuTa (Tayak Yuyayta Jatachik Sarayaku Runa Tandanakuy, 'the Sarayaku People's Organization for the Uplift of the Culture of the Ancestors').

In 1988, Sarayaku detained government officials who landed in a plane to negotiate oil drilling by the ARCO Corporation. Residents blocked the village's only airstrip with logs. The community insisted that the officials were welcome to leave if they wished to walk the three days back to the airport through the jungle, thus not technically detaining them. During that week in which the officials were in Sarayaku, a set of principles for further discussions was negotiated, which came to be known as the Sarayaku Accords (Macdonald 1999, 2015). However, once the officials returned to the city, the Accords, which were said to be made under duress, were not heeded. In response to the lack of action, in 1992 OPIP led a march from Pastaza's provincial capital of Puyo to Quito on foot, some 230 kilometres away, which ended in front of the presidential palace Corondelet in the centre of Quito (Whitten et al. 1997). Within two years, Ecuador's

President Rodrigo Borja had approved global (unparcelized) land titles for each community of OPIP's constituents. Sarayaku's title for 135,000 hectares amounted to around 450 hectares per family, nine times more than the government's initial offer in the 1970s. By 1994, on account of continued indigenous mobilization and wider public discontent, IERAC was shuttered and agrarian reform and colonization officially ended. IERAC, with a modified mission in name but not so much in practice, was renamed ECORAE, the Amazonian Institute for Regional Eco-Development.

However, these hard-won Amazonian land titles were not to include subsoil or airspace sovereignty, as the central government maintained its claim to their exclusive ownership (Sawyer 2004). In the late 1990s and early 2000s, Sarayaku again faced the incursion of state-supported oil companies. One company, without announcement or consultation, planted pentolite explosives across a portion of Sarayaku's forest for the purpose of subsurface petro-testing. When residents kicked out the surveyors, the Ecuadorian military occupied Sarayaku, although, facing overwhelming community resistance, they were soon driven out. Sarayaku, collaborating with key nongovernmental organizations (NGOs) and lawyers, filed a lawsuit in the Inter-American Court of Human Rights that they won in 2012. The ruling ordered, amongst other things, indemnification for Sarayaku residents, removal of the pentolite and that the Ecuadorian government respect international law on prior and informed consent in the future (Macdonald 2015). The community received \$1.4 million in indemnification, providing a seed for further organizing.

Between 1994 and 2003, with land titles in hand, Sarayaku activists reflected on what real development should mean for them. Some came out with the idea that it means *sumak kawsay* ('beautiful living', 'living in plenitude', 'good living' or 'living well') (Gualinga Montalvo 2005; Viteri 1993, 2003). These pioneering Runa authors envisioned development as primarily a past achievement rather than a future pursuit, arguing that Runa culture and the Amazon forest were already developed, and that the task at hand was avoiding underdevelopment, and maintaining and improving conditions for beautiful living (Baker et al. 2017; Keleman-Saxena et al. 2017; Ludlow et al. 2017). The term was taken up by national indigenous federations in the 1990s and 2000s, and eventually came to be used as the guiding concept of the 2008 Ecuadorian Constitution. However, within a few years, the government began to insist that by rejecting oil industri-



Figure 2.4. *High-voltage electric lines in Ecuador in 2013, before the cambio.*
© Chris Hebdon.

alization and by supporting indigenous self-determination efforts across the Oriente, Sarayaku was going against the *sumak kawsay* of the rest of Ecuador. There was a recognition among Sarayaku's intellectuals that *sumak kawsay* was perhaps too abstract and portable, as it did not necessarily signal the centrality of forests to beautiful living. In response, the community created an amended concept of *kawsak sacha* or a 'living forest'. This concept, which remains key to the community's activism and self-determination initiatives today, has attempted to respond to the government's misuse of the term *sumak kawsay* and to reground its vision for beautiful living as inseparably tied to the wider economy of a healthy forest ecology (Baker et al. 2017; Keleman-Saxena et al. 2017; Ludlow et al. 2017).

Blue: Water and Electricity

In the decades since the start of agrarian reform and colonization and the oil boom in the Oriente, Ecuadorians experienced two military dictatorships (1972–79), the death of the first post-junta democratically elected President Jaime Roldós by probable assassination (1981) and, throughout the 1980s and 1990s, the neoliberalization of the nation's political economy, including widespread corporate privatization of electric utilities. By the late 1990s, a financial crisis marked the nadir of an economic situation so dire that millions of Ecuadorians decided to emigrate in search of work. Between 1994 and 2006, indigenous-led social movements organized protests, blockades and other civic actions that contributed to the resignation of more than ten Ecuadorian presidents before the ends of their full terms. During this same period, the extraction of oil by the state-owned Petro-Ecuador dropped by more than a third, while extraction by private corporations surged (Castro 2011: 60).

In the wake of these and related events, President Rafael Correa's landslide election win in 2006, and his party's platform for a twenty-first-century socialist 'Citizens' Revolution' (Revolución Ciudadana), represented a promise for a new era for Ecuador: no longer to be dominated by foreign powers or by the traditional Ecuadorian oligarchy, and no longer to pursue 'development' that did not contribute to the 'good living' of the majority of Ecuadorians, and especially the poor. Correa's Administration captured attention around the world by defaulting on billions in debt from the World Bank and refusing to renew a US military base in Ecuador because the US government would not reciprocally offer Ecuador a military base in Florida. Such actions were taken by many as signals that Correa was serious about breaking Ecuador away from US and European hegemony. Indigenous organizations and many NGOs were encouraged that Correa embraced the language of *sumak kawsay*, which was translated into Spanish as 'good living' (Baker et al. 2017; Ludlow et al. 2017). Beyond popular support at the polls, the president's platform was undergirded by a decade-long (2007–17) parliamentary majority held by his political coalition Alianza PAÍS (País Altiva y Soberana, 'The Alliance for a Proud and Sovereign Country').

Sovereignty was one of the most important goals of the Citizens' Revolution. Emphasizing the importance of public planning, the government intervened in 'strategic sectors' (nearly all of them resource sectors, such as mining, hydroelectrics and oil), a set of priorities that came to be named 'The Return of the State' (*El Retorno del Estado*)

(SENPLADES 2013). As President Correa (2009) wrote in his first book, Ecuador's past neoliberal decades had turned it from a 'banana republic' in the 1950s and 1960s – dominated by foreign corporations such as United Fruit – into what he called a 'non-republic' unable to control its own natural resources and political fate. For example, in the 1970s, the Ecuadorian government had planned out a hydroelectric-based electrical system for the country, but the vision stalled in the 1990s as a neoliberal wave shifted planning power to private businesses, which ended up building mostly fossil thermolectric power plants instead (Garzón and Castro 2018: 32).

By the beginning of President Correa's term, most of the country's electricity came from hydrodams (59%) and from oil-fuel and natural gas-burning power plants (40%) (CONELEC 2009: 19; CONELEC 2012). The new energy transition plans of the *cambio de la matriz energética* sought to reduce the contribution of fossil fuels to below 10% within a decade (2007–17), primarily by constructing new hydroelectric dams. Over the coming years, the government commissioned eight dams: Mazar Dudas (21MW), Quijos (50MW), Manduriacu (62MW), Delsi Tanisagua (116MW), Toachi Pilatón (253MW), Minas San Francisco (276MW), Sopladora (487MW) and the mega-dam Coco Codo Sinclair (1,500MW). Of this new hydroelectric capacity, 80.2% came from Andean rivers running east into the Amazon.

By late 2018, after nearly a decade of work, only 1,194MW or 43.2% of these projects had come online, upping Ecuador's hydroelectric contribution from 59% to 81.1% (ARCONEL 2018). However, the Mazar Dudas and Quijos projects were abandoned because of structural problems in 2015. All of the dams had cost overruns and corruption problems, which amounted to their electricity costing per megawatt between 40% and 84% more than that of existing Ecuadorian dams build decades earlier (Garzón and Castro 2018; Villavicencio n.d.). Catastrophically, by late 2018 the multi-billion dollar Coca Codo Sinclair mega-project had more than 7,000 cracks 'splintering the dam's machinery. Its reservoir [had] clogged with silt, sand and trees. And the only time engineers tried to throttle up the facility completely, it shook violently and shorted out the national electricity grid' (Casey and Krauss 2018).

Total financing for the hydroelectric and other projects of the *cambio* is estimated to have amounted to as much as \$19 billion, most of which was loaned from the People's Republic of China (Casey and Krauss 2018). As a condition of many of these loans, construction was to be done by the Chinese National Electrical Engineering Company using 30% Chinese labourers who – unlike their Ecuadorian

counterparts – were not unionized (Peng 2015). Ecuador agreed to pay off some of these loans in oil rather than dollars, according to an exchange ratio set, unfavourably for Ecuador, before the collapse of oil prices in 2014. Due to these petro-barter (Rogers 2014) arrangements, in recent years it is estimated that Ecuador has been sending around 80% of its total oil exports to China (Casey and Krauss 2018). In 2017, it was revealed that total debts during the Correa Administration had exceeded 40% of the country's GDP, in violation of the Constitution (Fontaine et al. 2019: 64). Amongst other fallout from corruption investigations, the once Vice President of Ecuador, Jorge Glas, was sentenced to six years in prison (Fontaine et al. 2019: 64).

Along with these problems in ramping up hydroelectrics, two other key aspects of the so-called energy transition or *cambio* – for improvements in the petroleum sector and in home energy efficiency – also faced problems.

Since the 1980s, Ecuador has not been able to refine all of the oil it needs to meet domestic demand, instead having to import petroleum, diesel and natural gas. By the start of the Correa presidency, 96% of all the energy produced by Ecuador's formal economy was in the form of fossil fuels and 4% was from hydroelectric and renewables; 64% of these energy commodities were exported, 28% went to meet domestic demand and 8% was lost in transmission (SENPLADES 2009: 114). And yet of these 28% of energy commodities used domestically in Ecuador in 2012, 83% of natural gas, 60% of diesel and 49% of gasoline had to be imported (MICSE 2013: vi). In 2016, after nearly a decade of *cambio* transition policies, 87% of all the energy produced in Ecuador was still represented by crude oil, and nearly 70% of this was exported (MEER 2017). Subsidies on imported fuels, in place since the oil boom of the 1970s, often cost the government in excess of 10% of its budget each year. Most subsidized of all, LPG in 2018 cost \$1.60 in Ecuador compared with an average 13 times more in neighbouring Colombia and Peru (Martínez-Gómez et al. 2017: 136). The central goal of the *cambio* was to eliminate these subsidies by 2017. While it didn't happen in 2017, by 2018 subsidy reductions had begun, courting mass public discontent and protests. In October 2019, the government effectively abandoned the *cambio* transition and opted for immediate IMF austerity and the bringing of subsidized energy prices to global market levels, as mentioned in the introduction of this chapter. Only by negotiating on live TV in a midnight session with indigenous movement leaders, including those from Sarayaku, was the government of President Correa's successor Lenin Moreno able to avoid a governmental collapse.

Among the *cambio* projects targeted at petroleum problems were a new mega-refinery, a maritime port, several oil pipelines and a gas liquefaction plant, as well as a programme of major repairs to the existing refinery. Enveloped in scandals after a decade of work and nearly \$3 billion invested, none of these petroprojects has yet been completed (Vistazo 2019). Only in energy efficiency have the *cambio* policies been able to register some tentative successes. Energy-saving compact fluorescent lights were made standard across Ecuador, which is more than has been achieved in the United States, for example. The government invested billions in encouraging the conversion of home cooking and heating appliances from LPG-powered to electrically powered versions (with a focus on promoting induction-electric stoves). To enable people's use of these stoves, participating homes could have their electrical wiring upgraded from 110 to 220 volts for free. By 2017, however, this programme, Ecuador *Cambia*, had only met 18% of its goals since beginning in 2014 (Universo 2017).

The hydroelectric, petroleum and energy efficiency aspects of the *cambio* taken altogether have been unpopular since they began. In part this is because the only aspect of it – energy efficiency – that required changes by most Ecuadorians was a lousy bargain. While touted as a positive and sustainability-oriented change by the government, a transition from cooking and heating with LPG (92% subsidized) to cooking and heating with hydroelectricity (also subsidized but only at 20%) implied more than a twelvefold increase in price for the average family (Martínez et al. 2017: 186). And this estimate does not factor in the cost overruns and failures of some of Ecuador's new dams, which will likely result in even higher prices. Moreover, the elimination of gasoline and diesel subsidies implied higher transportation costs for which the *cambio* policies provided no immediate solution.

Each part of the *cambio* has hinged on the other, and the uneven results and unconsidered complexities within each and amongst the whole have, in practice, hobbled the government's entire plan. The government wanted to fix its books, while paying little attention to what these changes meant in everyday life to different kinds of people. To avoid mass discontent at the elimination of fossil fuel subsidies, people needed to use electric stoves and heat, and simultaneously the government had to improve oil refining and transport. To reduce governmental expenditure on subsidies, fossil fuel infrastructures needed to be improved and dams needed to be built, while in short order citizens needed to start making the switch to electric. To soak up the supply of newly built dams, citizens needed to be using electri-

cal devices because the subsidies on fossil fuels had to be eliminated. Timing was essential, with these three aspects of the *cambio* taking place all on a short timeline. But with secrecy shrouding many of the constructions, and honest public reporting about their progress very scarce, most citizens were left in the dark and suspicious about what was really going on.

Moreover, ‘blue gold’, from the vantage points of off-grid Amazonians such as the Sarayaku Runa, did not even resemble a plan for a new horizon or shift. The tapping of Amazonian water flows while upping extraction from Amazonian oil deposits implied the re-inscription of old ‘gold’ patterns of discrimination. Paying for blue gold dams hinged on more black gold extraction and green gold grabbing, implying the continuation of the kinds of inequalities and indignities that had long been at the heart of Amazonian resistance to hubristic state control. In ways such as these, Oliverio Vasconez Salvador’s ‘four golds’ have become increasingly recursive, with each being looped back upon the other and building force together. At the same time, these interconnections have exposed increasingly unavoidable fragilities.

All along, these four shades of gold have been versions of the same hegemonic framework in which that which lacks centralized control must have its nature changed by persuasion or force. The four preceding sections on different shades of gold have attempted to outline a brief history of the special place that the Oriente has had in Ecuadorian national experience. In large part, this has been as a zone of extraction (Bunker 1985) for labour, land, oil and water. In the following conclusion, I turn to explicitly drawing out how this way of framing and relating to the Oriente has hobbled Ecuadorian renewable energy solutions.

Multiple Energy Concepts

From the colonial period up to the present, the Oriente has been dominantly figured as a subordinate and distant part of Ecuador. Various forms of energy – from labour, land and oil to falling water – have been key objects of desire in the history of the region. Notably, however, outsider extractivisms have been centred on the accumulation of ‘energy resources’ as sources of wealth. Vasconez Salvador’s rationale for colonization was explicit about this: the Oriente’s value as a part of Ecuador could be reduced to its potential to yield exchange-values, or ‘golds’. However, energy use-values, and espe-

cially the affordances of understanding energy thermodynamically, have not been central.

Energy ‘progress’ was tightly wound up with regional and racial hierarchies. Ecuador’s national shield, which was inaugurated in the early 1900s before the region became an increasingly controlled region of Ecuadorian economic production, seemingly does not show the Oriente. As Almeida Vinueza (1994) noted, the Oriente was not so much absent from the shield as it was figured as a kind of ‘virtual negation’ of Ecuadorianness. Not simply behind Ecuador on a scale of development, it has been treated as beyond Ecuadorianness. In this sense, the shield signified a deficiency *not* in the Oriente’s nature, but in the dominant conception of Ecuadorianness that could not include the Oriente as an equal (Coronil 1996). This ‘Oriente-ism’ – based on ethnic and environmental stereotypes and ancillary notions of remoteness, distance, emptiness, underdevelopment and primitiveness – suffused elite Ecuadorian energy thinking. Inabilities to question this mindset’s *logic of lack* prefigured inadequate results.

The Oriente has been constructed as a frontier of Ecuador, as a ‘periphery’ to the ‘core’ zones of the country, and one that could be subjected to colonial conversions without intercultural learning, mutual dignity and shared ownership. This was the ‘grand continuity’ that the Citizens’ Revolution and policies such as the *cambio de la matriz energética* assiduously avoided: Amazonian subordination was left outside the scope of the Revolution. Assumptions about differentiated social value – quite apart from questions of energy values – helped connect the *cambio* with existing social hierarchies and infrastructures that entrenched unequal systems of exchange (Hornborg 1998) not only within Ecuador, but also between Ecuador and other countries, such as the United States and China.

Notably, the indigenous social movements’ proposal for radically reimagining the conventional concept of development with *sumak kawsay* was instructive in terms of how it defined the important variables for a broader transition. It saw concept shifts, or cultural shifts, as mutually constitutive with power shifts. It considered the dearth of indigenous control over technological choices and ownership of economic enterprises to be rooted not in nature, but in a cultural problem. It broadened the scope of what was to be included in energy questions by starting from a more reflexive frame that questioned mentalities and priorities. *Sumak kawsay* activism aimed at the concept of Ecuadorianness that served as the condition of possibility for a history of technological revolutions that left the unequal

relationship between Amazonians and Others unrevolutionized. As its Runa authors from Sarayaku have argued (Sarayaku 2003; Viteri 1993, 2003), *sumak kawsay* represents a notion of development and progress that does not default to the assumption that nature and people suffer from *lack* (Baker et al. 2017; Keleman-Saxena et al. 2017; Ludlow et al. 2017). This counter to the conception of the Oriente as primitive and undeveloped did not seek recognition of Amazonian energy (though swidden agroforestry was described as the ‘central axis’ of *sumak kawsay* (Viteri 2003)). Rather, it was about challenging the Ecuadorian, and especially elite, common sense upon which the metaphorical downgrading and disparagement of Amazonian ‘beautiful living’ rested. Indigenous movements took up a broader call for values transitions (Almeida 1992; Sawyer 2004).

Similarly, the *cambio de la matriz energética* dwelt on many other values than energy per se. Far from a plan turning on thermodynamic, ecological or social energy concepts and priorities, the *cambio* was largely a financial plan made with traditional economic concepts that secondarily tried to incorporate certain insights from anthropology, ecology and thermodynamics (see e.g. CONELEC 2009). The *cambio* in this sense represented an honest Ecuadorian attempt to plan the energy economy in energetic rather than solely monetary terms, which highlights how the *cambio* also involved a transition to energy, or an ergoconceptual transition, within the government. But the conceptualization of energy that emerged from the *cambio* was still strongly entangled with conventional thinking about energy resources as money resources. It was difficult for many to break from decades, and even centuries, of commercial tradition and intellectually separate the logics of energy from those of the resource extraction industries.

During the most optimistic years of the Citizens’ Revolution, from around 2010 to 2014, certain actors in the government – and especially those working with the National Secretariat for Higher Education, Science, Technology and Innovation (SENESCYT) – were keenly aware of this conceptual slippage in which energy and money were both treated as resources and commodities. SENESCYT put out a vision for a properly Ecuadorian version of ‘ecological modernization’ that would turn on Ecuador’s transition from a raw materials exporter and finished products importer to a country based on an ‘eco-knowledge socialism of *sumak kawsay*’ (Ramirez Gallegos 2012). The Secretariat hired some of the world’s leading theorists in ecological economics, political ecology, free and open source commons, and Marxist world-systems studies (including a team led by

David Harvey). The disciplines of these scholars had been leading important debates for decades about whether energy could be understood as a ‘universal equivalent’ of value like money. While ecological economists such as Odum (1971) argued that energy could be understood as a true universal equivalent, political ecologists had countered that this approach was overly functionalist, too narrow in its theorizing of power and unable to amount to an alternative theory of economic value (Trimbur and Watts 1976; Hornborg 2001; Martínez-Alier 2001). However, scholars grappling with such questions often faced opponents in the government who tried to block their work. After years of publications, workshops and conferences, the leader of one group noted in a public talk that President Correa had not even been informed of their project’s existence (Charles 2015).

As Lohmann et al. (2013) have pointed out, it behoves us to discern when the concept of energy employed by a particular actor in a particular social struggle may itself be part of the problem (see also Caffentzis et al. 1980; Illich 1983; Angel 2019). They cite (Lohmann et al. 2013: 24–28), for example, a common difference between ‘little-e energies’, which are so entangled in the particular times and places of people’s lives that they may not even be called energies, and ‘big-e energies’, which are conceptualized *as* energy of a uniform kind that is abstractable and disentangleable from particular times and places. From other frames, we might consider a distinction between energy *mētis* and energy *techne* (Scott 1998), or embedded versus disembedded constructions of energy (Polanyi 1944; Illich 1983). In general, we could ask what are the multiple concepts of energy involved in any energy transition.

The *cambio* policies in Ecuador have tended to hinge on a concept of energy as abstract, uniform, disentangled and perfectly convertible between forms. Most notably, the *cambio* assumed that a variety of different entities and processes could replace each other: private and multinational corporations could (seemingly) be replaced with the state; Euro-American loans with petro-barter with China; offshore refining with domestic refining; fossil fuel-burning plants with hydroelectric dams; highly subsidized fuels with less-subsidized electricity. Yet the *cambio* plans shied away from an explicit analysis of the whole array of ramifications implied by such conversions.

Avoidance of a holistic anthropological and ecological analysis helped to insulate and obscure the *cambio*’s ‘failures of reach’, making it seem more wide-reaching and widely beneficial – and indeed more about energy in a holistic sense – than it could be, given its narrow commitments. Grid-bound hydroelectricity in particular was

not able, given the available means, to substitute for diesel and gasoline used in transport and a variety of portable engines, whether in the cities or in the countryside. When fossil fuels subsidy reductions began in 2018, protests began to be mobilized by everyone from bus and taxi drivers' and boat pilots' cooperatives to gas station owners, big industrialists, artisans, farmers and small businesspeople. In the 2018 protests as in the national blockades of October 2019, Ecuadorians have shown their scepticism towards the idea that the government lacks the money to let Ecuadorians reap an advantage from fuels extracted in their own country.

Hornborg (2016: 155) has noted that money may come to be treated as 'fictive energy', that is, it may come to be 'imagined as a vital flow that nourishes society'. Similarly, in Ecuador, a metaphorical mapping of energy and money as both types of resources has been part of dominant commodity-based visions for Ecuador's 'development' path, whether capitalist or socialist (Acosta 2012; Acosta and Villavicencio 2007; Correa 2012). It has been wrapped up in a belief in Ecuador's 'dependency' on natural resources as a 'lifeblood' to which the economy is 'addicted' (Huber 2013). Fossil fuels subsidies in particular acted as one such form of fictive energy, making money and energy appear as natural equivalents, while the elimination of the subsidies focused people's attention on the politics of the equalities and inequalities enabled by these semiotic correlations and their social infrastructural logics.

Framed within the ambitions of the Citizens' Revolution, the *cambio* was part of an attempt to create energy autonomy and break the 'inevitability syndrome' (Nader 1997; Hughes 2017) about Ecuador's seemingly unchangeable position in the global system. Yet in accepting oil-based financial arrangements and in leaving unresolved its internal disunion with Amazonia, the government also participated in reproducing and exacerbating many of the same unequal relations that it otherwise claimed to be trying to resist. It conceptualized energy solutions as separable from racial, ethnic and regional hierarchies. In continuity with the thinking about Amazonian 'golds', the *cambio* ceaselessly framed any kind of energy difference as signifying *lacks* and *gaps* – in the distance to the Oriente, in the level of development of indigenous peoples and in the value of centralized mega-projects over diverse distributed renewables. Indeed, the *cambio*'s avoidance of distributed electricity such as solar and distributed agriculture such as swidden shares roots in the same pro-centralizing political agenda that continues to the present day.

Today, indebtedness built on oil (Sawyer 2004) has been compounded by debts built on hydrodams, land grabbing and minerals mining in increasingly interwoven ways. This quandary of technological change without social transformation signals a problematic tendency for governments to see mega-projects as a kind of ‘magic’ for resolving social problems, and to underestimate the entanglements of energy technologies in unequal relations spanning peoples, regions and the globe. Central dogmas in energy politics such as these are at the heart of what Wolf (1990: 587) has called ‘structural power’, or the habits that channel energy by shaping ‘the social field of action so as to render some kinds of behaviour possible, while making others less possible or impossible’. Indeed, the elite obsession with big-money centralized energy systems remains a key barrier to thinking anew about energy in Ecuador and beyond.

Ecuador’s energy transition policy since 2007, as this chapter has outlined, was presented as a plan to benefit the state and its citizens economically, yet immanent to the plan was also a narrow vision of infrastructural substitution and expansion that entrenched rather than transformed Ecuador’s inequalities within and beyond the country. It failed to achieve its own very limited aims. The narrow framing of the transition obscured processes, such as swidden agriculture, which may not have gone under the name of energy. It forestalled more durable investments in wind and solar and quotidian forms of energy efficiency. However, its struggles have also helped shine a light on the conceptual struggle to distinguish energy from resources. The *cambio* involved little actual study of Ecuador’s existing energy solutions and potentials, which would have required a reflexive questioning of what energy is and means in different contexts without assuming that each kind can be ranked according to a universal equivalent or standard. Far beyond just swapping technologies and channelling flows, the *cambio* had ramifications for virtually all Ecuadorians and every aspect of life, including in societies beyond Ecuador’s borders and other lives that were beyond the plan’s explicit scope. Just as these actual ramifications have been wide in scope, the alternatives to the *cambio* proposed by social movements have not narrowly been ‘energy’ alternatives per se, but more encompassing ones.

Chris Hebdon is a Ph.D. candidate in the Combined Doctoral Program in Anthropology and Environment at Yale University. His research focuses on renewable energy and thermodynamic anthropology.

References

- Acosta, A. 2012. *Breve Historia Económica Del Ecuador*. Quito: Corporación Editora Nacional.
- Acosta, A., and A. Villavicencio. 2007. *Agenda Energética 2007–2011: Hacia Un Sistema Energético Sustentable*. Quito: Ministerio de Energía y Minas.
- Almeida, I. 1992. *Indios: Una Reflexión Sobre El Levantamiento Indígena de 1990*. Quito: Abya-Yala.
- Almeida Vinuesa, J. 1994. 'El Mito de La Amazonía En La Construcción de La Identidad Ecuatoriana', *Memoria: MARKA Instituto de Historia Y Antropología Andinas* 4: 201–24.
- Alvarado, R. 1953. 'El Problema de La Colonización En El Ecuador', *Revista de La Casa de La Cultura Ecuatoriana* 6(14): 6–22.
- Angel, J. 2019. 'Irregular Connections: Everyday Energy Politics in Catalonia', *International Journal of Urban and Regional Research* 43(1): 1–17.
- ARCONEL (Agencia de Regulación y Control de Electricidad). 2018. 'Balance Nacional de Energía Octubre 2018', 15 November. Retrieved 20 July 2020 from <https://www.regulacionelectricidad.gob.ec/balance-nacional>.
- Ayala Mora, E. 2003. 'Centralismo y Descentralización en la Historia del Ecuador del Pasado a la Situación Actual', *Revista Ecuatoriana de Historia* 19: 203–21.
- Baker, L. et al. 2017. 'Mainstreaming Morality: An Examination of Moral Ecologies as a Form of Resistance', *Journal for the Study of Religion, Nature, and Culture* 11(1): 23–55.
- Balée, W.L. 2013. *Cultural Forests of the Amazon: A Historical Ecology of People and Their Landscapes*. Birmingham, AL: University of Alabama Press.
- Barsky, O. 1984. *La Reforma Agraria Ecuatoriana*. Quito: Corporación Editora Nacional.
- Bunker, S.G. 1985. *Underdeveloping the Amazon: Extraction, Unequal Exchange, and the Failure of the Modern State*. Chicago: University of Chicago Press.
- Caffentzis, G. et al. 1980. 'The Work/Energy Crisis and the Apocalypse', *Midnight Notes* 2(1): 1–30.
- Casey, N., and C. Krauss. 2018. 'The Costly Dam That Tethers Ecuador to China', *New York Times* A1.
- Castro, M. 2011. *Hacia Una Matriz Energética Diversificada En Ecuador*. Quito: Centro Ecuatoriano de Derecho Ambiental.
- Cepek, M. 2012. *A Future for Amazonia: Randy Borman and Cofán Environmental Politics*. Austin: University of Texas Press.
- Charles, D. 2015, April 16. 'Research for Transition'. Retrieved 20 July 2020 from <http://commonstransition.org/research-for-transition>.
- Cobes, N.E. 2001. 'Imaginario Tradicionales Sobre El Oriente Ecuatoriano', *Revista de Indias* LXI(223): 541–71.

- Commons, W. 2010. 'Coat of Arms of Ecuador'. Retrieved 20 July 2020 from https://commons.wikimedia.org/wiki/File:Coat_of_arms_of_Ecuador.svg.
- CONELEC (Consejo Nacional de Electricidad del Ecuador). 2009. *Plan Maestro de Electrificación 2009–2020*. Quito: Consejo Nacional de Electricidad.
- . 2012. *Plan Maestro de Electrificación 2013–2022*. Quito: Consejo Nacional de Electricidad.
- Coronil, F. 1996. 'Beyond Occidentalism: Toward Nonimperial Geohistorical Categories', *Cultural Anthropology* 11(1): 51–87.
- Correa, R. 2009. *Ecuador: De Banana Republic a La No República*. Bogotá: Debate.
- . 2012. 'Ecuador's Path', *New Left Review* 77: 89–104.
- Dall'Alba, J.L. 1992. *Pioneros, Nativos y Colonos: El Dorado en el Siglo XX*. Cayambe, Ecuador: Ediciones Abya-Yala.
- Del Pilar Gamarra, M. 1996. 'La Frontera Nómada: Frentes y Fronteras Económicas en el Proceso Cauchero Ecuatoriano (1870–1920)', *Procesos: Revista Ecuatoriana de Historia* 1(9): 39–79.
- Delaunay, D. et al. 1990. *Transición Demográfica en el Ecuador*, Geografía Básica del Ecuador (vol. 2). Quito: Centro Ecuatoriano de Investigación Geográfica.
- Eichler, A. 1983. 'Economía Agrícola al Revés'. *Kipu* 1: 150.
- Esvetit-Cobes, N. 2008. *La Incipiente Provincia: Amazonía y Estado Ecuatoriano en el Siglo XIX*. Quito: Universidad Andina Simón Bolívar.
- Evans-Pritchard, E.E. 1940. *The Nuer: A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*. Oxford: Oxford University Press.
- Fischer, W.T. 2015. 'Ecuadorianizing the Oriente: State Formation and Nationalism in Ecuador's Amazon, 1900–1969', Ph.D. dissertation. Gainesville: University of Florida.
- . 2016. 'Constructing and Celebrating a National Object of Desire: The Amazonian Oriente Frontier and Ecuadorian Society, 1900–1946', in M.J. Tejada and B. Tatar (eds), *Transnational Frontiers of Asia and Latin America Since 1800*. New York: Routledge, pp. 163–76.
- Fontaine, G. et al. 2019. 'Policy Mixes against Oil Dependence: Resource Nationalism, Layering and Contradictions in Ecuador's Energy Transition', *Energy Research & Social Science* 47: 56–68.
- Ford, A., and R. Nigh. 2016. *The Maya Forest Garden: Eight Millennia of Sustainable Cultivation of the Tropical Woodlands*. Walnut Creek, CA: Left Coast Press.
- Ford, M. 2017. 'The Other Slavery at the Heart of America: Andrés Bello, Indian Enslavement, and Looking South to Amazonia', *Middle Atlantic Review of Latin American Studies* 1(2): 62–75.
- Fox, J. et al. 2000. 'Shifting Cultivation: A New Old Paradigm for Managing Tropical Forests', *American Institute of Biological Sciences Bulletin* 50(6): 521–28.

- Gaechter, D.A. 2007. 'Recolonizing Ecuador's Oriente: Oil, Agriculture, and the Myth of Empty Lands', M.A. thesis. Vancouver: University of British Columbia.
- Garzón, P., and D. Castro. 2018. 'China–Ecuador Relations and the Development of the Hydro Sector', in E.D. Peters et al. (eds), *Building Development for New Era: China's Infrastructure Projects in Latin America and the Caribbean*. Distrito Federal, Mexico: University of Pittsburgh Asian Studies Center; Center for International Studies, pp. 24–57.
- Gobierno Autónomo Descentralizado de Napo. 2017. *Ordenanza para Declarar la Chakra Kichwa como Sistema Sostenible en la Provincia de Napo*. Napo: Gobierno Autónomo Descentralizado.
- Gondard, P., and H. Mazurek. 2001. '30 Años de Reforma Agraria Y Colonización En El Ecuador (1964–1994): Dinámicas Espaciales', *Estudios de Geografía* 10: 15–40.
- González Suárez, F. 1890. *Historia General de La República del Ecuador* (vols 1 – 5). Quito: Publicaciones Educativas Ariel.
- Grijalva, O. et al. 2011. *Mejoramiento de Chakras, una Alternativa de Sistema Integrado con Cacao, Cultivos Anuales y árboles en el Alto Napo*. Quito: INIAP, Estación Experimental Santa Catalina, Programa Nacional de Forestería.
- Gualinga Montalvo, J. 2005. 'Pueblo Originario Kichwa de Sarayaku Tayjasaruta, Propuesta Declaratoria de Kausak Sacha, Selva Viviente, (Territorio Sagrado, Patrimonio de la Biodiversidad y Cultura Kichwa en Ecuador)', *Ecología Política: Cuadernos de Debate Internacional* 29: 168–75.
- Hecht, S., and A. Cockburn. 1990. *The Fate of the Forest: Developers, Destroyers, and Defenders of the Amazon*. Chicago: University of Chicago Press.
- Hornborg, A. 1998. 'Toward an Ecological Theory of Unequal Exchange: Articulating World System Theory and Ecological Economics', *Ecological Economics* 25(1): 127–36.
- . 2001. *The Power of the Machine: Global Inequalities of Economy, Technology, and Environment*. Walnut Creek, CA: AltaMira Press.
- . 2016. *Global Magic*. New York: Palgrave Macmillan.
- Huber, M.T. 2013. *Lifeblood: Oil, Freedom, and the Forces of Capital*. Minneapolis: University of Minnesota Press.
- Hughes, D.M. 2017. *Energy without Conscience: Oil, Climate, and Complicity*. Durham, NC: Duke University Press.
- IERAC (Instituto Ecuatoriano de Reforma Agraria y Colonización). 1972. *Estadísticas de Las Adjudicaciones Legalizadas En Reforma Agraria Y Colonización, 1964–1972*. Quito: Instituto Ecuatoriano de Reforma Agraria y Colonización.
- Illich, I. 1983. 'The Social Construction of Energy', *New Geographies* 2: 11–19.
- Keleman-Saxena, A. et al. 2017. 'Indigenous Agriculture and the Politics of Knowledge', in P. Sillitoe (ed.), *Indigenous Knowledge: Enhancing Its*

- Contribution to Natural Resources Management*. Wallingford: CABI, pp. 203–17.
- La Tierra (ed.). February 1949. ‘Presidente Plaza Califica de Absurda La Colonización Masiva Del Oriente’. *La Tierra*, page 6.
- Lohmann, L. et al. 2013. *Energy Alternatives: Surveying the Territory*. Manchester: The Corner House.
- Ludlow, F. et al. 2017. ‘The Double Binds of Indigeneity and Indigenous Resistance’, *Humanities* 5(53): 1–19.
- Macdonald, T. 1979. ‘Processes of Change in Amazonian Ecuador: Quijos Quichua Indians Become Cattlemen’, Ph.D. Dissertation. Urbana: University of Illinois.
- . 1995. ‘Indigenous Politics and Local Heritage in the 1990s: Shifting Concepts of Land Use, Land Tenure, and Self’, *Yale School of Forestry and Environmental Studies Bulletin* 98: 87–103.
- . 1999. *Ethnicity and Culture amidst New Neighbors: The Runa of Ecuador’s Amazon Region*. Boston: Allyn & Bacon.
- . 2015. ‘Beyond Dinosaurs and Oil Spills’, *ReVista: Harvard Review of Latin America* 15 (1): 56–61.
- MAGAP/MAE (Ministerio de Agricultura y Ganadería/Ministerio del Ambiente). 2013. *Mapa de Cobertura y Uso de la Tierra del Ecuador Continental*. Quito: Ministerio de Agricultura y Ganadería.
- Martínez, J. et al. 2017. ‘Analysis of Energy, CO₂ Emissions and Economy of the Technological Migration for Clean Cooking in Ecuador’, *Energy Policy* 107: 182–87.
- Martínez-Alier, J. 2001. *Environmentalisms of the Poor*. New York: Oxford University Press.
- Martínez-Gómez, J. et al. 2017. ‘Analysis of the “Plan Fronteras” for Clean Cooking in Ecuador’, *International Journal of Energy Economics and Policy* 7(1): 135–45.
- MEER (Ministerio de Electricidad y Energía Renovable). 2017. *Balance Energético Nacional 2017, Año Base 2016*. Quito: Ministerio de Electricidad y Energía Renovable.
- MICSE (Ministerio Coordinador de Sectores Estratégicos). 2013. *Balance Energético Nacional 2013, Año Base 2012: Resumen*. Quito: Ministerio Coordinador de Sectores Estratégicos.
- Muratorio, B. 1987. *Rucuyaya Alonso y la Historia Social y Económica Del Alto Napo, 1850–1950*. Quito: Ediciones Abya-Yala.
- Nader, L. 1997. ‘Controlling Processes: The Dynamic Components of Power’, *Current Anthropology* 38(5): 711–38.
- . 2010. ‘Side by Side: The Other Is Not Mute’, in A. Iskandar and H. Rustom (eds), *Edward Said: A Legacy of Emancipation and Representation*. Berkeley: University of California Press, pp. 72–85.
- Odum, H. 1971. *Environment, Power and Society*. New York: Wiley-Interscience.
- Peng, R. 2015. ‘Constructing Hydropower: Labor Control in Chinese Trans-

- national Hydroelectric Projects in Ecuador', MA thesis. Tuscan: University of Arizona.
- Plaza, G. 1949. *Economía Y Producción en el Ecuador: Exposición del Presidente Constitucional de la República, Excmo. Señor Galo Plaza, Radiada en Guayaquil, el 7 de Mayo de 1949*. Quito: Talleres Gráficos Nacionales.
- Polanyi, K. 1944. *The Great Transformation*. Boston: Beacon Press.
- Porras, P.I. 1979. 'The Discovery in Rome of an Anonymous Document on the Quijo Indians of the Upper Napo, Eastern Ecuador', in D. Browman and R.H. Schwartz (eds), *Peasants, Primitives, and Proletarians: The Struggle for Identity in South America*. Berlin: De Gruyter Mouton, pp. 13–47.
- Ramirez Gallegos, R. 2012. *Socialismo del Sumak Kawsay, O Biosocialismo Republicano*. Quito: Imprenta Don Bosco.
- Rogers, D. 2014. 'Petrobarter', *Current Anthropology* 55(2): 131–53.
- Rudel, T.K., and B. Horowitz. 1993. *Tropical Deforestation: Small Farmers and Land Clearing in the Ecuadorian Amazon*. New York: Columbia University Press.
- Sarayaku, el Pueblo Originario Kichwa de. 2003. *Sarayaku Sumak Kawsayta Katina Killka*. Sarayaku, Ecuador: Tayak Yuyayta Jatachik Runaguna Tandanakuy.
- Sawyer, S. 2004. *Crude Chronicles: Indigenous Politics, Multinational Oil, and Neoliberalism in Ecuador*. Durham, NC: Duke University Press.
- Scott, J.C. 1998. *Seeing Like a State*. New Haven: Yale University Press.
- SENPLADES (Secretaría Nacional de Planificación y Desarrollo). 2009. *Plan Nacional para el Buen Vivir 2009–2013: Construyendo un Estado Plurinacional e Intercultural*. Mexico City: Talleres Gráficos Calle.
- . 2013. *Buen Vivir: Plan Nacional, 2013–2017: Todo el Mundo Mejor*. Quito: Secretaría Nacional de Planificación y Desarrollo.
- Silva Charvet, E. 2003. *Mushuk Allpa: La Experiencia de los Indígenas de Pastaza en la Conservación de la Selva Amazónica*. Puyo, Pastaza: Comumidec y el Instituto Amazanga.
- Sirén, A. 2004. 'Changing Interactions between Humans and Nature in Sarayaku, Ecuadorian Amazon' doctoral dissertation. Uppsala: Sveriges lantbruksuniv., Acta Universitatis agriculturae Sueciae. Agraria.
- Taylor, A.C. 1989. 'El Oriente Ecuatoriano en el Siglo XIX: "El Otro Litoral"', in J. Maiguashca (ed.), *Historia y Región en el Ecuador 1830–1930*. Biblioteca de Ciencias Sociales. Quito: Corporación Editora Nacional y FLACSO-Ecuador.
- Trimbur, T., and M. Watts. 1976. 'Are Cultural Ecologists Adapted? A Review of the Concept of Adaptation', *Proceedings of the Association of American Geographers* 8: 179–83.
- Universo, E. 2017. 'Ecuador Financió Compra del 75% de Cocinas de Inducción', *El Universo*. Retrieved 20 July 2020 from <https://www.eluniverso.com/noticias/2017/10/15/nota/6430648/estado-financio-compra-75-cocinas-induccion>.

- Vasconez Salvador, O. 1977. *La Colonización de La Región Amazónica Ecuatoriana, Obra Nacional*. Quito: Ministerio de Agricultura y Ganadería.
- Villavicencio, A. n.d.. 'El Cambio de la Matriz Productiva o la Mayor Estafa Política de La Historia', *Plan V*. Retrieved 20 July 2020 from <https://www.planv.com.ec/historias/sociedad/el-cambio-la-matriz-productiva-o-la-mayor-estafa-politica-la-historia>.
- Villavicencio, M. 1858. *Geografía de la República del Ecuador*. New York: Imprenta de Robert Craighead.
- Vistazo. 2019. '\$650 Milliones se Requerira para Reparar Obras Petroleras', in *Vistazo*. Retrieved 20 July 2020 from <https://www.vistazo.com/seccion/pais/politica-nacional/650-millones-se-requeriran-para-reparar-obras-petroleras>.
- Viteri, C. 1993. *Mundos Míticos: Runa Mundos Amazónicos: Pueblos y Culturas de la Amazonía Ecuatoriana*, N. Paymal and C. Sosa (eds). Quito: Fundación Sinchi Sacha.
- . 2003. *Sumak Kawsai: Una Respuesta Viable al Desarrollo*. Quito: Universidad Salesiana.
- Vizcaíno, V.A. 2009. *Chakras, Bosques y Ríos: El Entramado de La Biocultura Amazónica*. Quito: INIAP Archivo Historico.
- Whitten, N. 1976. *Ecuadorian Ethnocide and Indigenous Ethnogenesis: Amazonian Resurgence amidst Andean Colonialism*. Copenhagen: International Working Group on Indigenous Affairs.
- Whitten, N. et al. 1997. 'Return of the Yumbo: The Indigenous Caminata from Amazonia to Andean Quito', *American Ethnologist* 24(2): 355–91.
- Wolf, E. 1990. 'Facing Power: Old Insights, New Directions', *American Anthropologist* 92: 586–96.
- Wolf, T. 1892. *Geografía y Geología del Ecuador: Publicada por Orden del Supremo Gobierno de la República*. Quito: Tipografía de F.A. Brockhaus.

Nepal's Water, the People's Investment? Hydropolitical Volumes and Speculative Refrains

Austin Lord and Matthäus Rest

Enacting the Hydropower Future: '10,000 MW in 10 Years'

Stuck in traffic on the way to the Power Summit in December 2016, we decided to get out of the taxi and walk. The way to Bouddha was a giant construction site: the road was being widened and trenches were being dug to accommodate the new pipes of the long-promised Melamchi drinking water project (Rest 2019). Pipes were stacked alongside the road, their inert immensity materializing the muddy promise of Nepal's imagined infrastructural futures. Walking along the road, we passed the camp at Pasang Lhamu Chowk for people displaced by the 2015 earthquake, a labyrinth of plastic tarps caked with dust. Eighteen months after the 2015 earthquake, several hundred people still lived here just outside the gate of the Hyatt, the ritzy enclave where the 2016 Power Summit was being held. Passing the security checkpoint and its queue of SUVs awaiting entry, we walked up the long green driveway to the hotel. Prayer flags and signs for the Power Summit were hung rhythmically along the way, repetitively affirming the event slogan '10,000 MW in 10 Years'.

Upon reaching the hotel, we turned left in the atrium and descended down a broad set of stairs into the separate event hall. Quickly, the neoclassical Nepalese architectural style of the hotel gave way to a fluorescent hallway adorned with the logos of institutional and corporate sponsors – a spectacular gateway to the hydropower future. As we entered the cavernous ballroom, the programme abruptly

began with an intensely affective opening salvo. First, there was a short video that summarized the history of hydropower in Nepal and framed the potential of the current historical moment: scenes of the 2015 earthquake and the resilient people of Nepal, the historic promulgation of Nepal's Constitution in late 2015, the fuel crisis triggered by the 'unofficial blockade' of India against Nepal that followed, and recent promises made by the current government. Reaching a crescendo, the video welcomed us all to the 2016 Power Summit and formally introduced the bold goal of installing 10,000 MW of hydroelectric generation capacity in the next ten years – '10,000 MW in 10 Years'. The assembled crowd rose as a former Miss Nepal invited Prime Minister Puspha Kamal Dahal to formally inaugurate the Summit. After he gave a short speech, a troupe of child performers were herded onto the stage, each dressed in the traditional clothing of a different ethnic group, to sing the national anthem. This series of prospective performances was meant to set the mood and focus our attention – to enact an affective atmosphere of anticipation and to mobilize a coherent, rousing, realizable and united vision of Nepal's hydropower future perfect.

For decades, the Nepalese government and the hydropower sector, often in concert with the Western donor community, have presented hydropower development as Nepal's only way out of the club of Least Developed Countries. Narratives about hydropower development in Nepal are typically constructed in terms of two main themes: the immense possibilities for development offered by the natural water resource endowment of Nepal and the longstanding failure to realize that dream.¹ The bright future and the dark past are typically mentioned in the same breath. Amid the recursive patterns of hype and hope that animate Nepal's hydropower sector, a series of common affective refrains recur, such as nationalist assertions that 'not one drop of water should flow beyond Nepal's borders without creating wealth'. During the previous Power Summit of 2013, one speaker invoked a moral duty to develop hydropower resources, highlighting the need to prevent 'an entire generation from growing up in the dark'. Reflecting broader patterns of hydronationalism, these visions of the hydropower future are 'structured through contested notions of progress, emancipation, and betterment' (Swynge-douw 1999: 449). Thus, after more than a century of hydropower development efforts, the country has arrived at the Power Summit 2016, animated by the continuous repetition of a new spectacular refrain – '10,000 MW in 10 Years' – itself an upgraded refrain of previous proclamations.



Figure 3.1. Government officials and hydropower developers discuss future paths to 10,000 MW during the final session of the Power Summit, December 2016. © Austin Lord.

Spectacular Refrains

Spectacular events like the Power Summit generate and maintain a sprawling economy of anticipation organized around the promise of Nepal's hydropower future, popularly understood as a dream deferred. These events coordinate oratorical and prospective practices focused on claiming Nepal's hydropower future, reproducing a discursive regime that emphasizes both the liminality of the present and the abundance of the imagined resource future.

Over the years, these performances and re-enactments of future prosperity have become rhythmic *refrains*, a discursive tool for coordinating an assemblage of territorial motifs, spatializing state practices and affective orientations to the future (Merriman and Jones 2017: 604). These refrains, often articulated as planning goals, reproduce and amplify the authority of the state apparatus and its 'state effects' (Abram and Weszkalnys 2011). Refrains enable larger resource-making projects, inscribing the current or future value of resources (realized or unrealized) in collective social imaginaries. As state-sponsored refrains circulate, they seek to establish discursive

hegemony. Consider, for example, the way in which practically every citizen has been made aware that Nepal has an estimated 83,000 MW of hydropower generation capacity – a calculation from 1966 that has remained unchallenged, despite the lack of reliable hydrological data on most river systems. ‘This figure, known to almost any schoolchild, is repeated endlessly in the media as Nepal’s passport out of poverty. It is equally well known that more than half a century of effort by various Nepali governments, its giant neighbours and international aid agencies have not produced the imagined cornucopia’ (Dixit and Gyawali 2010: 107). As new and old refrains circulate, they enhance a public sense of infrastructural enchantment (Harvey and Knox 2012) and inculcate a hopeful and hydrological form of national ‘resource affect’ (Weszkalnys 2016). Nepalis are told that the hydropower future is close at hand, that *bikas* (development) is flowing right by their homes, going to waste.

In this chapter, we consider the shifting contours of the imaginative terrains enacted by events like the Power Summit, focusing on the recent popularization of ‘the shareholder model’ of hydropower development in Nepal. Contemporary state ambitions to capitalize the hydropower frontier, we argue, are best understood through the speculative slogan ‘Nepalko Paani, Janatako Lagaani’, which translates as ‘Nepal’s water, [the] people’s investment’. While several states have presented ‘people-centred’ hydropower development discourse in the past, Nepal is a unique case where citizens are being summoned as *shareholders*: to purchase publicly traded equity in hydropower companies (IFC 2018; Lord 2016, 2018). In recent years, as popular investment in hydropower companies has increased across Nepal, this phrase has emerged as an important nationalist refrain that indexes the speculative and affective energy of the contemporary hydropower frontier.

We argue that the discursive ascendance of the ‘Nepalko Paani, Janatako Lagaani’ (NPJL) refrain speaks to a double process of securitization: both a material effort to *secure* Nepal’s hydrologic volumes through dam construction, and a concerted financial attempt to *securitize* those volumes by translating them into publicly-traded securities in which Nepal’s citizens can invest. Building from previous analyses of the ways in which nation-states attempt to create territory by ‘securing volumes’ (Elden 2013) and the ways in that claims to volumes are tangled up in claims to sovereignty, we examine the ways in which the NPJL trope, understood as a state-sponsored refrain, seeks to reconfigure the relationships between the Nepalese state, the hydrologic volumes it seeks to accumulate, capital and the

various publics of Nepal. As we will show, these attempts to enact and claim futures are all essentially concerned with questions of security and volume: the control of different kinds of volumes with different qualities.

In the first two sections of the chapter, we consider the emergence of the NPJL refrain and the way in which it interacts with other volumetric claims on Nepal's hydropower future. Drawing from participant observation conducted at a variety of hydropower sector events, interviews with representatives from the hydropower sector, and content analysis of contemporary political discourse, we examine how and why this concept has gained discursive momentum among broader Nepali publics.

Building on the work of other scholars who have demonstrated that 'the affective dimensions of resource-making projects also saturate people's conceptions of time and the future' (Ferry 2016: 185; Ferry and Limbert 2008), we show how the phrasing of NPJL captures a particular configuration of infrastructural ambitions at a critical moment in the broader history of hydropower in Nepal. Critically, while highlighting the ways in which dreams of becoming a 'hydropower nation' (Lord 2016) have long circulated in Nepal, we do not seek to reify the Nepalese state or the 'hydropower nation' as a real and coherent entity; instead, we highlight the ways that the refrains of hydropower development serve as a method for enacting a coherence that the Nepalese state lacks. We argue that NPJL has become a central discursive device, used to enact and implement a new set of relations between the state and its citizens. On the one hand, it postulates a right to ownership of national natural resources for its citizens, while, on the other hand, it turns reinvesting individual financial assets into them into a civic duty.

In the third section, we follow the NPJL refrain to two national-priority hydropower project sites in the Arun and Tamakoshi watersheds. Drawing on long-term ethnographic research conducted in the project-affected areas of the Arun-3 and Upper Tamakoshi hydropower projects (both currently under construction), we consider the ways in which NPJL is understood by the differently positioned project-affected populations that might also be 'local investors'. While hydropower development often resembles Ferguson's (1990) anti-politics machine, we show how the refrain of NPJL creates a new field for the practice of politics, enabling a variety of different volumetric claims on Nepal's hydropower future. As refrains circulate, they can take on a life of their own, as the state is speaking to 'a number of different audiences who hear different things; and who,

in repeating what the state says to still other audiences, changes the words, tones, inflections, and meanings' (Roseberry 1994: 365). Reflecting on the polysemic qualities of NPJL, we ask how do other publics – the varied body of citizens, stakeholders and potential investors – relate to the NPJL idea? In what ways are the people of Nepal reformulating this refrain in their own terms?

Finally, we highlight the ways in which state-sponsored efforts to 'secure the volume' through hydropower development are complicated by a variety of *unsecured* volumes and flows. Infrastructures are constantly being made and unmade. After several years conducting research on hydropower development in Nepal, we are acutely aware of the fact that Nepal's imagined hydropower frontier is anything but stable; rather, the entanglement of complicated geology, hydrological uncertainties, seismic risk, geopolitical volatility, and logistical and bureaucratic challenges continue to trouble dreams of a secure hydropower future (Butler and Rest 2017; Huber 2019; Lord 2017, 2018). The presence of these unsecured volumes also complicates the financial narratives of shared wealth creation that drive the proliferation of the shareholder model of hydropower development. By highlighting the repeated emergence and unruliness of unsecured volumes, we highlight the uncertainty and contingency of the imagined hydropower future.

Securing Future Volumes

Nepal is a small nation often referred to as 'a yam between two boulders' or 'a mouse between two elephants', which shares its rivers with China and India. The government is particularly keen to lay claim to water resources flowing within its borders and to export electricity to markets in nearby India and Bangladesh. To make this dream a reality, Nepali citizens are being called on to invest in hydropower development, which is presented as a national initiative towards energy security, socioeconomic development, and geopolitical self-determination. As the government, the hydropower sector, development agencies, foreign diplomats and the media reiterate the value of Nepal's hydropower resources, Nepal's water volumes are popularly imagined as an untapped reservoir for future wealth.

In recent years, scholars have shown a growing interest in moving beyond two-dimensional representations of sovereignty and to

define territorial ambitions in terms of volumes. As Elden (2017) recently stated: 'Often focused on state borders, territory more properly extends through the fabric of the state and can only be grasped as volume.' Critical studies of 'waterscapes' have long argued that territorial contestations over volumes are particularly pertinent in the context of water, and analysed the shifting relations between water, technology and the nation-state (Baviskar 2007; Menga and Swynedouw 2018). For South Asia, colleagues have discussed nationalist framing of water management (Gyawali 2003; Klingensmith 2007; Rademacher 2011) and highlighted the reasons why water is a particularly challenging volume to control (Anand 2017; Björkman 2015; D'Souza 2006). Most recently, scholars have turned their attention to contestations over 'volumetric sovereignty', which can generate new forms of turbulence as different flows interact (Lord 2019; Billé 2019, 2020). Nationalist ambitions and volumetric uncertainty are both particularly intense in Nepal, given the relative economic scale of Nepal's hydropower resources and the intense uncertainty of Himalayan hydrology.

While Nepal has long been interested in developing its hydropower resources, in recent years the Nepalese government has demonstrated an increasing interest in securing Nepal's 'energy sovereignty' and in developing new strategies to capitalize its largely unrealized hydropower frontier. These trends were evident at the 2016 Power Summit, which gathered the most important players of the private hydropower industry and the public sector together with the ambassadors of the most influential foreign powers, and a few foreign experts, to discuss a variety of contemporary issues and future scenarios. Throughout the Power Summit, participants engaged in elaborate games of 'counting up the future' by listing their favourite projects, adding their capacity and reassuring each other that 10,000 MW was an ambitious number, but was not impossible. Like earlier exercises undertaken to ascertain the 83,000 MW of the hydropower future, we understand this game as a kind of 'geo-metrics' (Elden 2013), a process of knowing and calculating potentiality of territory. But what kind of hydrologic and financial volumes need to be secured in order to generate '10,000 MW in 10 Years'?

'10,000 MW in 10 years' is also a volumetric claim on the future: as a mandate to develop the infrastructure required to harness water volumes capable of generating 10,000 megawatts of hydroelectric power. As all Nepalis are aware, this will take billions of dollars and mountains of concrete. Articulated in a single refrain, this statement

puts forth a headline number and a time horizon, while at the same time referencing a series of similar targets that have been uttered in the past. In this chapter, our analysis highlights the cascade of uncertainties this speculative refrain conveniently elides or occludes. Even in the event of reaching the stated goal, it is in no way clear what 10,000 MW would mean in terms of actual electricity produced. Technically, the number refers to an installed capacity, which is a statement of potential; this potential is shaped by and directly dependent on the seasonality of water and flow in Nepal.²

In short, Nepal is highly dependent on its rivers for its production of electricity, and yet the volume of those rivers fluctuates dramatically. Due to the monsoons – the dominant weather system in South Asia that brings perennial struggles with ‘unruly waters’ (Amrith 2018) – about half of the annual precipitation typically falls over just fifteen days, while there is hardly any rain at all in the eight months between October and May. For hydropower companies, this creates a huge discrepancy between potential summer production of electricity and the ‘firm energy’ that can be produced on a normal day in December. Critically, climate change will also have considerable effects on the flow regimes of Nepal’s rivers as the timing of the monsoons becomes increasingly unstable and the contributions of melting glaciers, often referred to as ‘the water towers of South Asia’, fluctuate (Immerzeel et al. 2010; Wester et al. 2019). Critical voices are increasingly pointing out how climatological and hydrological changes pose a risk to Himalayan hydropower (Dixit 2019; Huber 2019). Climate change therefore brings both new challenges for states looking to secure water volumes and new narratives of urgency that can be used to justify efforts to store volumes and control over the timing of flows.

In the following sections, we consider the rise of a new technique for underwriting Nepal’s hydropower future: tapping into ‘domestic capital’ and encouraging the citizens of Nepal to invest in the making of the imagined hydropower nation through the rapid proliferation of the ‘shareholder model’ of hydropower development, exemplified by the emergence of two initiatives to create citizen shareholders. Focusing on the NPJL refrain and the various people and things it attempts to choreograph, we ask how exactly is *paani* (water) being conceptualized in this new project? What efforts are being undertaken to secure and regularize watery volumes? And who exactly are the *janata* (people) whose investments will be leveraged to build the imagined hydropower nation?

Popular Speculation: The 'Nepalko Paani Janatako Lagaani' Refrain

As the citizens of an imagined 'hydropower nation', Nepalis are represented within multiple frames of subjectivity by multiple state and private sector actors – as political subjects longing for development, as electricity users whose patterns of future energy consumption must be accounted for, as 'project-affected people' who must bear the impacts of future-making projects and as project stakeholders who will share the benefits of hydropower development. Since the 2000 World Commission on Dams, globally circulating questions about 'corporate social responsibility' and 'benefit sharing' in the hydropower sector have become significant in Nepal (Dixit and Gyawali 2010; Shrestha et al. 2016). As debates about the appropriate models for 'benefit sharing' in Nepal's hydropower sector continue, a new and financialized kind of subjectivity has become increasingly prominent: the Nepali as a citizen shareholder of the hydropower future.

Critically, we are not talking about the idea of being a 'shareholder' in the abstract. In January 2019, when we began writing this chapter, nearly one million Nepalis had bought shares in a variety of hydropower companies – twenty-three hydropower companies are now publicly listed on the Nepal Stock Exchange and another thirty-five companies have filed to conduct initial public offerings (ShareSansar 2019). This trend began when the Chilime Hydropower Company created the 'shareholder model' of hydropower development in 2010 – a funding modality that emerged from prolonged negotiations with project-affected locals, created significant wealth for Chilime shareholders and established a critical precedent in Nepal's hydropower sector (Lord 2016: 154–56). The result was the birth of a new model of hydropower governance that has rapidly proliferated throughout Nepal, wherein 15% of company shares are offered to the general public and 10% of shares are offered to local, 'project-affected populations'.³

After decades of indeterminacy, many Nepalis living in the vicinity of hydropower projects are understandably interested in the prospect of 'becoming an agent of *bikas* [development] rather than one of its targets' (Pigg 1992: 511) by participating in what is sometimes referred to as a 'public-private-people partnership'. In the district of Rasuwa, there are more people who purchased shares in the 2010 Chilime offering than people who voted in the national elections of 2013. Local Chilime shareholders often speak glowingly about the

opportunity to claim the rights, recognition and share of company profits accorded to shareholders, and hope for future opportunities to invest. As this popular reorientation of hydropower subjectivities continues, a new and speculative frontier of aspiration has emerged.

As an attempt to expand the shareholder model to the scale of the nation-state, the NPJL concept references a complex assemblage of other ideas about resource governance, energy security, sovereignty, shareholder capitalism and citizenship. Further, while the shareholder model emerged in a socioeconomic and political context specific to Nepal, one could also argue that it reflects a global trend where governments and their corporate allies seek to encourage the 'productive involvement of the citizens of resource-rich countries in the creation of resource wealth' (Weszkalnys 2016: 140).

Writing about the experiences of people waiting for a future oil economy to arrive in São Tomé and Príncipe, Weszkalnys introduced the concept of 'resource affect', suggesting that state and corporate resource-making efforts to materialize resource futures focus 'no longer simply on macroeconomic issues and elite politics but on the purported hopes, desires, and aspirations of citizens in producer states' (Weszkalnys 2016: 161). In Nepal, we argue, the 'shareholder model' of hydropower development is also a machine for generating, modulating and coordinating resource affect, a means of summoning domestic capital to invest in the hydropower frontier. Tellingly, the NPJL trope first emerged in response to an 'energy emergency': as the slogan of an ambitious 'crisis management plan' that bundled together an array of policy reforms focused on removing barriers to rapid hydropower development. Despite debates over the exact causes of the energy scarcity and disagreements over the scale of future electricity demand, both the state and private actors see the current situation as an energy crisis.

In October 2015, less than six months after Nepal was struck by a 7.8 magnitude earthquake and a few weeks after the promulgation of a long-awaited new constitution, an 'unofficial blockade' took shape along the Nepal–India border, causing a protracted fuel crisis in Kathmandu (Jha 2015). During the four months that the blockade was in place, post-earthquake reconstruction work was significantly compromised, infrastructure projects came to a halt and the denizens of Kathmandu were forced to wait in line for days to get petrol. These experiences of energy scarcity and the significant economic losses associated with the blockade dredged up painful memories of a similar geopolitical scenario in 1989. As anxieties about energy insecurity mixed with nationalist discourse about the need for Nepal's

'energy sovereignty', the hydropower sector called on the Nepalese government to declare an 'energy emergency'.

In February 2016, just after the blockade ended, the Nepalese government declared a national energy crisis (for the fourth time in eight years) and announced a 'National Energy Crisis Reduction and Electricity Development Decade'. Using affective rhetoric to highlight chronic insecurities and threats, the state and its corporate allies invoked a moral and pre-emptive narrative of security and drafted an official ten-year plan organized around two highly aspirational goals: providing electricity to every household and helping every Nepali become a shareholder with claims to national hydropower wealth. This plan reconfigured existing hydropower policy and sought to secure the hydropower frontier as a space open for investment. Tellingly, this plan reclassified hydropower sites as 'restricted areas' and allowed private contractors to deploy state security forces in response to 'obstruction from political parties and locals' (*Kathmandu Post* 2016), creating a state of exception. Supported by affective crisis narratives, these interventions were clearly intended to 'secure the volume' of imagined future hydropower wealth. This effort was part of a double securitization: to promote investment and to stake a claim to project sites.

Organized under the official slogan NPJL, these territorializing efforts and the exercise of state power were justified by using both classic ideas about the greater good and the logic of shareholder capitalism. The slogan was meant to: (a) re-enact the imagined communities of the hydropower nation; (b) imply that state intervention was necessary to protect future shareholder value and secure returns on investment; and (c) promote and coordinate popular investment in the dream of energy sovereignty. Like all good state refrains, it sought to choreograph the actions and affective orientations of the citizenry and it was intended to be, in many ways, a self-fulfilling prophecy (Merriman and Jones 2017).

The intensity of the shareholder trend became even more apparent in January 2017 when the Ministry of Energy launched an online crowdfunding platform also called 'Nepalko Paani Janatako Lagaani', raising the equivalent of US\$1.5 million in its first three days. This initiative, intended to target both Nepali citizens residing in Nepal and those living abroad, also sought to tap into the populist appeal of citizen shareholder ship. The fact that the proposal did not specify which projects would be funded and did not provide any details on the terms of the investment speaks of the speculative exuberance of the moment. For two years, we did not see any updates on

the scheme. Recently, the media reported that the programme ‘was aborted midway after collecting investment commitments from the public’ (*Repubblica* 2019), while describing a new campaign by the same name (see below). This campaign and its successors are an attempt by the Ministry of Energy to cash in on a bubble, but they also speak of a broader set of efforts to summon Nepalis to invest in their *own* hydropower development.

As an effort to reconfigure the relationship between Nepalese citizens and ‘Nepal’s water’, this speculative refrain is both a resource-making project and a scale-making project. As a coordinated programme designed to create a nation of hydro-investors, it is simultaneously a technique of governance that seeks to conduct the conduct of citizens using ‘technologies of imagination’ (Bear 2015; Sneath et al. 2009), an anti-political statement about the correct and best use of water resources that reflects classic developmental logic, and an aspirational ethos.

In the end, this is not about Nepal’s water, but about power (electric, governmental and discursive) and subjectivity. In this case, hydraulic territories are the object to which the state and the private sector turn their attention, but the potential investors of Nepal are the subject. As Abram and Weszkalnys (2011: 10) have suggested, planning processes often reduce diverse publics to an abstract ‘quasi-individual’ that is the target or subject of projects of improvement and future-making – ‘the public is often treated as though it were an empirical entity, when it is better imagined as being called into existence in the planning moment’. But who exactly are the diverse publics here?

Going Upstream: A Tale of Two Rivers

Case 1: The Arun-3 Project

So far, the majority of people eligible for buying ‘local’ shares at the hydropower frontier are members of indigenous groups and ethnic minorities living in mountainous and formerly remote ‘project-affected areas’ – people who have been occupying the margins of the Nepalese state, both geographically and socially, since its so-called ‘unification’ in the late eighteenth century. Only the recent boom in work migration to places like the Arab Gulf has provided some within these communities with money to spare. To date, most places in the Nepali hills and mountains severely lack investment options; without a road and electricity, it is difficult to buy things. People long

for the material flows associated with *bikas* (development) and the amenities (*savidha*) these entail.

This sense of extended waiting for development is very graspable in the upper Arun Valley of eastern Nepal (Rest 2012). This is because a road was promised to 'arrive' here in 1992 in order to access the construction site of the Arun-3 hydropower project – a national priority project that has been on the horizon ever since. The Arun has a large trans-Himalayan catchment area that generates a far higher minimum volume than other rivers in Nepal. For this reason, it has long been one of the most important and promise-laden sites on Nepal's imagined hydropower frontier, despite its remote location. However, even for the Arun River, there is no reliable hydrological data (personal communication, Katalyn Voss, 28 February 2018). For a few years now, an Indian developer has been paying local people to keep track of the amount of water passing through the village of Phyaksinda at the proposed dam site for the Arun-3 hydropower project. This flow data is critical to assess the project and its potential, and so (unsurprisingly) the company's employees are reluctant to share their records.

While the rivers of Nepal are full of unbuilt hydropower dams, Arun-3 is by far the most famous of them. Originally identified as the best site in the whole Kosi basin by a Japanese feasibility study and taken up by a consortium of Western donors in the 1980s, the project was cancelled in 1995 after the World Bank got into trouble with the global anti-dam movement. Subsequently, the Bank stopped all hydropower funding. In 2008, the Nepalese government signed a Memorandum of Understanding with Satluj Jal Vidyut Nigam (SJVN), an Indian state-owned public service undertaking to construct the project. This was one of the first actions of the transitional government right after the end of the decade-long armed conflict between the state and the Maoist People's Liberation Army.

The design of the current project is practically identical to the previous iteration, except for one major difference that again brings us back to seasonal volumes and volumetric politics: the installed generation capacity will be bumped up from 400 MW to 900 MW. In light of the vast contractual differences between the two attempts, this makes sense from the developer's perspective: while the first Arun-3 was an attempt to secure the national power demand, the new project will be built and owned by a foreign state company. For thirty years, SJVN will export 78.1% of the generated electricity to India, and while Nepal's major problem with electricity is in the winter, north India needs most power in summer when it is hottest and water in the Arun is abundant.

Not surprisingly, given the current energy situation and the close connection between water resources, nationalism and the promise of future wealth, this contract has drawn fierce criticism from water experts, activists and the political opposition – whichever parties that might be at any particular moment. Many of these critics accuse India of neocolonial ambitions and use the case of Bhutan as a negative example where India has established a de facto monopoly on hydropower extraction. Confronted with these accusations, the Indian engineers working on the Arun-3 project argue that no other Build-Own-Operate-Transfer contract in the world is so favourable for the host country. In their narrative, Arun-3 becomes development aid with different means. ‘We are a state-owned company therefore we are not restricted by purely economic logic. We want our neighbours to develop too’, one of them told us (interview, Khandbari, 2010).

Seen from a geopolitical perspective, another reason for this ‘sweet deal’ might be the fact that the proposed dam site is only 30 km south of the Chinese border, along one of the few relatively easy passages through the mountains, in an area marked to become a major trans-Himalayan commercial corridor. In securing this location, the geopolitical aim to keep China at bay conflates with the long-established insistence of the Indian water bureaucracy to control the tributaries of the Ganges as far upstream as possible. A recent announcement by Indian Prime Minister Narendra Modi that his government will not buy Nepal’s hydroelectricity from dams built by Chinese developers clearly shows the red line for India’s self-proclaimed benevolence.

After many delays, the Prime Ministers of Nepal and India officially laid the foundation stone for the Arun-3 in May 2018. In an odd joint ceremony in Kathmandu, they simultaneously pressed two remote-control buttons that unveiled a granite plaque at the construction site 200 km east of the capital. Subsequently, construction started in unruly circumstances: a tunnel collapsed, trapping four workers for 39 hours before they could be rescued. On at least three occasions, improvised explosive devices have been planted at different spots around the construction site (*Himalayan Times* 2018; *Kathmandu Post* 2018). Asked about the bombs, friends from the region suspected outside radicals interested in creating chaos of being behind these attacks instead of disgruntled locals. To the best of our knowledge, police investigations so far have led to no arrests.

Amid these uncertain beginnings, SJVN has undertaken or announced a variety of compensation and mitigation activities. The families who will lose land to the scheme have been offered very generous

compensation packages, 30 kWh of free electricity was promised to every household in the directly affected communities, and SJVN has signed a non-binding commitment towards skills development and employment opportunities for locals. In addition, 1.5% of project shares have been earmarked for 'project affected people'. However, one employee told us: 'Tell your friends not to buy those shares. In this particular project, the government has gotten such a good deal that private small-scale investors will not make any profit on their investment' (interview, Kathmandu, 2015). However, during frequent trips to the Arun region before construction started, people talked frequently of profitable share offerings in other regions of Nepal, most importantly the Chilime example. Longing for investment opportunities, people across Nepal have been demanding that *more* shares should be made available for 'local' people.

We understand the enthusiasm of indigenous communities in Nepal's periphery to buy into these 'local' shares as their humble attempt at securing their share of Nepal's rivers. After centuries of discrimination by a high-caste Hindu elite, they see the offering of local shares as a small step towards a more inclusive and egalitarian state. Given the disappointments of the post-civil war peace process, at the moment this is as much progress as they can hope for. Beyond that, after thirty years of uncertainty as to whether Arun-3 will be constructed or not, to many of our interlocutors, buying shares serves as confirmation that eventually something will happen and that all that waiting was not in vain.

A revisit to the Arun valley in November 2019 revealed a radically changed attitude of local interlocutors towards the project. As civil engineering progressed, it became increasingly clear that many of the expectations the Indian developer had raised over the years would remain unfulfilled. Nobody knew when the promised electrification of directly affected households would take place. Asked about the 'local' shares, friends in the village of Num told us that they had heard the shares would only become available after the commissioning of the plant – a detail, they claimed, nobody had bothered to tell them beforehand.

However, the main criticism all over the region was connected to the fact that there were almost no jobs for local people. While indigenous activists for years had cautioned that promises of local jobs had to be tied to a skills development programme to avoid the well-known problem that local people will only get jobs as low-skilled labourers during construction, it had become obvious that not even those jobs were available for locals. Despite the fact that SJVN has a



Figure 3.2. *The construction site of the Arun-3 hydropower project in Nepal, November 2019. © Matthäus Rest.*

large civil engineering division, the company had tendered the actual construction work to subcontractors. Not surprisingly, those companies brought in their own work crews. During three days at and around the dam construction site, we met one local person who had found employment in the project. He was working as accounting assistant for the Gujarati company in charge of the electrical engineering component. The vast majority of construction workers and truck drivers we talked to came from Western Nepal, Kathmandu and India, while senior staff seemed to come exclusively from India.

Furthermore, with a change of personnel, senior SJVN staff had radically changed their way of interacting with local community and civil society leaders. A friend and indigenous activist complained: ‘With the old *hakim* [boss], their office door was always open. We had his cell phone numbers. But he left for India. The new bosses don’t talk.’ This taciturnity became obvious when we wanted to meet one of the Indian executives at the newly constructed SJVN headquarters. We had spoken to our contact at the Investment Board Nepal in Kathmandu beforehand to inquire whether we would need any form of accreditation or advance notification, which he negated. Still, after waiting for 30 minutes in front of his office, we were asked to leave. ‘I’m very sorry, but some bad people have come recently. It is very difficult for us’, his assistant told us as he walked us back to the

main gate of the impressive compound the company had erected in close vicinity to the airport in Tumlingtar.

Case 2: The Upper Tamakoshi Project

Located halfway between Kathmandu and the Arun-3 site in the district of Dolakha, the 456 MW Upper Tamakoshi Hydropower Project (UTKHP) has been under construction for several years now. Once considered a low-priority project, overlooked by the state and international agencies focused on megaprojects like Arun-3, it is now a 'national priority project' on the brink of completion. Like Arun-3, the project is designed as a peaking run-of-the-river project that creates temporary storage that can be utilized at strategic moments of peak demand or pricing – while the volume of flow is relatively low, the hydraulic head in this steep terrain is over 800 metres. Once the project is completed and connected to the national grid, it will become Nepal's largest hydropower project and will increase the national electricity generation capacity by almost 50%. Construction began in early 2011, but the project has faced a series of setbacks in recent years – including the 2015 earthquake and a fuel crisis triggered by Nepal-India disputes (Lord 2018). After pushing back the expected completion date several times, project developers most recently predicted that the project would begin commercial operations by the end of 2020.

In recent years, the Upper Tamakoshi project has been at the forefront of the public consciousness for a variety of reasons: first, because government officials and hydropower developers frequently state that the completion of the UTKHP will be a point of inflection in Nepal's push for national energy security and energy sovereignty – the moment Nepali electricity users will be guaranteed a permanent end to the rolling blackouts and put the scarcities of the past behind them; second, because the Upper Tamakoshi HPP was slated to conduct an initial public offering that was to be the largest IPO in the history of the Nepal Stock Exchange at the time of its announcement.

Over the last four years, however, the Upper Tamakoshi HPP has been troubled by a variety of disruptions and conflicts. The troubles began in early 2015 during initial preparations for the IPO, as hundreds of thousands of potential investors across Nepal registered to purchase shares, generating a palpable 'economy of anticipation' (Cross 2015) that spread from the project site in Dolakha to the halls of government in Kathmandu. As the speculative buzz waxed and waned, the hydropower company itself was undertaking

a massive data-collection exercise to determine the legitimacy of different claims – effectively an updated census wherein data on everything from income to livestock to births/deaths was collected and provided to the district-level government. This process precipitated a series of conflicts concerning the definitions of eligibility criteria: would residency in the ‘project-affected area’ be determined by birth, residency time or landholding? What kinds of documentation would be accepted? What about labour migrants and women who have married away? In March 2019, just a few weeks before the 25 April earthquake, project construction was halted by two separate strikes organized by stakeholder groups demanding a ‘fair’ opportunity right to invest in the project. These strikes and the contestations over shareholder allocations that preceded and followed them highlight some of the broader debates over equity and benefit sharing in the hydropower sector.

First, a group of local leaders from villages slated to be affected by the construction of transmission lines blocked the project access road and demanded a greater allocation of local shares. This group cited the project Environmental Impact Assessment (EIA), which officially classified their villages as *prabhavit* (affected) and accused local political leaders of diluting their rightful claims to shares by including others who were only indirectly affected in the classification. Frustrated with the way in which their tactical claim to shares through the EIA was redirected by political deal-making at the district level, one of the strike leaders told me: ‘The politicians come, but the rules and the policies are theirs, and the local people just clap. This is why we were not aware before’ (interview, March 2015).

Concurrently, Nepali employees of the main project contractor SinoHydro – a state-owned Chinese transnational and the largest hydropower developer in the world – initiated a labour strike. After hearing about the massive demand for shares across Nepal and witnessing the successful mobilizations of others, these men attempted to stake their own claim for shares. Here, they also articulated a politics of affectedness, arguing: ‘We have invested our sweat, our blood, our lives in the project tunnels. We are the most-affected people. Why shouldn’t we be able to invest our money?’ (interview, March 2015). Stopping project work for several weeks and organizing formal events, these men were willing to put their jobs at stake, demanding an allocation of four hundred shares per labourer (roughly US\$400 valued at par). During these negotiations, SinoHydro deferred to the Nepali project developer and Nepali officials, who stated that a provision to allocate shares to labourers was not included in the original

project agreement and that the pie had already been carved up. A high-level political committee of company representatives and government officials was formed to negotiate.

During these strikes, project officials bemoaned the fact that they were losing an estimated US\$250,000 per day due to project stoppages. Back in Kathmandu, policy-makers, institutional investors and other stakeholders decried these mobilizations as extractive behaviour: claiming that no citizen has the right to obstruct the development of the country or to stand in the way of projects designed to transform Nepal's water into collective wealth. They argued that these protests were costing their (future) fellow Nepali shareholders and jeopardizing the investment climate of Nepal – generally understood as a form of high treason in industry circles. One official blamed the media for these recurring controversies: 'this is because of the media . . . people's perceptions and expectations about shares have evolved over time. They were happy before and now they think they are being cheated' (Interview, 2015).

Conversely, the aggrieved parties framed these disruptive actions in moral terms and within a parallel discourse of awareness, directly stating their aim of creating a precedent that would trigger future actions and policy change. One of the local strike leaders remarked that 'a nationwide policy for awareness is needed, as this has become a national issue – to tell Nepalis about impacts and benefits: what, how, when, and so on' (interview, 2015). Pointing again to the distinctions of the EIA and citing recurring controversies regarding land acquisition for transmission lines, they said: 'If we succeed in getting our demands this could become a law and help people in other places get recognition of their rights and voice.' Leaders of the labour strike similarly recognized the importance of their demands, describing a policy gap. 'There is no law or provision in the constitution for giving shares to labourers', they said, 'but if we do not get shares here at Tamakoshi, then maybe at other projects in the future. Other people are watching us. This will catch like wildfire' (interview, 2015).

A quick examination of the mobilizations at the Upper Tamakoshi project highlights just some of the ways that the NPJL refrain can be reframed by Nepali citizens with different ideas about the dimensions of 'Nepal's water' and the meaning of 'the people's investment'. In each case, project stakeholders presented a divergent narration of hydropower development, rearticulating normative development rhetoric in local terms. By doing so, these actors reframed the politics of the shareholder model and the normative interpretations of terms like 'benefit sharing' and 'stakeholder engagement' that it car-

ries, while posing deeper questions about the fair distribution of risk and opportunity among communities impacted by hydropower development. Both the project-affected locals who protested and project labourers are what Nixon (2011: 62) referred to as unimagined communities, or people whose presences ‘inconvenience or disturb the implied trajectory of a unitary national ascent’. As the promised hydropower future is financially securitized and spatialized across the many watersheds of Nepal, local populations and other project stakeholders are reinterpreting the NPJL trope to articulate their own concepts of equity and (volumetric) sovereignty.

In the four years since these events, the project has encountered several other setbacks that delayed the initial public offering and highlighted a variety of additional risks that investors had perhaps not fully considered (Lord 2018). In sum, these events suggested that the public-private-people partnerships designed to secure the volumes of the Upper Tamakoshi watershed and to create a ‘national priority project’ had not adequately considered the variety of different *unimagined* communities and *unsecured* volumes that might trouble dreams of the hydropower future. And yet, when the Upper Tamakoshi IPO finally occurred in late 2018, it turned out to be an incredible and unprecedented success. Again, hundreds of thousands of Nepalis queued throughout the country, and the newspapers buzzed with analysis of their investment prospects and reports of investor turnout.

In August and September, more than 276,000 people from the ‘project-affected district’ of Dolakha alone turned out to buy shares – an astonishing participation rate of more than 98%. Project representatives, local and national politicians, and social mobilizers all worked together to generate awareness and ensure that local residents were registered (and, if need be, financed) to buy shares. Speaking at the local launch event in August 2018, one central-level politician captured the ethos of the moment, stating that distributing hydropower shares to the local people is ‘like a social movement’ and that ‘nobody in society should be left out’. People waited hours in sweaty lines to fill out their paperwork. In November 2018, another 346,000 Nepalis registered to purchase the remaining 15% of shares in just four days, reflecting an unprecedented level of interest. When the Upper Tamakoshi (UPPER) shares began trading on the Nepal Stock Exchange in January 2019, the company had more than 800,000 shareholders.

As 2019 drew to a close, project officials continued to reconfigure the construction process in the face of new logistical uncertainties, the UPPER stock price trebled after an initial surge, and the



Figure 3.3. *Employees from the Upper Tamakoshi Hydropower Project present a young girl from the project-affected area with a receipt for the shares that her mother purchased in her name – all citizens from the district of Dolakha were eligible to purchase shares, regardless of their age. Dolakha, July 2018. © Austin Lord.*

projected completion date was postponed yet again. In any event, company shareholders will have to wait several more years for the project to become profitable, typically several years after commercial operation begins, before any kind of dividends start flowing through. Meanwhile, some of them are paying interest on loans and perhaps wondering if perhaps the money might not have been better spent on post-earthquake reconstruction or something else. In Dolakha, Nepal's water has become the people's investment, but not yet the people's profit. Tellingly, within all of the debates about contracts, concrete and shares, *water* itself has been largely overshadowed. What can these investors now lay claim to? Have they traded one concept of equity for another? And will this trend continue for Nepalis elsewhere?

Conclusions: Uncertainties and Unsecured Volumes

In June 2018, less than two years after the 2016 Power Summit, Nepal's newly elected government promulgated a national budget that

prioritized (once again) rapid hydropower development, introducing a new and more ambitious refrain: ‘15,000 MW in 15 years’. In no uncertain terms, current political leaders are intentionally escalating the promises of the previous governments, and they want to be the ones who deliver the promised hydropower future. Amid the excitement, new deals are being made with China and India, and new money is being thrown at old problems. Depending on your perspective, this constant renewal of hydropower dreams deferred could be interpreted as hopeful resilience or as a kind of ‘cruel optimism’ (Berlant 2011).

In any case, speculation about Nepal’s hydropower future is shaped by a kind of ‘prognostic politics’ (Mathews and Barnes 2016) where visions of shared hydropower-wealth mix with declarations for energy sovereignty – where differently positioned stakeholders and prognosticators stake claims to differently imagined futures. The Power Summit, the declaration of an energy emergency, the creation of an online investment platform, protests at the Upper Tamakoshi project site and the pushing of buttons to ‘virtually launch’ the Arun-3 project are all prime examples of the practice of prognostic politics. Each of these events indexes a plurality of hopes, expectations and investments in differently imagined futures, which become entangled together with the refrain of ‘Nepalko Paani, Janatako Lagaani’ – the catchphrase of a larger economy of anticipation, which shows that ‘the present is governed, at almost every scale, as if the future is what matters most’ (Adams, Murphy and Clarke 2009: 248).

Accordingly, both the Arun-3 and the Upper Tamakoshi projects remain under construction, much like the hydropower future. Though the bright future does not seem as far away as it once did, open questions remain. One of the most significant of them is about environmental risk – the unsecured volumes that, much like unimagined communities, threaten the idealist machinations of future-making projects. How do those eager to construct a ‘hydropower nation’ try to exclude hydrologic uncertainties, the erosive power and the weight of water, and its implication for seismicity from the discussion? As Huber et al. (2017: 51) have recently argued, further investigation is needed to consider ‘how and why dam construction continues to be projected as an orderly and safe activity, alongside the emphasized ideals of modernity, growth and clean/climate-friendly development despite a history of dam failures’. Within Nepal, the state and the hydropower sector are working hard to guarantee that ‘Nepal is still open for business’ in the wake of the 2015 earthquake, which often requires avoiding hard questions about the risk related to future seis-

micity and other geohazards. This trend is common throughout the Himalayan region, where the intensification of hydropower development often requires collectively denying or wilfully ignoring the significance and scale of geological and climatic unknowns (Butler and Rest 2017; Huber 2019; Lord 2017). Ongoing tectonic entanglement ensures that the Himalayan region is an utterly insecure territory and, despite the material and financial securitization of Nepal's imagined hydroscares, hydropower assets are similarly *unsecured*.

We believe that by thinking about territoriality through the unsecured volumes of Nepal's energy futures, we can see two very different conceptions of sovereignty at work within the Ganges catchment area. Whereas public discourse in Nepal is occupied with constructing infrastructure to harness the imagined water wealth for national development, some Nepali pundits also call for a different kind of self-determination, arguing that the Indian state sees Nepal's headwaters as an extension of their own territorial claims. Chinese-facilitated hydropower development in Nepal's northern region hints at a similar set of geopolitical logic and alliances (Murton and Lord 2020). As Chinese and Indian actors move to secure some of Nepal's hydropower project sites and contracts for their own hydropower industries, they become variably implicated in contestations over Nepal's hydropolitical volumes and 'energy sovereignty' in Nepal. From the perspective of both powers, Nepal appears less and less like a buffer state – be it a yam between two boulders or a mouse between two elephants – and more and more like a soaked, porous sponge.

In this discursive environment, the NPJL refrain serves two important purposes: at the local scale, it reshapes conceptions of equity and the politics of consent; and at the national scale, it successfully reframes the question of energy sovereignty, offering the promise of shareholder citizenship. And while the investments of individual shareholders may seem less significant than the financial volumes mobilized by the country's neighbours, they are quickly becoming more than just the proverbial pennies in the bank as time goes by. As of January 2020, thirty-four hydropower companies had successfully completed initial public offerings and their shares were being publicly traded on the Nepal Stock Exchange; while another dozen companies were slated to conduct IPOs in the coming year (ShareSansar 2020).

Tellingly, in February 2019, the NPJL refrain was invoked once again when Prime Minister Khagda Prasad Oli launched a new and expanded programme to promote Nepali investment in the hydropower sector, also called 'Nepalko Paani, Janatako Lagaani'. This ambitious plan seeks to mobilize an estimated US\$1 billion in domestic

Nepali investment to build nineteen government-selected hydro-power projects, distributed across all seven provinces, that would collectively represent 3,479 MW of generation capacity (*Repubblica* 2019). Inaugurating the campaign and speaking a familiar language of ‘socioeconomic transformation’ and emancipation, the Minister for Energy, Water Resources and Irrigation repeatedly highlighted the capacity of Nepalis to mobilize their own resources, suggesting that Nepal might not need to rely on foreign donors anymore. However, just one year later, after a series of lukewarm share offerings, Nepali media outlets began publishing articles showing ‘how hydro companies are cheating shareholders’ (Pangeni 2020: 1) which have added a critical question mark to dreams of citizen-financed hydropower futures.

In recent years, timelines have been reconfigured and new plans have been announced, but the spectacular refrain of shareholder citizenship has continued to circulate and to fuel recursive dreams of energy security and volumetric sovereignty in Nepal. Government officials and private sector actors continue to summon imagined citizen shareholders using the ‘Nepalko Paani, Janatako Lagaani’ refrain: branding Nepal as a hydropower hotspot, creating new platforms for coordinating and channelling investment, and calling for Nepali self-determination in the energy and development sectors. Amid uncertainty, the spectacular and the speculative remain mutually dependent, and Nepal’s hydropower futures remain largely unsecured.

Austin Lord is a Ph.D. Candidate in the Department of Anthropology at Cornell University. His research on energy and infrastructure in the Himalayan region focuses on questions of subjectivity, territorialisation, speculation and the distribution of socioenvironmental risks. His dissertation research focuses on post-disaster recovery, memory, climate change and uncertainty in the Langtang Valley of Nepal, where people struggle to rebuild their lives and reorient themselves in the aftermath of the 2015 earthquake.

Matthäus Rest is an anthropologist interested in the relations between the environment, the economy and time. He has published on unbuilt water infrastructures and the Krampus. His current research is concerned with the microbes that live in milk, the fermentation collectives that sustain them and how biomolecular archaeologists translate them into claims about the history of human–animal–microbe coevolution.

Notes

1. In more than a century of hydropower development, beginning with the Pharping Hydropower Station in 1911, less than 1,000 MW of generation capacity has been installed.
2. Under ideal conditions, a capacity of 10,000 MW will yield 10,000 MWh of electricity in one hour, but no hydropower plant in the world reaches this efficiency of 100% capacity factor. Many experts estimate that during the trough of the dry season, barely more than one-third of installed capacity will be used.
3. The state owns water rights in Nepal and sells licences to hydropower developers, who own hydropower assets through thirty-year Build-Own-Operate-Transfer contracts. Shareholders are paid a portion of company profits that accrue over the period of commercial operation, and shares are publicly traded on the Nepal Stock Exchange.

References

- Abram, S., and G. Weszkalnys. 2011. 'Introduction: Anthropologies of Planning: Temporality, Imagination, and Ethnography', *Focaal* 61: 3–18.
- Adams, V., M. Murphy and A. Clarke. 2009. 'Anticipation: Technoscience, Life, Affect, Temporality', *Subjectivity* 28: 246–65.
- Amrith, S. 2018. *Unruly Waters: How Mountain Rivers and Monsoons Have Shaped South Asia's History*. London: Penguin.
- Anand, N. 2017. *Hydraulic City: Water and the Infrastructures of Citizenship in Mumbai*. Durham, NC: Duke University Press.
- Baviskar, A. 2007. *Waterscapes: The Cultural Politics of a Natural Resource*. Ranikhet: Permanent Black.
- Bear, L. 2015. 'Capitalist Divination: Popularist Speculators and Technologies of Imagination on the Hooghly River', *Comparative Studies of South Asia, Africa and the Middle East* 35(3): 408–23.
- Berlant, L. 2011. *Cruel Optimism*. Durham, NC: Duke University Press.
- Billé, F. 2019. 'Volumetric Sovereignty', *Environment and Planning D: Society and Space* (Online), 4 March. Retrieved 20 March 2020 from <http://societyandspace.org/2019/03/04/volumetric-sovereignty-part-1-cartography-vs-volumes>.
- . (ed.). 2020. *Voluminous States: Sovereignty, Materiality, and the Territorial Imagination*. Durham, NC: Duke University Press.
- Björkman, L. 2015. *Pipe Politics, Contested Waters: Embedded Infrastructures of Millennial Mumbai*. Durham, NC: Duke University Press.
- Butler, C., and M. Rest. 2017. 'Calculating Risk, Denying Uncertainty: Seismicity and Hydropower Development in Nepal', *Himalaya* 37(2): 15–25.
- Cross, J. 2015. 'The Economy of Anticipation: Hope, Infrastructure, and Economic Zones in South India', *Comparative Studies of South Asia, Africa and the Middle East* 35(3): 424–37.

- D'Souza, R. 2006. *Drowned and Dammed: Colonial Capitalism and Flood Control in Eastern India*. Delhi: Oxford University Press.
- Dixit, A. 2019. 'Climate Risk to Hydropower Investment', *Nepali Times*, 22 March. Retrieved 20 March 2020 from <https://www.nepalitimes.com/opinion/climate-risk-to-hydropower-investment>.
- Dixit, A., and D. Gyawali. 2010. 'Nepal's Constructive Dialogue on Dams and Development', *Water Alternatives* 3(2): 106–23.
- Elden, S. 2017. 'Terrain', *Theorizing the Contemporary, Cultural Anthropology*, 24 October. Retrieved 20 March 2020 from <https://culanth.org/fieldsights/1231-terrain>.
- . 2013. 'Secure the Volume: Vertical Geopolitics and the Depth of Power', *Political Geography* 34: 35–51.
- Ferguson, J. 1990. *The Anti-politics Machine: 'Development', Depoliticization and Bureaucratic Power in Lesotho*. Minneapolis: University of Minnesota Press.
- Ferry, E. 2016. 'Claiming Futures', *Journal of the Royal Anthropological Institute* 22(S1): 181–88.
- Ferry, E.E., and M.E. Limbert. 2008. *Timely Assets*. Santa Fe, NM: School for Advanced Research Press.
- Gyawali, D. 2003. *Rivers, Technology and Society: Learning the Lessons of Water Management in Nepal*. Kathmandu: Himal Books.
- Harvey, P., and H. Knox. 2012. 'The Enchantments of Infrastructure', *Mobilities* 7(4): 521–36.
- Himalayan Times*. 2018. 'Four Successfully Rescued from Collapsed Arun III Tunnel after 39 Hours'. Retrieved 20 March 2020 from <https://thehimalayantimes.com/nepal/four-succesfully-rescued-from-collapsed-arun-iii-tunnel-after-39-hours>.
- Huber, A. 2019. 'Hydropower in the Himalayan Hazardscape: Strategic Ignorance and the Production of Unequal Risk', *Water* 11(3): 414.
- Huber, A. et al. 2017. 'Beyond "Socially Constructed" Disasters: Re-politicizing the Debate on Large Dams through a Political Ecology of Risk', *Capitalism Nature Socialism* 28: 48–68.
- IFC. 2018. *Local Shares: An In-depth Examination of the Opportunities and Risks for Local Communities Seeking to Invest in Nepal's Hydropower Projects*. Washington DC: International Finance Corporation.
- Immerzeel, W.W., L.P. van Beek and M.F. Bierkens. 2010. 'Climate Change Will Affect the Asian Water Towers', *Science* 328(5984), 1382–85.
- Jha, P. 2015. 'In Nepal, Where a Battle for Rights Merges with Geopolitics', *Hindustan Times*, 1 October. Retrieved 20 March 2020 from <https://www.hindustantimes.com/world/in-nepal-where-a-battle-for-rights-merges-with-geo-politics/story-6O5KoVlnoaIEQNpx9ZnjKM.html>.
- Kathmandu Post*. 2016. 'Power Crisis, by Govt Lights, to End'. Retrieved 20 March 2020 from <https://kathmandupost.com/national/2016/02/19/power-crisis-by-govt-lights-to-end>.
- . 2018. 'IED Explosion at Arun III Office'. Retrieved 20 March 2020 from <http://kathmandupost.ekantipur.com/news/2018-04-30/ied-explosion-at-arun-iii-office.html>.

- Klingensmith, D. 2007. *'One Valley and a Thousand': Dams, Nationalism, and Development*. Oxford: Oxford University Press.
- Lord, A. 2016. 'Citizens of a Hydropower Nation: Territory and Agency at the Frontiers of Hydropower Development in Nepal', *Economic Anthropology* 3(1): 145–60.
- . 2017. 'Humility and Hubris in Hydropower', *Limn* 9: 42–53.
- . 2018. 'Speculation and Seismicity: Reconfiguring the Hydropower Future in Post-earthquake Nepal', in F. Menga and E. Swyngedouw (eds), *Water, Technology and the Nation-State*. London: Routledge, pp. 167–88.
- . 2019. 'Turbulence', *Environment and Planning D: Society and Space* (Online), 17 March. Retrieved 20 March 2020 from <http://societyandspace.org/2019/03/17/turbulence/>
- Mathews, A., and J. Barnes. 2016. 'Prognosis: Visions of Environmental Futures', *Journal of the Royal Anthropological Institute* 22(S1): 9–26.
- Menga, F., and E. Swyngedouw (eds). 2018. *Water, Technology and the Nation-State*. Abingdon: Routledge.
- Merriman, P., and R. Jones. 2017. 'Nations, Materialities and Affects', *Progress in Human Geography* 41(5): 600–17.
- Murton, G., and Lord, A. 2020. 'Trans-Himalayan Power Corridors: Infrastructural Politics and China's Belt and Road Initiative in Nepal', *Political Geography* 77: 102100.
- Nixon, R. 2011. *Slow Violence and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press.
- Pangeni, R. 2020. 'How Hydro Companies Are Cheating Shareholders', *Republica*, 17 February. Retrieved 20 March 2020 from <https://myrepublica.nagariknetwork.com/news/how-hydro-companies-are-cheating-shareholders>.
- Pigg, S. 1992. 'Investing Social Categories through Place: Social Representations and Development in Nepal', *Comparative Studies in Society and History* 34(3): 491–513.
- Rademacher, A. 2011. *Reigning the River: Urban Ecologies and Political Transformation in Kathmandu*. Durham, NC: Duke University Press.
- Republica*. 2019. 'Government Mobilizing People's Money for Hydropower Development', 14 February. Retrieved 20 March 2020 from <https://myrepublica.nagariknetwork.com/news/govt-mobilizing-people-s-money-for-hydropower-development>.
- Rest, M. 2012. 'Generating Power: Debates on Development around the Nepalese Arun-3 Hydropower Project', *Contemporary South Asia* 20(1): 105–17.
- . 2019. 'Dreaming of Pipes: Kathmandu's Long Delayed Melamchi Water Supply Project', *Environment and Planning C: Politics and Space* 37(7) 1198–216.
- Roseberry, W. 1994. 'Hegemony and the Language of Contention', in J. Gilbert and D. Nugent (eds), *Everyday Forms of State Formation: Revolution and the Negotiation of Rule in Modern Mexico*. Durham, NC: Duke University Press, pp. 355–66.

- ShareSansar. 2020. 'Listed Companies: Hydropower'. Retrieved 20 March 2020 from <http://www.sharesansar.com/company-list>.
- Shrestha, P., A. Lord, A. Mukherji, R. Shrestha, L. Yadav and N. Rai. 2016. *Benefit Sharing and Sustainable Hydropower: Lessons from Nepal*. Kathmandu: ICIMOD.
- Sneath, D., M. Holbraad and M. Pedersen. 2009. 'Technologies of the Imagination: An Introduction', *Ethnos* 74(1): 5–30.
- Swyngedouw, E. 1999. 'Modernity and Hybridity: Nature, Regenerationism, and the Production of the Spanish Waterscape, 1890–1930', *Annals of the Association of American Geographers* 89(3): 443–65.
- Wester, P., A. Mishra, A. Mukherji and A.B. Shrestha (eds). 2019. *The Hindu Kush Himalaya Assessment*. Cham: Springer.
- Weszkalnys, G. 2016. 'A Doubtful Hope: Resource Affect in a Future Oil Economy', *Journal of the Royal Anthropological Institute* 22(S1): 127–46.

Energopolitics in Times of Climate Change

Productive and Unproductive Politics of Energy Infrastructures in Poland

Aleksandra Lis

Introduction

This chapter reflects on the politics of carbon dioxide reduction infrastructure in post-EU accession Poland. The EU accession was formative for Poland in terms of constructing the energy security and climate change nexus (see Kuzemko 2013) that became articulated more strongly by the Polish political and business actors, as well as experts in energy technologies, during the negotiations of the EU Climate Change and Energy Package (CCEP) in 2008. The CCEP was a turning point for Polish energy politics, after which the state and energy sector actors came to realize that carbon dioxide reductions are also an obligation of the postsocialist countries. Since then, various infrastructural projects were proposed as a way to curb carbon dioxide emissions in the Polish economy where, in 2008, around 90% of electricity production was based on burning coal. This chapter examines three moments in Poland's climate and energy politics: first, it analyses discourses about carbon dioxide emissions developed by Polish energy sector actors during the negotiations of the new ETS Directive (one of the CCEP directives); second, it examines discourses on carbon capture and storage installation planned to be constructed in the biggest power plant in Poland in Bełchatów; and, third, it examines discourse about electromobility proposed by the new conservative government in 2016.

This chapter engages with the concept of energopolitics (Boyer 2012), which stands for the power over energy and through energy. Energopolitics, as an extension of Foucault's concept of biopolitics, allows social scientists to examine how energy is involved in the productive powers of the state and how the imaginaries of productivity of various infrastructure are crucial for their role in state politics. The concept of energopolitics reminds us that energy is always shaped by and is shaping power structures and underlies different concepts of the state. The analysis also proposes to rethink how infrastructures are brought into existence or fail to be constructed as a result of experimenting with making new material and symbolic connections, and how the productive connections are vital for the mobilization of social, economic and political capital. These questions are addressed through the analysis of media, expert and policy discourses that took place in Poland during the last decade. The chapter is based on ten years of studying energy politics in Poland by the author as part of different projects.¹ Over two hundred interviews were carried out, policy documents related to the examined projects were analysed and around fifty energy-related events (conferences and workshops) were attended.

What has been problematized so far in the anthropology of energy are mainly the cultural meanings of different fossil fuels and their change over time, in particular in the context of uneven access to energy (Szeman and Boyer 2017; Szeman et al. 2017). However, a reflection on the relationship between energy and social power is another important contribution of social sciences and humanities to studying energy in society (New Daggett 2019). For example, it has been observed that electrification is a political process and that electric power always signifies places of power and accumulation of capital (Coleman 2017). Taking a critical stance, Coleman (*ibid.*) shows how electrification, power production and the construction of transmission infrastructure have always carried with them certain political promises of power, development, progress, modernization and the good life. New Daggett (2019), on the other hand, examines how energy came to signify fuel as an object in need of governance and how energy in the capitalist system has been associated with the productivity of work. In this sense, energy technologies and energy assembled into infrastructures of production and distribution become objects of moral concern and moral economies, and as such are constitutive of various political orders and concepts of the state. Different energy projects are thus always part and parcel of political processes and involve uneven power and capital accumulation. Also,

the imaginaries of sociotechnical development have also been part of building nation-states (Jasanoff and Kim 2009).

Energopolitics, as part of state biopolitics, is not only about the accumulation of energy and resources for energy production, but also of the financial and human capital needed to produce and distribute energy, and to exert its energies in the form of labour (New Daggett 2019). Moreover, in the same way as biopolitics is about disciplining and governing of the productive forces of the population, energopolitics also involves the concept of productivity. The imaginaries of productivity are thus an important part of discourses about energy infrastructures and make particular projects useful or useless for state politics. As the analysis below will show, already during the CCEP negotiations, the power sector actors in Poland started to articulate carbon dioxide reductions in relation to the productive powers of the Polish economy and compared them to the productive powers of the Western European economies. Carbon capture and storage (CCS) and the electric vehicle (EV) come as two solutions to carbon dioxide emissions, one in the power sector and the other in the transport sector. While the CCS installation, which was planned to be installed in the biggest power plant in Poland in Bełchatów, has been cancelled due to being too expensive, electromobility is being developed. However, the main difference between the two types of infrastructure that I want to emphasize in this analysis is the way in which actors managed their images of productivity in relation to the economy, citizens and state power. The post-EU accession history of large-scale climate-energy infrastructures resembles the history of the transport infrastructure Aramis analysed by Latour (1996) in the 1990s. The question of who killed the Polish infrastructural projects may be tempting to ask, but a different question, about the role of these infrastructural projects in Poland's energopolitics, may be more interesting if one wants to understand how infrastructures get involved in the productive politics of nation-states.

The text is organized as follows. The next section reconstructs the recent history of Polish climate and energy politics and the moments constitutive for the climate change and energy security nexus. The subsequent section examines politics of constructing CCS. The last section examines the most recent project of electromobility as part of the nationalistic turn in the energopolitics of the Polish state. The chapter concludes on the role of the category of productivity in politics around energy installations in the context of the energy security and climate change nexus.

Energopolitics in Post-EU Accession Poland

The first experiments with carbon trading in Poland, the main tool of climate policies in ‘third generation environmentalism’ (Pooley 2010), were carried out in the time of the political and economic transition from socialism to market economy in the early 1990s, mainly through World Bank initiatives (Żylicz 2000). However, the proposed projects never really took off, even though they received support from a group of Polish economic experts from the Ministry of Environment trained in the Western academic institutions of the time (ibid.). The project of the Polish carbon market was designed on a small company-to-company scale and the problem with its implementation mainly stemmed from the fact that Poland lacked market-minded managerial professionals and wider market infrastructures within which carbon accounting and flexibility of market exchanges could turn into practice (ibid.). Moreover, in the early 1990s, all energies of the state actors were channelled into constructing markets for other goods and into processes of privatization of various state-owned companies. However, it is worth mentioning that one of the industries that was not privatized was the power sector.

The accession of Poland to the EU in 2004, an important date for Poland’s climate politics, did not bring about immediate changes in domestic climate policies. In 2004, climate change action was seen in Poland primarily as an obligation of the Western European economies (Lis 2020). When entering the EU, Poland’s main reference document for this issue was the Kyoto Protocol, in which Poland was listed under the Annex I countries as an economy in transition (EIT). This classification allowed for less restrictive emission reduction targets. Moreover, the collapse of energy-intensive and emission-intensive industries in Poland at the end of the 1980s and the beginning of 1990s placed it far ahead of its Kyoto targets. The collapse of the socialist economy caused massive reductions in carbon dioxide emissions – 300% of the target that Poland promised to comply with in Kyoto (Lis 2020). And even though Poland became part of the European Union Emission Trading Scheme (EU ETS) by the act of adopting the EU’s *Acquis Communautaire* in 2004, the wake-up call came only in 2008, when the European Commission proposed to change the main rules of the EU ETS. The proposal for a new ETS Directive was part of a wider Climate Change and Energy Package (CCEP) – a package of climate policy directives that would affect Polish energy systems and industries operating in Poland for the first time. The proposed rule of full auctions of the carbon credits at

the EU ETS, European Emission Allowances (EUAs), by the power producers would make energy production in Poland very costly as over 90% of Poland's electricity was produced from coal (hard and lignite) at that time, and to each MWh produced one would need to add the cost of EU Allowances (as one EUA stands for 1 tonne of carbon dioxide produced). The estimations of EUA's price by the European Commission was €40 (European Commission 2008).

The battle to soften the EU ETS's rules in order to accommodate the system to the Polish carbon-intensive electricity production provided a space for debating the past, present and future possibilities to develop Poland's economy. ETS was framed as a system that came from the outside – from the EU – that was designed without Poland's participation prior to the 2004 accession and was imposed on Poland by the European Commission. Various political actors from Poland – government officials, power sector representatives and trade union leaders – all joined forces to oppose the Commission's project in 2008, which for them, to a large extent, embodied the interest of the strongest Western European economies: Germany, France and partly also the UK. A lobbying group was established by experts from the energy sector and from the energy-intensive industries, which was called the Green Effort Group. The main leader of the Group was Krzysztof Źmijewski, who actively lobbied in the European Commission as well as in the European Parliament for exempting the Polish power sector companies from full auctions of the EUAs. The Green Effort Group also established relations with other energy and industry associations in Europe: both from the old as well as new Member State countries. Źmijewski was also active in the international media, where he tried to present the Polish arguments against the Commission's proposal.

The first article with Źmijewski's input was published in the *European Voice* in the middle of 2008, entitled 'Breakthrough or a breakdown?'. The text outlined the dangers posed by the new ETS to the Polish economy. According to the Polish expert, the existing economic inequalities would be perpetuated once industries and power sector companies from all over the EU had to purchase EUAs on a common market. Smaller companies with less capital, like the Polish power sector companies, would have to bid against bigger ones on the pan-European auctions. The bigger and richer companies, like E.ON, RWE or EDF, would be able to invest more capital into buying bigger volumes of EUAs, while they were still relatively cheap, and then sell them when they were more expensive and more in demand. This was the first argument against full auctions for the power sector

companies and for a bigger emission cap for Poland – an argument defending national power sector champions against foreign capital. The article showed that energy politics were still to a large extent analysed in national terms and the biggest corporations were imagined as productive forces of national economies. During 2008, a new policy nexus of climate change and energy security (see Kuzemko 2013) was established in Poland and related to a country-specific situation. This perspective was also underpinned by a legalistic argument, as according to the Treaty on the Functioning of the European Union, determination of the countries' energy mix lies within the national government competence.

In July 2008, another article concerning Poland's situation on the new EU ETS was published in *Die Zeit*. The article was entitled 'The Anxiety of Pygmies' (Tenbrock and Claas 2008) and the heading read: 'Europe is fighting for climate protection. The Continent is threatened with a rupture as the East is anxious about its economic growth'. The article was based on an interview with Żmijewski, who ended it by 'drawing three big figures on a piece of paper, like from a cartoon, next to which he drew three smaller ones. The big ones are the Maasais, the small ones are the Pygmies – says Żmiejewski and asks – how will the race between them end?' He continued by stating: 'Pygmies are not able to catch up with Maasais, the East is not able to keep up with the West, and Poland is not able to keep up with Germany.' This imaginative rhetorical trick introduced a clear division between 'the big West' and 'the small East'. It also gave little hope for the future since Pygmies' short legs would never let them catch up with the long-legged Masais (ibid.). In the *Die Zeit* article, Żmijewski tried to reinvigorate differences between the developed West and the developing East, and also bring in an image of different productive potential of the two European regions. The Polish energy expert essentialized this difference through a biological metaphor of short-legged Pygmies and long-legged Maasais to show a close relationship between carbon dioxide politics and biopolitics – the government of the productive powers of the population and its resources, and more specifically of energy understood as capital and labour (New Daggett 2019).

In the *Die Zeit* article (Żmijewski 2008b), in the Polish media as well as on his blog (Żmijewski 2008a), Żmijewski made a point about the significance of emission reductions in Central and Eastern Europe at the beginning of the 1990s. He pointed out that in 2004, emissions in the new Member States fell by 23% as compared to 1990. The Czech Republic reduced its emissions by around 20%, Poland

by around 27% and Slovakia by 25%. He argued that these earlier reduction efforts should have been taken into account on the ETS today and in the future. One of the ways to do so was to shift the base year for 2013–20 emission reductions from 2005, proposed by the Commission in 2008, to 1990, the year before the post-Communist economic meltdown (Tenbroek and Claas 2008). This idea has also been strongly promoted by the Polish mining and energy trade unions. The leader of the Secretariat of the Mine and Energy Workers' *Solidarność* argued for this shift during our conversation in October 2008:

Every country should be treated individually as to carbon emission reductions, especially since Poland signed the Kyoto Protocol and by the time it joined the European Union, it managed to reduce emissions by 300% of what it declared. And now I am asking: so what? Having accessed the EU, which did not meet its Kyoto reduction targets, we are forced to help the EU make up for its failure. The EU failed, we reduced over 300% of what we were supposed to have reduced and now again we have to make the same reduction effort.²

This was a controversial point and some argued that emission reductions carried out outside of the ETS should not be taken into account within ETS (see e.g. Pearson 2010), and thus Polish carbon reductions achieved before the EU accession in 2004 should not count in the new emission cap for the 2013–20 trading period. This issue was already debated at the beginning of 2000s before the establishment of the EU ETS. At that time, the phrase 'hot air' was coined to refer to 'the amount by which the Eastern European country's Kyoto Protocol target exceeds its probable emissions in 2012 even without any abatement actions. The reason for this excess emission reduction is the economic collapse which these countries suffered after the base year 1990' (Ellerman et al. 2006: 15–16). However, the argument of the Polish lobbyists was that the emission reductions from the early 1990s were accompanied by a painful experience of collapsed industries, lost jobs, impoverished towns and lost life chances. Therefore, what was called by the European environmental nongovernmental organizations (NGOs) 'hot air' or 'windfall emission reductions' – something that happened by accident, without making any policy effort – for the Polish power sector and industry lobbyists was seen as emission reductions that came with a huge cost for the productivity of the economy and the population.

In the CCEP negotiations, carbon dioxide has thus become politicized and contextualized in the recent histories of national economies and national state populations. It was related to the biological

forces, resources and capital accumulated in national economies and to their productive potential, including labour, which could be mobilized or demobilized by climate policies. Differences between the Eastern and Western parts of Europe were framed with biological metaphors, and the history of prior emission reduction efforts ceased to appear as politically and socially neutral; on the contrary, it was related to different experiences of the whole populations. While in Western Europe, emission reductions were guided by policies from the 1990s – even if with a very modest result – the Eastern European emission reductions were achieved at the moment when the economic systems collapsed. The category of productivity and growth became important in the arguments for or against particular types of climate action. Importantly, one can also see that climate change policy became highly nationalized in the Polish political discourses and its relationship to national economic growth made it difficult to see the importance of solidarities crossing national boundaries and global impacts of national energy and industrial production.

CCS: Nonproductive Politics of a Carbon Reduction Infrastructure in Poland

It seems that the CCEP debate of 2008 established quite a stable picture of EU climate policies in Poland for the next ten years. Over the next decade, it turned out to be almost impossible to change the opinion shared by most of the political and business elites that the EU climate policy is ‘a threat to Polish economy’. Only few of them promoted a different attitude where the EU’s stand on climate action could be seen as an opportunity for Polish economy, but in a different noncoal-based way.³ Some modernization efforts were made: old coal-fired power blocks were renovated and some new more efficient ones were constructed. One could also observe a boom for wind energy, a number of new wind farms were connected to the grid and a vibrant industry developed around this source of energy in Poland. However, the percentage of coal used for electricity production only dropped by around 10 points over a decade. Coal remained the main fuel for power generation and also the main object of Poland’s discourses on energy. Coal was there to stay, according to the proposal of the Energy Strategy for Poland (Polish Ministry of Energy 2019).

However, a strong and clear disapproval for the black energy coming from EU-level experts, from the European Commission (mainly Directorate General for the Environment), some factions of the Eu-

ropean Parliament and leaders of the biggest EU Member States was an important push factor for planning carbon reduction infrastructures. The German *Energiewende* set high standards for how a long-term strategy to transform an energy system could be devised at the national level, even though in reality it went beyond the national boundaries. One of the first carbon dioxide reduction projects that came on to the political agenda of the Polish government in 2008 was a CCS installation. CCS was promoted by the CCEP as one of the promising solutions for carbon dioxide emissions reductions (and also earlier in the IPCC Special Report on CCS in 2005). The CCS Directive introduced broad definitions of what a capture-ready installation is and a general framework for governing CCS at the Member State level. The ETS Directive established a fund for financing CCS pilot projects in the EU, two of which were planned in Poland: in Kędzierzyń Koźle (the Kedzierzyn Zero-Emission Power and Chemical Plant) and Bełchatów (a coal-fired power plant). A fixed number of credits from the European carbon market was allocated to the CCS fund and national governments were supposed to cofinance this expensive installation. Apart from the high cost, CCS was also controversial for other reasons. Carbon underground storage was perceived as high risk by communities living nearby, in particular in the areas that are seismically active (see e.g. NearCO2 Reports).⁴ A fear of carbon leakage and questions about future responsibilities for the installation were overwhelming. One of the two sites of CCS development in Poland, the Bełchatów power plant, is the largest brown coal-fired power plant in Poland and is owned by one of the four state-controlled power companies Polska Grupa Energetyczna (PGE). The open-pit mine that supplies the plant with lignite is one of the largest in the world, being visible on satellite pictures, and is located in central Poland (Lis and Desbarats 2012).

In November 2009, the Polish Ministry of Economy adopted a new ‘2030 Energy Strategy for Poland’, where it planned to increase the share of renewable energy resources in the final energy production mix up to 15% by 2020 and up to 20% by 2030. In addition to the need for energy efficiency and renewable energy, the document outlined the need for active participation in the initiative of the European Commission to construct large-scale CCS installations. During a conference of the Polish Chamber of the Liquid Fuels in October 2009, the Deputy Director of the Chamber called CCS one of the most promising technologies to reduce carbon dioxide emissions. He saw CCS as being compatible with economic growth. This position

was also supported by the country's chief geologist and the former Prime Minister, Jerzy Buzek, who was at the time a Member of the European Parliament and, in 2009–11, the President of the European Parliament. The latter was the strongest supporter of CCS construction in Poland. For him, CCS presented a big chance for Poland – not only a chance for keeping a large share of coal in Poland's power generation, but also for exporting the CCS-related knowhow to developing countries, especially if a new global climate change agreement promoted CCS as a viable option for emissions reductions. The plans to construct CCS in Poland were thus supported by discourses about economic growth and a potential global role for Polish economic actors.

By actively mediating between the EU arena, the Polish government and Polish companies, Buzek worked towards keeping CCS on the political and business agenda in Poland. At the origin of the interest of the Polish government for this technology was the interest in keeping the Polish mining industry alive. 'Clean coal' was a new category that captured the imagination of some Polish experts, in particular Buzek, who came from the mining region himself and promised to reconcile climate policy objective with a long-term perspective for mining and burning domestic coal. Soon, some NGOs became interested in the Polish project as well. Bellona, an international NGO based in Norway, opened its office in Kraków in 2010. Bellona's team lobbied heavily for CCS in the Polish ministries and companies. In the meantime, it became clear that Poland is not only a big source of carbon dioxide emissions, but that it also has vast areas of geological structures fit for storing carbon dioxide underground – the saline aquifers. Bellona allied with a Polish liberal think tank DemosEuropa, which launched a programme promoting CCS and various policy strategies to finance the installations. In 2010, DemosEuropa held a conference where Bellona presented its Road Map for developing CCS in Poland. However, at the conference, some sceptical voices claimed that the development of CCS may over time turn Poland into a trash heap of Europe as the Bellona report not only underlined the emission reduction benefits for the Polish economy, but also the huge storage potential of the underground geological structures (Corless et al. 2011). Against the background of this vision, another concern was raised, namely whether large-scale underground storage of carbon dioxide would not prevent the development of other resources, e.g. natural gas, minerals or coal. The unproductive vision of waste storage was thus opposed by a productive vision of resource extraction.

At the company level, the management of the Bełchatów power plant was not enthusiastic about the installation either. The costs both of its construction and of running it over time were very high. The so-called ‘energy penalty’ of the carbon capture installation made the technology unattractive from a business perspective – carbon dioxide sequestration consumes a lot of energy, which results in a loss in revenues as less energy can be sold on the market. Carbon dioxide transport and storage would also incur additional costs and in the eyes of the highest management, the whole installation that was planned for the Bełchatów power plant had no productive potential; rather, it was perceived as a very expensive waste utilization and storage infrastructure. But the pressure put on Bełchatów to develop CCS was quite high. The global and European climate policies positioned it within a complex and often competing set of economic, environmental and technological priorities. The perspective to comply with greenhouse gas (GHG) reduction targets under the EU ETS and to lower the share of coal in Poland’s energy mix were huge incentives to engage in this project. In order to comply with emissions reduction targets, Bełchatów would need to buy 20 million EUAs by 2013 under a scenario where CCS was not adopted.⁵ In February 2012, PGE announced the area where its carbon dioxide would be stored: the Wojszyce geological structure was identified as geologically best suited for this purpose. In order to develop the storage component, PGE Elektrownia Bełchatów (PGE Powerplant Bełchatów) worked with the National Geological Institute, Schlumberger and Geofizyka Toruń S.A.

However, anxiety grew among communities living close to the designated storage site in the region of Łódź (Lis and Desbarats 2012). The phase of geological examinations in 2010 was the first test of how CCS might be locally received in Poland. It was the first test of what kinds of discourses might evoke around CCS locally, what kinds of reactions might come from the local residents and authorities, and what kinds of concerns might be raised with regard to the idea of carbon storage. What one could observe were many misunderstandings and hostility towards the CCS project gradually growing among the local population. As previous research showed, PGE did not manage to engage local communities in a real and equal dialogue and adopted a defensive and expert position, which did not satisfy the communities’ need for a broader sociotechnical and economic debate on the implications of CCS (Lis and Desbarats 2012).

In October 2009, the European Commission allocated €180 million to the CCS project in Bełchatów under the European Economic

Recovery Programme. In addition to this financial support, PGE sought funding through the Structural Funds, the New Entrant Reserve within the EU ETS and preferential loans offered both by the European Investment Bank (EIB) and the Environmental Protection Bank (interview in PGE EB, July 2010). In February 2011, PGE applied for the NER300 funding – the fund created from carbon credits under the ETS. However, since mid-2011, the Bełchatów CCS project has been suspended for financial reasons. According to the company's management, the project would result in financial losses. PGE waited for the government to take a decisive move towards subsidizing operations of CCS and suggested a flexible funding mechanism that would subsidize the operation of CCS only in the range of the difference between a tonne of carbon dioxide sequestered and the price of EUAs. However, the government only proposed to allocate some money from the European Structural Funds towards the CCS project. However, this move would require opening European negotiations and the Polish government did not do that.

In the meantime, the US Energy Information Agency published an assessment of unconventional oil and gas resources worldwide and pointed to Poland as the most resource-abundant place in Europe with 5.3 billion cubic metres of shale gas. This channelled the government's attention towards shale gas, leaving CCS aside. The Bełchatów project was suspended mainly because of potential financial risks. However, two other reasons were the lack of governmental regulations for carbon dioxide pipelines and of social acceptance for the infrastructure. The company had to settle accounts with the European Commission about the €180 million grant for the pilot installation.⁶ Once the Bełchatów project was cancelled, CCS quickly disappeared from media reports and political discourse, even though particular research institutes and companies are still working on this technology and its variations. The Polish government never managed to send a clear and strong message about the need to develop CCS in Poland. The 'clean coal' framework was used to speak about CCS and its potential for the Polish economy, but since 2011, the political discourse on energy has been dominated by shale gas (Wagner 2017). One of the challenges that made it so difficult for the Polish government to fully take CCS on board was its unproductiveness. High construction and operation costs, energy penalties, social risks and waste storage as the end result of the whole process were coming up as main concerns in the political and expert discourses. The only productive result that was expected was emission reductions and a prospect of keeping 'clean coal' in Poland's electricity mix. However, the

low EUAs prices of the time (below 10 per EUA) were not pressuring companies to invest in CCS. As a rather unproductive technology, an additional burden on the power sector and on the economy, CCS was difficult to convert into political currency or to have capital raised on it.

Electromobility: The Productive Politics of an Electric Transport Infrastructure

The government created by the conservative Law and Justice Party (PiS) after the elections in October 2015 strengthened the nationalistic discourse about energy, underlining the importance of coal and sovereignty in relation to the EU's climate change politics.⁷ CCS had already disappeared from the political agenda during the previous government and did not reappear after the new one had been created. However, it has not totally been erased from Poland; it is still being developed by various research institutes, but there is no public discussion on it. The end of the Civic Platform rule focused mainly on making shale gas a reality in Poland. However, due to the falling oil and oil-indexed gas prices, the biggest companies drilling for shale gas left Poland. In the meantime, the Polish nuclear power project, also launched by the Civic Platform government, was put on hold. Currently, the new government is reviving it (Polish Ministry of Energy 2019).

The Law and Justice government also proposed a new flagship energy project: to develop electromobility and construct a Polish electric vehicle (EV or rather PEV). This idea came with a more general vision of national economic growth and progress through technological development promoted by the new government, and announced by Mateusz Morawiecki, the Deputy Prime Minister and Minister of Economy, in June 2016 during a meeting at the Technical University in Warsaw.⁸ Later on, in 2017, he became the Prime Minister of Poland. In June 2016, he announced that by 2026, there will be one million EVs driving on Polish roads, which seems to come as a figure to outbalance one million of the yearly imported used cars. His announcement follows similar ones made by Barack Obama and Angela Merkel – leaders of the greatest world economies – who also announced dates by which they want to see one million EVs driving on the roads of their countries. In Morawiecki's vision, the development of electromobility should be totally based on Polish know-how.⁹ At the time when the government announced the launching

of the electromobility programme, no work was being done on EVs in the private car sector. However, the biggest bus manufacturer in Poland, SOLARIS, has already been producing electric busses since 2011. Its URBINO electric model won the ‘Bus of the Year 2017’ award.¹⁰ Already today, SOLARIS is successfully exporting its buses to over 30 countries.

By reconstructing how electromobility became a viable political option, one can see that the impulse came from the politicians and experts of the Law and Justice Party and, more precisely, from the Minister of Economy, but not from business. Moreover, from the very beginning, the EV became framed by the government as a proposition to resolve the problematic relationship between Poland’s coal-based electric energy system and the EU-imposed carbon reduction targets. As previous projects failed in Poland, in particular CCS and shale gas, the EV was introduced by the government as a cutting-edge, green, national solution that would stimulate innovation, economic growth and maintain the security of energy supplies based on coal – preferably domestic. As a transport infrastructure, entangled in multiple complex relations and practices, the Polish project of electromobility resembles the famous Aramis project in France (Latour 1996) – a sociotechnical network that started to be weaved, in this case, by political actors.

On 30 March 2017, the President of the Economic Committee of the Council of Ministers established a task force for the Programme for Electromobility Development in Poland. Its aim is to work out the concept of electromobility for Poland – what electromobility could entail in terms of infrastructure, scope, location, technologies and actors involved – and coordinate projects within two programmes: e-buses and e-cars. This new strategy for Poland’s energy development came with a slogan ‘Energy into the Future’. This is the first emission reduction programme in postsocialist Poland that explicitly speaks about the future in relation to energy and proposes a vivid vision of it. Interestingly, the slogan does not say ‘Energy of the Future’, but rather ‘Energy into the Future’, which indicates that the energy is not a goal in itself, but rather something that will take Poland forward – into the future. The movement, rather than a stable object, is thus what matters.

The slogan ‘Energy into the Future’ needs to be interpreted against the background of political debates on energy, environment and, most importantly, climate change, which took place in Poland over the last few decades. On the wave of these nationalistic discourses about coal, the government managed to channel some capital of the

four state-controlled power companies into a financial rescue plan for the collapsing coal mines and to revive this industry a little. At the same time, the new government was faced with the very bad financial and economic condition of the state-owned hard coal mines, a debate about capacity shortage and capacity markets. Moreover, each summer, when temperatures stayed above 30°C for a longer time than two weeks, a threat of a blackout is becoming imminent because of a combination of several factors: some coal-fired blocks have to be switched off if water levels go down and the cooling systems do not work properly, and people start cooling their houses and offices intensively. These are the moments when the shortage of installed power in the system becomes visible.

In October 2016, four state-owned power sector companies – Tauron, PGE, Energa and Enea – established a new company called ElectroMobility Poland S.A. Each company owns 25% of the shares in ElectroMobility Poland S.A. and its initial capital was 10 million PLN. The website of the company says: ‘We are moving together into the future’ (*‘Razem ruszamy w przyszłość’*). These are the same four companies that had been involved in the major power sectors projects of the recent past – PGE in CCS, and Tauron, PGE, Energa and Enea in nuclear power. Moreover, the new government forced the power sector companies to invest in the collapsing mining sector in Poland in order to capitalize it. The four companies can thus be seen as the main source of capital for various state-led projects in the energy sector with the CEOs appointed and frequently called off by the changing governments when two sides do not share the same vision. The political and business interface located in complex relations between the government and the four power state-owned companies is thus blurring a clear classification of the Polish EV – is it a ‘green’ or a ‘black’ object? Is it leading Poland to a green or to a black future?

The Polish electric vehicle started to gradually materialize through various governmental programmes, companies’ joint statements of cooperation, and a nationwide contest for the best private electric vehicle design organized by the newly established company Electro-Mobility Poland S.A. Various documents and ways in which actors presented, verbalized and visualized ideas about electromobility in the media entailed particular visions of a productive future for the Polish economy, the Polish state and the Polish citizens. It was a vision of productivity at multiple sites: a new branch of car production, construction of the charging infrastructure, development of smart grid technologies and various IT solutions for more flexible mobility. But, more importantly, this vision of productivity could be

coined into a political currency as the new vehicle would be Polish – an object of national pride, exported at a regional and maybe even a global scale in the future. In the Pantheon of national treasures, the EV would be as precious as Polish coal. And even if, looking back at the recent discourses on climate and energy in Poland, carbon emissions and the technologies for their reduction have also been strongly framed in national terms by the previous liberal government, the EV was framed not as a foreign technology good for the Polish economy, but as a Polish technology.

All these new ideas about producing a Polish EV came in the moment when the car industry had already been well-established in this country, which is regarded as one of the pillars of the Polish economy (KPMG 2013). However, Poland is an important car-producing economy only because of its ability to attract big car producers, among other reasons, because it can offer less costly labour than Western European countries. It is thus not a country of automotive knowhow or innovation. In 2016, over 550,000 cars were produced in Poland and the number is growing. The majority of the vehicles are sold in Western countries. Several hundreds of thousands of people are employed in the sector. Despite these growing trends, in recent years, Poland has lost its position as a regional car production leader against the Czech Republic and Slovakia. At the same time, the number of the imported, secondhand cars is growing and in 2016 it went above one million cars (*ibid.*: 5). This shows the lack of affluence of many Polish citizens, who still prefer to buy an old, cheap car over a new one. Thus, an EV, as an expensive, luxurious item, is being put forward in Poland in a situation when the citizens are still buying twice as many used cars as new cars (*ibid.*: 8). The idea of the Polish EV comes at a time when the Polish car industry is growing after the 2008 crisis, but still has not returned to production levels achieved before 2008.

The Programme for Electromobility is one of the key programmes in the broader Strategy for Responsible Development¹¹ and has been built around several policy areas.¹² On the government website, one can find a reference to the EU's guidelines and regulations – the Polish Programme for Electromobility is a response to the EU activities aimed at popularizing electromobility and alternative fuels.¹³ The Minister of Energy was put in charge of the Fund for Low Emission Transport. This will support the construction of the infrastructure for alternative fuels and a market for vehicles charged with these fuels. Its annual fund is planned to be around 155 million PLZ, which is equal to €35 million. Moreover, the Plan for Electromobility De-

velopment should stimulate demand for e-vehicles. The goals are ambitious and broad: LNG, CNG, biofuels, biocomponents, charging stations, e-cars, e-buses, consumers and producers – all to be brought into life and coordinated into an efficient market. The actors that are to benefit from the programme, as listed in government documents, are: drivers, infrastructure constructors, public transport institutions, innovative companies and car producers. The Programme should last from 2016 until 2025.

Electromobility is also productive in other ways: according to the government's strategy, it should bring many benefits to Polish citizens living in cities, such as lower levels of air and noise pollution and improvements to public transport. EVs are planned to mushroom quickly as the Ministry of Energy foresees around 50,000 cars fuelled by electric energy driving to around 32 urban agglomerations in 2020. Around 6,000 charging stations of a normal charging capacity and 400 charging stations of a high-charging capacity will be constructed. An important challenge of the Programme is to coordinate all the components of electromobility development with the development of the electric power grid. These are high numbers, and given the fact that by 2025 Poland was supposed to have seen its first nuclear power plant, shale gas El Dorado and a working CCS installation under the previous government, a shadow of doubt looms over these bold figures. However, this is not the point. The political productivity of the electromobility discourse has already proved itself, long before electromobility materializes in EVs, infrastructures and a system of practices.

A national competition for the design of the Polish EV was launched by the company ElectroMobility Poland S.A. amid much publicity. Thus, since the car batteries would need to be imported in any case, it seems that the 'Polishness' of the car would reside in its look. In March 2017, a competition for the 'City Car of the Future' was launched. On the competition website, the following text appeared:

The future of the automotive industry belongs to electric cars. The market for electric cars is growing intensively. It is assessed that in 2040, one in every four cars driven worldwide will be fuelled by electricity. Therefore, starting from today, we are working on conditions for developing the electromotive sector in Poland. For Poland, this is not only a chance to catch up but also to take over the global trends.¹⁴

A video spot on the website starts with a caption 'Polish Road of Innovation' and is followed by the President of ElectroMobility Poland

S.A. saying: ‘We believe that our competition will open a new chapter in the history of the Polish auto-industry.’¹⁵ The video is made as a compilation of short statements and shots taken in a modern lab set up in an industrial interior, where the juries are discussing and evaluating the submitted projects. The next speaker is a woman who says that in her view, in the nearest future, an electric car is something that is worth attention. An expert that follows identifies herself as ‘a woman of auto-industry who loves the smell of gasoline’. However, she admits that despite her preferences, she is aware of the fact that we are heading towards ecology and silence. An engineer with a Ph.D. degree further states that an e-car is not a question; the question is how fast an e-car will push other types of cars out of the market. All speakers refer to the future. They cast no doubt on whether an e-car belongs to the future – it certainly does.

On 12 September 2017, four best projects were chosen. At the final gala of the competition, the Vice-Minister for Energy congratulated the winners and thanked the organizers for promoting a ‘fashion for electromobility’ in Poland. He underlined that the Ministry wanted to create a flexible space for a new market for electric transport and new business models. The government has been working on legislation and support instruments, and has been counting on active participation on the side of entrepreneurs. However, it is difficult to say, and it was not explained on the project website in what sense the designed cars made their mark on the history of the Polish car industry – whether their design expresses any kind of Polish design tradition.

However, at the end of 2018, the Polish EV was still a unicorn;¹⁶ everybody was talking about it, but nobody had ever seen it. A query was submitted by three Members of the Polish Parliament asking about the strategy of ElectroMobility Poland S.A., the results of its activities and its plans for the future.¹⁷ As a state-owned company, its activities should be made known to the public. After the competition, no new information about the construction of the Polish EV was released to the public. Despite this mediocre progress, the company management had already spent around 2.8 million PLN – including 1 million PLN on salaries. The reported financial loss of the company has been 2.6 million PLN and the company asked for an additional 20 million PLN of capital.¹⁸ The company has reported that it has completed a review of the productive and expert potential of Polish companies and institutions with regard to electromobility development. However, no concrete information has been given to the public. The Polish EV is still alive, but the network created to

maintain its existence, to sustain it as a promise even if it is difficult to fully materialize, has to a large extent been kept secret, making it difficult also for me, as a researcher to untangle and describe it.

Conclusions

The post-EU accession history of climate and energy politics in Poland shows that the category of productivity is an important part of energopolitics. Productivity has both a material and a symbolic meaning. In the Polish discourses on carbon dioxide emissions reductions, the link between carbon dioxide and the productive side of the Polish economy was strongly underlined. During the CCEP negotiations, one of the main arguments used by Polish actors against the proposed ETS rules was about the right to develop, to catch up with the developed West, even if from the start, the Eastern European economies were in a worse situation. This was most radically represented by the drawing of Masai and Pygmies by the Polish energy expert lobbying in Brussels.

The discourse around the development of carbon capture and storage (CCS) technology in Poland shows how difficult it was to relate the idea of productivity to this project. After the initial positive vision of CCS, the Polish experts had difficulties to establish a discourse of productivity around this technology. CCS would bring additional costs for the power-producing companies – not only at the investment stage but also for its operation. Politically, the frame of a clean coal technology seemed attractive but the idea that the end product of CCS is the underground storage of carbon dioxide – or waste was not easy to sell politically. A vision that Poland would become a waste dump not only for its own carbon dioxide but also for carbon dioxide from other parts of the world evoked old images of the better West and the worse East, of the productive and wasteful Western economies and of the unproductive Eastern economies full of waste. The report presented by Bellona (Corless et al. 2011) shows various future scenarios for carbon dioxide storage in Poland, as the saline aquifers suitable for storing carbon dioxide are abundant underground.

Electromobility, on the other hand, is a discourse of productivity in many aspects: economic, technological, infrastructural and political. A vision that Poland can give an EV to the world is very attractive and reinvigorates national ambitions. After over ten years of EU-imposed climate policies, electromobility was framed by the Polish

government as a Polish project. Polish investors, four state-controlled power companies, Polish design, Polish assembly lines – this was the promise made by the new conservative government. Environmental gains – cleaner air and less carbon dioxide emitted from high-tech car engines – were more easily sold politically than reduced carbon dioxide emissions from power plants due to its burial underground.

Since 2016, the Polish electric vehicle and a wider concept of electromobility have captured the public imagination with the prospect of ‘making Poland great again’ – to paraphrase Donald Trump’s election slogan – in particular in relation to Western European countries. Discourse on electromobility is to a large extent nationalistic and constructs a ‘new tradition’ of Poland’s car industry, which comes as no surprise in the current nationalistic politics. Electromobility is also involved in a paradoxical enterprise of both masking and exposing the link of the green future to the Polish coal-based power sector – by sometimes underlining a fuel switch from fossil fuels to electricity – and on other occasions by clearly stating that electromobility is going to increase demand for electricity and thus also for domestic coal. The EV as an object thus functions in contradictory registers: in the future and in the past, in the sphere of innovation and in the sphere of tradition, as a clean technology and as a coal-based dirty technology, as a national pride and as part of a global trend.

Thus, in order to understand the paradoxes of Poland’s energy politics, it is vital to examine both the production relations within Poland’s power system and the recent history of Poland’s energy transition marked by several climate and energy infrastructural projects in the context of EU climate policies and politics. This chapter also contributes to current debates about various political meanings of energy and the ways in which energy infrastructures become part of wider political projects and visions of state buildings, progress, modernization, security, innovation and environmentalism. Discourses about the European carbon market, CCS and electromobility showed that climate politics are strongly nationalized and that the political vision of the Polish state is related to maintaining its productivity, including the productivity of the population framed as a labour force. The Polish state is not only a neoliberal state that sees its role as a container that provides space and conditions for investments, but is also as a resource state that provides itself with the basic fuels for energy production. The most important fuel for the Polish economy is still coal and even the green project of electromobility, at the end of the day, has turned out to be a project about burning more domestic coal.

Aleksandra Lis is Associate Professor at the Adam Mickiewicz University in Poznań. She holds a Ph.D. degree from the Central European University in Budapest and worked as a research fellow at various research institutions and think tanks: CSTM&S at the University of California, Berkeley, Columbia University, IAS STS at TU Graz, Agora Energiewende in Berlin and the Max Planck Institute for the Study of Society in Cologne. She has led several research projects on climate and energy politics funded by the National Science Centre, the European Commission and the Polish-German Science Foundation. Her work has been published in peer-reviewed journals such as *Energy Research and Social Sciences*, *Environmental Politics* and *Environmental Policy & Planning*.

Notes

Parts of the research carried out for this project were financed by a Polish National Science Centre research grant, number UMO-2017/25/B/HS6/00880.

1. Energetyzując świat: STS i antropologia ku społecznym studiom nad nowymi energiami (2018-2021), grant NCN, number 2017/25/B/HS6/00880. Communication Near CO2 (Horizon 2020). Retrieved 20 July 2020 from <https://www.communicationnearco2.eu>.
2. Interview, Leader of the Secretariat of Energy and Mining Unions Solidarność, Warsaw, October 2008.
3. Two organizations that engaged in promoting climate policies as an opportunity for the Polish economy were 'Lewiatan' (the association of private employers) and Energy Forum (a think tank).
4. Retrieved 20 July 2020 from <https://www.communicationnearco2.eu>.
5. Video report on Bełchatów, 2008.
6. Retrieved 20 July 2020 from <http://belchatow.naszemiasto.pl/arttykul/rezygnuja-z-ccs-w-elektrowni-belchatow-koncern-pge-giek,1860201,art,t,id,tm.html>.
7. Retrieved 20 July 2020 from https://gornictwo.wnp.pl/premier-prezydent-i-szef-mon-do-gornikow-wegiel-podstawa-polskiej-gospodarki,312301_1_0_0.html; <https://www.tvp.info/33776701/premier-nowoczesne-gornictwo-to-przyszlosc-polskiej-gospodarki>.
8. Retrieved 20 July 2020 from <https://www.forbes.pl/przywodztwo/samochody-elektryczne-w-polsce-elektryzujaca-wizja-morawieckiego/9et2m5y>.
9. Retrieved 20 July 2020 from <https://www.forbes.pl/przywodztwo/samochody-elektryczne-w-polsce-elektryzujaca-wizja-morawieckiego/9et2m5y>.
10. Retrieved 20 July 2020 from <https://www.solarisbus.com/pl/pojazdy/napedy-alternatywne-elektryczne-hybrydowe-hybryda/grupa-urbino-electric>.

11. Retrieved 20 July 2020 from <http://www.emobilitypoland.pl/pl/o-projekcie.html>.
 12. The four strategic documents that constitute the basis for the forthcoming regulations are: (i) 'Energy into the Future', the Plan for Electromobility Development adopted by the Council of Ministers on 16 March 2017; (ii) the National Framework for Alternative Fuels Infrastructure Development, adopted by the Council of Ministers on 29 March 2017; (iii) the law proposal establishing a Fund for Low Emission Transport, amending the Law on biocomponents and liquid biofuels and other laws (UC 79); and (iv) the law proposal on electromobility and alternative fuels (UC 89).
 13. Retrieved 20 July 2020 from <http://www.me.gov.pl/Innowacyjnosc/Elektromobilnosc>.
 14. Retrieved 20 July 2020 from <http://konkurs.emobilitypoland.pl/#galeria>.
 15. Retrieved 20 July 2020 from <http://konkurs.emobilitypoland.pl/#galeria>.
 16. Retrieved 20 July 2020 from <https://www.auto-swiat.pl/wiadomosci/aktualnosci/polski-samochod-elektryczny-jak-jednorozec-poslowie-kontra-minister/4y0myk5>.
 17. Retrieved 20 July 2020 from <https://www.auto-swiat.pl/wiadomosci/aktualnosci/polski-samochod-elektryczny-jak-jednorozec-poslowie-kontra-minister/4y0myk5>.
 18. Retrieved 20 July 2020 from <https://www.auto-swiat.pl/wiadomosci/aktualnosci/polski-samochod-elektryczny-jak-jednorozec-poslowie-kontra-minister/4y0myk5>.
- Retrieved 20 July 2020 from <https://wiadomosci.wp.pl/polski-samochod-elektryczny-gigantyczna-strata-spolki-electromobility-poland-6297336357697153a>.

References

- Boyer, D. 2012. 'Energopolitics and the Anthropology of Energy', *Anthropology News* 52: 5–7.
- Coleman, L. 2017. *Moral Technology, Electrification as Political Ritual in New Delhi*. Ithaca, NY: Cornell University Press.
- Corless, V. et al. 2011. *Insuring Energy Independence: A CCS Roadmap for Poland*. Kraków: BEST: Bellona Environmental CCS Team.
- EC4MACS – European Consortium for Modelling of Air Pollution and Climate Strategies. 2008. *Technical Mid-Term Report*. Retrieved 20 July 2020 from http://www.ec4macs.eu/content/report/public/EC4MACS_MidTermReport_Final_without_Financials.pdf.
- Ellerman, D.A., B.K. Buchner and C. Carraro. 2006. *Allocation in the European Emissions Trading Schemes: Rights, Rents and Fairness*. Cambridge: Cambridge University Press.
- European Commission. 2008. *Impact Assessment: Document Accompanying the Package of Implementation Measures for the EU's Objectives on Cli-*

- mate Change and Renewable Energy for 2020*. Retrieved 20 July 2020 from <http://ec.europa.eu/transparency/regdoc/rep/2/2008/EN/2-2008-85-EN-1-0.Pdf>.
- Jasanoff, S., and S.-H. Kim. 2009. 'Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea', *Minerva* 47(2): 119–46.
- KPMG. 2013. 'KPMG's Global Automotive Executive Survey 2013'. Retrieved 20 July 2020 from <https://assets.kpmg/content/dam/kpmg/pdf/2013/01/2013-Global-Automotive-Executive-Survey.pdf>.
- Kuzemko, C. 2013. *The Energy Security-Climate Nexus: Institutional Change in the UK and Beyond*. Basingstoke: Palgrave Macmillan.
- Latour, B. 1996. *Aramis, or the Love of Technology*. Cambridge, MA: Harvard University Press.
- Lis, A. 2011. 'Negotiating the European Union Emission Trading Scheme: Re-constructing a Calculative Space for Carbon', *Polish Sociological Review* 174(2): 77–94.
- . 2014. 'Strategies of Interest Representation: Polish Trade Unions in EU Governance', *Europe-Asia Studies* 66(3): 444–66.
- . 2020. *Climate and Energy Politics: Debating Carbon Dioxide and Shale Gas*. New York: Routledge.
- Lis, A., and J. Desbarats. 2012. 'Carbon Capture and Storage in Poland: National Strategies and Local Controversies', *Assessing Accession Working Paper*, CRCEES, University of Glasgow.
- New Daggett, C. 2019. *The Birth of Energy: Fossil Fuels, Thermodynamics and the Politics of Work*. Durham, NC: Duke University Press.
- Pearson, A. 2010. 'The Carbon Rich List: The Companies Profiting from the EU Emission Trading Scheme'. Retrieved 20 July 2020 from https://sadbags.org.uk/wp-content/uploads/2016/11/carbon_fat_cats_march2010.pdf.
- Polish Ministry of Energy 2019. '2040 Energy Strategy for Poland'. Retrieved 20 July 2020 from https://www.gov.pl/documents/33372/436746/PEP2040_projekt_v12_2018-11-23.pdf/ee3374f4-10c3-5ad8-1843-f58dae119936.
- Pooley, E. 2010. *The Climate War: True Believers, Power Brokers, and the Fight to Save the Earth*. New York: Hyperion.
- Szeman, I., and D. Boyer (eds). 2017. *Energy Humanities: An Anthology*. Baltimore: Johns Hopkins University Press.
- Szeman, I., J. Wenzel and P. Yaeger (eds). 2017. *Fueling Culture: 101 Words for Energy and Environment*. New York: Fordham University Press.
- Tenbrock, C., and T. Claas. 2008. 'Die Angst der Pygmäen', *Die Zeit*, 10 June. Retrieved 20 July 2020 from <http://www.zeit.de/2008/29/Klima-Osteuropa>.
- Wagner, A. 2017. 'Shale Gas in the Polish Media Discourse', in A. Wagner (ed.), *Visible and Invisible: Nuclear Energy, Shale Gas and Wind Power in the Polish Media Discourse*, B. Koshalka (trans.). Kraków: Jagiellonian University Press.

- Żmijewski, K. 2008a. 'The Anxiety of Pygmies'. Retrieved 20 July 2020 from <http://www.wnp.pl/blog/2.html>.
- . 2008b. 'Breakthrough or breakdown?', *European Voice*. Retrieved 9 February 2014 from <https://www.politico.eu/article/breakthrough-or-breakdown/>.
- Żylicz, T. 2000. 'Obstacles of Implementing Tradable Pollution Permits: The Case of Poland', in OECD (ed.), *Implementing Domestic Tradable Permits for Environmental Protection*. Paris: OECD Publishing, pp. 147–67.

The Earth Is Trembling and We Are Shaken

Governmentality and Resistance in the Groningen Gas Field

Elisabeth N. Moolenaar

Introduction

Increasingly, since the late 1980s, there has been seismicity induced by conventional natural gas extraction in the province of Groningen, an area with no naturally occurring earthquakes from fault-lines. The ‘big quake’, with its epicentre in Huizinge in 2012, led to hundreds of instances of reported damage and the official acknowledgement of the relationship between gas extraction and seismic events. It was also the beginning of the development of technopolitical measures to control the situation. It has been several years since the ‘big quake’ at the time of writing this chapter. A local man reflects on the anniversary in one of the local newspapers: ‘Huizinge changed everything, and at the same time it changed nothing’ (van Sluis 2017). This chapter recounts some of the unanticipated changes and the hoped for but unattained changes in relation to the earthquakes induced by gas extraction for people who live over the gas field.

At the time of the seismic event in Huizinge, I was conducting ethnographic research in the area on regional identity and learned that the experience of earthquakes had become intertwined in a complex manner with what it means to be from Groningen. The experience of earthquakes and the political processes surrounding extraction have rendered new ways of understanding oneself and new subjectivities. Moreover, extraction in Groningen is enmeshed in national

discourses of hierarchical differences and is related to experiences of cultural, political, and economic marginalization.

As Raminder Kaur also notes in this volume, extraction of natural resources and energy production frequently occurs in more remote areas and leaves most consumers unaware of these practices and of the impacts on the local residents (Jalbert et al. 2017). Established anthropology of mining scholarship has described these impacts from a global perspective, but in so doing has mostly focused on the Global South. More recent scholarship deals with the impacts of energy production and resource extraction in other locations. Among its many contributions, this body of work makes evident that mining and resource extraction has an effect on processes of identification and subjectivation. Thomas Pearson (2016), Anna Willow et al. (2014), Anna Willow and Sara Wylie (2014), and Rebecca Scott (2010) show that, through altering the landscape, resource extraction affects people's sense of self and belonging. The work of Rebecca Scott on Mountain Top Removal (*ibid.*) describes how in Appalachia, extractive practices exacerbate the experience of political, economic and cultural marginalization of its mining communities. People may experience that in political decision-making over resources, they and/or the place they call home are being sacrificed and that they are exposed to environmental degradation, threats to health and/or financial losses (*ibid.*). Being put at risk by industrial practices in general affects the wellbeing of communities and individuals, as well as ideas of nation and government (Erikson 1995). The political choices surrounding energy production and resource extraction influence how people understand themselves and their social relationships (Strauss et al. 2013). People may draw on oppositional identities in opposing the gas extraction, while new ways of identifying may also spring from collective action (Castells 1997; Jalbert et al. 2017).

This ethnographic chapter treats the Groningen gas field as a locus of power. In the tradition of Miller and Rose's work on governmentality (2008), and based on Foucault's writing (1979), it describes policy proposals and political programmes, devices and instruments, and the role of (various forms of and access to) knowledge in shaping the ways in which individuals understand and act on themselves in the context of the gas extraction in Groningen. The focus is on the daily lived experiences of people in the province, and processes of identification and subjectivation in the wake of the seismic events induced by the local gas extraction.¹

A ‘Remote’ Province

Groningen province is one of the least-populated provinces of the Netherlands and has merely one big city (population ca. 200,000) the eponymous capital, Groningen. The rest of the province is mostly rural with a few small towns. Locals call this area the *Ommelanden* (literally, the ‘lands around’). This province, even though it was once part of the Hanseatic League, developed very differently and quite apart from the densely populated and rich political and economic centre of the country in the west, called the *Randstad*. Instead, it remained a mostly agricultural province. Groningen province currently houses some of the poorest people of the Netherlands. Social hierarchies developed based on this geography of wealth and power, exhibiting centre–periphery and rural–urban antagonisms – within the province between city and *Ommelanden* and nationally between Groningen and the *Randstad*.

The rural and agricultural character of Groningen (as compared to the cultural, political and economic centre of the Netherlands) and its physical distance from the *Randstad* have developed into bases for the cultural and political marginalization of the people from Groningen. People from the *Randstad* view people from Groningen as hicks, poorly educated and speaking a less respectable form of Dutch. They disparagingly use the word farmers (*boeren*) for them, regardless of whether they are farmers by profession. In mainstream media, *Groningers* have often been caricatured and/or portrayed as poor and stupid. Many people from the *Randstad* see Groningen province as extremely remote and as a place in which one would rather not find oneself.

In this more or less peripheral position, some *Groningers* feel that national politicians have no interest in the region. They say that (national) politicians hardly ever come to the province and do not know what life is like there. Prior to the 2017 national elections, one of the big debates was hosted in Groningen and people commented with cynicism on social media that one only sees national politicians in Groningen during campaign time (‘when they need your vote’). They also feel unheard and underrepresented (together with people from other provinces outside of the *Randstad*).

Groningen Gas Field

In 1959, natural gas was discovered by the national gas company (at that time, oil company) the Nederlandse Aardolie Maatschappij

(NAM) during a survey drilling in the town of Slochteren, Groningen (Brandsma et al. 2016; VPRO 2016). The survey drilling indicated that underneath Groningen lay the world's tenth-largest extractable natural gas field and the biggest in Europe: the Groningen Gas Field. Since the Napoleonic Wars and the ensuing mining law (from 1810 and only revised in 2002, though not significantly changed in content), the deep layers of the soil and all mineral rights belong to the Dutch government.² According to the law, people who live over any minerals are obliged to allow for drilling for minerals on their land, provided that all the mandatory drilling permits are in order. Farmers who had to give up their land for drilling received one-off compensation.

Before the discovery of gas, the Netherlands was largely powered and heated by oil, extracted from Drenthe by the NAM, and by coal from the national mines (Nederlandse Staatsmijnen) in the south of the Netherlands. When the gas was discovered, the Dutch government saw the advantage of the cheaper, domestic gas and started a gasification programme (Brandsma et al. 2016: 27–53). To be able to extract, transport and sell the gas (e.g. on the international market), the government entered into a complicated joint venture structure with the NAM and private and semi-private companies called *gasgebouw* ('gas structure').³ Between 1963 and 1965, the whole country was outfitted with gas pipelines and distribution networks connecting the gas wells to every household in the Netherlands. By 1965, all of the coal mines were closed (VPRO 2016).

The gas is used to heat the entire country and it is for sale as an export product (gas exports have halved in the past three years and currently comprise 2% of the national exports (Centraal Bureau voor de Statistiek n.d.)). Massive infrastructure projects and a variety of social programmes were financed with the money made from the gas since the 1960s. The Dutch government has come to rely on this source of income (€300 billion total, €500 billion with inflation correction) (Centraal Bureau voor de Statistiek 2018; Aardgas in Nederland 2018).

Earthquakes

Small earthquakes have been occurring with increasing frequency in the province of Groningen since the late 1980s. The most notable one, with its epicentre in Huizinge, reached 3.6 on the Richter scale, bigger than any prior earthquake ever recorded in the region. The

many years of gas extraction and the volume of gas extracted have led to pressure drops in geological layers, which caused compaction. The compaction renders tension differences along various layers in the soil that can cause earthquakes. The quakes are small on the Richter scale (between 1 and 3), but tend to occur near the earth's surface (at a depth of about 3 km) and, as a result they travel far and can be felt more vigorously as naturally occurring earthquakes from faultlines of the same magnitude, which mostly occur deeper than 10 km (Haak and de Crook 1994). Many people describe these quakes as shaking furniture and light fixtures, 'as if a large truck drives right by the room' or 'as if the floor was rolling'. People remarked on startling loud sounds as well.

Most of these earthquakes have epicentres near the gas wells that are predominantly located in the *Ommelanden*. Many structures in this area are at least a hundred years old and are considered cultural heritage, and have never been secured to withstand earthquakes of any intensity. The earthquakes, combined with related subsidence in the area, have caused many of these structures to become damaged – some even beyond repair. Houses have rapidly dropped in value, and people who want to leave either have trouble selling their properties or are faced with rock-bottom prices and negative equity. Groningen had already been declining in population for a few years because of sparse opportunities for employment and because of it being more rural and further away from the cultural, political and economic centre of the Netherlands. The earthquakes have exacerbated this situation. Provincial and municipal politicians are concerned that the area is being drained, both in terms of population and finances.

Mineral Rights

The earthquakes have aggravated previously developed feelings of marginalization, of disenfranchisement and of being governed by far-away and uncaring leaders. An oft-heard complaint is that national politicians do not visit Groningen to see for themselves what the situation is really like. Like people impacted by fracking in Ohio, *Groningers* find that decisions are being made by distant leaders who do not understand the local situation and the consequences of their decisions (Willow et al. 2014: 60).⁴

One of the aspects that makes the relationship with the government and politicians particularly fraught is that the government owns all the mineral rights and, together with the gas extraction company,

is the largest beneficiary of the gas extraction. Government websites currently state that this construct of government and business ventures in the ‘gas structure’ (see above) was to ensure that the gas profits would benefit the entire population of the Netherlands.⁵ Yet, this construct has led to uncertainty regarding who is responsible for the negative impacts of the gas extraction and damage compensation schemes. The national government, particularly the Ministry of Economic Affairs, makes the executive decisions regarding the volume of gas to be extracted. There is a special governmental body to oversee all mining activities regarding safety, Staatstoezicht op de Mijnen (‘state supervision of the mines’), that advises the Ministry of Economic Affairs on the decision. The Ministry of Economic Affairs is also responsible for treaties and contracts related to the export of gas.

Since the quakes started in the late 1980s, quite a few *Groningers* were convinced that the quakes were caused by the gas extraction. This was denied by the government and the NAM. Researchers who had previously claimed that there was a relationship between gas extraction and earthquakes were not taken seriously (Brandsma et al. 2016). The earthquake in Huizinge in 2012 changed all that. In 2013, Staatstoezicht op de Mijnen produced a report that larger quakes were possible in the area due to extraction, and voiced safety concerns at the extraction rate applied at the time.

Technopolitical Measures

When it was officially acknowledged that the gas extraction over the years had caused movement and tension in layers of the soil, the first response of the government and the NAM was to initiate financial compensation to damaged houses. The procedures were handled on a case-by-case basis that lacked an underlying protocol. Cases were evaluated by NAM experts and took an increasingly long time. Damage kept accruing as the quakes kept occurring, and subsequent cases of damage and claims quickly accumulated. An independent National Coordinator was appointed by the Minister of Economic Affairs to oversee the situation and structure procedures. The government gave the coordinator funding to help with economic losses and to support projects that would boost the attractiveness of the area in the long term. Which projects qualified for funding out of this lump sum was negotiated through another institution, organized like a roundtable with local citizens, farmers, companies and organizations. This in-

stitution and the role and performance of the National Coordinator became increasingly criticized. People deemed him to be ineffective. Some people claimed he was trying to enlarge his sphere of influence, while others felt he was acting like a representative, whereas the people did not elect him.

The government also established a ‘centre for safe living’. This centre was meant to advise people who accrued damage, offer them support in getting the damage repaired, and offer them aid in having their house fortified against future seismic events. Over time, the centre has been criticized by *Groningers* as well: by some for its lack of competence and by others for its ties to the NAM and the government. Meanwhile, the government has continued to create new institutions. The various actions are ‘intended to manage the potentially unruly conduct of material assemblages, aligning them with broader economic and governmental objectives’ (Barry 2013: 142). These technopolitical attempts at providing victims with aid and assistance have not erased uncertainty; indeed, quite a few interlocutors perceive the procedures for damage reporting and compensation as unfair and inaccurate (see also below). The lack of a clear system or protocol for damage repair compensation procedures, the many years the procedures take, and the numerous and interwoven institutions and offices have also left many *Groningers* upset, as is evident from newspaper articles, TV interviews, blogs, social media groups and personal interviews.

Psychological Aid

In addition to material damage, physical and mental suffering have increasingly become a part of the narratives regarding the earthquakes. In City Council meetings and local meetings to discuss gas extraction, on social media, personal blogs, and in interviews with the press and with me, people say they suffer from psychological distress⁶ and physical complaints such as headaches, insomnia and dizzy spells. Consequently, this type of suffering also became part of the government’s attempts at aid and assistance. A research team was set up through the University of Groningen and surveyed a large number of respondents with questionnaires about their health situation, what type of doctor(s) they visit and how frequently, and how they see the future of Groningen (Postmes et al. 2017). The results were published expediently and are accessible to everyone.⁷ On Facebook pages, created by and for people from Groningen suffering

from earthquakes, commenters were critical of the research project. They claim they do not need more research; instead, they want the extraction to stop.

The government has appointed special psychologists to be available for people who suffer from mental health problems due to the earthquakes. These additions to the technopolitical management that address the suffering and complaints of the *Groningers* resonate with Aiwah Ong's work on spirit possession in factories in Malaysia. In Ong's work, spirit possession among the labour force during work hours is an expression of, and a way of dealing with, a rapid change to multinational production processes (Ong 1988). The work further showed that multinational companies hire exorcists to combat the possession of a culturally appropriate matter, but do not address the production process itself. The symptoms people are suffering from in Groningen can be understood as social trauma and a specific cultural symptomology to express distrust, unsafety, uncertainty and social rupture in light of Kai Erikson's work on populations exposed to risk and affected by natural, environmental and economic disasters (Erikson 1995). Making psychologists available may help people cope, but it also leaves the extraction practices as the origin of people's suffering unexamined and as such unhindered. When I asked my interlocutors about the psychologists, they mentioned that this help does not address their need for compensation or demand for the extraction to stop.

Research

Since the 2012 quake in Huizinge, the province has been the locus of a great amount of research by both the government and the NAM. In 2013, one of the pioneering reports investigated the change in property values and the damage to the image of Groningen (pertaining to its ability to attract investment to the region). It concluded that the inhabitants of the region should profit from the local economic activity and that the NAM and the government should have to pay a large sum to Groningen (Commissie Duurzame Toekomst Noord-Oost Groningen 2013). Other reports ordered by the government and the National Coordinator followed, investigating the threats to safety, how much it would cost to repair the damage, the maximum magnitude the earthquakes could possibly reach in the area, and whether and what structures in the area needed to be fortified, as well as how much this would cost.

Over time, the NAM ordered research to be conducted to establish categories for the kinds of damage in order to determine who can claim what kinds of damage from the earthquakes. Maps were drawn for those properties ‘within the contours of the quake area’, defining who could file legitimate claims for damage compensation by the NAM. A system of classification for different levels of damage was outlined and a large area was considered outside the contours of the earthquake area. People living in this area would not be compensated, but would receive a voucher for €1,500 to fix whatever damage they had suffered. This system has been challenged in the courts, as a group of locals who live around these contours of the quake area and suffered damage decided to fight it, claiming that the system was based on faulty and biased research: ‘earthquakes do not neatly follow borders drawn on to maps’. Research by the NAM into damage and damage compensation is continuous and ongoing.

The two (public) institutes for higher education in Groningen, the Hanze Hogeschool University of Applied Sciences and the University of Groningen, have also become hubs for research on earthquake-resistant construction and energy-neutral housing, and for new forms of energy production, and have established the Energy Transition Centre, the EnergyBarn project and the Energy Academy Europe. However, according to many of my interlocutors, this research has not produced results in terms of compensation, safety or reduction of earthquakes, etc., or improvements in living conditions for those who suffer from the earthquakes.

Many inhabitants in the area have lost faith in the outcome of the research ordered by the government and the NAM. They claim that it does not help them in any way. Within grassroots groups that oppose extraction and/or seek compensation and on social media, people claim that the research by the government and NAM is merely to postpone having to take action or that all this research is simply to appease the locals. Any research regarding damage ordered by the NAM is also highly contested; its value neutrality and objectivity are being questioned. When I shared research by the Energy Centre of Durham University on induced seismicity on social media, it was immediately dismissed by a grassroots group opposing extraction because it was ‘sponsored by the NAM’ (which, to interlocutors, means it cannot be trusted). Also, people said it had faulty data because one of the largest earthquakes was not recorded with the accurate magnitude. As one interlocutor put it: ‘This database can be put directly in the rubbish bin.’ Some interlocutors state that all this research makes them ‘research tired’. In interviews with me but also on social media,

locals opined that the researchers and students coming to Groningen for their research projects are yet another way in which the locals are being exploited or taken advantage of.

While reports have continued to accrue and institutions and organization have been brought to life, the political parties on the left of the political spectrum and part of the opposition in Congress have been putting gas extraction on the agenda in Congress ever since the earthquake in Huizinge. Their focus has been a significant reduction in the volume to be extracted from the wells (as is determined by the Ministry of Economic Affairs). The Minister's response was initially that heating the country and all the export contracts prevent a significant reduction from being achieved.⁸ Increasingly, more political parties from across the political spectrum are supporting a reduction in extraction, but have differing ideas about the extent of this reduction. What complicates matters is that the government has grown accustomed to using the gas money to cover diverse budgetary expenses. Currently, Congress is exploring fulfilling energy demand in alternative ways, mostly by wind, solar and hydrogen power. However, some politicians are reconsidering hydraulic fracturing in other areas, which was previously thought of as an anathema. These explorations of alternative sources of energy have led to new conflicts and debates (both inside and outside of the political arena) over the methods, locations and scales of (renewable) energy production. These political debates about extraction and energy production are ongoing.

Relationship with the Government

The attempts at managing the impact of earthquakes and damage compensation have led to a network of many institutions (all semi-government or related to the NAM) that are hard to navigate when seeking assistance or compensation according to my interlocutors. The narratives collected in the area and from the (social) media relay being sent from one organization to the next, only to be sent back again. Or, just when they are in the process of getting assistance or compensation, a new institution will be established that might make the procedures less clear or take longer. The murkiness of how to navigate the web of institutions is upsetting to many people who are seeking compensation. One interlocutor describes trying to get her complaints heard and to receive compensation as a process that has taken over her entire life and says she feels exhausted.

The collected narratives about dealing with all the institutions also reveal feelings of disempowerment. Some wonder aloud why it has to be so hard to find assistance and compensation. Others claim that the system is intentionally nebulous, or state that the government is incompetent or not interested in improving the situation. Recently, *Dagblad van het Noorden*, a regional newspaper for the Northern Netherlands, published articles about how many people are employed within the network of institutions and organizations, and what percentage of the money available for compensation goes to all the employees and experts; the ‘centre for safe living’, mentioned above, made a profit of millions of euros (van Hofslot 2018). These newspapers exposés spurred outrage among locals as well as left-wing politicians on social media, and protests followed (Trimbach 2018).

In Groningen, there is great and growing distrust towards the national government, the primary beneficiary of the gas extraction. From the start of earthquakes in the late 1980s until the 3.6 earthquake in Huizinge in 2012, it denied that the earthquakes were caused by gas extraction. Moreover, the government has made a large amount of money from this extraction, relatively little of which has flowed to the people who live over the gas field or have been impacted by the negative consequences of extraction.⁹ During my time in the region, the majority of my interlocutors who were suffering from the induced earthquakes stated that the government should protect them from harm, damage, etc., but instead saw a government that makes money from the gas extraction and does nothing to protect or help them. Damage compensation procedures are complicated, take years and are frequently carried out by contractors or organizations that are directly related to the NAM. Locals’ narratives in newspapers, on talk shows, on social media, and the language on protest signs echo these negative ideas about and experiences with the government.

Like other locations of energy production around the world, narratives about undemocratic practices and conspiracy theories have surfaced (Howe et al. 2015). In these narratives, politicians only care about financial gain and not about the people who live over the gas field. Some of my interlocutors even publicly accuse certain politicians of being ‘owned by the gas extraction company’. When the political party GroenLinks (Green Left) cancelled a discussion on how to deal with damage compensation – because they had to attend an emergency meeting with the other political parties and the National Coordinator – people wrote on social media that this conflicting agenda was all preplanned by the National Coordinator, or they otherwise accused the party of ‘being in cahoots with the National Co-

ordinator'. A few asked to be present at the meeting, but were told it was a closed meeting, which raised new suspicions about politicians trying to hide things from the local population.

Initially, upset *Groningers* were mainly suspicious of national politicians, but over time, many have started doubting the trustworthiness of local politicians too. When local politicians are not highly critical of (national) policy regarding gas extraction, they may be labelled as only caring about the money or as having been paid off. When the King came to visit the area to talk to people who had suffered damage, rumours surfaced on Facebook groups that he met with actors or with people who did not suffer as a result of the earthquakes.

Resource Colony

Even though Groningen is located over one of the world's largest gas fields, it is one of the poorer provinces of the Netherlands. The people of Groningen have not directly profited from the gas spoils, as most investments from the gas proceeds (such as large infrastructural projects) were made in other parts of the country. In addition, financial compensation for damage or economic loss is a slow and laborious process, and is not adequately done (in terms of coverage and scope) in the opinion of *Groningers*. Environmental scientist Jan Rotmans used the metaphor of Groningen as the ATM of the *Randstad*: the Netherlands can increase its riches simply by withdrawing and exporting more and more gas per day, yet the inhabitants of Groningen feel they do not get to partake in the spoils and only suffer the negative consequences (Rotmans 2013).

Some people mentioned to me – and grassroots organizers stated this in the media as well – that they feel like Groningen is merely a colony of the Netherlands, only good for extracting natural resources and sacrificed to benefit the rest of the country. In 2012, a faction of the Labour Party (PvdA) went so far as to suggest moving all the people out of Groningen and using the province for gas extraction and industrial practices only. Some people in the *Randstad* sometimes say this, half-jokingly, as well.

In April 2017, one of the grassroots organizations opposing extraction started framing the gas extraction in terms of human rights issues. Representatives of some grassroots groups had a meeting with the Human Rights Committee of the UN about the violation of human rights. Some *Groningers* who are active in the grassroots groups

opposing the extraction have started to refer to the region as a banana republic. During protests in the summer of 2017, there were a few people carrying signs that said ‘From grain republic to a banana republic’ (*van graanrepubliek naar bananenrepubliek*) – signifying that Groningen was once the powerful bread basket of the country and is now exploited by the government for gas.

Groningen is also a province with great potential for wind and solar energy. Following discussions about reducing gas extraction, these energy sources have become even more the focus of long-term policy plans. However, as, for instance, social media posts and town hall meetings illustrate, these initiatives are considered by some *Groningers* as yet more energy production infringing upon their living environment that benefits others only, and more sacrificing of ‘their’ space and wellbeing. The notion of Groningen serving as a resource colony for the rest of the country and the idea that the area is being treated as a sacrifice zone have aggravated the experience of marginalization of the region. Similar ideas and discourse are present in areas of resource extraction and energy production around the world (Erikson 1995), such as the rural population in Tamil Nadu fighting against a nuclear power plant in Kudankulam (as Kaur describes in this volume) and people who live in the coal-mining areas in Appalachia (Scott 2010).

The induced earthquakes have impacted the way in which many *Groningers* experience their relationship with the government and the rest of the country. Narratives by upset locals reveal feelings of disenfranchisement, disempowerment, exploitation and marginalization, and, as such, it has also become central to what it means to be from Groningen. As some of my interlocutors said ‘In the rest of the country they don’t care about us remote farmers’ and ‘if there were earthquakes in the *Randstad* the politicians would have taken action immediately’. These sentiments are similar to the experience of the Kurds in the aftermath of the earthquakes in Van, Turkey, in 2011 that Marlene Schäfers has described; Kurds find that the state would have dealt with the situation completely differently had the earthquakes happened in another part of the country where the inhabitants are mostly Turks (Schäfers 2016).¹⁰

Social Divisions

Not only have feelings of marginalization within the nation been exacerbated, and the relationship between *Groningers* and the gov-

ernment been altered, but social relationships have been affected in the aftermath of the earthquakes as well. In some villages, the underdeveloped and unclear damage compensation protocol has led to a situation where some residents are eligible for compensation and others are not. Neighbours who have experienced similar levels of damage might face a completely different reception of their claims. In some cases, this difference occurs among neighbours on the same street. Moreover, there are whole areas that were determined ineligible for compensation because the damage was considered ‘outside of the contours of the earthquake area’, even though seismicity has been recorded and the people who live here have experienced the earthquakes. Those who have been unsuccessful in getting compensation sometimes feel resentment, which may be directed towards the NAM and the government, but at times also towards the people who *have* received compensation.

What feeds this resentment is that frequently the people receiving compensation must sign nondisclosure or confidentiality agreements. This was the case for one local whose old farmhouse was damaged severely and was in negotiations with the NAM about repairing the damage for many years. The NAM refused to pay for the repairs and fortification because repairing the historical building and ensuring that it would withstand future earthquakes would be more expensive than the actual market value of the house. In the end, her family and the NAM agreed to tear down the house and build a new house paid for by the NAM. After some people heard about her getting a new house, she was accused on social media for having taken advantage of the situation; ‘getting a million-euro home in return for an old hovel’.

Similarly, there are also divisions between renters and homeowners when it comes to damage compensation and the fortification of homes. A lot of social housing cooperatives have been considered a priority for damage compensation. Social housing cooperatives have received money quickly to fortify structures and to switch all their apartments from gas to electricity. The homeowners who, in some cases, live right next door in historic farms have often not received anything yet. One of them told me angrily: ‘They even received new pot and pan sets!’¹¹

Another way in which the earthquakes and the unclear damage compensation protocol have worked divisively is that not everyone has equal access to or the ability to get the help and assistance they need. As mentioned above, the network of organizations to obtain help and assistance is difficult to navigate. There are people who simply do not know where to start. Also, not everyone is equally able to

fight for damage compensation and not everyone has the means to litigate, let alone to litigate for as long as it might take in order to gain compensation. One of the farmers I spoke to did not see the severity of the situation and thought that maybe some people were making it into a bigger deal than it was. He had some cracks in his barn, but had them fixed, which he said was paid for by the NAM ‘without any issues’. There are locals who claim that it is only ‘non-native’ people who are upset about the earthquakes. Some interlocutors in the area pointed out that longlasting societal tensions have emerged. According to a physician from the area, people are being impacted by something they cannot control and become part of a process¹² that they cannot control (van Sluis 2017). Some interlocutors believe that the social rifts are caused intentionally and speak of ‘divide and conquer’.

Acts of Resistance

Feeling like they have nowhere (trustworthy) to turn and experiencing a lack of government protection, *Groningers* are looking for ways to have their voices heard, to maintain control over their homes and villages and to resist. On a smaller scale, similar to civil disobedience, there are people who purposely do not fly the Dutch flag during national holidays to indicate that they feel as though they are not a part of the nation (or perhaps have been sacrificed for the nation, as described above) and that for them, there is nothing to celebrate. There are also some people who fly the Dutch flag or the regional flag knotted, called ‘in sjouw’. This was originally a sign of emergency aboard ships. In Groningen, it has become a symbol to express the exigency of the impact of the gas extraction. People also send angry letters to the CEO of the NAM or the King, or have protest signs in their front yards.

Opposition to extraction has also been exercised through the courts. There are a few people who suffered damage and took the NAM to court. What people find hard in such cases is that the NAM has several (high-profile) lawyers, while they have only one. Also, the financial burden of such cases is uneven and weighs heavily on most individuals. In 2016 there was a group of plaintiffs who sued the NAM for compensation for the loss in value of their houses and properties. In the same year, a (still larger) group of plaintiffs sued both the NAM and the Dutch state for diminishing their quality of life.¹³ In 2017, a group of petitioners together with two district waterboards, a collective for people who suffer from earthquake damages and the agricul-

tural and horticulture organization LTO Noord took their objection over the rate of gas to be extracted (as determined by the Minister of Economic Affairs) to the Administrative Jurisdiction Division of the Council of State (van Bokkum 2017; De Rechtspraak 2017).

Over the years, more collective action has been organized and protests have grown in size. There have been many protest marches and gatherings in front of the NAM extraction sites and NAM headquarters, and in front of and within various government buildings. Delegations of *Groningers* attend the many debates regarding the gas extraction in both the provincial government and the national government. The objective of many protests has been getting one's voice out there: being heard by national politicians and the rest of the country. The visual media (especially national primetime talk shows) and social media have become platforms to broadcast stories of those affected by the earthquakes. The situation in Groningen received national attention when a primetime talk show devoted an entire segment to the earthquakes in Groningen. Since then, other talk shows invited people from Groningen to discuss matters with national politicians, and the foreign media has picked the story up as well.

Another method to gain more attention for the situation in Groningen is the making of videos by locals to show the impact of the earthquakes and sharing them on YouTube and social media. There have also been attention-grabbing, unusual and 'playful' methods, like collectively knitting extremely large blankets to cover damaged historical houses, and the synchronized shooting of emergency flares throughout the region. Similar to the protests against the Kudankulam Nuclear Power Plant mentioned in Kaur's chapter in this volume, a hunger strike was organized more recently, which seemed to spur new negotiations about compensation and extraction volume between politicians and activists, but according to organizers was ineffective.

Groningers also use blogs, websites and social media groups to draw attention to the impact of the earthquakes on people's lives and to give voice to personal stories. The stories are mostly centred on the physical damages to people's houses and the interactions with institutions necessary to obtain damage compensation. The majority of these reveal that such interactions are frequently frustrating and upsetting, and in the aftermath of induced seismicity can alter one's sense of connection with the nation/community and government. Even though there has been more attention paid to the plight of those dealing with earthquakes, concrete action appears to have been inconsequential.

Community of Resistance

Several grassroots organizations opposing the gas extraction have emerged since 2012. As the earthquakes keep occurring, the resistance is growing. The opposition to extraction is very much a regional movement using the local flag, local dialect and the image of the farmer in its promotion materials and during protests. It draws on the region's difference from the rest of the nation and the marginalization of the region to form an oppositional group identity, fighting the oppression inhabitants of the region experience in which marginalization and gas extraction are very much intertwined (Castells 1997). In the community of resistance, local symbols and the image of the farmer have become a particular form of consciousness. This is similar to the women Seitz describes in coal communities in Appalachia who started using 'Appalachian', a term with a previously negative connotation and that works to demean and marginalize. Women activists drew on this 'Appalachianness' to develop a particular form of class and gender consciousness as they participated in acts of resistance (Seitz 1998: 215).

Some of these grassroots organizations collaborate with environmental protection or conservation organizations, as they both oppose the extraction of natural gas (although for different reasons). In the process of collaborating against extraction, *Groningers* have also become more aware of and/or interested in environmental conservation or protection. The environmental organizations are employing the resistance to extraction to reach their goal to switch to all renewables, with the least impact on the natural environment in the region. While trying to protect their villages and their homes from damage, and themselves and their families from insecurity and harm, local people have become 'coincidental' stewards of the environment. At times, the two groups' objectives clash, for instance, on the topic of wind energy production in the area, which some locals experience to be more exploitation or sacrificing of their direct living environment (see above). Yet, they have remained allies in their opposition against extraction.

There are several social media groups focused on the earthquakes in Groningen. In these groups, news articles are shared regarding the gas extraction, for instance, on new policy or damage compensation schemes. Also, they report earthquakes as they happen, with information on their epicentre and magnitude. Some posts are meant to expose bad practices by the government or NAM. Members of these groups complain about the government, but they also try to provide each other with support and offer a sense of community on social

media. Social media is also used to reach out people, and to organize and coordinate. Over time, the community of resistance is becoming increasingly better organized and coordinated in its acts of resistance. There has also been contact with resistance groups in other locales. In November 2017, activists opposing the Dakota Access Pipeline joined forces with *Groningers* for a protest gathering.

While in the beginning, action was aimed at drawing attention to the situation and the plight of *Groningers*, increasingly it has become aimed at resisting certain policies and measures. On social media, there have been calls to jointly reject particular aid packages. In 2017, a plan was voiced on social media to not pay any property taxes to benefit the local municipalities, after a local mayor was not critical of a new policy regarding the gas extraction. People argued that if the municipal government does not help protect one's buildings, one should not have to pay taxes on one's buildings. What distinguishes the movement from other Dutch political and/or social movements is its regional consciousness.

Conflicting Interests

People in the region wish to live safely in their homes and combat the deleterious effects of the gas extraction on their lives. Those who have suffered damage to their houses, financial losses or mental/physical problems want to be fully compensated by either the government or the NAM through straightforward and easy procedures. The community of resistance and the political parties on the left want the gas extraction to be cut to a level that ensures no more earthquakes. Yet, there is much uncertainty about what those levels would or should be. Therefore, quite a few people just want the 'gas tap to be turned off' (*gaskraan dicht*), which has become a slogan during protests.

Given the size of the gas proceeds and the reliance on this national income, as well as the international contracts the nation-state has with other nations, as mentioned above, the government is hesitant to reduce the gas extraction by much or to turn the gas tap off completely. The government planned to have access to natural gas until approximately 2050 and never anticipated having to reduce or halt extraction earlier than that, nor were there any financial provisions made for damage caused by the extraction. For years now, there have been negotiations about acceptable levels of extraction for both parties. Recently, there has been a reduction in the extraction rate, but earthquakes are still occurring on a regular basis (several a week).

Within the community of resistance, people express that they feel that they are perhaps being lied to regarding the rates of extraction, causing trust to be further eroded, and they are becoming progressively more concerned. An increasing number of *Groningers* want to halt the extraction entirely.

In many cases, damage compensation schemes have still not been fully developed, or not developed to the satisfaction of all parties involved. That this process has taken several years has led to much frustration and anger among people in the region. In Facebook groups, some claim that the NAM and government are trying to wear those seeking compensation and protestors out, playing a game of attrition and hoping that the people will give up. For those with damage, as well as some others, it is inconceivable that a company that has made so much money over the years from the gas cannot afford to pay for all the damage caused in the province from where the gas originated. Moreover, few of my interlocutors believe that it is truly so complicated to develop clear damage compensation schemes.

Conclusion

The earthquakes in Groningen have damaged structures, and livelihoods and social relations have come under great stress. As a beneficiary of the gas proceeds, the government has developed a continuously growing assortment of predominantly technopolitical measures in response to the earthquakes that penetrate the daily life worlds of inhabitants of the region. My interlocutors blame the government for focusing on the technological and not thinking about the inhabitants of the region. While aid is available, little concrete action has been taken to mitigate the impact of extraction. My interlocutors hold the government responsible for placing them in peril and uncertainty.

Groningers' relationship with the government has become redefined and, as a result, new political subjectivity has emerged in the wake of the seismic events. My interlocutors' narratives reveal perceptions that the government and the rest of the country do not care about the impact of earthquakes on *Groningers'* lives. In addition, some perceive the government as consciously exploiting the local people and sacrificing the area, their home, for economic gain and the benefit of the rest of the country. The use of such discourse as 'colony' and 'banana republic' points to the notion that people should not live under such conditions in a democratic and wealthy country. The comparison with a resource colony or sacrifice zone criticizes

the relationship between the region and the rest of the country, and evokes a sense of economic and political marginality (Scott 2010: 218). Upset *Groningers* have come to understand themselves as less important, marginalized or ‘second-class citizens’.

People frequently understand themselves in relation to their environment and in relation to others (Scott 2010: 221). *Groningers* experience to have become more distanced from the rest of the nation, or, less a part of the nation. Moreover, dealing with the damage caused by earthquakes and the pursuit of compensation have also caused people to see themselves as disconnected from their communities, neighbours or families. These shifts in identification are ‘materialized in geographies of inequality and the built environment’ (ibid.: 212–13).

Resistance against the gas extraction is growing. Within the community of resistance, experiences of marginalization form the basis for a collective oppositional identity. Activists draw on dialect and local symbols in opposition to the gas extraction. Regional affiliation is entangled in discourse on colonialism and being sacrificed (Scott 2010: 218–20). This collective (oppositional) identification simultaneously disidentifies them from the rest of the population of the Netherlands.

The struggles over damage compensation and extraction, and their impact on processes of identification and subjectivation, reflect larger national debates regarding energy production and shared meanings of wealth, wellbeing, sovereignty and citizenship (see also Scott 2010: 222). As such, studying the cultural context of extraction and energy production contributes to envisioning energy futures beyond technical and economic possibilities, while enhancing our understanding of contemporary power.

Elisabeth N. Moolenaar works as a Term Professor of Sociology and Anthropology at Regis University. Her diverse research is broadly centred on identity, belonging, and processes of identification and subjectivation, and the sociocultural context of energy production. Her most recent project focuses on the impacts of conventional natural gas extraction in the Netherlands.

Notes

1. This descriptive chapter foregrounds the experiences and narratives of the people who live nearby or over the Groningen gas field. These experiences and narratives were collected using ethnographic fieldwork, including interviews with fifty interlocutors spread over all municipalities in the province, participant observation, and the examination of social and other media from 2012 to 2017, and analysed using ATLAS-ti. Voices of employees of the gas extraction company are not included in this chapter.
2. Wetten Overheid. n.d. 'No Title'. Retrieved 1 January 2017 from <https://wetten.overheid.nl/BWBR0014168/2017-03-11>.
3. For instance, Shell is part of this structure.
4. Over time, more politicians have visited, and in 2017 the King visited the area as well. However, the experience of politicians being far away and uncaring remains.
5. Retrieved 1 January 2017 from <https://www.rijksoverheid.nl/onderwerpen/gaswinning-in-groningen>.
6. The people who complain about psychological problems sometimes explain that these problems stem from safety concerns, fair and uncertainty, or (similar to what Kaur mentions in her chapter in this volume) from the constant stress of having to deal with seeking damage compensation or attempting to halt the extraction.
7. It is unclear who has used these results besides the government or locals effected by the earthquakes, or to what end they have been used. Some of my interlocutors consider the research ineffective.
8. The Netherlands has committed to deliver gas to Germany, Belgium and France until 2030. In 2017, the country delivered 27 billion cubic metres of gas (Brans 2018).
9. Of the €300 billion total in gas proceeds, €1.2 billion has gone to Groningen to cover compensation. Most of the investments made with the gas proceeds were made in the Western Netherlands (de Waard 2014; Centraal Bureau voor de Statistiek 2018).
10. It should be noted that Groningers refuse to see themselves as victims or to call themselves victims.
11. Renters of social housing had received pots and pans that were suitable to cook on their new electrical stoves provided by the social housing cooperatives.
12. She is referring to the process of gaining compensation or assistance.
13. 'Lees Terug: Rechtszaak Tegen NAM En Staat'. Retrieved 21 July 2020 from <https://www.rtvnoord.nl/nieuws/170516/Lees-terug-Rechtszaak-tegen-NAM-en-Staat>.

References

- Aardgas in Nederland. 2018. *Clingendeal International Energy Programme*. EBN, Energy Academy Europe, NOPEGA, Energy Delta Institute TNO. The Hague: TNO.
- Barry, A. 2013. *Material Politics: Disputes along the Pipeline*. Hoboken, NJ: Wiley Blackwell.
- Brandsma, M., H. Ekker and R. Start. 2016. *De Gaskolonie: Van Nationale Bodemschat Tot Groningse Tragedie*. Groningen: Passage.
- Brans, K. 2018. 'Kan Nederland Af van de Gascontracten Met Het Buitenland?', *Nieuwsuur*, 15 January.
- Castells, M. 1997. *The Power of Identity: The Information Age: Economy, Society and Culture*. Oxford: Blackwell.
- Centraal Bureau voor de Statistiek. 2018. 'Aardgasbaten'. Retrieved 21 July 2020 from <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84114ned/table?ts=1548468475315>.
- . n.d. 'Gas Exports Halved in the Past Three Years'. Retrieved 21 July 2020 from <https://www.cbs.nl/en-gb/news/2017/09/gas-exports-halved-in-the-past-three-years>.
- Commissie Duurzame Toekomst Noord-Oost Groningen. 2013. *Vertrouwen in Een Duurzame Toekomst: Een Stevig Perspectief Voor Noord-Oost Groningen*. Groningen: Provincie Groningen.
- De Waard, P. 2014. 'Is 1,2 Miljard Compensatie Voor Groningen Genoeg?', *Volkskrant*, 18 January.
- Erikson, K.T. 1995. *A New Species of Trouble: The Human Experience of Modern Disasters*. New York: W.W. Norton & Company.
- Foucault, M. 1979. 'On Governmentality', *I&C* 6: 5–22.
- Haak, H.W., and T. de Crook. 1994. 'Seismische Analyse van Aardbevingen in Noord-Nederland: Bijdrage Aan Het Multidisciplinaire Onderzoek Naar de Relatie Tussen Gaswinning En Aardbevingen'. Retrieved 21 July 2020 from <https://www.knmi.nl/kennis-en-datacentrum/publicatie/seismische-analyse-van-aardbevingen-in-noord-nederland-bijdrage-aan-het-multidisciplinaire-onderzoek-naar-de-relatie-tussen-gaswinning-en-aardbevingen>.
- Howe, C., D. Boyer and E. Barrera. 2015. 'Wind at the Margins of the State: Autonomy and Renewable Energy Development in Southern Mexico', in J.A. McNeish, A. Borchgrevink and O. Logan (eds), *Contested Powers: The Politics of Energy and Development in Latin America*. Chicago: Zed Books, pp. 92–115.
- Jalbert, K. et al. 2017. *ExtraACTION: Impacts, Engagements, and Alternative Futures*. New York: Routledge
- Miller, P., and N. Rose. 2008. *Governing the Present; Administering Economic, Social and Personal Life*. Malden, MA: Polity Press.
- Ong, A. 1988. 'The Production of Possession: Spirits and the Multinational Corporation in Malaysia', *American Ethnologist* 15(1): 28–42.

- Pearson, T. W. 2016. 'Frac Sand Mining and the Disruption of Place, Landscape, and Community in Wisconsin', *Human Organization* 75(1): 47–58.
- Postmes, T. et al. 2017. *Veiligheidsbeleving, Gezondheid En Toekomstperspectief van Groningers*. Groningen: Rijksuniversiteit Groningen.
- De Rechtspraak. 2017. Retrieved 21 September 2020 from <https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RVS:2017:3156>.
- Rotmans, J. 2013. 'Groningen Is de Pinautomaat van de Randstad', *Nu.Nl*. Retrieved 14 February 2013 from <https://www.nu.nl/zakelijk-opinie/3203483/-groningen-pinautomaat-van-randstad.html>.
- Schäfers, M. 2016. 'Ruined Futures: Managing Instability in Post-earthquake Van (Turkey)', *Social Anthropology* 24(2): 228–42.
- Scott, R.R. 2010. *Removing Mountains: Extracting Nature and Identity in the Appalachian Coalfields*. Minneapolis: University of Minnesota Press.
- Seitz, V.R. 1998. 'Class, Gender, and Resistance in the Appalachian Coalfields', in N.A. Naples (ed.), *Community Activism and Feminist Politics: Organizing across Race, Class, and Gender*. New York: Routledge, pp. 213–36.
- Strauss, S., S. Rupp and T. Love. 2013. *Cultures of Energy: Power, Practices, Technologies*. Walnut Creek, CA: Left Coast Press.
- Trimbach, M. 2018. 'Protestacties in de Maak Na Bekendmaking Na Miljoenenwinst CVW', *Dagblad van Het Noorden*, 24 October.
- Van Bokkum, M. 2017. 'Raad van State: Besluit Gaswinning Groningen Moet Opnieuw', *NRC*. Retrieved 21 July 2020 from <https://www.nrc.nl/nieuws/2017/11/15/gaswinning-rvs-winningsniveau-uitspraak-a1581221>.
- Van Hofslot, G. 2018. 'CVW Verdient Meer Aan Aardbevingsschade', *Dagblad van Het Noorden*, 23 October.
- Van Sluis, B. 2017. 'Door "Huizinge" Veranderde Alles En Tegelijk Niks', *Dagblad van Het Noorden*, 16 August.
- VPRO. 2016. 'Onzichtbaar Nederland, Aflevering Energie'. Retrieved 21 July 2020 from <https://www.vpro.nl/programmas/onzichtbaar-nederland/kijk/afleveringen/2016/energie.html>.
- Willow, A., and S. Wylie. 2014. 'Politics, Ecology, and the New Anthropology of Energy: Exploring the Emerging Frontiers of Hydraulic Fracking', *Journal of Political Ecology* 21(12): 222–36.
- Willow, A. et al. 2014. 'The Contested Landscape of Unconventional Energy Development: A Report from Ohio's Shale Gas Country', *Journal of Environmental Studies and Sciences* 4(1): 56–64.

Delving at the Core of Everyday Life – Between Power Legacies and Political Struggles

The Case of Wood-Burning Stoves in France

Nathalie Ortar

Introduction

Despite the fact that among Western European countries, France possesses one of the largest expanses of forests after Sweden and Finland, the use of wood as an energy source has mainly been ignored over the course of the twentieth century. During the last century, fire became associated with special occasions in people's minds, but no longer with heating. The exception was in remote rural areas, where farmers have not changed their heating methods. Wood is associated with peasant society, with dirt because it is necessary to clean up ashes, with health risks because smoke spreads through the house if the pipes have holes in them, and with energy inefficiency because France has always used cast-iron stoves or open fireplaces, not earthenware stoves as in neighbouring countries. Wood also requires space for storage and handling, for sawing or chopping. In other words, wood appears to have lost its appeal, except for when people are on holiday or for creating a blaze during an evening gathering. Moreover, politicians are inclined to spurn it.

Research into energy transition has shown how the technical systems in place lead to inertia and not only limit possible action in the future (Nader 1981; Araújo 2014) but also frame a specific thinking that prevents the ability to 'shift gears' (Nader 2004). And more than many other European countries France is shown to be locked into choices made in the past. Change is hampered by the nuclear infrastructure built in the 1970s and onwards to make electricity accessi-

ble to all, the prevailing ideology that it is impossible to do without this energy source (Lee and Gloaguen 2015) and the belief that a change in consumption is not possible without going backwards. The existing infrastructure represents physical barriers to new thinking (Nader 1981) and defines the energy landscape. When looking at the willingness of the government to continue the exploitation of nuclear energy and the lobbying to have it qualify as renewable, France appears more than ever locked in nuclear energy, which makes any change in users' practice difficult (Raineau 2018), as 'changes in patterns of energy demand are closely entwined with the dynamics of supply infrastructure and provisioning systems' (Walker 2014: 50).

This should mean that the electricity production associated with renewable energies like solar or wind power is relegated to a back seat in the system. However, their share is increasing. Furthermore, unlike choices made in the recent past, which tended towards greater simplicity and invisible heating systems, people are once more opting for a visible source of heating – wood – that requires places to store it as well as much handling. Why make this choice when any change to routine is costly because of the need to acquire new habits (Ehn and Löfgren 2009; Ilmonen 2013; Ortar 2014)? These questions raise the issue of the role of energopolitics in influencing decisions made by, and the capacity of, a state to change its energy regime, as well of how civil society takes alternative paths in locked-in systems. This requires getting to know who uses these stoves and understanding the contextual factors such as the political environment in the transition processes (Shove and Walker 2007), as well as the influence of the historical and cultural contexts (Labussière and Nadaï 2014). The aim is to comprehend the motives for this choice and which set of knowledge and habits rendered it possible.

This chapter is based on a diachronic analysis of daily consumption practices of various energy resources such as electricity or hydrocarbons, which may be understood by analysing local journeys and describing daily practices observed in the Lyon (France) region in 2012–13. The interviewees live and work in the suburban areas of the city and the entire socioprofessional spectrum is represented.

The Turbulent History of Wood

Indeed, the poor image of wood only partially corresponds to reality. Although marketing through the traditional routes for selling firewood declined steeply throughout the twentieth century (de Lagarde

2000), the noncommercial gathering of wood – for self-supply, agricultural work, *affouage* (estovers) and the black market – has remained constant and has even increased as French forests have grown (Pointereau 2000). France is not unusual from this point of view: wood-gathering for one's own use is highly prevalent in Northern Europe and has been the subject of particular studies (Nyrud et al. 2008; Petersen 2008; Jalas and Rininen 2016). The declared portion of firewood production (which is therefore officially included in the statistics) represented only 6% of total activity in 1999 (de Lagarde 2000), and in 2013, out of 26 million m³ of forest reserves harvested for energy, only 6 million m³ was offered for sale (Pouet and Gauthier 2013). The attempt to use wood as an energy source in a country seeking energy autonomy was thus largely ignored by the public authorities throughout the twentieth century – a phenomenon that is not limited to France, as suggested by the sparse research dealing with the use of wood for heating (Jalas and Rininen 2016; Chatti et al. 2017). Invisibility of production is in part due to the high number of private forests, accounting for three-quarters of forest cover on generally small plots of land, which are self-managed or handed over to be managed by neighbours or relatives. This is the case even though the running of state-owned forests has been governed by a ruling of Colbert, acting on behalf of King Louis XIV, since 1669. Since then, the state has tried to convert forest products into the taxes, revenues and profits they can yield (Scott 1998). If the state has managed to create national laws to regulate harvesting, the very fact that almost four centuries later, municipalities still have the right to decide on the conditions of the estovers and that most of the forests escape any regulations tells us a lot about the resistance encountered.

Interest in wood was rekindled after the first oil crisis, but had very little effect until 1998, when a report entitled 'Forests: An Opportunity for France' was carried out for the Prime Minister by Jean-Louis Bianco: this was followed by a law on forest orientation in 2001 (Loi d'Orientation sur la Forêt du 9 juillet 2001), which explicitly introduced the principle of forest multifunctionality. In 2009, the Grenelle 1 Law and then the 2015 Law on Energy Transition for Green Growth enforcing the use of renewable energies maintained interest in wood. Nonetheless and despite this law, the National Forests Office (ONF), which has three main missions – the management of public forests, the prevention of risks in natural environments (dunes, mountains and forest fires) and the provision of services – and takes care of 25% of the French forest, has seen its budget diminished drastically. In 2017, the ONF's civil servants denounced an unofficial

privatization of the ONF while the government was considering to dismantle it. However, in June 2019, a report has stated the importance of a multifunctional management of public forests that fully addresses the challenges of climate change, the development of the wood industry, the preservation of biodiversity and the development of rural areas. Based on these observations, the state intends to maintain the management unit of public, state and municipal forests by the ONF (Ministère de l'agriculture et de l'alimentation 2019).

Meanwhile, a review has been carried out by the ADEME (the French Environment and Energy Management Agency), which has the role of stimulating, animating, coordinating, facilitating and carrying out operations to protect the environment and control energy, reporting on the poor state of heating installations that used wood and the lack of organization of this industry (Guitton 2015). To alleviate this deficiency, the ADEME launched a campaign to inform people about the new wood-fired stoves and boilers that produce lower levels of pollution and consume less wood. These appliances are simpler to use than the older versions and are cleaner, since the ashes fall into a drawer that is easy to empty. The state supports this campaign by offering tax reductions when people purchase the appliances. However, these subsidies do not compensate for the cost differential, and both stoves and boilers remain expensive to buy. Nevertheless, more than seven million households benefited from these measures between 2005 and 2011, and state support for wood-burning equipment is thought to have represented €130 million in 2012, falling to €100 million in 2014 because of the reduction in help with tax credit (Guitton 2015). These appliances are only partly replacing the old-fashioned stoves as the households acquiring them did not use this kind of heating previously. In 2019, despite a slight stagnation in the sales, 'France is still seen as an El Dorado', says a foreign brand established in France interviewed by the Observatory of renewables energies (Observatoire des énergies renouvelables 2019). The 2019 report also mentions a change in the behaviour of the professionals as now pellet stoves are offered even by professionals who supplies all the electrical conduit equipment for new houses.

The Political Structure of Energy Choices in France

Let us first reconsider the surprise caused by wood heating becoming the natural choice. As mentioned above, despite its long history of forest public management, more than an interest in wood as an

energy resource, the ONF has been saved by the effects of climate change that are already noticeable and the political willingness to reinforce the need to preserve biodiversity. The French energy system has often been identified by characteristics conducive to great stability, if not inertia, caused by the effects of inheritance and sedimentation that have gradually led France's energy policy on a path of dependence. Supported state interventionism in the formulation and implementation of energy policy is one of the main features of this system (Aykut and Evrard 2017). Indeed, historically, France has had to rely on imported energy. From the First World War onwards, energy dependence was regarded as unacceptable: during that time, France was cut off from the coal supplies provided by the Nord-Pas-de-Calais and Belgian coalfields, and had to rely heavily on UK shipments. These supplies were often slow and difficult. The government at the time, under Clemenceau's leadership, even had to send an emergency message to the United States so that the French front could continue to receive supplies during the darkest days of the last German offensive. The Second World War was also marked by energy shortages that affected the daily lives of the French and their businesses. After the war, the country still had to rely on German and American coal, and experienced four years of power cuts.

This heavy reliance on imports meant that after the First World War, the state sought to diversify its sources of supply for coal and oil and to find ways of producing its own energy (Beltran 1998). From 1920, the state decided to intervene directly in certain areas of the economy, including energy. In the oil sector, the state created the *Compagnie française des pétroles* (French Oil Company) in 1924. This would become the *Régie autonome des pétroles* in 1939, before evolving into Total in 1991. After the Second World War, the law of 1946 nationalized the production, transport, distribution, import and export of electricity and gas. Public enterprises were created: *Charbonnages de France* was nationalized in 1945, and *Electricité de France* (EDF) and *Gaz de France* (GDF) in 1946. In the post-war period, when France occupied a secondary position on the international scene, the Gaullian discourse according to which 'France cannot be France without greatness' confirmed the interests of many elites in the industrial sector and, more particularly, that of energy (Hecht 2009). Moreover, after the Suez Crisis in 1956, the need to become independent of Arab oil against a background of dwindling coal resources led to an economic interest in nuclear power. However, the concern was subsequently forgotten because of the return to cheap oil until the first oil crisis of 1973–74, which exacerbated the

need for home-produced energy. This institutional and intellectual context considerably influenced the constitution of a particularly atypical French ‘energy mix’, embodied by the slogan ‘all electric, all nuclear’, put forward by EDF in the early 1970s (Aykut and Evrard 2017). Throughout the rest of the twentieth century, this policy was justified in the name of the general interest, which gave legitimacy to the officials pursuing it. The policy was made possible because of a desire for continuity and dirigisme, coupled with the existence of suitable decision-making structures. This resulted in a system based on monopolies or quasi-monopolies in production, distribution and imports, but with the exception of petroleum products – monopolies that were mainly held by public companies. However, this system has been forced to open up under EU regulations.

Although the 2000s were characterized by a gradual state withdrawal from energy companies, the state retains a strong political role in controlling energy prices – which has become a social issue – and in the future of nuclear power. In France, nuclear power accounted for 71.6%¹ of energy generation in 2017, meaning that the country ranks first in the world for the use of nuclear power (Lee and Gloaguen 2015). In 1983, electricity production from nuclear power far exceeded consumption due to overestimated figures for consumption, resulting in a policy to incentivize electricity consumption. Meanwhile, France had become the largest Western European power exporter – a trend currently reinforced by the decline of electricity consumption since the 2008 financial crisis.

In support of the decision to develop nuclear plants, the French state advocated heating by electricity, stressing the dual benefit: there would be no release of CO₂ into the atmosphere and the cost of purchasing equipment would be low. In 2017, heating by electricity represented 10% of national electricity consumption and 28% of household consumption.² It currently supplies 30% of households in France. Electrical heating in France accounts for half that of Europe, and although consumer prices for electricity have increased by around 50%, since 2007 these prices have remained on average 20% cheaper than in the rest of Europe (Briand and Oparowski 2019).

The political initiative to use electricity was publicized by media campaigns and accompanied by the training of house builders and designers at all stages in the process. Thus, in the 1980s and 1990s, due to the low investment costs related to electrical heating, many individual homes and buildings were fitted out with it, even though the buildings themselves were inadequate for this heating method (i.e. without thermal insulation). This trend was particularly important

in the private rental sector, where investment and operating costs are not borne by the same people. Landlords fail to provide the bulk of the investment for the thermal insulation and allow future tenants to bear the resulting high running costs.

Meanwhile, the price of gas and oil has fallen by almost 30% compared to 1985. The ‘fossil fuel-electricity’ differential became very favourable to oil and gas. Nowadays, the second-largest source of energy used by households is gas. The state has been less active in policy-making, but gas has grown as a source of heating in cities, especially in communal dwellings with a boiler and for cooking. The growth is mainly accounted for by urban heating, although gas storage tanks have also increased in rural areas, where they were in competition with oil. Despite the lack of state incentives and the higher installation and maintenance costs, gas heating has expanded in individual households because of its better performance and ease of use.

The Contradictions of the ‘French-Style’ Energy Transition

In contemporary France, the concept of energy transition emerges in a context of international mobilization on climate change and has been put forward by two coalitions of causes: first a bottom-up approach up, driven by outsiders of the energy system who question technical and economic aspects, behavior change, and the very conception of energy systems; second a more consensual and top-down approach, carried by the insiders, namely dominant players in the existing energy regime, which will gradually succeed in imposing their vision to the State. (Aykut and Evrard 2017: 18–19)

Established in September 2012 by Eric Besson, the then Minister of Energy, and chaired by university professor Jacques Percebois, the 2050 Energy Commission is responsible for conducting an analysis of the various possible energy scenarios for France by 2050. The authors of the report appropriate the concept of energy transition, while justifying the nuclear choice, on the one hand, by the importance of the climate problem and, on the other hand, by economic arguments. They conclude that the scenarios that maintain the level of nuclear power generation are cheaper for consumers and at a macroeconomic level, and add that the choice of nuclear energy presents an advantage for the competitiveness of the French industry and the energy independence. Two of the report’s eight recommendations concern nuclear power.

This *Energy 2050* report embodies the appropriation and specific framing of the notion of transition, carried out by insiders of the French energy system, according to which ‘the reduction in the use of fossil fuels (coal, oil, gas) is the main characteristic of the energy transition’.³ It is mainly on the basis of this report that the energy transition in France will be implemented. ‘It is based on a top-down logic, driven by a state that does not want – or cannot – control everything, but nonetheless asserts itself as the central actor in putting the transition narrative into politics. The concept of energy transition becomes a political instrument allowing, in a more or less explicit and more or less visible way, to maintain a certain continuity in existing energy and industrial policies’ (Aykut and Evrard 2017: 33).

Promulgated on 17 August 2015 after multiple postponements and fairly sharp criticism, the Law on Energy Transition and Green Growth (TECV Law) confirms in several respects the continuity of French energy policy, despite the development of a narrative of the transition. The first element relates to the relative disconnection between the establishment of spaces for deliberation and the decision-making process, identified both at the time of the implementation of the major orientations of energy policy in the 1970s (Colson 1977) and more recently in the context of the Grenelle de l’Environnement (Boy et al. 2012; Topçu 2013).

The TECV Law was to concretize the two main commitments of President Hollande on this subject: the reduction to 50% of the atom’s share in electricity production by 2025 and the closure of the Fessenheim Power Plant before the end of his five-year term. On this point, however, the transition came up against, on the one hand, the traditional inertia factors of the French energy sector, which are the institutional and legal constraints, and, on the other hand, the resilience of the main players, notably EDF (Deront et al. 2017). In general, the implementation of all of the ambitious objectives (the halving of final energy consumption in 2050, the reduction in the share of fossil fuels by 30% or the development of renewable energies up to 32% of the energy consumption and 40% of electricity production by the same deadline) proposed in the TECV Law depend on the adoption of a complementary regulatory text: multiyear energy programming (PPE). After having been repeatedly postponed, the publication of this text on 1 July 2016 was not enough to remove doubts about the contradictions of this ‘French-style’ energy transition. Those doubts are confirmed as, according to the World Nuclear Industry Report Status 2019, the atom is no longer competitive. President Macron has nevertheless postponed the reduction to 50% of the atom’s share

in electricity to 2035 and will decide in 2021 about the opportunity to build more power plants using Evolutionary Power Reactor (de Ravignan 2019), despite a constant slowdown in the electricity consumption in France and neighbouring countries, and the slow but constant increase of the share of renewables (Commissariat Général au Développement Durable 2018), a growth pushed by the ADEME and the Ministry of Sustainability.

However, within the state, different actors are playing according to their own agenda. The ADEME is pushing towards more energy efficiency and the diversification of energy resources, while after several years of fight, the ONF has seen its mission re-established and wood consumption is growing. Despite the willingness to carry on producing nuclear energy and the efficiency of the lobbies, the 2009 Grenelle 1 Law established the need to develop renewable energy sources, including wood, and did not recognize the nuclear industry as renewable. Moreover, electrical heating equipment in new housing saw a decrease from 70% to 15% in 2017,⁴ due in particular to a new norm, RT 2012, following the Programming Law fixing the Orientations of the Energy Policy of 2005, which has benefited other heating systems. The main purpose of this thermal regulation is to reduce energy consumption: new buildings now have to have a maximum average primary energy consumption of under 50 kWh/m² per year. This calculation, using primary energy, is unfavourable to electricity, with its retained coefficient of 2.58 (the ratio between the final energy available for end users and the primary energy entering the system, which therefore has a bearing on the efficiency of power plants as well as transport losses and distribution).

Nevertheless, in the French energy system, the trend for using wood appears paradoxical because it makes visible the invisible and necessitates a change of practice in a context where buying supplies through the traditional channels fails to meet demand. Wood is not only a visible source of energy, which people can store themselves, but its supply structures are mostly informal. Furthermore, as I have indicated, help towards purchase does not compensate for the difference in cost when compared with other heating fuels. Why then use wood?

Energy Choices: Choosing between Following the Herd, Economics and Ecology

Salim and Yvette live on a north-facing hillside in the Beaujolais region, in an ancient hamlet 3 km away from the nearest village. Salim

is employed in a service enterprise and his wife is a foster mother. Until 2004, they lived in a small suburban town to the west of Lyon, in an apartment that had become too small for them following the birth of their two youngest sons, who were twins. They then decided to buy a house 5 km away. The house is large, but is at the bottom of a wooded valley and so gets very little sun in winter. It is centrally heated by an oil-fired boiler, which is quite common in rural areas. But the couple very quickly became alarmed by the size of their bills and decided to look for an alternative solution. As the house is surrounded by woods, Salim points out that it was ‘natural’ for them to consider buying a boiler using this source of energy, with he himself cutting the wood.

Salim comes from a family of migrant workers who arrived in Beaujolais in the late 1950s. Yvette too originates from Beaujolais and also comes from a working-class background. Their home has been completely renovated by Salim. He insulated it and changed the source of heating by having a wood-fired boiler installed. Shove and Walker (2007) and Maniates (2001) have shown that the analysis of such changes in practice is largely founded on the assumption that individuals are guided by economic choices. These analyses, based on the notion of ‘homo economicus’, do little to explain the obstacles to changing behaviour among consumers, since they assume that any change in practice is motivated by individual choice, itself made because of certain values held, and that it is those values that need to be modified. This thinking also dominates the approach adopted in public policy, which does not take into account the complexity of the different spheres of everyday life and the value systems intertwined with it (Sahakian and Wilhite 2014). In Salim’s case, the economic argument played a role, as did the aid provided by the state. Although the boiler was expensive, he expects a quick return from his investment.

‘What we might call the everyday ethics of energy is . . . about negotiating an increasingly tangled thicket of norms and imperatives. This is particularly the case in contexts where responsibility is delegated to individuals for following norms of energy use that reflect the need, in response to the “energy trilemma”, to reduce energy use not only because of its costs but on climate change grounds also’, wrote Groves et al. (2017). The complexity of prescriptive regulations is particularly felt in Salim’s case. In a situation where higher energy costs have been announced and purchasing power has decreased (Pora and Wilner 2017) because of the crisis France has been undergoing for the past ten years, and since the couple have bought a house that is partic-

ularly deprived of sunlight, the possibility of saving money on heating is an important consideration. Yet for all its importance, it is not the only consideration. The environmental argument backs up the choice of heating as recent woodstoves are supposed to produce fewer emissions than traditional ones. Although environmentalism has not succeeded in making a political breakthrough in France, it is a concern for people and has acquired the quality of a norm whose effects upon lifestyles are measurable (Commissariat Général au Développement Durable 2017). The decision to go over to using wood has therefore resulted from several factors – increased energy costs, ADEME information campaigns that have highlighted the advantages of new stoves, and the environmental argument – all of which the couple say they appreciate, but they are also aware that it is possible to obtain supplies of wood at very little cost or even free of charge.

Karen and her husband Jan are from the Netherlands, and arrived in France in the early 1990s. After renting accommodation in the centre of Lyon, they bought an eighteenth-century house to renovate in 2000, in a hamlet 60 km from Lyon and at an altitude of 800 metres. They carried out most of the work themselves and had the benefit of receiving tax credits during the first stage when they bought solar panels, which they had installed on the roof. The surplus electricity was sold to EDF, which is usually the case in France. As with Salim, their main concern is not to become free of the infrastructure (they are linked to the national network) or from the systems of state aid. They know what the various possibilities are and say they are ready to take advantage of them if their income allows, since these investments have a cost. Here again, it is not about freeing themselves from a sociotechnical system or from the market economy – quite the contrary, since their use of solar power reinforces existing sociotechnical systems. They installed central heating soon after beginning the renovation and chose electricity for it in order to use the electricity they were producing and thereby limit the cost of heating at high altitude, as the winters are cold.

During the second phase of their project, they adopted wood heating. Several factors then came into play. Despite the solar panels, the size of their bills led them to consider a complementary heating solution. They renovated the living room fireplace, which they now use frequently, but it gives out insufficient heat. The few years they had already spent in the region enabled them to observe that it was very easy to obtain cut wood or stands of growing timber. The final aspect was that Karen had grown up in a house heated by wood and was very fond of this form of heating, which she said she preferred to oth-

ers. Taking advantage of state subsidies, in 2008, they bought a heat distribution insert that allowed them to heat the ground floor and stairwell by means of a fan blower. Environmental concerns played a part in this choice: ‘Using wood for heating is obviously one of the reasons too, using renewable resources.’ But parental example has also had an effect, since the house her father renovated in the Netherlands uses wood for heating. Thus, it is certainly ‘because of the environment, because of cost too, since there is quite a lot of wood round about, so it can be found for a good price’ (to quote Karen’s words) that wood heating was chosen. And this form of heating is much used by them as ‘We only start the central heating going if it’s very cold, like now, because we don’t especially heat all the bedrooms if we’re using wood heating. We heat the main rooms. . .’ They thus reconfigure the uses of domestic space according to the season (Ortar 2018b). In this context, the decision is also about acquiring independence from the market economy.

Pierre, a senior manager, and Nadine, who makes artisan clothing, are aged around fifty and are the parents of two grown-up children. They live in the inner suburbs of Lyon, in a 1950s house surrounded by woods. Being in a hollow at the side of a hill, the house receives little sun, and to make the most of this poor sunlight, Pierre has to cut down the surrounding trees each year. The house has oil heating. They have a fireplace with an open fire, but in 2000 they decided to install a wood-burning stove designed to complement the central heating in the lower part of the house. For a time, the wood they used was cut from around the house, but then Pierre decided to use the stove during the night too and so added to the fuel supplies by buying oak logs. In 2011, they embarked on a renovation of the house’s heating and the wood-burning stove began to give out too much heat for the house. They then sold the existing stove and bought a smaller one in 2013. The initial decision to use firewood was pragmatic, linked to the abundance of wood around them and an attempt to make up for the mediocre heat emitted by the fire in the fireplace. However, in the early stages, they simply wanted to supplement the heat from the boiler, which, as in Karen’s case, they gradually ceased to use and came to rely almost exclusively on wood. Their reasons were financial, but comfort also played a part: the heating obtained from the stove was preferred to the central heating and they liked seeing the fire through the glass. Although, like the others, they benefited from financial help, the initial decision to buy was taken because it matched the context in which they lived, namely the fact that they were surrounded by woods.

Serge and Fanélie are forty-year-olds in senior management who have two children. They too live in the inner suburbs of Lyon. In 1999, they bought a house heated by town gas. In 2009, they completely renovated and extended it, practically doubling its floor surface. To heat the vast newly built kitchen-cum-living room, they had a wood-burning stove installed, while the rest of the house remained gas-heated. The decision to use wood was motivated by several factors, the first being that some of their friends had bought wood-burning stoves and appeared to be very satisfied with them. The other reason was financial: buying the stove enabled them to benefit from an increased tax reduction because it completed the renovations carried out on the old building – insulating the walls and replacing the single-glazed windows. A third reason was connected to the fact that they could obtain supplies of wood at little cost. And the last was environmental, a relatively vague argument linked to those put forward by the ADEME in its publicity leaflets, giving information about the requirements necessary to qualify for the tax reduction.

Although the desire to be independent from the market economy, along with environmental concerns and the domestic economy, emerge as the prime factors in these choices, it should be noted that experience of living in houses also plays an important role in the search to find different heating methods from those tried in the past. When nuclear power stations began production, it was necessary to find national outlets for electricity. Electric radiators were then installed into dwellings *en masse*, with the advantage that they were cheap to buy. However, these systems turned out to consume an excessive amount of energy. Sylvie grew up in one such house and remembers having been cold throughout her childhood because her parents avoided raising the thermostat. Even when the heating was on, it still felt cold because the thermostat switched the heating off when the chosen temperature was reached. Another reason for the cold was that in order to benefit from a lower electricity tariff, her parents had to cease using electricity for twenty-two days of the year. When she and her husband, Stéphane, had their house built, they decided to install a wood-burning stove to back up the gas central heating, on account of the type of heat it gave out. The argument for choosing this dual system was economic – they did not want to push the boiler temperature beyond 21°C – but it was also about meeting standards and seeking to extend them without infringing them.

Since wood-burning stoves do not have thermostatic control, temperatures higher than the state-recommended norms are not recorded, as there is no need to preset them. If ‘the warmth or cold

we perceive therefore depend, at least in part, on the different social and material relations we have actualized in order to heat up or cool down' (Vannini and Taggart 2014: 69), being as warm as one wants to be in a normative context implies interacting with different devices and their technical features, being free to go beyond any given settings. This use of wood to obtain one's own feeling of a comfortable temperature, feelings that are outside the norms, is based on the very characteristics associated with the wood-burning stove when used as a back-up – it uses living material, drawn from abundant deposits, and only functions for as long as it is tended to. In Sylvie's case, the state subsidy did not play a role because the decision to buy a wood-burning stove was taken as soon as they planned to build their house: the choice was motivated solely by the wish for a degree of warmth that was too costly to be acquired by other means of back-up heating. Wood was affordable because it came from the municipality (commune) where Sylvie's parents had their second home.

Parallel Economy

Wood heating thus forms part of a parallel economy of self-supply, involving networks of friends and acquaintances as well as knowhow. When Salim and Yvette justify their choice of wood for economic reasons, this argument is less simple than it appears at first sight, because the decision to use wood is part of two different economic systems. The first is the market economy: the subsidy received following the purchase and installation of the stove will take the form of a deduction from income tax. It is understood as a net benefit linked to the purchase, a benefit that, from this point of view, stops there in terms of the declared economy. The use of the stove, on the other hand, is part of a different system: that of a parallel economy and the self-supply made possible by the particular way in which the wood industry is structured in France. In order to obtain the wood needed to heat the house, in addition to the wood cut on their plot of land, the couple implement different synergies requiring knowledge of the limits of communal territory and the rules governing wood-cutting.

In communal forests, cutting is governed by *affouage* (estovers), a term that means the potential, given by the Forestry Code, for a town council to reserve a section of the woods in the communal forest for the domestic use of inhabitants. Historically apportioned by fires, permission for wood-cutting decided by the town council is now granted to those who request it against payment of a tax, or

even freely in many municipalities. Wood-cutting in private forests, on the other hand, depends on the decision of the owners and may be preferred or used in addition to estovers when the cutting is not sufficient to ensure that winter needs are met. Urban communities have abolished estovers, which therefore means that city dwellers wanting access to standing timber have to know people owning forests or second homes. The last great rural exodus took place between 1950 and 1970, but many houses continued to be used by families and, after that, their descendants. Until the 2000s, rural property outside of tourist areas was very cheap, which allowed even modest households to become second-homeowners. These links have persisted over time. If one does not own woods oneself, finding kindling depends on the networks of people living around these dwellings, whether they are family or simple acquaintances, as the cases of Stéphane and Sylvie demonstrate.

Accessing wood that is virtually free of charge therefore implies having extensive knowledge of at least one area of land or possessing a wide network of contacts who can provide an entry to woodland. Salim and Yvette were born in a neighbouring municipality and know the place thoroughly, particularly Salim, who, alongside his job, renovates houses. He uses these opportunities to glean information about the owners of different woodlands – owners whom he canvasses for permission to cut wood in exchange for handing over some of the wood he has cut. Wood heating is therefore a way of capitalizing on local resources and becoming independent of the market economy – a choice adopted with an economic rationale that does not involve the market.

The same approach governs Karen and Jan's choice, even though Karen's energy options indicated that she had internalized the socio-technical system and accepted dependency: when the couple installed solar panels, these were linked up to the network, which offers a commercial outlet for the surplus and allows demand to be topped up in winter. The decision was dictated by EDF's marketing offers and there was no obvious desire to free themselves from an economic system and weighty infrastructure. But in fact, when Karen talks about her decision to use wood, she indicates that it is intended to 'make them as little dependent as possible on the authorities . . . Well, all that's akin to the EDF, etc.' Wood was chosen on account of the informal networks that enabled them to obtain supplies of kindling close at hand: the municipality in which they live has many woods, making it possible for them to cut wood themselves or have cut wood delivered. For Karen and Jan, using wood is as much about

being in control of their consumption – made tangible by the physical mark it makes in the outbuildings where it is stored – as the production networks. Here again, it is about setting themselves apart from the market economy for reasons that are as much economic as ideological; controlling their energy consumption from production to consumption is a way of taking back power and becoming free of a dominant economy that affects all of their daily life. ‘Managing on your own implies resistance to the powers that dominate and a permanent struggle to prevent practical compromises becoming dishonest compromises of the mind and soul’, notes Latouche (2004: 6) in relation to parallel economies, and it is indeed from such resistance that Karen and Jan’s attitude stems in their desire to limit their dependence on the network.

Using kindling cut by farmers arises from the same wish to resist. At the same time, relationships with friends and neighbours can be built by using short distribution channels for economic reasons; this system encourages informal exchanges and adds a human touch to buying energy. Knowing a farmer who is likely to sell wood implies having recourse to informal networks of family or friends living in rural areas. The wood bought by Serge and Fanélie comes from a farmer with whom a first cousin exchanges grazing rights. Purchasing wood from him therefore keeps them within a network for exchanging services, which fosters local relationships and enables them to continue participating in a local life from which they are separated by living in Lyon. It also emphasizes the importance of not separating economic activity from kinship (Godelier 1973), even in the Western world. These networks are based on mutual trust because most of the sales are not declared. Another way of obtaining cheap wood is to know a craftsman working with wood, or sawmills that sell discounted offcuts or even give them away. These methods too are based on mutual acquaintance, since owners only give wood away to those they know if they do not sell their offcuts in the form of pellets; thus, the production chain continues right up to the disposal of leftovers.

Finally, there are the official marketing networks. In most cases, these too are informal networks that have to be sought out in order to be identified. They also meet specific needs that are supplementary to production. In the case of Pierre and Nadine, when the stove stopped being a simple back-up and became the main source of heating, they began to use the services of a wholesale dealer to obtain species with a heating capacity that was better than that of the trees, such as oak, that were available in their own garden. These types of

wood, which are denser and therefore burn more slowly, were used at night or during the daytime absences. This usage involves particular skills and knowledge of wood that go far beyond the economic domain. Sourcing wood sits at the core of several niches that have so far mostly escaped the attention of the state when it turns to the black market and the use of informal networks, but also when it turns to the uses that the municipalities are making of their woods. In *Seeing Like a State*, Scott (1998) documented the difficulties encountered by the French government since the seventeenth century to get taxes and use forest as a financial resource, despite the existence of fiscal penalties. The fact is that the state lacked and still lacks the information and, to some extent, the administrative network to know the exact revenues coming from forests (ibid.: 47–49). The fact that wood has been of little interest during the second part of the twentieth century has extended this state of affairs beyond what has happened in other domains. The irony, however, is that the incentives to go for wood-heating stoves have been rendered attractive by its lack of presence in the supply chain.

Cutting Your Own Wood

Wood is also a ‘hot’ energy. In an article about off-grid heating practices in Canada, Vannini and Taggart find that whereas on-grid heating is something we might metaphorically call a ‘cool’ energy, off-grid heating is something we might label a ‘hot’ energy. Hot energies demand greater intensities of participation in socio-technical and spatio-temporal processes than cool energies do because they are locally controlled by homeowners, rather than distally managed by utility providers. (Vannini and Taggart 2014: 65)

Using wood if one does not own a forest means, at the very least, looking for a supplier of kindling or of wood that is ready to saw. Even when the wood is delivered already sawn, there is still work to do to store it and carry it between the place of storage and the house so that the stove can be refilled. Wood heating therefore demands physical effort in order for the stove to work and the heat produced to be maintained. Wood heating requires a presence and winter consumption has to be predicted when the weather starts to become colder, so that the amount of wood steres (cubic metres) needed can be estimated. Daily requirements must also be thought about to anticipate the length of time each day that heating will be wanted, and this implies not only knowledge of the quality of woods used but

also the average duration of burning time according to the diameter of the logs. These core skills can be acquired as one goes along, that is, through practice on the job, if they were not known beforehand.

In addition to these skills and the handling needed in order to make the stove work, knowledge of wood-cutting is also required for all those who cut their wood themselves. In French literature, finding your own wood supplies is associated with people of few means (Sansot 2002): manual workers and employees forced to do work on the side in order to pay their bills (Weber 1989). Growing your own vegetables has also been understood in terms of workers' allotments (Weber 1998), whereas when the more well-to-do indulged in this practice, it was seen to be for ornamental purposes (Gojard and Weber 1995; Dufour 1998). Where wood in particular is concerned, practices connected with its use ceased to feature in texts written by anthropologists observing a rural world in the process of disappearing over the decades following the Second World War (Jolas et al. 1990).

The practice of cutting your own wood (*faire son bois*), according to the old French expression, shows the particular value placed on knowhow and on work often done by several people at once. It also reflects the specific timeframe of winter – the wood being cut when the sap is at its lowest – together with essentially male modes of socializing and a particular physical expenditure of energy. This practice has changed very little over the course of time, even if mechanization has made it less strenuous than in the past (Verdier et al. 1990).

First, it requires a specific set of tools: a saw, a wedge, an axe and especially a chainsaw – a set of tools associated with masculinity that also comes with the risk of accident. The training is done by copying skilled elders or peers. Salim learned to use a chainsaw with a friend; he himself derived his knowledge from a relative who had worked as a wood-cutter for a time. He bought his tools in gradual stages. He does most of his cutting with neighbours in a system that functions as a mutual aid network, each of them setting aside time for doing the other's woodcutting according to a timetable worked out at the beginning of winter, when the trees have lost their leaves. Pierre cuts his wood with a friend and in turn allows the friend to store his beehives on his land, while Stéphane cuts wood once a year with his father and brother-in-law: he keeps some of the wood and the rest is left to meet the needs of the second home. Pierre learned to cut with his brother-in-law who has a wood in the Jura. The annual cutting supplies a second home and provides wood for Nadine's mother, who

opted to have electricity only in the bedrooms and bathroom of her house. Stéphane learned to use an axe at the home of his grandparents who had wood as an extra heat source, before going on to fine-tune his knowledge with his in-laws. Necessary skills to become an experienced wood-cutter are achieved through an education of the attention (Delbos and Jorion 1984) that resonates with the properties of the environment (Ingold 2001). It is a way of learning that implies having a mentor and therefore being a part of a network of people likely to train you. Wood-cutting is therefore a male social activity and is valued for that.

Women and children are rarely present during the cutting, but they lend a hand to remove branches and saw up the small wood. Just as access to the wood is a matter of who you know, knowledge of the techniques required to practise woodcutting is part of a group activity carried out with people who do one another favours and make reciprocal arrangements that are independent of the market. In this way, wood escapes the market economy twice over. Unlike the use of the wood-burning stove, the increase in work generated is not perceived as relating to ecology, as Salim admits: ‘I could easily do without it [woodcutting]. It’s not . . . I don’t mean that . . . It’s a bit of a chore really’, thus shifting the context of his commitment. It is about fulfilling a task he considers important for the family economy and that requires an investment of time and particular skills.

Conclusion: Is Wood a Government Choice?

Foucault, in his critique of power (Foucault 1976), mentions the importance of resistance that takes shape within the very intimacy of the power relationship because any act of power calls forth, arouses, and even programmes the action that is liable to resist it. Wood heating is one of these forms of resistance to the economic and governmental power that prescribes choices and seeks to guide people in their use of available energy. However, it would be simplistic to see the choice of wood only in terms of resistance and the state as a monolith able to control all energy consumption as it itself has created different entities to meet various goals such as energy efficiency, carbon neutrality and industrial development that hamper each other. In the practices surrounding wood use can be read the knowhow handed on by the network of relatives and social relationships between equals, the persistence of rural customs and knowledge of *terroir* – in short, a whole set of skills upon which individuals draw to bypass or avoid

certain constraints. Therefore, although relaunching the wood industry through a programme of subsidies for buying wood ovens and boilers is certainly a government choice, its implementation and success currently depend on re-activating and reasserting the value of a set of practices, such as an informal economy over which the state has little hold, despite a long-held wish to legislate in this area. Anthropology thus makes it possible to reveal the unthought-of political actions through the weight of cultural and technical systems on which individuals rely to escape the weight of legal constraints, but also give meaning to their daily actions.

Indeed, the social practices linked to managing energy cannot all be understood without analysing the family attitudes to which they belong (Ortar 2018a). In the same way, the energy transition processes in urban systems are based on a pre-existing energy culture as well as on inherited practices and pre-industrial structures (Emelianoff and Mor 2013). Heating with logs, from this point of view, illustrates the importance of taking into account not only the history of practices surrounding wood use but also the history of supply channels and their current state, in order to understand ongoing usage. Wood use invites us to question the role of informal economies in today's world. Through wood, the need emerges to take the economic ideas of social actors seriously (Jorion 1990), together with the desire to preserve a place for interconnections that are not strictly market ones and that encourage networks of relationships. We should also consider the importance and pleasure of practical and creative work in the search for more sustainable lifestyles, or simply for lifestyles that have meaning, in which providing for oneself is a significant factor, along with the importance of the material world and of our capacity to physically work on and with it – in short, the importance to make and act in a more and more dematerialized world, all of which stresses some important anthropological aspects that are often neglected in the research on energy.

Finally, these ways of getting around or manipulating a system enlighten us about another important factor when thinking about the weight of sociotechnical systems. Although these systems place limits on possible futures (Araújo 2014), they do not limit all of these futures (Nader 2004), as technology evolves and old solutions can be transformed into new ones. Therefore, although the nuclear option in France continues to present an alternative that is difficult to rival, as can be seen from the new report announced by the government on ending its use, we should not underestimate the importance of other energy sources as well as the role of bottom-up actions (Masse-

min 2019). The analysis of practices surrounding wood heating tells us about the importance of taking different economic attitudes into account for understanding the developments taking place, even in so-called developed countries. Wood heating also tells us about the ability of these informal systems to adapt to evolving demand, as well as their capacity to structure themselves as alternatives, and hence it enlightens us about the adaptability of society in general.

Nathalie Ortar is senior researcher in anthropology at the École Nationale des Travaux Publics de l'État. Her research interests focus on the meaning of dwelling as well as on the consequences of energy transition in daily life and its moral and symbolic implications.

Notes

1. Retrieved 21 July 2020 from <https://bilan-electrique-2017.rte-france.com>.
2. Retrieved 21 July 2020 from <https://www.edf.fr/groupe-edf/espaces-dedies/l-energie-de-a-a-z/tout-sur-l-energie/le-developpement-durable/l-electricite-dans-le-secteur-residentiel>.
3. Page 322. Retrieved 21 July 2020 from http://archives.strategie.gouv.fr/cas/system/files/rapport-energies_1.pdf.
4. Retrieved 14 February 2020 from <https://www.batiétude.com/observatoire.php>.

References

- Araújo, K. 2014. 'The Emerging Field of Energy Transitions: Progress, Challenges, and Opportunities', *Energy Research & Social Science* 1: 112–21.
- Aykut, S.C., and A. Evrard. 2017. 'Une Transition Pour Que Rien ne Change? Changement Institutionnel et Dépendance au Sentier dans les "Transitions Énergétiques" en Allemagne et en France', *Revue Internationale de Politique Comparée* 24(1): 17–49.
- Beltran, A. 1998. 'La Politique Énergétique de la France au XX^e siècle: Une Construction Historique', *Annales des Mines* August: 6–10.
- Boy, D. et al. (eds). 2012. *Le Grenelle de l'Environnement: Acteurs, Discours, Effets*. Paris: Armand Colin.
- Briand, A., and S. Oparowski. 2019. 'Les Dépenses des Français en Électricité depuis 1960', *Insee Première* 1746.
- Chatti, D. et al. 2017. 'Exploring the Mundane: Towards an Ethnographic Approach of Bioenergy', *Energy Research & Social Science* 30: 28–34.

- Colson, J.-P. 1977. *Le Nucléaire sans les Français : Qui décide? Qui profite?* Paris: La Découverte.
- Commissariat Général au Développement Durable. 2017. *Ménages & Environnement: Les Chiffres Clés – Édition 2017*. Paris: Ministère de la Transition Écologique et Solidaire.
- . 2018. ‘Les chiffres clés des énergies renouvelables : Edition 2018’. Retrieved 21 July 2020 from <https://www.ademe.fr/sites/default/files/assets/documents/datalab-35-cc-des-energies-renouvelables-edition-2018-mai2018-c.pdf>.
- De Lagarde, O. 2000. ‘Le Bois-Énergie et la Politique Forestière’, in A. Corvol (ed.), *Le Bois, Source d’Énergie: Naguère et Aujourd’hui*. Paris: Cahier d’Études n°10, IHMC-CNRS, pp. 67–70.
- De Ravignan, A. 2019. ‘Énergie Nucléaire : la France à l’heure du choix’, *Alternatives économiques*, 1 October. Retrieved 21 July 2020 from <https://www.alternatives-economiques.fr/nucleaire-france-a-lheure-choix/00087747>.
- Delbos, G., and P. Jorion. 1984. *La Transmission des Savoirs*. Paris: Éditions de la Maison des sciences de l’homme.
- Deront, E. et al. 2017. *Fermer Fessenheim: Politisation et Dépolitisation d’une Promesse Électorale*. Research report, PARTIPOL project.
- Dufour, A.-H. 1998. ‘Une Passion Pacifique: Le Jardinage’, in C. Bromberger (ed.), *Passions Ordinaires : Du Match de Football au Concours de Dictionnaire*. Paris: Belin, pp. 71–94.
- Ehn, B., and O. Löfgren. 2009. ‘Routines: Made and Unmade’, in E. Shove, F. Trentmann and R. Wilk (eds), *Time, Consumption and Everyday Life: Practice, Materiality and Culture*. London: Bloomsbury, pp. 99–112.
- Emelianoff, C., and E. Mor. 2013. ‘Société Postcarbone : Les Villes Pionnières’, *Futuribles* 392: 27–41.
- Foucault, M. 1976. *La Volonté de Savoir, Histoire de la Sexualité I*. Paris: Gallimard.
- Godelier, M. 1973. *Horizons, Trajets Marxistes en Anthropologie*. Paris: Maspéro.
- Gojard, S., and F. Weber. 1995. ‘Jardins, Jardinage et Autoconsommation Alimentaire’, *Recherches en Économies et Sociologie Rurales* (2): 1–4.
- Groves, C. et al. 2017. ‘Why Mundane Energy Use Matters: Energy Biographies, Attachment and Identity’, *Energy Research & Social Science* 30: 71–81.
- Guittou, J.-L. 2015. ‘La Situation de la Filière Bois-Forêt en France Fin 2014’, *Revue Forestière Française* 3: 263–83.
- Hecht, G. 2009. *The Radiance of France: Nuclear Power and National Identity after World War II*. Cambridge, MA: MIT Press.
- Ilmonen, K. 2013. ‘Sociology, Consumption and Routine’, in J. Groncow and A. Warde (eds), *Ordinary Consumption*. London: Routledge, pp. 9–23.
- Ingold, T. 2001. ‘From the Transmission of Representations to the Education of Attention’, in H. Whitehouse (ed.), *The Debated Mind: Evolutionary Psychology versus Ethnography*. Oxford: Berg, pp. 113–53.

- Jalas, M., and J. Rinkinen. 2016. 'Stacking Wood and Staying Warm: Time, Temporality and Housework around Domestic Heating Systems', *Journal of Consumer Culture* 16(1): 43–60.
- Jolas, T. et al. 1990. *Une campagne Voisine*. Paris: Éditions de la Maison des sciences de l'homme.
- Jorion, P. 1990. 'Les Déterminants Sociaux de la Formation des Prix du Marché : L'exemple de la Pêche Artisanale', *La Revue du MAUSS* 9: 71–106.
- Labussière, O., and A. Nadai. 2014. 'Unexpected Wind Power "Potentials": The Art of Planning with Inherited Socio-geographical Configurations (France)', *Scottish Geographical Journal* 130: 1–15.
- Latouche, S. 2004. 'Vivre Autrement le Même Monde', in N. Barbe and S. Latouche (eds), *Économies Choisies?* Paris: Éditions de la Maison des sciences de l'homme, pp. 1–6.
- Lee, R.P., and S. Gloaguen. 2015. 'Path-Dependence, Lock-in, and Student Perceptions of Nuclear Energy in France: Implications from a Pilot Study', *Energy Research & Social Science* 8: 86–99.
- Maniates, M.F. 2001. 'Individualization: Plant a Tree, Buy a Bike, Save the World?', *Global Environmental Politics* 1(3): 31–52.
- Massemin, É. 2019. 'Le gouvernement enferme la France dans le nucléaire', *Reporterre*, 26 January. Retrieved 21 July 2020 from <https://reporterre.net/Le-gouvernement-enferme-la-France-dans-le-nucleaire>.
- Ministère de l'agriculture et de l'alimentation. 2019. 'Pistes d'évolution de l'Office national des forêts (ONF)', 27 June. Retrieved 21 July 2020 from <https://agriculture.gouv.fr/pistes-devolution-de-loffice-national-des-for-ets-onf>.
- Nader, L. 1981. 'Barriers to Thinking New about Energy', *Physics Today* 99–104.
- . 2004. 'The Harder Path-Shifting Gears', *Anthropological Quarterly* 77(4): 771–91.
- Nyrud, A.Q., A. Roos and J. B. Sande. 2008. 'Residential Bioenergy Heating: A Study of Consumer Perceptions of Improved Woodstoves', *Energy Policy* 36(8): 3169–76.
- Observatoire des énergies renouvelables. 2019. 'Étude qualitative 2018 du marché des appareils domestiques de chauffage au bois', May. Retrieved 21 July 2020 from <http://www.energies-renouvelables.org/observ-er/etudes/Observ-ER-etude-qualitative-2019-marche-bois.pdf>.
- Ortar, N. 2014. 'Le Quotidien Peut-il Être Durable? Routines dans la Baie de San Francisco', *Noroi* 231: 13–25.
- . 2018a. 'Chapitre 8 – Faire avec la Hausse des Coûts de l'Énergie : Quels Changements dans les Routines', in N. Ortar and H. Subrémon (eds), *L'Énergie et ses Usages Domestiques : Anthropologie d'une Transition en Cours*. Paris: Pétra, pp. 100–12.
- . 2018b. 'Dealing with Energy Crises: Working and Living Arrangements in Peri-urban France', *Transport Policy* 65: 72–78.

- Petersen, L.K. 2008. 'Autonomy and Proximity in Household Heating Practices: The Case of Wood-Burning Stoves', *Journal of Environmental Policy & Planning* 10(4): 423–38.
- Pointereau, P. 2000. 'Estimations de la Quantité de Bois-Bûche Utilisée en France (1980–1996)', in A. Corvol (ed.), *Le Bois, Source d'Énergie : Nature et Aujourd'hui*. Paris: Cahier d'Études n°10, IHMC-CNRS, pp. 48–61.
- Pora, P., and L. Wilner. 2017. 'Les Dynamiques Individuelles de Revenu Salarial en France Pendant la Crise', *Économie et Statistiques 'La crise, Dix Ans Après'* 494–96: 191–211.
- Pouet, J.-C., and A. Gauthier. 2013. *Étude sur le Chauffage Domestique au Bois : Marchés et Approvisionnement*. Paris: Ademe.
- Raineau, L. 2018. 'Les Contradictions d'une Transition Énergétique Morcelée', in N. Ortart and H. Subrémon (eds), *L'Énergie et ses Usages Domestiques : Anthropologie d'une Transition en Cours*. Paris: Pétra, pp. 57–64.
- Sahakian, M., and H. Wilhite. 2014. 'Making Practice Theory Practicable: Towards More Sustainable Forms of Consumption', *Journal of Consumer Culture* 14(1): 25–44.
- Sansot, P. 2002. *Les Gens de Peu*. Paris: Presses Universitaires de France.
- Scott, J.C. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.
- Shove, E., and G. Walker. 2007. 'CAUTION! Transitions Ahead: Politics, Practice, and Sustainable Transition Management', *Environment and Planning A* 39(4): 763–70.
- Topçu, S. 2013. *La France Nucléaire : L'Art de Gouverner une Technologie Contestée*. Paris: Seuil.
- Vannini, P., and J. Taggart. 2014. 'Making Sense of Domestic Warmth: Affect, Involvement, and Thermoception in Off-Grid Homes', *Body and Society* 20(1): 61–84.
- Verdier, Y., T. Jolas and F. Zonabend. 1990. 'Les Verts Anneaux Acides', in T. Jolas et al., *Une Campagne Voisine*. Paris: Éditions de la Maison des sciences de l'homme, pp. 101–12.
- Walker, G. 2014. 'The Dynamics of Energy Demand: Change, Rhythm and Synchronicity', *Energy Research & Social Science* 1: 49–55.
- Weber, F. 1989. *Le Travail À-Côté: Étude d'Ethnographie Ouvrière*. Paris: INRA-École des hautes études en sciences sociales.
- . 1998. *L'Honneur des Jardiniers: les Potagers dans la France du 20ème siècle*. Paris: Belin.

Afterword

People Thinking Energetically

Leo Coleman

Why an anthropology of energy now? And why specifically a political anthropology of energy rather than an approach focused on the seemingly more relevant domains of science, technology or economics? The first answer that springs to mind (in the context of this volume in particular) is simply that energy is explicitly at issue nowadays in policy, government and everyday life, in terms that while not always obviously political do implicate collective life, distributions of power and possibilities of participation in the common good. The conditions of our world are such that people pay attention to energy less as an abstract measure of work or an ‘invisible’ power enabling activities (its scientific and technical meanings, respectively) than in its more concrete and tangible forms, when it is proximate and powerfully relevant to collective aspirations: the price of petrol, a proposed pipeline or a dam, even the settings on one’s household ‘climate control’ devices (a term strangely resonant with talk of climate *change*). Such encounters with energy as a fuel, an infrastructure and a set of daily habits of consumption (with their ramifying effects) spur thinking about energy in political terms; that is, in terms of the distribution of power and the allocation of risks, possible alternatives (pathways that we might travel together) and costs that might be shared (now or in the future). As consumers and citizens and indeed as inhabitants of a shared planet, from disparate locations and working within our distinct habitus of energy use, we *all* count and monitor the items in our energy lives regularly and consistently, while our choices are constrained by our collective investment in cer-

tain material pathways, our relative inability to imagine other ways of life. Energy is, at once, personal, collective and political, an experienced reality and a total social fact, and hence the kind of political phenomenon anthropology is best situated to study. As the editors explain in their Introduction, this volume is part of a wider renewal of anthropological interest in energy. However, this turn to energy also implicates basic questions of political anthropology, which are the questions I will focus on in this Afterword.

When Marshall Sahlins and Ellman Service, at an earlier moment of anthropological interest in energetic models for society, hypothesized that general social evolution could be measured by higher rates of exploitation of energy, the latter term was for them clearly scientific rather than popular, etic rather than emic: a statistical object far from the minds of men and women working, using machines or being hurtled through space by a thousand tiny explosions of oil and oxygen in a car's engine (Sahlins and Service 1960, 36–38). Political life, for them, came into view mostly in the form of institutions, social integration and coordination of myriad social forces. However, they did observe that energy use could produce an *individual* sense of mastery over forces and hence personal freedom, linking energy quite directly to political affects. Nowadays, we can observe that the political associations that gather around energy and its infrastructures and devices are much broader, more embedded in ordinary language and not so easy to define as integrative or progressive (Rogers 2015; Wieszkalnys 2016; Hughes 2017; High and Smith 2019). Sahlins and Service's multifactorial modernist equation between harnessed energy, social complexity and progress, on the one hand, and increased individual freedom, on the other hand, has been undone – or, if not undone, at least is no longer automatically granted a positive valuation. Energy is now reckoned in terms of risks and consequences (often individualized) instead of as a measure of historical advancement. Calorie counts are prominently displayed on food packaging and, as Andrew Barry notes, 'the thermodynamic efficiency of a vast range of devices, from lightbulbs to internal combustion engines, is increasingly regulated, while individuals and organizations are expected to monitor and manage their expenditure or consumption of energy in the face of growing concerns about energy security, resource scarcity and climate change' (Barry 2015: 121). Energy has become not only a means of accounting for social wealth and progress and fuelling personal aspirations, or just a matter of urgency in times of crisis, but also a part of ordinary political thought and action, not least for state actors trained to think of so-

ciety in terms of inputs and outputs, efficiency and productivity (see Daggett 2019).

Taking the measure of this ordinary attention to energy and the ways in which statecraft is inflected as it is exercised in and through flows of energy, often in the form of ‘technopolitics’ (see Mitchell 2011), the contributors to this volume all build on a set of political-anthropological insights into the nature of contemporary governance, the constitution of political power in a neoliberal era, and the forms of discipline and organization to which citizens are subject as they move across domains, from work to school to political participation. There is another set of theoretical influences evident here as well. According to Dominic Boyer, the rise of energy as a topic in the social sciences follows on an ‘anti-anthropocentric turn’ in anthropology that explicitly seeks to map out how non-human things and forces combine to constitute new forms of being and new levels of reality (Boyer 2014). Scholars pursuing this line of thought have sought to replace or supplement ethnographic explanations based in processes of human meaning-making, ‘symboling’ and communication, with others that involve tracing out ramifying connections between material bodies and forces (from molecules to pipelines to the wind itself), and only then moving from these to the rationalities and calculations in which these nonhuman forces are put to work (Howe and Boyer 2015). This approach – and it is primarily a set of methods or modes of descriptions rather than a cohesive theoretical system – has made it possible to imagine an anthropology of electrons, or of waves, or indeed of their ‘energy’, independent of their harnessing for human ends or their relationship to any particular community or a set of intentional actions. Bringing these two lines of thought together – the biopolitical and the anti-anthropocentric – Boyer has proposed that we now live in and, most importantly, *must think in the terms of* an era of ‘energopolitics’ (more on this shortly).

This volume offers, in this conjuncture, a distinctive and to me unanticipated ethnographic response. To be sure, these chapters deploy the full range of analytic possibilities opened up by attention to distributed sites of power, the movement of flows of energy across infrastructures, regimes of power and rationality, and impersonal forces and affects. Yet, the authors here focus on collective and individual political actions that arise from the operation of people’s critical faculties and their organization towards common projects, often in the face of stiff competition from other collectively formed interests (including corporate and state interests). This provides a distinctively anthropological perspective, from amidst human conflicts and

struggles, on the rationalities by which states and other powerful organizations grasp and organize flows of energy and power, their material impacts and even the more-than-human consequences of climate change.

Time and again, these ethnographers return to practices of meaning-making and the interpretive links and partial associations that are made in both political propaganda and in everyday efforts of understanding, including the ‘refrains’ of state actors invoking a flow of megawatts to come from damming remote rivers (see the chapters by Lord and Rest, and Hebdon), and those of Polish ones imagining a future of high-tech electrical mobility while holding into their coal-fired economic base (see the chapter by Lis). They gauge the affective reaction of (deeply energy-dependent) rural Europeans against the intrusion of oil and gas infrastructure into their neighbourhoods, the firm resistance mounted by indigenous groups in the resource frontier of interior Ecuador to new economic disciplines imposed in the name of geopolitical and climatological necessity (see the chapter by Hebdon), and the angry self-awareness of those whose lives or regions are sacrificed to national (or corporate) energy and security needs (see the chapters by Kaur and Moolenaar). Let me be clear: this is not a matter of ethnographic particularism focused on *reaction* and resistance, gauged against some absent, but established and authoritative, centre of power. Rather, the ethnographic insight at stake here indicates that whether we are looking at policy documents or popular mobilizations, corporate strategy or efforts to get by at the margins, energy in its ordinary materiality is entangled with cultivated meanings and deep feelings of solidarity – and, similarly, it is subject to debate and discussion, which may at times even lead to revision of meanings once thought to be stable.

To be sure, these studies reveal distinct, located apperceptions of what Nathalie Ortar calls the ‘weight’ of systems that are at once technical, cultural and (importantly) legal; however, for the most part they explore the ‘raw edges’ (see the chapter by Kaur) of the energetic organization of life and society, dwelling at friction points between imaginations of prosperity and dirty, inhuman or violent processes of extraction, and tracing the political consciousness sparked there. Moreover, they follow out the organization and consequences of specific responses to such apperceptions, from protest, to alterations in everyday energy-consumption habits, to state and corporate efforts to paper over the widening cracks in energy-intensive ways of life. Finally, these authors trace the contours of an emerging form of citizenship and political action within the matrices of energy produc-

tion and consumption, one in which the supply of energy becomes an object of domestic choice and personal investment of labour and value – when people seek shares in a national hydropower concern or as they organize on a small scale to collect wood and put local resources to personal use. Thus, these chapters show us clearly that the infrastructures of energy-intensive modernity are not only ‘integrating’ in some material or organizational sense, as an earlier modernist anthropology might have proposed or even as a study devoted to tracing material associations and ramifying networks might imply. Instead, energy practices, policies and infrastructures are themselves integrated into local politics, neither impervious to them nor beyond their reach, not only imposed from afar or simply smoothly rational and banal. Plans and infrastructures and social organizations of energy can inform a way of life, but only because they stand as problematic objects of interpretive effort, both provoking doubt about their effects and, at times, sustaining a wider claim on community (Berlant 2016; Coleman 2017; Coleman and Abel 2020).

Energy and Its Metaphors

This volume’s ethnographic evidence about energy and contemporary political action might serve to remind us that the central – perhaps original – topic of any political anthropology with a democratic vocation is not only the organization of society but also collective effervescence, its sources and its transformative potential (personal and societal). Though employing varied theoretical approaches, these authors are all attuned to meaning and the gathering that intensifies it, to the forceful ascriptions that impress the sign of belonging upon objects and bodies, and how collective energies take forms that extend ‘beyond the gathering’ as a (contested) claim upon participation in the common good (Durkheim 1995: 222). Towards a wider project of a political anthropology of energy, following these leads, we might also want to recall that the word ‘energy’ has a set of perfectly literal meanings that relate to civic participation, the attention that our common and daily affairs demand, and how this kind of effort can both reshape institutions and make them durable. Alexis de Tocqueville used the French word *energie* (and its variants) some fifty times in his *Democracy in America* as he sought to define a power of action that was both psychological and physiological, in the citizen and the body politic, which could wax and wane, be generated or wasted, concentrated and diffused (Berger 2011: 91). Of course, it is

necessary and appropriate to be critical about neoliberal techniques that claim to increase involvement and participation, like the Nepali popular ‘shareholder’ model of hydropower development, as Lord and Rest describe it, which is more about ‘securing volumes’ than extending democracy or augmenting collective energies. Still, collective practices that involve the coordination, extension and concentration of energy, that make something tangible and sharable of the *work* expended – including such humble-seeming ones as cutting wood (see the chapter by Ortar) – can indeed have deep implications for political life, in that they both actualize and organize a broader awareness of the distribution, and expenditure, of forces.

Of course, any such ethnographic conception of political energy as attention and effort has an Aristotelian genealogy – Aristotle’s *energeia* or actuality means, in Boyer’s gloss, ‘being-at-work’ (Boyer 2014: 325). Indeed, our entire political vocabulary echoes with the deep resonances of a whole (Western) tradition of political reflection. In this vein, all of Giorgio Agamben’s work, with its recent influence in political anthropology, can be read as an extended commentary on the historical, material implications of our philosophical vocabulary for political power and its descent from Aristotelian metaphysics (Seshadri 2014). Any talk of power, potential, dynamic, force – all ‘energetic’ metaphors – invokes an interaction between bodies, actions and some horizon of actualization. Thinking through our language of political analysis in some detail, in such a genealogical fashion, might go some way towards clarifying the role that energy – even in its technological absence or inadequacy – plays in political life (see Cross 2019).

This kind of linguistic analysis or genealogy of energy-talk is, for the most part, not a task that the present volume takes up; it does not fall within its remit. However, energy practices in the present are given intense descriptive attention in ways that draw out the meaningful terms by which people understand the energetic realities that affect them, whether it is a matter of entropic disorder looming on the horizon of climate change or of the ground quite literally shaking as a result of energy extraction and national policies. This volume shows us people both at work and in conversation, and how they interweave physical realities with imaginations, rhetorics and passions in talk and action – from formal political analysis to the mobilization of new political identities.

Indeed, this distinctive ethnographic attention to talk and anger about local projects, fears for the future, affective responses to governmental energy discourses and situated attempts to wrest control

over or assert democratic participation in energy choices helps challenge from within, as it were, any account of ‘carbon modernity’ in which (political) power is distributed and works its effects silently and invisibly through energy infrastructures that operate unnoticed and beyond the reach of ordinary political consciousness and collective organization until they break down (Mitchell 2011; Harvey et al. 2017). More explicitly, it also calls into question the routine modernist association between energy, (public) utility, productivity and life – positive discursive links between energy, consumption and political power that are not only ill-suited to the constraints imposed by climate change, but starkly inapposite when energy projects so often despoil and destroy both natural and human life (a critique articulated, distinctly, by Kaur, Hebdon and Lis in their chapters in this volume).

Beyond Energopolitics

All the contemporary political-anthropological approaches mentioned so far are indebted to Michel Foucault’s analysis of power and of modern governmental regimes: the attempt to shift focus from formal institutions and organizations (‘the state’) to trace rationalities and technical actions as they operate across social fields; the infrastructural analysis of carbon modernity; and the biopolitical account of modern states as invested in regulating – indeed, augmenting – the life of their populations. These Foucauldian approaches continue to hold serious critical force and resonate with much contemporary political experience. Foucault’s descriptions seem in fact to capture a political reality that is starkly materialized in energy grids, pipelines and mundane artefacts like power meters: the pluralization of political sites (with the emergence of a political rationality concerned to regulate and maximize vital flows rather than simply secure territory); the intimacy of a form of power exercised through knowledge and discipline rather than constraint; and the productivity of that power – with its commands to desire and consume. Such diffuse and forceful political phenomena are precisely what Dominic Boyer means to describe with his concept of ‘energopower’: these forms of power are not only biopolitical in their purchase on human life and productive bodies, but also seek to produce ‘corporate’ vitality (taking both *corporate* and *vital* in a wide sense) by a simultaneous ‘securitization of energy provision and synchronization of energy discourses’ (Boyer 2014: 327). However, on the evidence of

these chapters, we can push Boyer's insight further. 'Energopolitical' thinking is not only a matter of tonnes of coal, barrels of oil or rates of generation and consumption of electricity; it is also evident in neo-liberal regulation of labour-time and in governmental calculations of hours worked or jobs created. In a word, it is the *work* of the population, including the forces of nonhuman 'actors' and not just its biotic life, that is the object of our most characteristic contemporary government rationalities.

Each of the chapters here demonstrates the strength of the energopolitical and infrastructural approaches, recounting shifts of power from state to private actors, productive deployments of knowledge and expertise, and a proliferation – within and beyond formal legality – of new technical instruments and practices of regulations. And yet, ethnographically this volume pushes against the strictly biopolitical or governmental framing of energy politics. Each chapter looks at specific places where some energy project is provoking political debate and providing the occasion for new languages of collectivity and practices of belonging to emerge, often in deliberate opposition to regimes of productive interconnection with their own discursive appearances. Each chapter, in its own way, uses ethnography to move past questions of state rationalities and their material forms to focus on complex negotiations in which stakes are laid out and sides are not just taken, but are themselves constituted and reconstituted as positions in political struggle. In other words, the volume as a whole investigates not so much *why* energy is relevant to politics or vice versa, but rather two aspects of *how*: how do political actions, gathering people and suturing together otherwise disparate scales of knowledge through located acts of judgment, shape and frame energy resources? And how, in turn, can energetic resources help provide the conditions – or the occasion – for people to organize politically and unleash power?

As Kaur argues in her chapter, we might start to move beyond energopolitics by turning the basic biopolitical lens around to look not only at the places where distributions of political power, life and actual energy mesh, efficaciously and productively, but also take in those places, equally saturated by power, where risk is dumped at the cost of life and health. Kaur models her intervention on Achille Mbembe's thoughts about the violence and death inherently produced by modern governmentality, not as an exception from but as integral to its processes, and it is useful to remember that he stipulates there that the productivity of biopolitics *includes* the violent destruction of the very material basis of alternative and oppositional

forms of life, ‘an orchestrated sabotage of the enemy’s societal and urban infrastructure’, leading to ‘invisible killing’ (Mbembe 2002: 29–30). Energopolitics is, Kaur and others show us (see the chapters by Moolenaar and Hebdon), as much about spectacular destruction and violent sacrifice, the negative other or magical side of ‘work’ and ‘productivity’ as it is about protection and fostering of forms of life and vitality. Both work and waste are equally material aspects of its operations.

The counterpublic of activists that also emerged in Kaur’s field site near the now-operating nuclear power plant at Kundankulam provides some hope that energopolitics is never entirely totalized or totalizing – as Foucault’s notion of a ‘productive’ power that ‘calls forth, arouses, and even programmes the action that is liable to resist it’ would indicate (Foucault 1978, as quoted in Ortar, this volume). This latter is an important aspect of Foucauldian thought that Ortar takes up and develops in her chapter on wood-gathering as integrated into but also as a means of resistance to a nationwide energy policy. It also appears – although more in the form of paradox – in the massive protests against energy-change policies in Ecuador described by Chris Hebdon. As Hebdon tells us, indigenous resistance was sparked by policies that aimed to reduce reliance on cheap hydrocarbons in the Ecuadorian economy. The policies might appear laudable, a useful exercise of governmental power to mitigate climate change by altering incentives and shifting behaviours. But the resistance the policies provoked reveals that they entail not only ‘reduced consumption’, which through the lens of Northern climate change politics is a good, but also increased exploitation of Ecuador’s resource frontier and damage to the lands and livelihoods of its indigenous occupants.

These ethnographic insights shift our attention away from the terms of energopolitics, insofar as it sees energy primarily in its material forms and in its positivity, as a set of sources and resources always available to a governmental analytics of force and security (Foucault 2007). Ultimately, it directs us to another set of abstract representations of *work* and the various conversions these can undergo – into money, say (see the chapter by Hebdon), or speculative futures (see the chapter by Lord and Rest). However, this also involves an analytic shift away from the ‘ordinary’ level of energy interactions with which I started. In this other, perhaps more-than-ordinary perspective, energy is nothing material at all; it is a relation and a capacity, a potential and an abstraction, evident in social and political forms (structured sets of relations) that do not accord at all with those we

might otherwise be led to expect by either the boundary-crossing materiality of energy flows or by the expansive reach and global scale of contemporary governmentality. Lord and Rest observe that in ‘all the debates about contracts, concrete and shares’ in the Nepali politics of hydropower development that they study, ‘*water* itself has been largely overshadowed’. This striking observation indicates that something *politically* is at stake that is not water or the energy produced from it at all, but rather something that energy is only one *partial* way of measuring: a social form that owes only a part of its reality to materiality or energy.

Climate and Nation

Two striking features of these chapters are particularly significant for the clarification of this other perspective, beyond energopolitics, which focuses less on the global organization of energetic flows or the reprogramming of work as ‘energy’ in carbon modernity, and more on the energy of the abstract ideas, solidarities and immaterial bonds (of obligation and reciprocity and belief) that link people to each other and to things. First, climate change is pervasive but hardly central to the particular projects pursued here and, second, the problems, corporate and political actors, and avenues of citizen response explored in this volume are all notably *national*. These two are linked as ethnographic findings and are not the result of methodological blindness or ethnographic microscopy.

Climate change has, of course, generated a new domain of policy knowledge and political action with many permutations and potentially global consequences (Mann and Wainwright 2018). The policies meant to address it and the problems of grappling with it through normal political and policy routines are discussed throughout this volume. Meanwhile, both the causes and the effects of climate change are unevenly distributed, localized and specific; this specificity – which is usually registered in scientific knowledge as uncertainty – demands ethnographic engagement with its many manifestations at scales below the global one (Barnes 2016). On the evidence in this volume, we can certainly see that climate change is now providing a context of evaluation and justification that also drives economic investments and defines contemporary energy politics. For example, large dams have returned to prominence – in Nepal and Ecuador and elsewhere – in part because they can be ‘sold’ to international investors and institutions as well as local populations as a neat solution to

both energy supply and emissions problems at the same time. However, environmental scientists are increasingly aware that dammed rivers in tropical areas can produce just as many greenhouse gases (methane from decaying vegetation) as any coal-fired power plant (Bauer and Bhan 2018). In short, this programme of building is not any kind of rational response to climate change, even as the latter is put forward as a political justification for the large investments – affective as much as financial – that dams require. Similarly, the prominence of fracking as a nation-state desideratum follows the massive shift of power generation to gas-fired plants, in part justified by gas being relatively cleaner to burn than coal. Meanwhile, fracking that takes place in densely populated parts of Western democracies intimates a new era in carbon modernity: the politics of carbon-intensive societies can longer be entirely characterized by an oil-mediated ‘disentanglement’ of energy consumption from the labour and place involved in its production (see Appel 2012); rather, new and uncomfortable proximities (for citizens in Western democracies) with energy production and palpable consequences in local climates alike seem to be the new norm.

For her part, in her chapter, Lis shows us that the political promise of a Polish electric vehicle is framed in terms of national technological achievement and industrial (and biopolitical) productivity, as well as freedom from conditions of economic constraint (the latter figured by the high numbers of used cars imported into Poland). The urgent need to decarbonize transport is hardly more than a distant justification and not (she demonstrates) the proximate cause or real stakes of the policy for actors involved. Meanwhile, economic marginality and a sense of regional identity are far more important than reducing carbon emissions to Moolenaar’s *Groningers*, while the earthquakes that provoke their political organization and action are themselves the direct geological result of past gas extraction rather than being caused by emissions or accumulative climate effects.

In sum, at every point where climate appears to be central – in the Ecuadorian policy of ending petrol subsidies, in the turn to hydro-power to fuel growth in Asia, in the promotion of a Polish electric vehicle and so on – it turns out to be peripheral to the debates and political processes really at issue.

Perhaps this only proves the ‘weight’ of the infrastructures we have inherited. This brings us to the ‘national’ framing of the case studies in this volume. In all three of these cases, and throughout these chapters, climate is framed and understood in relation to national laws, national interests and national citizenships. Transnational connections

become apparent mostly when *other* nation-state actors (e.g. China) deploy their own national finance and expertise to expand their energy operations and secure flows of energy from elsewhere. Meanwhile, national laws shape the availability of natural resources like fallen wood in municipal forests and regional governments greedily eye the possibility of a giant spike – albeit a temporary one – in flows of gas revenues if fracking takes off or pursue a new generation of power and prosperity from the ‘blue gold’ of the resource frontier. For her part, in her chapter, Kaur passionately indicts the exclusionary national security logic that not only accompanies but itself justifies both the construction of a large nuclear installation and the suspension of basic political rights in its pursuit. As her chapter makes clear, moving beyond energopolitics towards another political anthropology of energy involves moving beyond the limitations of the logics of ‘security’ and those governmental rationalities that are so often the central *object* of even ethnographic attention. Moreover, this also introduces judgement and evaluation, in two registers, directly into ethnographic engagements with energy: both attending to the values and valuations given to energy objects by people in their own places and times, and, at the level of analysis, judging critically the good or bad that energy forms can bring. Neither task is, in itself, necessarily confined by the framework of a national politics or a national citizenship – to say so would be to commit the sin of methodological nationalism. But both in practice and in thought, energy is, as the chapter by Lis on the Polish effort to navigate transnational regulations and economic realities shows, very often linked to a notion of national productivity and national effort. In other words, the form that energy politics takes is contingently but also affectively national – and this is another ethnographic finding, not an *a priori* assumption.

The difficulty of framing climate change as a political object – an object of governmental rationality – reflects built legacies and long-cultivated affective bonds, which themselves have national histories to which we should pay closer attention in our ethnographic analyses (Edgerton 2018). In the middle third of the twentieth century, energy economies became increasingly bounded by national regulations, nationalized industries, national autonomy and national security. Energy was mobilized to serve social reproduction at national and regional scales through the construction of urban gas networks and national grids, while governments calculated potentials and reserves, and sought to construct capacity for national autonomy. We may think that this era ended long ago, with the oil

shocks of the 1970s and transnational neoliberalization, but the actual energy institutions and networks that these chapters cover are still largely constituted of networks and devices that served the prior governmentality of energy. However, this is not all. These ethnographers all conducted their research on the cusp of a new movement of national closure. Hebdon talks of the return of the state in Ecuador and its postneoliberal politics; India and Europe are experiencing political revivals of explicitly nationalist rhetorics. In all these sites, energopolitics is explicitly linked to nation and community in ways that abstract talk of energy flows or material mapping of pipelines and interconnections cannot predict. This is a dark thought, for it recalls Foucault's own caution that biopolitics can underwrite even the most destructive of attacks on the life of others; in the name of defending a society from 'external' threats, even 'massacres . . . become vital' (Foucault 1978: 137).

But these chapters offer an alternative. On the one hand, deeply embedded matrices of power, participation and legitimacy are enormously difficult to change, and the renewed attachment to national infrastructures – even when they threaten destruction – is in one sense a return of the repressed, a resurgence of the neglected material and affective underpinnings of contemporary governmentality (reprogramming or putting to new ends the old machineries of social reproduction may not be as easy as neoliberal reformers once thought). On the other hand, these turns and returns of climate and nation may also be worked together for the good, providing an opportunity to push along the necessary transitions and occasions for rethinking possible scales of action, with an accent on solidarity and effervescence rather than materiality and governing rationality. These chapters contribute to this work by dwelling in the dynamic space between action and reflection, in which efforts of collective concentration are sustained and then released to live on in the work of symbols. We see here that climate change demands more movement, more solidarity and more connection than our ill-considered and unthought infrastructures are able to give us. Settled rationalities – which we need to think about critically, as much as ever – can even under critical scrutiny bind hopeful and transformative practices to established lines of communication, and reinstate the exclusions of the latter. To counter the integrating force of these grids (which is even palpable at their raw edges), we can and must try to catch the currents that cut across them, offering indications of other directions in which energy has and still might flow, other configurations of solidarity and community, and other objectives for collective effort to

attain. Such counterflows and unexpected bonds of solidarity – with other people, but also with sources of energy that may exceed all existing political geographies – are what we all, more than ever, need to find ways to think about, and they are the subject of the emerging political anthropology of energy that this volume helps to bring into view.

Leo Coleman is Associate Professor of Anthropology at Hunter College and the Graduate Center, City University of New York. He is the author of *A Moral Technology: Electrification as Political Ritual in New Delhi* (2017) and the editor of *Food: Ethnographic Encounters* (2011).

References

- Abel, J.R., and L. Coleman. 2020. 'Dreams of Infrastructure in Global Asias', *Verge: Studies in Global Asias* 6(2): vi–xxix.
- Appel, H. 2012. 'Walls and White Elephants: Oil Extraction, Responsibility, and Infrastructural Violence in Equatorial Guinea', *Ethnography* 13(4): 439–65.
- Barnes, J. 2016. 'Uncertainty in the Signal: Modelling Egypt's Water Futures', *Journal of the Royal Anthropological Institute* 22(S1): 46–66.
- Barry, A. 2015. 'Thermodynamics, Matter, Politics', *Distinktion: Scandinavian Journal of Social Theory* 16(1): 110–25.
- Bauer, A., and M. Bhan. 2018. *Climate without Nature: A Critical Anthropology of the Anthropocene*. Cambridge: Cambridge University Press.
- Berger, B. 2011. *Attention Deficit Democracy: The Paradox of Civic Engagement*. Princeton: Princeton University Press.
- Berlant, L. 2016. 'The Commons: Infrastructure for Troubling Times', *Environment and Planning D: Society and Space* 34(3): 393–419.
- Boyer, D. 2014. 'Energopower: An Introduction'. *Anthropological Quarterly* 87(2): 309–33.
- Coleman, L. 2017. *A Moral Technology: Electrification as Political Ritual in New Delhi*. Ithaca, NY: Cornell University Press.
- Cross, J. 2019. 'No Current: Electricity and Disconnection in Rural India', in S. Abram, B.R. Winthereik and T. Yarrow (eds), *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures*. New York: Bloomsbury, pp. 65–81.
- Daggett, C. 2019. *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work*. Durham, NC: Duke University Press.
- Durkheim, E. 1995. *The Elementary Forms of Religious Life*, K.E. Fields (trans.). New York: Free Press.

- Edgerton, D. 2018. *The Rise and Fall of the British Nation: A Twentieth-Century History*. London: Allen Lane.
- Foucault, M. 1978. *The History of Sexuality: An Introduction*, R. Hurley (trans.). New York: Random House.
- . 2007. *Security, Territory, Population: Lectures at the Collège de France, 1977–78*, G. Burchell (trans.). New York: Palgrave Macmillan.
- Harvey, P., B. Bruun Jensen and A. Morita (eds). 2017. *Infrastructures and Social Complexity: A Companion*. London: Routledge.
- High, M.M., and Smith J.M. 2019. 'Introduction: The Ethical Constitution of Energy Dilemmas', *Journal of the Royal Anthropological Institute* 25: 9–28.
- Howe, C., and D. Boyer. 2015. 'Aeolian Politics', *Distinktion: Scandinavian Journal of Social Theory* 16(1): 31–48.
- Hughes, D.M. 2017. *Energy without Conscience: Oil, Climate Change, and Complicity*. Durham, NC: Duke University Press.
- Mann, G., and J. Wainwright. 2018. *Climate Leviathan*. New York: Verso.
- Mbembe, A. 2003. 'Necropolitics', L. Meintjes (trans.), *Public Culture* 15(1): 11–40.
- Mitchell, T. 2011. *Carbon Democracy*. New York: Verso.
- Rogers, D. 2015. *The Depths of Russia: Oil, Power, and Culture after Socialism*. Ithaca, NY: Cornell University Press.
- Sahlins, M.D., and E.R. Service (eds). 1960. *Evolution and Culture*. Ann Arbor: University of Michigan Press.
- Seshadri, K. 2014. 'Agamben, the Thought of *Steresis*: An Introduction to Two Essays', *Critical Inquiry* 40(2): 470–79.
- Weszkalyns, G. 2016. 'A Doubtful Hope: Resource Affect in a Future Oil Economy', *Journal of the Royal Anthropological Institute* (NS) 22(S1): 127–46.

Index

- accountability, transparency and, 26
- ADEME. *See* French Environment and Energy Management Agency
- agrarian reform, 60, 62, 65
- agroforestry, 59–60
- alternative energy paths, 14
- Amazon, 11–12, 52, 58–60
 - indigenous land rights in, 63–64
 - oil companies in, 61
 - as subordinate, 69–70
- Amazonians, 52
- Arun-3 project, 85, 92–97, 102
- Aswan Dam, 11
- Atomic Energy Act of 1962, 32
- Atomic Energy Commission, 36
- authoritarianism, 26, 29
- authority, forms of, 1–2

- biopolitics
 - power and, 27
 - productivity of, 187–88
 - proposals for modern, 26
 - of state, 111
- biopower, 6
 - nuclear, 28–29
 - side-effects of, 46n6

- Borja, Rodrigo, 63
- Boyer, Dominic, 2–3, 5, 11, 15, 28–29, 43, 182, 185–86

- cambio de la matriz energética* (shift of the energetic matrix), 53, 67–74
- capitalism
 - cancer stage of, 43–44
 - shareholder capitalism, 90
- carbon capture and storage (CCS), 12, 111, 116–21, 127
- carbon emissions, 36
- carbon market, 112
- carbon modernity, 186
- carbon reduction infrastructure, in Poland, 116–21
- CCEP. *See* Climate Change and Energy Package
- CCS. *See* carbon capture and storage
- Chernobyl, 46n5
- citizens
 - future and, 9–10
 - marginalization of, 152
 - response of, 189
 - second-class, 13
 - water and, in Nepal, 92

- citizenship, 6, 90
 biological, 46n5
 claim to, 37–38
 energy citizenship, 9–10
 revoking, 42
 shareholder citizenship, 10
 Citizens Revolution, Ecuador,
 65–66, 70–73
 civil disobedience, 40
 climate change, 3, 10
 challenges of, 159
 consequences of, 183
 electromobility and, 12
 energy security and, 111
 nation and, 189–93
 Nepal impacted by, 88
 Climate Change and Energy
 Package (CCEP), 109, 115–16
 coal, 116–18, 128, 169, 190
 colonial exploitation, 36
 colonialism
 internal, 13
 nuclear, 46n10
 colonization, 7, 12
 in Ecuador, 53, 58–62, 65
 slavery and, 29
 communities, 1. *See also* indigenous
 communities
 marginalization of, in Global
 South, 43
 of resistance, 149–50
 solidarity and, 16, 192–93
 conservation, resource sovereignty
 and, 13
 consumer culture, 5, 30
 consumption practices, 157, 170–71
 contamination, fear of, 37
 corporate ethics, 5
 corporate responsibility, 5
 corporations, 5, 8, 31, 65, 72, 114
 Correa, Rafael, 11–12, 65–67, 72

 Dakota Access Pipeline, 150
 damage compensation, 143, 146–52,
 153n12
 dams, 11–12, 66, 89, 93

 death
 centrality of, 28
 politics of, 6
 productivity, waste and, 15
 of protestors, 39–40
 sociopolitical, 38
 death penalty, 41
Democracy in America (de
 Tocqueville), 184
 depoliticization, 3–4
 deterritorialization, 15
 disconnection, 7
 discourse
 on electromobility, 128
 positive, 186
 surrounding CCS, 127
 displacement
 as brutal, 6
 oppression and, 11
 distribution
 channels of, 171
 of climate change effects, 189
 of heat, 167
 of political power, 186

 earthquakes
 in Nepal, 90
 in Netherlands, 133, 136–52
 ecocide, 38, 42
 ecology, 164–69
 economic interests, 1, 13
 economics, 164–69
 economy in transition (EIT), 112
 economy of anticipation, 10
 economy of knowledge and power,
 5
 Ecuador, 11–12, 188–90. *See also*
 Amazon
 colonization in, 53, 58–62, 65
 dictatorships in, 65
 electric lines in, 64
 indigenous leaders in, 52
 invasion of, 57–58
 land distribution in, 59
 progress in, 70–71
 regions of, 53–54

- Ecuadorian Institute for Agrarian Reform and Colonization (IERAC), 58–59, 63
- EIA. *See* Environmental Impact Assessment
- EIT. *See* economy in transition
- electric grid, 6
- electric infrastructures, costs of constructing, 8
- electricity, 5–7, 27
 - accessibility to, 157
 - consumption of, 161
 - generation of, 11
 - global supremacy and, 40
 - incorporation of, 43
 - production of, 113
 - water and, 65–69
- electric lines, in Ecuador, 64
- electric vehicles (EVs), 111, 121–26, 190
- electromobility, 12, 109, 111, 121–28
- electropolitics, governance and, 25
- elitism, 33–34
- emotions, 2
 - infrastructures and, 9
 - practices and, 5
- energetic challenges, 3
- energopolitical regimes, 1
- energopolitics, 5, 8, 15, 110–11, 186–87
 - era of, 182
 - influence of, 157
 - in Poland, 112–16
- energopower, 11
 - Boyer proposal for, 43
 - postcolonial state and, 28
- energy
 - concepts of, 72
 - culture, power and, 5
 - fictive energy, 73
 - as fuel, 180
 - metaphors and, 184–86
 - multiple concepts of, 54
 - political anthropology of, 1
 - political theory and, 16
 - politicizing, 3–4
 - risks and consequences related to, 181
 - theory of, 2
- energy anthropology, 2, 3, 10–11, 27, 110, 180
- energy bureaucracies, 4
- energy capacities, 2
- energy citizenships, 9–10
- energy conflicts, 15
- energy consumption
 - control of, 174–75
 - habits surrounding, 14–15, 183–84
- energy imagination, 12
- Energy Information Agency, US, 120
- energy infrastructures, 1, 4
 - deployment of, 6
 - emotions and, 9
- energy politics
 - governance and, 5
 - in Poland, 127–28
- energy production sites, 4
- energy security, 13, 90, 97, 111
- energy sovereignty, 6–9, 91, 97, 103
- energy studies, 2
- energy systems, 3–4, 10–11, 14, 74, 162
- energy technologies, 1, 3
- energy transition, 72
 - French-style, 162–64
 - policies for, 52
 - research into, 156–57
- energy trilemma, 165–66
- entropic disorder, 185
- Environmental Impact Assessment (EIA), 98
- epistemological turns, 3
- ethics, corporate, 5
- ETS. *See* Emissions Trading System
- EUAs. *See* European Emission Allowances
- EU ETS. *See* European Union Emission Trading Scheme
- European Commission, 12, 111–13, 116–20

- European Emission Allowances (EUAs), 113, 120–21
- European Union Emission Trading Scheme (EU ETS), 112–14
- EV. *See* electric vehicle
- evolutionist theory, 2
- expertise, 191
- expert knowledge, 187
- experts, 105n2
- nuclear, 34
 - studies of, 2
 - water, 94
- extraction
- of gas, 10, 133–52, 190
 - of oil, 65
 - political debates about, 142
 - of resources, 2, 9
 - violence and, 183
- following the herd, economics, ecology and, 164–69
- fossil fuels, 3–4, 54
- Foucault, Michel, 28–29, 110, 174, 186
- France, 156–69
- Francis, Sahayam, 40
- French Environment and Energy Management Agency (ADEME), 159, 164, 168
- fuel
- energy as, 180
 - fossil fuels, 3–4, 54
 - harnessing, 5
- future
- citizens and, 9–10
 - conceptions of, 2
 - energy futures, 16, 113, 152
 - future-making, 89, 92, 102
 - imagined, 16, 93, 96, 101, 112–14
 - of Poland, 123
 - water, nationalism and, 94
- Gandhi, Rajiv, 31
- gas. *See also* greenhouse gas
- discovery of, in Netherlands, 135–36
 - extraction of, 10, 133–52, 190
- General History of Ecuador* (González Suárez), 56
- genetic mutation, radiation and, 42
- geo-metrics, of power, 9
- geontopower, 6
- geopolitics, 5
- GHG. *See* greenhouse gas
- globalization, 43–44
- Global North, 11, 26, 45n2, 45n4
- Global South, 11, 26, 43, 134
- González Suárez, Federico, 56
- ‘good life,’ 6
- good living (*sumak kawsay*), 63–65, 70–71
- Gorakhpur Nuclear Power Plant, 41
- Gorbachev, Mikhail, 31
- governance
- electropolitics and, 25
 - energy politics and, 5
 - of life, 6
 - nature of contemporary, 192
 - new forms of, 7–8
 - resource governance, 90
- government, 26
- grid government, 44
 - of Poland, 121
 - relationships with, 142–44
 - wood and, 174–76
- governmentality, 11, 13, 26
- Green Effort Group, 113
- greenhouse gas (GHG), 8, 119
- grid, 7, 27, 43–44
- heating practices, 14, 167–68, 172–76
- hierarchies, 2, 34
- High, Mette, 3
- human development, 2
- human rights, 2
- hydroelectricity, 54
- capacities for, 11, 66
 - grid-bound, 72–73
- hydronationalism, 82
- hydropower, in Nepal, 12, 81–104

- hydropower development, 86,
105nn1–3
intensification of, 103
shareholder model of, 89, 185
- IAEA. *See* International Atomic Energy Agency
- IERAC. *See* Ecuadorian Institute for Agrarian Reform and Colonization
- imaginaries
of nationhood, 7
of productivity, 110
- IMF. *See* International Monetary Fund
- India, 25–44, 45n1, 86, 90, 93–97
India-US civilian nuclear agreement, 30–31
- indigenous communities, 55–56
enthusiasm of, 95
mobilization of, 63
- indigenous leaders, in Ecuador, 52
- Indigenous movements, 61–64, 70
- inevitability syndrome, 15
- infrapolitics, 6
- infrastructures
carbon reduction, 116–21
costs of constructing electric, 8
deployment of energy, 6
emotions and, 9
energy, 1, 4
- International Atomic Energy Agency (IAEA), 31
- International Monetary Fund (IMF), 52
- Itaipú Dam, 11
- John, Anthony, 38, 40
- knowledge, 2, 5, 186
culture and, 55
expert, 187
hegemonic, technological, 15
role of, 134
scales of, 187
of wood, 170–73
- knowledge-making, 16
- Kudankulam Nuclear Power Plant, 12, 24–25, 44, 145, 188
history of, 31–32
protests against, 38–41
- labour coercion, 55
- land distribution, in Ecuador, 59
- landscape, 9, 59, 157
- Law on Energy Transition and Green Growth (TECV Law), 163
- marginalization, 145
of citizens, 152
of communities in Global South, 43
cultural and political, 13
- materialities
brutal, 11
energy, 1
of ruin, 13
- Mbembe, Achille, 6, 28–29, 187–88
- migrants, 98
- migration, 92
- militarization, 25, 37
- mineral rights, 137–38
- modernity, 6–7, 57, 186
- Mora, Ayala, 55
- Morawiecki, Mateusz, 121–22
- Moreno, Lenin, 67
- Mugilan, R. S., 41
- multi-sited ethnography, 8, 45n1
- Nader, Laura, 2
- narratives
collected, 142–43, 152n1
of hydropower in Nepal, 12
nationalist, 15
neoliberal, 1
- nation, climate and, 189–93
- National Forests Office, France (ONF), 158–59, 164
- nationalism, 6, 94
- nationalization, 9
- nationhood, imaginaries of, 7

- necropolitics, 6, 28, 33
 neo-Brahmanism, 33–34
 neoliberal deregulations, 15
 neoliberalization, 65, 192
 Nepal, 189–90
 citizens and water in, 92
 climate change impact on, 88
 earthquake in, 90
 hydropower in, 12, 81–104
 national security in, 34
 ‘Nepalko Paani, Janatako Lagaani’
 refrain (NPJL), 84–91, 99–104
 Nepal Stock Exchange, 89, 97
 Netherlands, 13–14
 discovery of gas in, 135–36
 earthquakes in, 133, 136–52
 protests in, 145, 148
 non-governmental organizations
 (NGOs), 6–7, 63, 115
 NPJL. *See* ‘Nepalko Paani, Janatako
 Lagaani’ refrain
 NSG. *See* Nuclear Suppliers Group
 nuclear biopower, 28–29
 nuclear energy, 30–31
 nuclear installations, 6
 nuclear power plants, 28–29, 36.
 See also Kudankulam Nuclear
 Power Plant
 nuclear power stations, 29
 Nuclear Suppliers Group (NSG),
 31
 nucolonization, 35
 off-grid systems, 9–10
 Officials Secret Act of 1923, 32
 oil
 as currency, 67
 extraction of, 65
 indebtedness built on, 74
 supplies of, 160
 switch to, 9
 oil imperialism, 3
 oil subsidies, 11–12
 ONF. *See* National Forests Office
 oppression, displacement and, 11
 Özden-Schilling, 7–8
 parallel economy, 169–72
 People’s Movement Against
 Nuclear Energy (PMANE), 35,
 37–38
 petrocultures, 5
 PMANE. *See* People’s Movement
 Against Nuclear Energy
 Poland, 8, 109
 carbon reduction infrastructure
 in, 116–21
 energopolitics in, 112–16
 energy politics in, 127–28
 EVs in, 123–26, 190
 governments of, 121
 Police, 38–39
 political anthropology, 1, 184, 193
 political ordering, statecraft and,
 7–9
 political resistance, 9
 political structures, 7, 10, 159–62
 political theory, energy and, 16
 politics
 of electricity generation, 11
 prognostic, 102
 politics of death, 6
 post-colonialism, 5–6
 Povinelli, Elizabeth, 6
 power
 biopolitics and, 27
 centralization of, 7
 energy, culture and, 5
 geo-metrics of, 9
 soft, 5, 28
 structural, 74
 Power Summit, 81–84, 101
 practices, emotions and, 5
 productivity, 123–27, 191
 of biopolitics, 187–88
 concept of, 111
 death, waste and, 15
 Programme for Electromobility, 124
 progress
 in Ecuador, 70–71
 energy and culture, 3
 protesters
 anti-nuclear, 38–42

- death of, 39–40
 financial and psychological
 destruction of, 41–42
 protests
 in Netherlands, 145, 148
 by PMANE, 37–38
 psychological aid, 139–40, 153n6
- racial minorities, passive
 extermination of, 33–34
- radiation, genetic mutation and, 42
- radioactivity, 28
- Rajasekar, C., 40
- renewable energy, 3, 9–10, 69, 117,
 142
- resistance, 171
 acts of, 147–48
 community of, 149–50
 reaction and, 183
- resource colony, 144–45
- resource extraction, 2, 9, 119
- resource governance, 90
- resources, availability of, 191
- resource sovereignty, conservation
 and, 13
- responsibility, social, 11
- rhythmic refrains, 10, 83–88
- Rodríguez Lara, Guillermo, 53
- Roslin, J., 40
- Sarayaku Accords, 62
- Satluj Jal Vidyut Nigam (SJVN),
 93–96
- science and technology studies
 (STS), 3–4
- seismicity, 133, 148
- sexual assault, 41
- shareholder, 101, 104
 capitalism, 90
 citizenship, 10
 trend, 91
- shareholder model, of hydropower
 development, 89, 185
- shift of the energetic matrix (*cambio
 de la matriz energética*), 53,
 67–74
- SJVN. *See* Satluj Jal Vidyut Nigam
- slavery, 29, 55
- slow violence, 38
- Smith, Jessica, 3–4
- social and cultural projects, 5
- social cohesion, 7
- social divisions, 145–46
- sociopolitical inquiry, 1
- sociotechnical imaginaries, 10
- solar power, 73–74, 142, 157, 166
- solidarity
 communities and, 16, 192–93
 cultural event for, 39
- sovereignty
 Citizens Revolution and, 65–66
 representations of, 12
 two-dimensional representations
 of, 86–87
 volumetric, 87, 100
- state, 2
 anthropology of, 4
 biopolitics of, 111
 energopower and postcolonial, 28
 Foucault on modern, 28
 as overdeveloped, 26
 vengeance of, 40
- state-citizen relationship, 9–10
- statecraft, 6, 7–9, 182
- stoves, 167–74
- STS. *See* science and technology
 studies
- studying up, 2
- sumak kawsay* (good living), 63–65,
 70–71
- technological progress, 70–71
- technopolitics, 182
- TECV Law. *See* Law on Energy
 Transition and Green Growth
- thermodynamics, 2
- de Tocqueville, Alexis, 184
- tourism initiatives, 5
- transnational activist networks, 25
- transparency, accountability and, 26
- Udayakumar, S. P., 35–37, 42

- Upper Tamakoshi Hydropower Project (UTKHP), 85, 97–102
- Vasconez Salvador, Oliverio, 53–55, 69
- violence, 5–6, 42
 - authoritarianism and, 26
 - extraction and, 183
 - slow violence, 38
 - spectrums of, 28
- volumes, of water, 86–87
- waste
 - productivity, death and, 15
 - radioactive, 31
 - waste storage, 118
- water
 - citizens and, in Nepal, 92
 - electricity and, 65–69
 - nationalism, future and, 94
 - seasonality of, 88
 - volumes of, 86–87
 - as wealth, 99
- waterscapes, 87
- wind, 4, 43, 74, 116, 142, 149
- wind turbines, 26, 32
- wood, 14, 156, 157–76, 191
- World Commission on Dams, 89