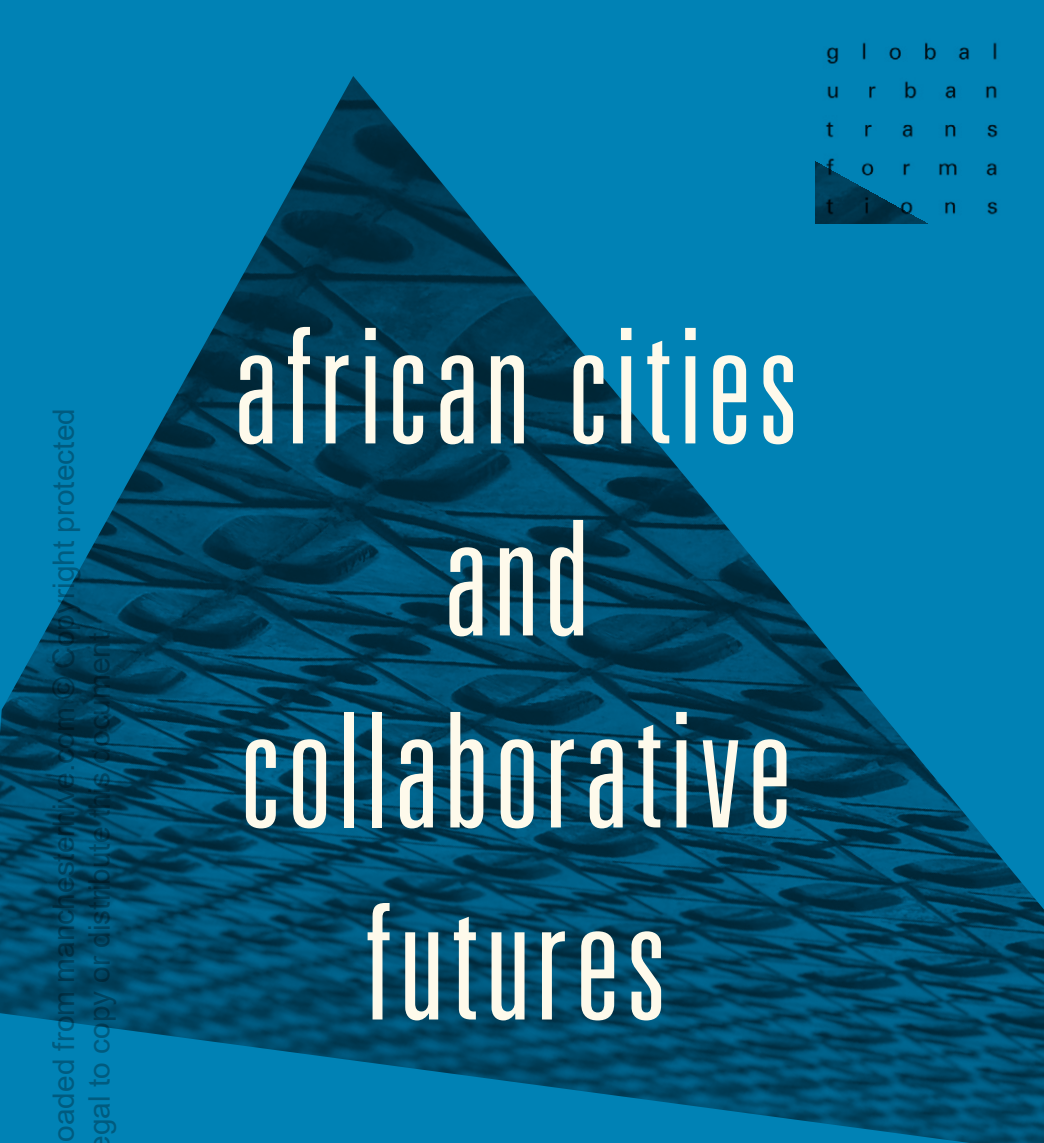


g l o b a l
u r b a n
t r a n s
f o r m a
t i o n s



african cities
and
collaborative
futures

urban platforms and metropolitan logistics

edited by michael keith and
andreza aruska de souza santos

African cities and collaborative futures

Downloaded from manchesterhive.com © Copyright protected
it is illegal to copy or distribute this document



Manchester University Press

g l o b a l
u r b a n
t r a n s
f o r m a
t i o n s

Series Editors
Michael Keith and Susan Parnell

Previously published

Urban transformations and public health in
the emergent city EDITED BY MICHAEL KEITH AND
ANDREZA ARUSKA DE SOUZA SANTOS

African cities and collaborative futures

Urban platforms and
metropolitan logistics

*Edited by Michael Keith and
Andreza Aruska de Souza Santos*

Manchester University Press

Copyright © Manchester University Press 2021

While copyright in the volume as a whole is vested in Manchester University Press, copyright in individual chapters belongs to their respective authors.

This electronic version has been made freely available under a Creative Commons (CC-BY-NC-ND) licence, which permits non-commercial use, distribution and reproduction provided the editors, chapter authors and Manchester University Press are fully cited and no modifications or adaptations are made. Details of the licence can be viewed at <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Published by Manchester University Press
Altrincham Street, Manchester M1 7JA
www.manchesteruniversitypress.co.uk

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

ISBN 978 1 5261 5536 8 hardback
ISBN 978 1 5261 5535 1 open access

First published 2021

The publisher has no responsibility for the persistence or accuracy of URLs for any external or third-party internet websites referred to in this book, and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

Cover design: Daniel Benneworth-Gray
Photo: Claire Forbes on Unsplash

Typeset
by New Best-set Typesetters Ltd

Contents

| | |
|--|------|
| <i>List of figures</i> | vii |
| <i>Series editors' foreword</i> | viii |
| <i>Notes on contributors</i> | ix |
| <i>Acknowledgements and dedications</i> | xvi |
| 1 Introduction: urban presence and uncertain futures in African cities – Michael Keith with Andreza Aruska de Souza Santos | 1 |
| 2 At the city edge: situating peripheries research in South Africa and Ethiopia – Paula Meth, Alison Todes, Sarah Charlton, Tatenda Mukwedeya, Jennifer Houghton, Tom Goodfellow, Metadel Sileshi Belihu, Zhengli Huang, Divine Mawuli Asafo, Sibongile Buthelezi and Fikile Masikane | 30 |
| 3 Uncertain pasts and risk-sensitive futures in sub-Saharan urban transformation – Mark Pelling, Alejandro Barcena, Hayley Leck, Ibidun Adelekan, David Dodman, Hamadou Issaka, Cassidy Johnson, Mtafu Manda, Blessing Mberu, Ezebunwa Nwokocha, Emmanuel Osuteye and Soumana Boubacar | 53 |
| 4 Beyond self-help: learning from communities in informal settlements in Durban, South Africa – Maria Christina Georgiadou and Claudia Loggia | 73 |

| | | |
|---|---|-----|
| 5 | Turning livelihood to rubbish? The politics of value and valuation in South Africa's urban waste sector – Henrik Ernstson, Mary Lawhon, Anesu Makina, Nate Millington, Kathleen Stokes and Erik Swyngedouw | 96 |
| 6 | 'Candles are not bright enough': inclusive urban energy transformations in spaces of urban inequality – Federico Caprotti, Jon Phillips, Saska Petrova, Stefan Bouzarovski, Stephen Essex, Jiska de Groot, Lucy Baker, Yachika Reddy and Peta Wolpe | 121 |
| 7 | Risky urban futures: the bridge, the fund and insurance in Dar es Salaam – Irmelin Joelsson | 143 |
| 8 | Conclusion: from an 'infrastructural turn' to the platform logics of logistics – Michael Keith with Andreza Aruska de Souza Santos | 166 |
| | <i>Index</i> | 185 |

Figures

| | | |
|-----|--|----|
| 2.1 | Molweni, eThekweni (Mark Lewis) | 32 |
| 2.2 | Tulu Dimtu, Addis Ababa (Mark Lewis) | 33 |
| 2.3 | Examples of multi-nodal cases: (a) Northern eThekweni and (b) Yeka Abado (Adapted from (a) Wazimap and (b) Google Maps) | 43 |
| 3.1 | Blockages and opportunities for urban risk transitions (M. Pelling, H. Leck, L. Pasquini, I. Ajibade, E. Osuteye, S. Parnell, S. Lwasa, C. Johnson, A. Fraser and A. Barcena (2018). 'Africa's urban adaptation transition under a 1.5° climate'. <i>Current Opinion in Environmental Sustainability</i> , 31: 12) | 55 |
| 4.1 | Self-help housing in Namibia Stop 8 (ISULabaNtu project team) | 80 |
| 4.2 | Self-building in Piesang River (ISULabaNtu project team) | 83 |
| 4.3 | Informal dwellings in Havelock settlement (ISULabaNtu project team) | 86 |

Series editors' foreword

This book series addresses the causes, dynamics and understandings of global urban transformation in the twenty-first century. We live in an era when numerically the greatest number of people moving to cities are in the parts of the globe normally characterised as the global south. It is also the case that in recent years much of the most interesting, innovative and insightful work around contemporary urbanisms has addressed the global condition through a disposition that speaks internationally both from and to this new cartography.

We have put together this series with Manchester University Press to reflect and capture these trends and realities and look for new voices that might articulate and curate these new realities through fresh lenses.

We look to publish work that is:

International, working within a global frame of reference, where cases are generative of larger transnational processes. The series aims to move urban studies to a focus that transcends a traditional separation of literatures of the global south and global north.

Interdisciplinary, originating mostly but not entirely from within the social sciences. The orientation of the series seeks work that rethinks interdisciplinarity in an urban context, drawing on insights from natural sciences and humanities as well as the social sciences.

Informed by the past but future oriented, addressing the challenges of the emergent cities of the twenty-first century. This perspective values the particularities of history and geography; the path dependencies of urban change; and the realities of spatial variation. It recognises the predictive value of new methods of data collection and technological change but considers that such a 'future' city orientation moves beyond extrapolation from trend to a more multidimensional sensibility.

Addressing multiple audiences working across conventionally defined urban scholarly and professional interests (such as architecture, planning, city politics and urban regeneration), privileging work that has value for city thought leaders and activists, the general reader as well as students and the specialist academic audience.

Multi-scalar, recognising the value of different scales of analysis, commissioning work that focuses on geographies that range from trends in rapidly expanding megacity regions, smaller towns or the dynamics of neighbourhood change.

Multi-actor, welcoming contributions that detail stakeholder interactions that drive urban change, including tracking the power dynamics and institutional politics between residents, civil society, the state, business or traditional authorities.

Michael Keith and Susan Parnell

Notes on contributors

Ibidun Adelekan is a Professor in the Department of Geography at the University of Ibadan, Nigeria. Her research interests are in the areas of climate and society interactions, human dimensions of global environmental change, and urban risks.

Andreza Aruska de Souza Santos (Editor) is Lecturer at the Latin America Centre and Director of the Brazilian Studies Programme at the University of Oxford. She works on participatory politics in cities in the global south. She is the author of the book *Politics of memory: Urban cultural heritage in Brazil*, which examines the relationship between nationalism, collective memory and the editing of history through urban design.

Divine Mawuli Asafo is a PhD candidate in the Department of Urban Studies and Planning at the University of Sheffield. His research focuses on the nexus between land conflicts and individual housing development in peri-urban Accra, a study which examines the extent to which tenure uncertainty in customary land affects the individual house-building processes in those areas.

Lucy Baker is a Senior Research Fellow at the Science Policy Research Unit (SPRU), University of Sussex. Her three main areas of research are: ownership, finance and renewable energy; governing electricity in a time of technological disruption; and technological capabilities and global production networks in renewable energy.

Alejandro Barcena is a Research Associate in the Department of Geography at King's College London. His research interests include the production of urban risk and its relation with urbanisation processes in the global south.

Soumana Boubacar is Head of Department of the Rural Sociology and Economics Faculty of Agronomy, Lecturer in Agroecconomics and President of the University Life Observatory (OVU) at Abdou Moumouni University, Niamey, Niger.

Stefan Bouzarovski is Professor of Human Geography at the University of Manchester. His research is on energy poverty, justice and equity.

Sibongile Buthelezi is Research Assistant at the School of Built Environment and Development Studies, University of KwaZulu-Natal (UKZN), South Africa. Her main focus of research is in literature reviews, field surveys (quantitative and qualitative), community research training and coordinating fieldwork, in-depth interviews, focus groups and processing of survey data.

Federico Caprotti is an Associate Professor in Human Geography at the University of Exeter. His research is on urban smart and environmental futures.

Sarah Charlton is an Associate Professor in the School of Architecture and Planning at the University of the Witwatersrand and Associate Director of its Centre for Urbanism and Built Environment Studies (CUBES). Her research focuses mainly on South Africa and includes low-income housing policy and practice, alternative accommodation strategies and the everyday lives of poor city residents, as well as the drivers and inhibitors of more inclusive cities.

David Dodman is Director of the Human Settlements Group at the International Institute for Environment and Development (IIED), and a Senior Teaching Fellow in the Development Planning Unit, University College London.

Henrik Ernstson is Lecturer in Human Geography at the University of Manchester and Honorary Associate Professor at the African Centre for

Cities at the University of Cape Town. He is developing a situated approach to urban political ecology with a special focus on southern and postcolonial urbanism.

Stephen Essex is Associate Professor in Geography at the School of Geography, Earth and Environmental Sciences, University of Plymouth. His research is on policy formulation, implementation and analysis with regards to planning.

Maria Christina Georgiadou is a Reader in Construction at the School of Applied Management, University of Westminster. She has a wide range of research interests including energy efficiency and future-proofing of residential buildings and sustainable communities. She has led interdisciplinary research projects on urban regeneration, construction management and low-cost housing.

Tom Goodfellow is a Senior Lecturer in the Department of Urban Studies and Planning at the University of Sheffield. His research concerns the political economy of urban development in Africa, with a particular focus on Rwanda, Uganda and Ethiopia.

Jiska de Groot is a Senior Researcher at the African Climate and Development Initiative, University of Cape Town. Jiska's research interests are in the social processes surrounding energy access, low-carbon energy transitions, and energy and climate justice.

Jennifer Houghton is a Postdoctoral Research Fellow at the Urban Futures Centre, Durban University of Technology, and an Associate Research Fellow of the Graduate School of Business and Leadership at the University of KwaZulu-Natal. Her research focuses mainly on urban transformation in South Africa, with a particular interest in economic development programmes and improvements in quality of life through economic and skills-development initiatives.

Zhengli Huang gained her PhD from Tongji University in 2017 with a thesis focused on informal settlements in cities in Africa and the dynamic nature of these settlements. She recently completed work on a project about China's impact on African urbanisation, taking Ethiopia and Uganda as case studies, and is now working as an independent researcher.

Hamadou Issaka is a Research Fellow at the Institute for Research in Human Sciences (IRSH), Department of Geography and Spatial Planning, Abdou Moumouni University of Niamey, Niger. His research interests include socio-environmental risks, vulnerabilities and urban morpho dynamics.

Irmelin Joelsson is a doctoral candidate in the Institute of Social and Cultural Anthropology/COMPAS at the University of Oxford. Irmelin's research explores urban transformation in Dar es Salaam, Tanzania, through an ethnography of the intersection between instances of insurance and infrastructure.

Cassidy Johnson is an Associate Professor at the Bartlett Development Planning Unit (DPU), University College London. Her academic interests are in integrating disaster risk into development, post-disaster recovery and the role of local governments, civil society and communities in this.

Michael Keith (Editor) is the Director of the PEAK Urban programme on global urban futures, working between China, Colombia, India and South Africa and the Centre on Migration Policy and Society at the University of Oxford. He was also the Director of the Economic and Social Research Council (ESRC) Urban Transformations Programme (2015–20). His own research has focused on the interface of migration and urbanism.

Mary Lawhon is an Assistant Professor at the University of Oklahoma. Her research interests include urban political ecology, infrastructure politics and postcolonial theory in African cities.

Hayley Leck is a development geographer whose research focuses on climate-resilient development in the global south, with particular expertise in urban climate adaptation, governance and disaster risk management.

Claudia Loggia is Senior Lecturer in Housing at the University of KwaZulu-Natal. She has extensive experience and consultancy work in the areas of energy efficiency, building design and retrofit, low-income housing design and informal settlement upgrading, smart cities, renewable energy and green infrastructure.

Anesu Makina is a PhD candidate at the Department of Geography and Environmental Sustainability (DGES) at the University of Oklahoma. Her research interests include urban informality and political ecology.

Mtafu Manda is a Senior Lecturer in the Built Environment Department, Mzuzu University and Urban Research & Advocacy Centre (URAC), Malawi.

Fikile Masikane is a PhD candidate in the Department of Sociology at the University of the Witwatersrand, Johannesburg, focusing on our understanding of waged work in relation to black liberation after 1994. She is a researcher for various organisations and her most recent work was with Advocate Tembeka Ngcukaitobi's book, *The land is ours*.

Blessing Mberu is a Senior Research Scientist and Head of Urbanization and Wellbeing at African Population and Health Research Center and an Honorary Professor of Demography and Population Studies at the University of the Witwatersrand, Johannesburg.

Paula Meth is a Reader in Urban Studies and Planning at the University of Sheffield and an Associate Fellow of the School of Architecture and Planning at the University of the Witwatersrand, Johannesburg. She focuses on social and everyday lives within cities of the global south, including South Africa, India and Ethiopia.

Nate Millington is Presidential Fellow in Urban Studies in the Department of Geography and the Manchester Urban Institute at the University of Manchester. His research focuses on the politics of the urban environment in an era of climate crisis, with particular interests in the governance of water and waste.

Tatenda Mukwedeya is a Lecturer in Sociology at the University of the Witwatersrand, Johannesburg. His research interests are in political sociology with a particular focus on politics of the poor, local governance, the local state and everyday lives.

Ezebunwa Nwokocho is Professor of Sociology at the University of Ibadan, Nigeria and Research Associate in public management, governance and public policy at the University of Johannesburg.

Emmanuel Osuteye is Research Fellow at the Bartlett Development Planning Unit (DPU), University College London, and works on the interface between development and environmental concerns in the urban global south, including the links between urban sustainability and resilience.

Mark Pelling is Professor of Geography at King's College London and seconded to the Global Challenges Research Fund as its Challenge Leader for Resilience and Climate Change. His expertise is urban climate change adaptation and disaster risk reduction.

Saska Petrova is a Senior Lecturer in Geography at the School of Environment, Education and Development, University of Manchester. She carries out research in political ecology, inequality and vulnerability with regards to energy, and crisis, financialisation and sustainable cities.

Jon Phillips is a Lecturer at the University of Cambridge's Centre for Development Studies. He is interested in relationships between society and environment, which guide his research on the production of resources and the governance of energy in the developing world.

Yachika Reddy is a Project Manager at Sustainable Energy Africa (SEA), Cape Town. Her experience includes project management, training, facilitation, research and data analysis in wide-ranging and complex energy and climate change projects.

Metadel Sileshi Belihu is Researcher and Lecturer at Emerging City Lab Addis Ababa (ECL-AA) and is currently completing her doctoral studies in the Bauhaus University, Weimar. She has a special interest in urbanisation processes in the global south, specifically in Ethiopia, with a particular focus of integrating socio-spatial dimensions in housing, informality, activities and common spaces.

Kathleen Stokes is a Postdoctoral Research Fellow in the Department of Geography at Trinity College Dublin. Her research focuses on political geographies of urban space, infrastructures, labour and citizenships in (post)colonial cities.

Erik Swyngedouw is Professor of Geography at the University of Manchester. His research focuses on political ecology, urban governance and emancipatory politics.

Alison Todes is Professor of Urban and Regional Planning at the University of the Witwatersrand, Johannesburg. Her work focuses on planning and spatial change in cities and regions, with a particular focus on questions of spatial transformation in South Africa.

Peta Wolpe is Managing Director of Sustainable Energy Africa (SEA), Cape Town. She has worked on a range of projects including energy and climate change strategy development, energy poverty, low-carbon development and vertical integration between local and national government.

Acknowledgements and dedications

A number of people gave great support to the work that went into making this volume come to life as an edited collection. Colleagues at the African National Research Foundation (NRF) in association with the Human Sciences Research in South Africa and the Economic and Social Research Council (ESRC) in the UK were incredibly supportive through the challenging process of assembling a cross-national interdisciplinary programme of research on cities in Africa. In particular Jeremy Neathey and Julie McLaren were there at the ESRC when it mattered, persuading all partners to commit to funding the enterprise and believing in its value. Colleagues at the African Centre for Cities were extremely hospitable in hosting the workshop at which most of these chapters were presented in their early stages. Colleagues at COMPAS including Emma Newcombe, Mikal Ann Mast, Nathan Grassi, Julia Pointer, Karla-Maria Perez-Blanco and Vicky Kingsman all worked behind the scenes in Oxford to make international collaboration logistics a mobile reality as much as an emergent theoretical concern of the volume. Several people have read and contributed to the detail of the volume and particular thanks are due to AbdouMaliq Simone, Sue Parnell and two anonymous referees for reading and making constructive suggestions on the manuscript. Tom Dark has been incredibly supportive of the production of a book series that relates back to and beyond the ESRC Urban Transformations programme. The volume has also benefited significantly in its genesis in contributions and support from the PEAK Urban programme linking researchers in Bangalore, Cape Town,

Medellín and Beijing. Perhaps more than any other single individual, Peter Grant has put an enormous amount of editorial work into this and other published work from the ESRC Urban Transformations programme that is too often both unseen and invisible.

We would like to dedicate the volume to the nameless numbers of scholars, researchers, activists and city makers in Africa and the UK that have died as result of the COVID-19 pandemic. We hope that this volume might make a small contribution to our thinking and their endeavours shaping better urban futures.

Downloaded from manchesterhive.com © Copyright protected
it is illegal to copy or distribute this document

Introduction: urban presence and uncertain futures in African cities

Michael Keith with Andreza Aruska de Souza Santos

Distance is not a safety zone but a field of tension.

Theodor Adorno (*Minima Moralia*)

In their collection *Africa's urban revolution* Sue Parnell and Edgar Pieterse argue that, 'as the continent that will be disproportionately shaped by the way in which society thinks about cities, Africa must assume an increasingly central position in the urban imaginary of theorists and practitioners.' They suggest that African cities demonstrate rapidly growing agglomerations of building and dwelling but that 'most African countries are not able to capitalise on this demographic shift because urban residents are structurally trapped in profoundly unhealthy conditions that impact negatively on productivity, economic efficiencies and market expansion' (Parnell and Pieterse, 2014: 15).

At the heart of this assertion is the sense that as cities grow they mobilise vast resources of investment and major structural changes to the built environment in terms of systems of transport, drainage, sewage and electrification systems, places to work and places to live. Urban transformations disrupt and reconstruct the relationship between humanity and nature, disturbing existing ecosystems and generating new levels of carbon emission, domestic and industrial sources of (rarely low-carbon) energy. But these changes are not material alone. They reconfigure the ways in which cities choose (for better and for worse) to govern their citizens, denizens and occasional dwellers. Their built forms also assume an agency

of their own. Before they are constructed, land is often cleared, people displaced, real estate traded. Sacrifices and interventions in the present day are frequently justified in terms of long- or medium-term futures. Attempts to rationalise the city are also commonly attempts to tame it, to control its morphology and to optimise its demography. And the people who live in cities appropriate these interventions. Both material infrastructures and the logistics that link them are mediated by the histories that weigh on the present, the deep cultures of the everyday and the experimental and inventive ways in which those who live in cities do not always choose to behave in the ways they are meant to.

Positioning questions of critical distance

These combinations of cultural practice of vernacular skills and crafts, international forms of professional and scientific knowledge and emergent landscapes of built environment foreground the city as a space of never-ending mutation. Nowhere is this combination of the material and the cultural more urgently demonstrated than in contemporary Africa, the part of the globe witnessing the most rapid urbanisation as the third decade of the twenty-first century begins. In this collection we have brought together a series of interventions in the study of African cities that address both academic debates and a more general audience in city halls, civil society and engaged communities. It explores practically how African cities might consider their futures more effectively. Each of the chapters in turn examines the sense in which the rapid growth of African cities reconfigures the relationship between urban social life and the built environment of housing, energy, transport, waste and transport infrastructures.

The authors share a rooting in the Economic and Social Research Council (ESRC)'s Urban Transformations programme.¹ One element of the programme involved a partnership between scholars in Africa and the UK with support from both the ESRC and the South African National Research Foundation in association with the (South African) Human Sciences Research Council. The volume is the result of that collective endeavour to link researchers across international borders to think about the challenges confronting African cities. All members of the endeavour were obliged to commit to work that was:

- *Interdisciplinary*, in particular recognising the combinations of culture, craft and science in the shaping of the city, an imperative to bring

together the strengths of the social sciences in working with both the natural sciences and the humanities.

- *Working across urban professional interests* to address policy communities and city stakeholders.
- *Multi-scalar*, recognising the challenges of geographical scale that structure the contemporary city globally, from the renewed interest in neighbourhood studies to the complex formations of the megacity.
- *Internationally comparative*, acknowledging that urban studies have moved beyond both a celebration of the iconic urban experiences of the global north and a straightforward valorisation of scholarship of the global south.
- *Future oriented*, working not only from the projection of past trends but also through an analytical focus on the challenges of the emergent city.

All of the authors of the volume have shaped their work to address these criteria. But the practices of working across borders is rarely straightforward: borders of training, borders of profession, borders of knowing – all generate communities of interest and boundaries of separation that sometimes reinforce and sometimes undermine borders of geography and history. And so the collection starts by asking two fundamental questions. To what extent does the interdisciplinary field of urban studies imply a ‘synthesis’ of forms of knowledge that can help us understand how the city works, how to ‘see like a city’ in twenty-first-century Africa? Or are different approaches creating exchanges and comparisons of ways of making the world visible through very different lenses that are fundamentally incommensurable?

As we collected and curated this collection, these questions in turn raised a series of three secondary issues that are provoked by the architecture of our endeavour, addressing in turn the nature of the interdisciplinary in urban studies, the practices and ethics of research and the dominant paradigms of social science research on cities.

In terms of the *nature of interdisciplinarity in urban studies*, the collection intervenes to suggest that it is imperative to move beyond pious appeals for scholars of different backgrounds to work together. Instead it considers a more contentious domain. The collection addresses how different forms of knowledge and science ‘land’ in African cities, whether it is conventional understandings of housing markets, received wisdoms on city resilience or transport planning or the ‘modernisation’ of waste, water and energy

systems. It explores what it might mean for citizens and city halls to consider what happens if different forms of knowledge production – for example urban economics, risk and resilience, ecosystems analysis and engineering logics – are deemed fundamentally incommensurable.

In this sense it makes an old case for cities to understand the importance of local context in shaping the possibilities of their own futures. It also calls for a study of how different knowledge systems open up different options for urban futures in Africa and suggests that the trade-offs and incommensurabilities between these forms of knowledge are central to any consideration of city futures. *Commensuration* is in this sense a regime of urban knowledge mediation and an everyday feature of city governance practices. Most people working in city halls recognise this as self-evident as they balance the demands of conflicting interests and diverse forms of professional expertise in planning, welfare, regulation and economic development. They confront daily realities of 'least worst' interventions, the rationing of scarce resources and the clumsy solutions that do not always work when confronting 'wicked' problems. Yet all too often, this is something that scholars in the business of providing 'golden bullet' solutions to single systems in transport dilemmas, building homes or city electrification overlook.

In terms of the *ethics of research*, the logic of the shared endeavours of the authors of this volume has a significant implication for the organisation of the academy. Academic power commonly reflects deeper economic and historical relations, privileging particular sites of knowledge production. This edited collection argues that twenty-first-century urban research, particularly in an African context, demands new forms of collaboration that recognise these institutional configurations. These include collaborations between cities and scholars – scholars working across disciplinary boundaries in the humanities, natural sciences and social sciences, and scholars working across geographical boundaries in the global south and the global north. Putting these principles into practice, the volume consequently comprises six substantive chapters, an introduction and conclusion, in total involving over forty authors, mostly from Africa and the UK but also of nationalities from across the world. This in turn implies a different way of thinking about research practice, never erasing the power relations of the academy but at least acknowledging them and seeking to address their implications.

In terms of the *dominant paradigms in urban research*, the collection contributes to a lively argument that some of the most exciting work on

cities internationally is emerging from the challenging experiences of the African continent. They speak back to the realities of the global north and inflect the ways we might rethink Chicago or Paris as much as Lagos or Nairobi. The edited collection evidences some of the engaged and practical dimensions of what these claims might mean in terms of cutting-edge research contributions from leading scholars in the field.

The chapters all reflect original research, the overwhelming majority of which emerges from collaborations between institutions of the global north and the global south. Most of the contributions are from South Africa, although three chapters draw cases from a much wider set of locations across sub-Saharan Africa. This in turn is partly a reflection of the relative institutional power of the South African university system. Chapters consider a number of locations across the continent, but South African cities appear more often than others. When this volume is making a case for the importance of consideration of the legacies of history and geography in shaping urban futures, it also raises the question of whether South African urbanisms should be seen as particular to or shared in common with the rest of the continent.

However, as the well-regarded political economist and postcolonial historian Mahmood Mamdani has argued in his award-winning book *Citizen and subject*, 'there is a historical specificity to the mode of rule on the African continent' (Mamdani, 1996: 294). The city plays a generic role in most of postcolonial Africa which makes the urban in South Africa exemplary rather than exceptional to a continental trend. Mamdani's framing is both provocative and contested as reception of his work at the time and subsequently demonstrates (Aseka et al., 1997; Chen, 2017; De Goede, 2017; Kamola, 2011). His work is also powerful because in these and other texts he emphasises the trajectories of *histories in place* that undermine flat readings of the present day in favour of deeper readings of specific historical and geographical conjuncture. More significantly, his arguments undermine what was seen as South African exceptionalism and are founded on a reading of colonial legacies that starts with what is continentally shared (whether in post-apartheid South Africa or contemporary Darfur) but rests on what is historically particular.

Mamdani argued that the bifurcation of power in colonial Africa structured the organisation of the rule of populations and the architecture of the state. It was generated from the deep logics of legal, formal and informal classification of the governed in colonial settings resulting from the continent's distinctive colonial experience. The city was a mode of

rule, historically rooted in colonial legacies structurally distinguishing between the rural and the urban but also defining the relational link between the two. In the bifurcation of the postcolonial, states were left with urban systems that relied on civil power and rights (with the colonised excluded on the basis of race) juxtaposed with systems of rural governance that appealed to tradition and culture to enforce rule by 'custom'. So for Mamdani in this sense apartheid and the South African experience were less 'exceptional' to the rest of Africa than was commonly argued. South African cities were in some ways the ultimate exemplification of the colonial lock-ins of African urbanism; their study cannot be simply 'exported' to explain other national trajectories, but their underlying logic frames the historical legacies of the continent as a whole. In this spirit we are careful about the use of the couplet 'African city' in the collection. More specifically the volume is weighted more to anglophone than lusophone or francophone settings, a recognised limitation notwithstanding some significant continental similarities of colonial history. But instead the authors make clear their setting in specific urban contexts in Cape Town, in Dar es Salaam, in Karonga or Ibadan. In this sense the volume as a whole is locally sourced but globally oriented, addressing international perspectives framed by particularly pressing local contexts.

What makes the African city particular? To what extent is the city in Africa part of a subset of concentrations of humanity that we call cities that will over time display the characteristics of what was once evoked as the 'urban age', the rules, laws, and evolutionary forms of urban science?

In one sense these two questions nuance our starting position and open a discussion of this volume that is central to the future of urban studies in Africa in particular but also globally. Across urban studies the call for 'interdisciplinary' or 'cross-disciplinary' modes of scholarship and research have become something of a cliché. All the contributors in this volume share a commitment to bring together different forms of empirical evidence and diverse approaches to urban Africa. But what are the terms of trade in such pluralities? To what extent does the interdisciplinary field of urban studies imply a 'synthesis' of forms of knowledge that can help understand how the city works? If we take commensuration itself as a focus of our work, to what extent is it possible to fuse engineering, neoclassical economics, normative aid interventions addressed at those most in need and medical science into a singular way of seeing and thinking about how cities make sense in the present day and might structure their own futures more effectively? These are slightly more problematic questions.

They invoke the extent to which combinations of humanities, social science and natural science perspectives may throw together diverse approaches, dispositions and epistemologies of the city that are in structure, form and logic incommensurable. They also make problematic the geometry of critical distance on which research is commonly premised.

Diverse approaches to urban research in Africa

In one of the more cogently argued overviews of African urbanism, Somik Lall et al. (2017) in a 2017 World Bank analysis suggest that African cities are dysfunctional (cf. Macamo, 2018: 6). They lay out the structure of their argument in terms of the fundamental basic premises of economic theory. The failings of cities in Africa relate both to challenges in the urban form and to related weaknesses in the urban economic structure. In terms of urban form, the authors argue that evidence demonstrates that African cities are crowded, disconnected and costly (Lall et al., 2017: 13). 'Crowded' is a term juxtaposed with density, the former pejorative, the latter not. Crowded cities have weakly developed infrastructure and poorly managed access to formalised residential housing; the negative externalities of disorganisation outweigh benefits of concentration. They lack connectivity across urban space, fragmenting travel to work areas and diminishing the propensity to scale up growth. And Lall and colleagues argue further that wage costs and transaction costs are disproportionately high and so labour costs reduce return to investment.

These challenges in turn translate into significant – if not insuperable – weaknesses in the economic structure of urban transformation. Standard urban economics highlights the city as a driver of economic growth through agglomeration economies, economic diversity and associated developments of rich reservoirs of human capital (Glaeser, 2011; Glaeser and Gottlieb, 2009). But for Lall and colleagues high costs for food, transport and housing diminish the potential advantages of African urban agglomeration. Weak property rights and institutional flaws also generate extra costs. Consequently the cities of Africa are 'locked in' to non-tradable goods and services, rendering the megacities and other urban concentrations of the continent in some ways fundamentally parochial and starved of global investment. This lock-in is prompted particularly by the 'Dutch disease' of concentrations of economic activity in natural resource exports and by the inefficient urban morphologies attributed to sub-optimal working of land markets, property rights and zoning regimes.

The response to contemporary weaknesses in urban form and economic structure are straightforward:

To grow economically as they are growing in size, Africa's cities must open their doors to the world. They need to specialize in manufacturing, along with other regionally and globally tradable goods and services. And to attract global investment in tradables production, cities must develop scale economies, which are associated with successful urban economic development in other regions. (Lall et al., 2017: 13)

As with other less plausible and more boosterist studies such as McKinsey's championing of cities of the continent as the 'African lions' (McKinsey, 2016), the architecture of the scholarly argument is clear. Identify the lessons of urban form and economic structure from other parts of the world and develop this logic so that it lands in Africa. Economics, what Thomas Carlyle once called the 'dismal science', is transformed into analytically coherent, policy-friendly recipes for interventions in cities across the continent. A dismal science that draws on the medium- and long-term imperatives of a utilitarian calculus to make a case for the rationalisation of the future African metropolis. If cities in Africa can be made to look more like the successful engines of growth in other parts of the world, then majoritarian prosperity and economic development (however benefits are distributed) will follow.

In the post-Cold War decades, such science may have escaped the juxtaposition of development models that owed their legitimacy either to postcolonial appropriations of Soviet socialism or proxy interests of Western governmental geopolitical models of continental change. But fundamentally, a neoclassical economics toolkit that appeals to clarified property rights, minimised transaction costs, optimised resource allocation of factors of production and efficient independent judiciaries to regulate and minimise rent seeking and state-legitimated corruption speaks clearly to a plausible everyday policy prospectus. Thus realised, the structure and form of economic reason speaks powerfully to the futures of cities. But perhaps only so far.

When science is defined as a search for the universal, the particularities of time and space, the distinctive powers of history and geography, are barriers to be overcome in the analytical frame. In the context of urban studies more generally, cities of the urban age are teleologically defined. So one of the critiques of economic reason as much as of economics scholarship per se is that urban economies are divorced from locational

specificity, both in the name of universal reason and in the knowledge claims of norm-free science.

While such framings may be at times both analytically powerful and politically persuasive, they can also generate a less unalloyed response from scholars in disciplines other than economics. The erasure of the normative in the name of critical distance is also at times explicit in other claims of scientific expertise but may lead in different directions. So a focus on the metabolism and ecosystems that reveal the disequilibrium of the systemic combinations of nature, culture and material form embodied in the built environment and infrastructures can also direct the analytical gaze elsewhere, maybe towards the temporalities of change and the power of ecosystem lock-ins and path dependencies that shape the city that is yet to come. If for John Maynard Keynes the long term is famously inhabited by the dead, those more ecologically inclined see it as the inheritance of our grandchildren. Timescales are measured differently through different scientific lenses. And where the normative domain is more explicit, appeals to the policy demands of poverty reduction might prioritise interventions of the here and now over the scientific promise of a future city realised at an uncertain date. Where a history of the present brings to the surface the enduring legacies of regimes of power and authority, the contested grounds on which reforms are mooted become analytically as well as descriptively relevant to making sense of what is possible in tomorrow's urbanism.

Most obviously this tends to appear in clashes between more activist-, NGO- or charity-focused foregrounding of the commonly grim realities of contemporary urban life on the one hand and the sort of diagnosis, prognosis and prescription of the urban condition found in the reports of the World Bank or McKinsey. But equally, in the appeal less to the vernacular than to the power of what anthropologists might describe as 'local knowledges', there is at times a fundamental challenge to the structuring of arguments that follow neoclassical economic reason. In this sense, while economic reason may simultaneously produce 'truths', those truths might be subjected to contrary evidence and different conclusions from different analytical starting points and contested normative futures. As Nobel economist Paul Krugman has argued, economics cannot tell you what values to have and where to start such analytical foundations. He has suggested that the tendency to ignore, neglect or mask interests is characteristic of certain structures of economic reason and that economics can rarely provide an exhaustive 'truthful' account of all dimensions of most social contexts (Krugman, 2020).

In terms of scholarship, this in part opens up a domain of intercultural dialogue which recognises the possibly incommensurable truths revealed by economic reason alongside other forms of 'science'. For Krugman it also opens up a different sort of exchange in city halls and policy domains where he finds himself too often 'arguing with zombies', 'ideas that should have been killed by contrary evidence, but instead keep shambling along, eating people's brains' (Krugman, 2020: 4). Such an alternative form of dialogue could involve a recognition that it is possible to acknowledge that you may 'have your own opinions but not your own facts' yet also recognises that these facts may reflect disciplinary weaknesses as well as strengths.

If we are to unpick the DNA of the city and to recognise a diversity of approaches to the urbanisms of the twenty-first century, such an element of humility might be essential. So in this volume we are trying not to privilege any particular take on such long-running institutional dilemmas of academic politics and metropolitan realities. However, in a collection that brings together contributions that cross a range of social scientific backgrounds, we hope at least to curate some terms of engagement which might structure the sort of cross-disciplinary exchanges that are in this fashion more productive than polemical.

Diverse dispositions to urban research in Africa

Within the social sciences an instructive exchange on the disposition of work on African cities characterised the pages of American academic prose in the early 2000s. It involved a published essay by Michael Watts responding to the work of Achille Mbembe and Sarah Nuttall.

Michael Watts is a distinguished geographer of development who locates his own work in the Marxian and post-Marxian traditions and whose powerful research has described over many years a committed theoretical and empirical engagement with the grim systemic underdevelopment of contemporary Africa in general and the extractive capitalisms that structured the Nigeria of the city of Port Harcourt and the Ogoni people in particular. In 2005 he published a high-profile critique of what might be seen in hindsight as a new disposition for thinking about the contemporary African city. In responding to the work of Achille Mbembe and Sarah Nuttall, Watts railed against what he appeared to see as the performatively spectacular but analytically and politically foreclosed celebrations of African expressive urbanisms. His essay criticised both the modes of knowledge

production and also almost a lack of a 'moral seriousness' of the project of Mbembe and Nuttall and their various networks of collaborators and colleagues, working at the time mostly within the South African academy. Even reading the Watts critique in hindsight, some years on, it comes across as morally serious, rooted in a deeply normative reading of emergent African urbanisms but also in a tone that castigates scholarship that might for Watts speak more to the ivory tower than the city streets.

For Watts, Mbembe (and co-author Nuttall) through a focus on cultural exploration retreated away from empirical reality towards paradoxically European theory, privileging 'Simmel over Sandton', using evocative textual strategies to extend a 'panoptic account of Africa as a space of radical uncertainty, of "nonlinearity, of chains of fragmented events, that has been misrepresented" by "the faked philosophies of Marxism and nationalism"' better grasped through the exploration of other archives capable of yielding both 'the power of falsification' and the processes through which Africans 'stylize their conduct'. Watts saw Mbembe in particular as creating texts that did not want to 'be encumbered by what he has elsewhere called the worn-out pretext of miserabilism'. The result may have been poetic but for Watts it was 'too conceptually undeveloped to be of much utility, and often the contours and pathologies of metropolitan psychic life [in Mbembe's writing] are weakly anchored in empirical data' (Watts, 2005: 188).

In contrast, Mbembe, a powerfully erudite social theorist, looked at Johannesburg through a lens that built on his own embedded critical engagement with multinational philosophical traditions and African modernities. Through turning his attention to the African metropolis in his work on the city, he adopts a particular disposition that responded to some of the motivations for his seminal monograph 'On the postcolony' (Mbembe, 2001). In this landmark work Mbembe famously and fundamentally challenged the *ways of seeing* late twentieth-century African social life. He subsequently explained how his strategy had been consciously provocative, invoking the economic anthropologist Jane Guyer's work to criticise three powerful analytical traditions that block key African realities from view: the (monetary) reductionism of economics and its associated tyranny of quantitative methodologies, the positivistic framing of the parameters of economic reason in turning African landscapes into economic science, but also the cultural particularism of anthropology that can make Africa 'look like a pathological departure from a standard model based

on Western experience and institutions' (Mbembe, 2006, quoting Guyer, 2004: 172).

Mbembe was writing against a series of 'isms' of late twentieth-century academic scholarship. He rejected the *scientism* of certain forms of neoclassical economics, the *presentism* of scholars that forgot or erased the legacies – we might even say the 'path dependencies' – of African history in descriptions of contemporary urban life, and the cultural *empiricism* particularly found in some genres of anthropology. It is possible to see this project as reconfiguring both the geographical imaginaries and historical sensibilities that might structure how stories are narrated of African cities. This project is founded on a novel relational intellectual architecture of theory and praxis that confounds conventional disciplinary boundaries but also consequently in some ways lacks the institutional supports of disciplinary epistemological self-assurance (or self-satisfaction).

The reason for referencing this debate of some time ago is not to privilege one or other of these takes on African urban life. All three scholars (Mbembe, Nuttall, Watts) have remarkable careers, committed engagements and impressive bibliographies. The intention is instead to suggest that in microcosm the debate encapsulates some distinctive choreographies of divergence in literatures on the African city in particular. It also foregrounds an urban studies more generally that privileges the theoretical insights of the urbanisms of the global south in general. The texts of Michael Watts were no more, no less normative than Achille Mbembe's. Neither made claims in the name of critical distance or scientific truths. There was a difference of disposition.

The urban scholarship of the global south has provided in the last decade some of the most exciting forms of new thinking about cities. Within the social sciences a standard trope of criticism has long been that paradigms, theories and approaches to the city that have been nurtured in a limited number of privileged metropolitan sites of the global north do not always serve particularly well when they land in those parts of the globe with the most significant increases in urban populations in the twenty-first century; in China, in India and in Africa in particular. Well-argued critiques of urban theory of the global north abound, drawing on postcolonial, feminist and other framings of urban life to contrast deliberately with the insights of the mainstream traditions of urban studies (Parnell and Robinson, 2012; Pieterse, 2010). Jennifer Robinson and Ananya Roy have gone so far as to argue that that the appeal to the universal speaks to a limited audience when the global urban majority

live in cities that are characterised by informality, multiplicity, marginality and dispersion unrecognised in the cities most commonly theorised by leading economic geographers, in the process (citing a phrase from Linda Peake) ‘seeing everything from nowhere’ (Robinson and Roy, 2017: 185).

But perhaps more productively still, some traffic might run in different directions. Strands of African urban theory speaks to the African city in particular but also transcend geographical specificity from a southern disposition. The various collaborations of Edgar Pieterse and AbdouMaliq Simone perhaps exemplify this trend. Pieterse was one of many that long called for an urban studies that could ‘think and theorise the specificity of African cities’ based on both an obligation for research to address the pressing dilemmas of the urban condition and the recognition that ‘there is no direct correlation between better theory and effective policy’ (Pieterse, 2011: 2).

In an early collaboration Pieterse and Simone (2013) try to outline the configurations of a specifically southern urbanism that draws in particular (though not exclusively) on the patterns and processes of contemporary African urban life. For Sharad Chari (2014) their work highlights five themes of specific “urbanisms” (what *are* our diverse African cities), “palimpsests” (how are multiple temporalities used, handled, sorted or denied), “deals” (Pieterse has it that “the term ‘economy’ ... is virtually meaningless in African cities” and that “deal-making” relates more to everyday pragmatics), “governmentalities” (how does state and non-state power work) and finally “interstices” (Chari, 2014: n.p.). This taxonomy of plural urbanisms, palimpsests, deals, governmentalities and interstices makes visible particular forms of urban life. But it also travels and is as recognisable on the streets of contemporary east London or New York as in the particularities of Johannesburg or Cape Town. Similarly, Simone and Pieterse have more recently argued that a paradox of contemporary urban life is that the global majority who ‘presently don’t have much access to rights, resources and opportunities actually prefigure, in their making something out of difficult conditions, what many urban futures may need to look like’ (Simone and Pieterse, 2017: 110). In their *New urban worlds* three vectors of redescription, secretion and resonance generate different ways of seeing the city anew.

But again these powerful descriptors can also inflect the ways in which we might understand a contemporary European condition characterised by post-austerity uncertainty, the ongoing and recurrent legacies of a ‘migration crisis’ and fears that it is pandemics as well as people that

travel. Importantly, the organising principles of the creativities, pragmatics and alternative worlding practices at the heart of their work draw less from the vocabulary of 'rights' discourse that structures much writing in the field and more from the performative, theatrical, extemporised strategies and tactics of everyday life. There is a sense, then, that the scope of such work cannot be confined in straightforwardly geographic terms. It is a standard trope of postcolonial studies approaches to make the familiar strange, the strange familiar and to 'provincialise' the dominant ways of telling stories and constructing narratives in the social sciences. But it would be a paradox if precisely this tactical move inhibited the propensity of such theory to speak back to a global urbanism that is locally inflected but internationally germane. The valorisation of 'southern urbanisms' should not inhibit flows both south/north and north/south. We might rethink how Cape Town speaks to London but equally how Shanghai might speak to New York, London to São Paulo. Such conversations imply a slightly different disposition of theoretical labour that is not straightforwardly 'comparative'.

However, several different arguments, occasionally conflated, become central to such positioning. All are legitimate, although each has slightly different implications. The specificity of African (most often South African) urbanisms, the push back against the scholarship of the global north and the rejection of an academic gaze that is instrumentally linked to technocratic policy formation are all shared by critical theoretical dispositions internationally. But what is perhaps most significant analytically and germane politically about their work is the positioning of the researcher *in situ*. The researcher is engaged. The outcomes of research are translational, they build on site and offer back to whence they came. Not necessarily co-productions as such, but Pieterse and Simone's collaborative and individual work is characterised by a sense of proximity. The view from up close. It involves an epistemology that undermines a valorisation of critical distance.

Informing Pieterse and Simone's work is clearly a project that is highly normative in both the forms of engaged scholarship on which it is based and the practically translational research which it advocates. So there are two dimensions which we are suggesting in this volume might be constructively brought together through an alternative framing of urban life. One relates to how we locate the alternative ways of inhabiting the city that Simone and Pieterse describe. The other involves how we seek to capture not a universal vocabulary of city life but think instead creatively

about how the experiences and tendencies of cities in Africa speak back to a global urban condition.

The sense of critical distance is not a safety zone but a field of tension, as Adorno once argued. But however productive making the city visible from up close might be, it is also essential at other times to retreat and make the lenses through which scholarship is generated explicit. Such movement questions how such mobile engagement might work; what are its spaces of translation, how does it envisage the time over which it operates, the relationship between the snapshot presentation of today and the propensity of tomorrow? Proximity begets a certain sense of plurality. Data observed and data analysed are data interpreted through specific frames of reference and knowledge productions that measure value differently. The calculus of economic value, optimal mobilities of transport systems, elongations of life expectancy, the calibration of happiness, the territorial extension of food, water and energy management and the generation of ecological sustainability – all are premised on measures of value and worth that are distinctive and particular to specific scholarly disciplines. They speak to a diversity of epistemologies that we also showcase in this volume.

Diverse epistemologies of urban research in Africa

The engagement up close and from a distance invokes different ways of producing knowledges of cities. What appears to be ‘merely’ perspectival can on closer inspection reveal some fundamental challenges to different epistemologies, regardless of how institutionally powerful their disciplines are in shaping the behaviours of city actors. In part this is no more than a restatement of some of the foundational truths of social science and its relationship to the urban world. W.I. Thomas, founder of what became the Chicago School of Sociology and the man who gave Robert Park a job, made the point a century ago that in the social sciences there was no straightforward correspondent theory of truth. You cannot choose your own facts. But people may choose their own ways of seeing the world and in this sense whether or not their interpretations of the world are factually correct is at some times and places irrelevant precisely because when situations are defined ‘as real, they are real in their consequences’ (Thomas, 1928: 572).

And what goes for cartographies of position applies equally for registers of the temporal and the way this structures reasoning across different

ways of making the city visible in research. Some people have jobs. Others have careers. Others again struggle to get by day to day. The difference between these objective demographics describes how rational actions are qualified by temporal horizons. Equally, the logics of profit maximising, utility optimising, mobility preference or sustainable building may subsume socially constructed measures of speed, rhythm and expectations.

In the context of late twentieth-century global forms of economic governance and structural readjustment programmes led by international regimes of lending and investment, Jane Guyer, a former member of the World Bank International Advisory Group and distinguished anthropologist of sub-Saharan Africa – whose work so influenced Mbembe – has highlighted the power of cultural constructions of the temporal for an understanding of African life. Foregrounding the counterintuitive similarities between late twentieth-century forms of monetarism and evangelical Christianity, she argued that both define knowledge systems that ‘privatize the near future while socializing the present and the distant horizon’ (Guyer, 2007: 411). Their similarities contrast with alternative readings of the temporal in (respectively) alternative traditions of twentieth-century neoclassical economics and many centuries of biblical thought historically. She goes on to suggest that ‘the new indexing of diagnosis of the present to an “infinite horizon” in the future places people in emotional and sociological *terra nova*. The nesting of temporalities and the relative emphasis and mutual entailment for different populations, or for the same population in different affective states, becomes the ethnographic question’ (2007: 413), an issue that the work of Irmelin Joelsson in this volume situates in contemporary Dar es Salaam (see also the work on Togo by Pinot, 2010).

The shift towards the temporal rhythms of neoliberal economic knowledge systems was itself a reconfigured relationship between legal and utility logics in the law and economics tradition emerging from economists such as Ronald Coase in the 1960s (Keith, 2019). For Guyer, an unintended consequence of the forms of neoclassical economics reason deployed in late twentieth-century Africa shifted mainstream economics thinking from a conventional taxonomic distinction between the short term and the long term to a privileging of the importance of the long term and diminution of short-term considerations. She then highlighted how this shift complements and mirrors a framing of fundamentalist Christianity which privileges the millennial and rewards in the hereafter over the contemporary moment. Both monetarism/neoliberalism and fundamentalist Christianity for Guyer rationalise and justify present-day

suffering in the name of longer-term reward. Simplifying her argument slightly, the overlaps as well as the divergences between neoliberal regimes of government and fundamentalist Christianity translate into regimes and rhythms of development time in sub-Saharan contexts structured by market state reforms. The paradigmatic differences of each with other forms of neoclassical economic thinking and biblical reason respectively are diminished by the structural similarities of implicit, not explicit, measures of the calculus of time.

For Guyer the plural registers of economic reason imply but do not always make explicit normalisation and valorisation of rhythms, speeds and horizons of the temporal. A cultural translation of internationally nuanced registers of temporality is consequently essential for any understanding of developmental interventions, infrastructural investments or forms of market liberalisation. Such an argument is not a form of 'relativism'. The argument follows instead the landmark choreography of Clifford Geertz's (1984) case for 'anti anti-relativism', asserting that to make our knowledge systems subject to forms of cultural translation pluralises our systems of knowledge production but does not equate to making equivalent all forms of truth or scholarship. It sits easily with a sense that we must understand that how multiple knowledge systems of universal economic reason, hydrology, engineering, climate science 'land' in context matters. Not in altering the internal logics of these disciplines as such but in making sense of how particular logics are inserted into the systems of systems of city change that are structured by individual legacies, path dependencies and lock-ins to particular organisations of social and economic life. It complements the renewed interest in anthropologies of time that interrogate the epistemological implications of temporal registers of different forms of scholarship and science (Born, 2015; Connolly, 2011; Goldstone and Obarrio, 2016; Nielsen, 2011; Pinot, 2010).

Guyer's rhetorical structure of argument reflects an obligation to make the familiar strange and the strange familiar that is also central to an anthropological sensibility. Curiously, the productive urban studies theoretical domain has at times reflected less on what it has derived from such argumentative structure and the anthropological discipline than it perhaps sometimes warrants. Yet the ability to link the view from up close with a perspective from a distance, to link the micro and the macro, has long been a mainstream dimension of such work.

Such a sensibility becomes particularly important when considering the scale of infrastructural change implicit in rapidly growing African

cities. Within mainstream urban studies research on infrastructure-led transformation has at times been characterised as an ‘infrastructural turn’, normally reflecting the influence of the work of Bruno Latour’s use of the Foucauldian notion of the assemblage in combinations of material structures and cultural forms (Amin and Thrift, 2017; Howe et al., 2015). Yet the traditions of thinking about such combinations has deep roots in anthropological inquiry and the infrastructural turn owes much to the early anthropological investigations of scholars such as Penny Harvey (Harvey, 2005 and 2012; Harvey and Knox, 2015) and Brian Larkin (Larkin, 2013).

Larkin’s influential work argues that infrastructures must be seen in terms of what they justify and invoke as much as what they deliver in purely technocratic terms. A road, a bridge, a pipeline makes claims on the land which imply specific notions of ‘development’. And development brings with it cultural baggage that is aesthetic, ethical and political. It is the claim of ‘progress’ that has long been contested in cultural theory but more straightforwardly links in cities the *micro* changes of the sidewalk, the drains or the domestic boiler to the legitimacy, trust and politics of *macro* systems of mobility, waste or energy or development economics (Larkin, 2013).

So, analytically the focus on infrastructure works productively to shift the analytical gaze from proximity to critical distance and back again. Social life on the ground works through these multi-scalar realities in every dimension of urban life, but academic research can at times separate them. Engineering challenges technocratically defined in terms of what is possible demand a time horizon different from returns on capital or from social or ecological impact assessments of particular interventions. Hence in part what the anthropological engagement with infrastructure facilitates is an ability to set up an analytical frame that can accommodate the scale of infrastructure investments, the upheavals, opportunities and transformations envisaged, engaged or delivered with the ways in which such changes land in urban contexts in terms of both geographical scale and rhythms of time and speed (Anand et al., 2018). Critical distance and proximate engagement are held alongside one another. Not a form of relativism but a facet of perspectival realities.

Similarly, Andrew Barry has argued that the wide exponential growth of an interest in infrastructural forms often neglects the four-dimensional locus of systems that are built, modified and eventually rendered obsolete. Barry distinguishes the notion of infrastructure as an ‘installed base’ from its physical location in material space. ‘We need to see the earth, its rocks,

soil and water, as integral to the ongoing existence of infrastructure. Infrastructures such as pipes, roads and cables should not be considered a solid and static base in part because they rest on, or are built into, a further base' (Barry, 2017: 187). But if the three-dimensional context is vital in determining what the infrastructural forms might become, then the fourth dimension of the temporal creates its own speeds of implementation, rhythms of operation and horizons of disruption, breakdown and eventual decay or obsolescence. And within the temporal itself the register of human and non-human time run together in strange ways. And so Barry likewise cites the powerful return to an interest in the anthropologies of the temporal in this context.

This analytical choreography replicates that of the multi-scalar. Temporal scale is also not a safety zone but a field of tension. The logics of the here and now may be quite properly different, based on different values, different knowledge systems and different epistemologies when we compare immediate needs of the impoverished with rates of return on investment and temporalities of urban ecosystems. It is fine to say that the gas boiler is not ecologically sustainable but such a rhetoric alone will not prevent utilities and industry companies servicing the demand for such commodities, people in need of heating demanding them or government legislating the exchange, planning and building regulations through which they are installed. The same is the case for almost any piece of infrastructural fabric. Timescale is not a safety zone but is a field of tension akin to that of scalar distance.

Of course the multi-scalar and the multi-temporal are realised simultaneously in city life characterised always by an excess of sensory information, cultural perception and historical legacies. And so for the purposes of this volume, the argument of the book as a whole and across the individual chapters identifies the importance of the imperative to 'only connect'. We cannot understand the urban without thinking about the rural, make sense of the periphery of the city without thinking about where its periphery flexes socially, is defined by regulations and is mapped by scholars and city governments (Chapter 2). Urban morphology is one medium through which we make visible the multi-scalar.

In many ways, every urban plan sketches a future. The promises contained in master plans, whether of new pipes, roads, houses or sanitation, already organise the present, inverting the logic that the present dictates the future (de Souza Santos, 2019; Larkin, 2013; Nielsen, 2011). But creating new presents with promises of a better future is not an equal resource. The limits of both governments and residents to wait for promises to

become (quite literally) concrete vary. While residents wait for roads to be tarred with asphalt, their rents may already become more expensive. Local governments may prefer to invest more on road tarring than sanitation. The latter, which should come first, is invisible and thus politically less appealing. In this intersection of people, place and time, tensions brought by frustrations and delays undermine the promise, and urban plans all too often go awry before they are even complete.

'Cures that harm' is how McCord (2003) described unintended consequences of crime prevention programmes and when turning the logic from individuals to cities; risk mitigation in African cities is what often inflicts risk (Chapter 3). Goodfellow (2017) reminds us that road construction can inflate land value and evict residents who are already vulnerable. 'Cures' can be a dangerous guessing game when adrift and not well connected to people, place and time. But who speaks for the people? How do communities engage with infrastructural futures? How do they incorporate heterogeneous practices in informal settlements? Participatory projects, when trying to connect residents, technicians and politicians, may give the right to voice to different groups, and yet, without safe employment and housing, frustration at the inability to confront those in power may result in a backlash. More commonly certain modes of community voice can legitimise top-down approaches when socio-economic disparities are not alleviated (Chapter 4).

The 'new urban sciences' in this world is a term that is increasingly used to characterise the interface of multiple forms of scientific practice to make sense of the complex systems of the urban. For Michael Batty (2013), the *science of cities* relates particularly to the theorisation of advanced spatial analysis. However, it is also the case that not only infrastructural investment but also the metabolism of urban forms, built environment interests, urban ecosystems and medicine have developed similar research sub-disciplines in the city. Specialisms of city engineering, biosystems, life sciences and public health have linked new sources and methodologies for garnering data at city scale such as satellite technologies, mobile phone records, mobility data, using data analytics to consider the interfaces between systems in settings of urban complexity. Such approaches have developed an extraordinary capacity to generate exponential increases of data in real time when paradoxically the speed of innovation and adoption of disruptive technologies in cities makes the longer term harder to predict. This highlights the need to consider how the new urban sciences land in the city. The relatively new discipline of science and technology studies

(STS) approaches work to understand how genres of scientific knowledges make sense of the city. The city simultaneously adopts (or does not adopt) scientific reason and the social processes of technological innovation become a rich research focus in their own right (UN-Habitat, 2020). STS repeatedly demonstrates how diverse epistemologies generate analytical frames that land and impact on how cities behave as complex systems (Howe et al., 2015; Krause and Guggenheim, 2012). A century on from W.I. Thomas's invocation of a *social* 'science', modes of seeing change patterns of behaviour.

Complex systems logic demonstrates why *seeing like a city* demands recognition of geographical specificity and path-dependent social settlement, opening contextual opportunities of place that render bespoke local city 'clumsy' solutions to 'wicked' urban problems more plausible. Cities of the global south have the potential to leapfrog the twentieth-century lock-ins of car-based urbanism and wasteful city metabolisms of water and waste. But equally, different histories of colonialism and systemic underdevelopment weigh heavily in specific parts of the world; alternative visions of the good life balance the imperatives of the city commons, the architecture of markets and the freedoms of regimes of rights differently. We have argued elsewhere that such a perspective demands a different framing of cross-disciplinary engagement between social science, humanities and natural science epistemologies of knowledge production (Keith and de Souza Santos, 2020). The tensions between time-space contextual framing and diverse epistemological approaches to the urban share a recognition of the powers of the new urban sciences and the capacity to *predict* in real time (P), the contingencies of *emergence* in complex systems (E), technological disruptions that are *adopted* differently (A) according to distinct local systems of commensuration that demand an experimental disposition to urban futures that promote innovative *knowledge exchange* across urban systems (K). This disposition of 'PEAK Urban' creates a frame through which technological change might be harnessed by cities that are reflexive and flexible in their response to technological disruption, optimistic yet also pragmatically realistic about the propensity for technological change to shape their futures (Keith, 2020).

Such a focus on emergence in complex systems does not equate to a sense of developmental immaturity. It instead highlights and problematises an acknowledgement that Africa is the part of the globe where by some measures urbanisation is moving fastest and a recognition that this in turn implies both shared logics and divergent dynamics of metropolitan

life. When divergent dynamics shape individual cities, they create particular articulations of these shared logics, combinations of local culture and global trends that create relational similarities between cities and also particular patterns of combination and hybridisation within each. How these processes of urban transformation can be theorised depends in part on how we make sense of such a process of combination and hybridisation. In this context Marilyn Strathern in the 1990s forensically examined Latour's analytical device of the assemblage that is central to his actor network theory that has become so influential in the urban studies of the last two decades. Her critique argues that in Latour (and in long-standing anthropological traditions) the combinations of material objects and cultural life create new forms of the hybrid. Latour analyses the links between the hybrid forms of the material, social and cultural, his networks that constitute actor networks are famously neither simply human nor non-human; not modern, just unfinished. Or put more simply, they are always in the process of becoming. She points out that Latour's logic of networks and hybrids is potentially endless through its fractal form and so she suggests that what might be of interest is as much how networks are cut as how they are held in place and stabilised in the short, medium or longer term. Interpretation 'must hold objects of reflection stable long enough to be of use' (Strathern, 1996: 522; see also Strathern, 2015), but it is in the cutting as much as the assemblage of the hybrid forms that novelty *becomes*, new parts of the systems emerge, ontology asserts itself.

Significantly, she illustrates this principle by citing the creation of intellectual property through patents that rely partly on individual or corporate innovation but also partly on knowledge made by others as scientific advance stands on the shoulders of its predecessors. Intellectual labour becomes property when law cuts the network itself. For Strathern, law 'cuts' the normative domain – 'the limitless expansion of justice' – when it creates a 'manipulable object of use' to which can be attributed a property value. In this sense 'there is a good case for seeing property as a hybridizing artefact in itself' (Strathern, 1996: 525). Similarly, when science 'lands' in the city, it structures how we might think about the urban but also creates new permutations, new ontologies of social, cultural and economic systems through which cities themselves evolve.

It is in this sense that in the contemporary city, where proprietary data is the clichéd new oil of tech giants such as Google, Uber or Amazon, future propensity cuts the network and becomes a property in its own right. When Uber in 2019 manages to make the largest quarterly loss

ever recorded of a public company and yet still pursue a major initial public offering of share value which bets on future data powers to enclose the virtual commons of the metropolis, urban futures are as tradable as futures in any other commodity. The city becomes a crucible of forms of expertise and knowledge practice. And in liberalised urban markets such as South Africa's Johannesburg, Uber captures market share far more rapidly than in other more regulated cities. For better and for worse.

In this spirit this volume shares a concern with how epistemological logics and regimes of particular expertise land in the cities of Africa, whether in generating novel forms of risk and institutional interdependency (Chapter 3), how regimes of law and economics frame interventions in upgrading and ownership in informal settlements (Chapter 4), the socio-technical systems and intersectionality of energy systems (Chapter 6) or the nexus of waste systems and contemporary science (Chapter 5). They share a recognition that, in order to make sense of the contemporary moment through a geographically sensitive lens, a global urbanism lands in the cities of Africa through diverse approaches, diverse dispositions and diverse epistemologies.

Outline of the book

This book brings together different disciplines and scholars from across the globe to discuss the nature of African cities – the interactions of residents with infrastructure, energy, housing, safety and sustainability, seen through local narratives and theories.

African peripheries usually face disqualification when represented by what they are not (Mbembe, 2001). Paula Meth et al. (Chapter 2) outline what an urban periphery is. The focus of this chapter is to conceptualise these heterogeneous spaces, often marked by constant change, in terms of governance and experience. Looking at case studies in five South African and two Ethiopian cities, the authors frame urban peripheries across distinct categories that epitomise economic, housing and governance arrangements. Despite efforts to create taxonomies and typologies, the authors conclude that such categories are not mutually exclusive; they are complex, contradictory and variable. The category of the periphery is problematic but is still a valuable descriptor of urban form. When discussing fast-paced urbanisation across the globe, it is important to account for the fact that 'suburbanisation' is 'now the dominant form of urban development globally'. Secondly, however overlapping and temporary

categories may be, because peripheries are spaces of urban transformations, the sociology of definitions and categories responds to the call to define African cities by what they are and not what they lack. The creation of new categories in the study of urban peripheries should aid the allocation of policy resources as well as the use of analytical tools avoiding a one-fits-all solution.

In a similar vein, Mark Pelling et al. ([Chapter 3](#)) consider the paradox of development in African cities. The authors point out that often development itself can be the root of risk as much as it aims to mitigate risks. The authors look at Karonga (Malawi), Ibadan (Nigeria), Niamey (Niger) and Nairobi (Kenya) and discuss natural risks (floods, droughts, earthquakes) as well as everyday risks (inadequate sanitation or poor water quality) and explore the governance of disaster. When analysing these distinct urban forms (from small cities to megacities), the authors call for a better understanding of the interaction between multiple nodal actors: government, universities, civil society, among others. Without such understanding, development projects, despite their aims, may harm rather than service cities.

Nodal actors and reflections on development projects are also part of Maria Christina Georgiadou and Claudia Loggia's chapter ([Chapter 4](#)). The authors analyse upgrading projects in informal settlements in Durban, South Africa. Georgiadou and Loggia consider that participation is more than providing feedback to projects previously agreed before community appraisal. The construction and management of integrated systems to think and intervene in urban peripheries are both necessary and challenging. Empirical data shared in this chapter shows that participatory processes will demand new tools and methodologies to deliver empowerment, local ownership and resilience. A successful participatory upgrading project will not be one that delivers infrastructure and services, but one that offers full ownership of the upgrading and tenure security. The measurement of successful policies from state and community perspectives deserves greater attention.

The question informing Henrik Ernstson et al.'s piece ([Chapter 5](#)) is 'who benefits from reframing waste as a resource, and in what ways?' The authors examine how green technology and livelihoods working in and with waste can antagonise in the process of being transformed. What is ecologically and technologically sensible is not always socially inclusive, and the politics of waste needs to encompass different voices to understand what makes waste 'valuable' economically, socially and ecologically. Listening to different actors also means thinking about the different power

plays and capacity of individuals to determine what waste can become. Collaborative governance is consequently considered conceptually and theoretically in the chapter.

While [Chapter 5](#) sheds light on sustainable development and Sustainable Development Goals (SDGs) when tackling waste, this discussion is continued in the chapter by Federico Caprotti et al. ([Chapter 6](#)), where urban energy is the key concern. The authors work with an understanding of the socio-technical nature of energy systems, where socio-spatial, environmental and economic inequality co-exist and for that reason cannot be studied separately. To make energy transformations inclusive demands an understanding of South Africa's development. From the country's industrialisation to its cheap workforce, it is possible to map how energy is distributed in the country. Socio-spatially, the chapter describes how informally built shacks and locally run solar power are challenged by both the physical material of the fabric and the path-dependent legacies of energy provision in South Africa, where municipal revenues relate to a single provider and an existing grid. Most shacks considered in their study could not bear the weight of a solar panel, while municipalities are perversely tied to extending centrally controlled twentieth-century energy systems to raise their own revenues and realise the fiscal stability needed to achieve just transitions. Echoing previous discussions, the chapter turns to multi-level governance for inclusive energy transition and better quality of life.

In the final substantive chapter, the infrastructural turn in urban studies is addressed head-on by Irmelin Joelsson's ([Chapter 7](#)) consideration of how the construction of a major piece of transport infrastructure in Dar es Salaam – a landmark river crossing – reconfigures the DNA of the city through its interface with global finance, the introduction of a pension scheme linked to the revenues generated by tolls on the road bridge and the social policies and practices of insurance. The emergence of welfare nets in contemporary Africa brings together international finance and new ways of governing urban populations. Welfare systems are meant to create providential systems for protecting individual futures. But in this chapter the author considers how such forms of urban governance have to be understood ethnographically alongside other traditions of getting by, hedging and networking to mitigate risk in the everyday lives of the citizens of Dar es Salaam.

These chapters, we believe, share a sense of the possibilities and also the dilemmas confronting African cities of the near future. In the conclusion

of this volume we go on to suggest that they also share a disposition that in some ways advances urban studies more generally from a focus on the powers of infrastructures of the city to a complementary but alternative focus on the architecture of the platform economies they configure and the logistics through which cities themselves manage to function in even the most challenging circumstances.

Note

- 1 The ESRC Urban Transformations (UT) programme was a portfolio of research funded by the ESRC from 2015 to 2020. It involved over seventy projects and international partnerships with equivalent research bodies in Brazil, China, India and South Africa. The UT programme was directed by Michael Keith. This book was completed with support from UT and also from the PEAK Urban programme, funded by UKRI's Global Challenge Research Fund (Grant Ref: ES/P011055/1).

References

- Amin, A. and Thrift, N. (2017). *Seeing like a city*. Cambridge and Malden: Polity Press.
- Anand, N., Gupta, A. and Appel, H. (eds) (2018). *The promise of infrastructure*. Durham, NC and London: Duke University Press.
- Aseka, E.M., Freund, B., Greenstein, R., Himmelstrand, U., Legassick, M., Nyang'oro, J.E. and Webster, E. (1997). 'Mahmood Mamdani and the analysis of African society'. *African Sociological Review/Revue Africaine de Sociologie*, 1(2): 96–144.
- Barry, A. (2017). 'Infrastructure and the earth'. In P. Harvey, C. Jensen and A. Morita (eds), *Infrastructures and social complexity: A companion*, 187–98. London and New York: Routledge.
- Batty, M. (2013). *Urban informatics and big data: A report to the ESRC Cities Expert Group*. Swindon: ESRC.
- Born, G. (2015). 'Making time: Temporality, history, and the cultural object'. *New Literary History*, 46(3): 361–86.
- Chari, S. (2014). 'Review of Edgar Pieterse and AbdouMaliq Simone (eds), 2013, *Rogue urbanism: Emerging African cities*'. Auckland Park: Jacana Media. www.academia.edu/8622998/Review_of_Edgar_Pieterse_and_AbdouMaliq_Simone_eds_2013_Rogue_Urbanism_Emerging_African_Cities_Auckland_Park_Johannesburg_Jacana_Media (accessed 15 July 2020).
- Chen, K. (2017). 'Review essay: On Mamdani's mode of thought'. *Cultural Studies*, 31(4): 580–601.

- Connolly, W. (2011). *A world of becoming*. Durham, NC: Duke University Press.
- De Goede, M. (2017). *An analysis of Mahmood Mamdani's Citizen and subject*. London: Macat.
- De Souza Santos, A.A. (2019). *The politics of memory: Urban cultural heritage in Brazil*. London: Rowman & Littlefield International.
- Geertz, C. (1984). 'Anti anti-relativism'. *American Anthropologist*, 86(2): 263–78.
- Glaeser, E. (2011). *The triumph of cities: How our greatest invention makes us richer, smarter, greener, healthier and happier*. New York: Penguin.
- Glaeser, E. and Gottlieb, J. (2009). 'The wealth of cities: Agglomeration economies and spatial equilibrium in the United States'. *Journal of Economic Literature*, 47(4): 983–1028.
- Goldstone, B. and Obarrio, J. (eds) (2016). *African futures: Essays on crisis, emergence and possibility*. Chicago and London: University of Chicago Press.
- Goodfellow, T. (2017). 'Urban futures and skeleton cityscapes: Real estate and late urbanisation in Kigali and Addis Ababa'. *International Journal of Urban and Regional Research*, 41(5): 786–803.
- Guyer, J. (2004). *Marginal gains: Monetary transactions in Atlantic Africa*. Chicago and London: University of Chicago Press.
- Guyer, J. (2007). 'Prophecy and the near future: Thoughts on macroeconomic, evangelical, and punctuated time'. *American Ethnologist*, 34(3): 410–21.
- Harvey, P. (2005). 'The materiality of state effects: An ethnography of a road in the Peruvian Andes'. In C. Krohn-Hansen and K. Nustad (eds), *State formation: Anthropological perspectives*, 216–47. London: Pluto Press.
- Harvey, P. (2012). 'The topological quality of infrastructural relations: An ethnographic approach'. *Theory, Culture and Society*, 29(4/5): 76–92.
- Harvey, P. and Knox, H. (2015). *Roads: An anthropology of infrastructure and expertise*. Ithaca, NY: Cornell University Press.
- Howe, C. Lockrem, J., Appel, H., Hackett, E., Boyer, D., Hall, R., Schneider-Mayerson, M., Pope, A., Gupta, A., Rodwell, E., Ballestero, A., Durbin, T., el-Dahdah, F., Long, E. and Mody, C. (2015). 'Paradoxical infrastructure: Ruins, retrofit and risk'. *Science, Technology, & Human Values*, 41(3): 547–65.
- Kamola, I. (2011). 'Pursuing excellence in a "world-class African university": The Mamdani affair and the politics of global higher education'. *Journal of Higher Education in Africa*, 9(1–2): 147–68.
- Keith, M. (2019). 'Philosophies of commensuration, value and worth in the future city: Rethinking the interdisciplinary'. In K. Jacobs and J. Malpas (eds), *Towards a philosophy of the city*, 217–33. London: Rowman & Littlefield.
- Keith, M. (2020). 'Maybe your watch is making your insurance so expensive'. In UN-Habitat, *Future cities: New economy and shared prosperity driven by technological innovations*, 24–9. Nairobi: UN-Habitat.
- Keith, M. and de Souza Santos, A. (eds) (2020). *Urban transformations and public health in the emergent city*. Manchester: Manchester University Press.

- Krause, M. and Guggenheim, M. (2012). 'How facts travel: The model systems of sociology'. *Poetics*, 40(2): 101–7.
- Krugman, P. (2020). *Arguing with zombies: Economics, politics, and the fight for a better future*. New York: W.W. Norton.
- Lall, S., Henderson, V. and Venables, A. (2017). *Africa's cities: Opening doors to the world*. Washington, DC: World Bank.
- Larkin, B. (2013). 'The politics and poetics of infrastructure'. *Annual Review of Anthropology*, 42: 327–43.
- Macamo, E. (2018). 'Urbane scholarship: Studying Africa, understanding the world'. *Africa*, 88(1): 1–10.
- Mamdani M. (1996). *Citizen and subject: Contemporary Africa and the legacy of late colonialism*. Princeton: Princeton University Press.
- Mbembe, A. (2001). *On the postcolony*. Berkeley: University of California Press.
- Mbembe, A. (2006). 'On the postcolony: A brief response to critics'. *African Identities*, 4(2): 143–78.
- Mbembe, A. and Nuttall, S. (2004). 'Writing the world from an African metropolis'. *Public Culture*, 16(3): 347–72.
- McCord, J. (2003). 'Cures that harm: Unanticipated outcomes of crime prevention programs'. *Annals of the American Academy of Political and Social Science*, 587(1): 16–30.
- McKinsey Global Institute (2016). *Lions on the move II: Realising the potential of Africa's economies*. New York: McKinsey.
- Nielsen, M. (2011). 'Futures within: Reversible time and house-building in Maputo, Mozambique'. *Anthropological Theory*, 11(4): 397–423.
- Parnell, S. and Pieterse, E. (eds) (2014). *Africa's urban revolution*. London and New York: Zed Books.
- Parnell, S. and Robinson, J. (2012). '(Re)theorizing cities from the global south: Looking beyond neoliberalism'. *Urban Geography*, 33(4): 593–617.
- Pieterse, E. (2010). 'Cityness and African urban development'. UN University, World Institute for Development Economics Research Working Paper No. 2010/42.
- Pieterse, E. (2011). 'Introduction: Rogue urbanisms'. *Social Dynamics*, 37(1): 1–4.
- Pieterse, E. and Simone, A. (eds) (2013). *Rogue urbanism: Emerging African cities*. Auckland Park: Jacana Media.
- Pinot, C. (2010). *Nostalgia for the future: West Africa after the Cold War*. Chicago: University of Chicago Press.
- Robinson, J. and Roy, A. (2017). 'Debate on global urbanisms and the nature of urban theory'. *International Journal of Urban and Regional Research*, 40(1): 181–6.
- Simone, A. and Pieterse, E. (2017). *New urban worlds: Inhabiting dissonant times*. London: Polity Press.

- Strathern, M. (1996). 'Cutting the network'. *Journal of the Royal Anthropological Institute*, 2(3): 517–35.
- Strathern, M. (2015). 'Detaching and situating knowledge: Comment'. In T. Yarrow, M. Candea, C. Trundle and J. Cook (eds), *Detachment: Essays on the limits of relational thinking*, 256–63. Manchester: Manchester University Press.
- Thomas, W.I. (1928). 'The methodology of behaviour study'. In W.I. Thomas and D.S. Thomas, *The child in America: Behavior problems and programs*, 553–76. New York: Alfred A. Knopf.
- UN-Habitat (2020). *Future cities, new economy and shared prosperity driven by technological innovations*. Abu Dhabi: World Urban Forum.
- Watts, M. (2005). 'Baudelaire over Berea, Simmel over Sandton?'. *Public Culture*, 17(1): 181–92.

At the city edge: situating peripheries research in South Africa and Ethiopia

*Paula Meth, Alison Todes, Sarah Charlton,
Tatenda Mukwedeya, Jennifer Houghton,
Tom Goodfellow, Metadel Sileshi Belihu, Zhengli Huang,
Divine Mawuli Asafo, Sibongile Buthelezi and
Fikile Masikane*

Introduction

This chapter explores how transformation in the spatial peripheries of three African city regions is shaped, governed and experienced, drawing on the findings of a three-year Economic and Social Research Council/National Research Foundation (ESRC/NRF) funded research project in South Africa and Ethiopia. We discuss both intellectual and methodological challenges, along with reflective insights of undertaking research on the dynamics and drivers of change and the 'lived experiences' of residents living on the peripheries of cities, using a mixed methods approach.

The chapter emphasises practices of collaborative research and reflects on our conceptualisations of terms such as 'periphery' and 'drivers of change'. It then turns to question the process of knowledge production, examining what or whose lived experiences are captured or can be known. In doing so it briefly points to some initial findings of the project, but its aim is not to address these findings substantively, rather to explore the conceptual and practical challenges of undertaking research in African city peripheries. This exploration is extended through a reflection on various methodological issues, including issues of comparability and managing differentials in data depth and coverage. It concludes by highlighting the richness of researching the peripheries and the wider impacts of the work for both academic agendas and policy contexts.

Introducing mixed methods in urban peripheries research

The key research questions of the project were as follows:

- What are the main characteristics of economic transformation and infrastructural change?
- Who has driven these changes, and what is their significance for inclusive urban development?
- What governance mechanisms shape these infrastructural and economic changes?
- How are these urban changes experienced by different residents of urban peripheries?
- What are the comparative lived experiences in urban peripheries?
- What are the implications of such drivers and experiences of urban change for reducing urban poverty and improving urban inclusion?

The project aimed to address and answer these questions through the use of a mixed methods approach which coheres around a focus on seven case studies representing different kinds of urban peripheries across African cities. Specifically, our cases included places where older and new low- and middle-income areas are close to major new areas of infrastructure investment (Waterloo/Hammond's Farm/Verulam near to King Shaka Airport, eThekweni in Durban); a traditional authority area close to areas of formal residential, commercial property and shopping mall investment (Molweni/Crestholme close to Hillcrest, eThekweni: see [Figure 2.1](#) for Molweni); a 'mega-human settlement', major social housing, lower-middle income private development and vulnerable informal settlement on the edge of Soweto, Johannesburg (Lufhereng/Protea Glen/Waterworks); places with a history of 'displaced urbanisation' and relocations linked to apartheid homeland policy (Winterveld, Tshwane) and apartheid-originated industrial decentralisation (Ekangala/Ekindustria/Bronkhorstspuit, Tshwane) where 'new cities' or mega-human settlements are planned.

In the city of Addis Ababa, our two cases are Tulu Dimtu and Yeka Abado/Legetafo. In both cases there is large condominium housing investment by the state. Tulu Dimtu is a new residential area of predominantly condominium and cooperative housing located in the south-eastern edge of Addis, relatively near to an industrial park, a site of significant employment straddling the municipal boundary between Addis Ababa and Oromia State (see [Figure 2.2](#)). Yeka Abado is a relatively established centre, located in the north-east of the city, adjacent to the boundary



Figure 2.1 Molweni, eThekweni

with Oromia State and quite close to the eastern end of the city's new light railway. On the other side of the boundary but adjoining Yeka Abado is Legetafo, an area of high-end private residential villas abutted by rural farmland.

Though the choice of case studies was by no means straightforward, a key feature of most of the cases is their multi-nodal nature. This means they are highly differentiated both in their composition and between cases: for example, a single case may include areas of informal housing, formal middle-class housing and state-subsidised housing for the urban poor.

The project used diverse methods and activities in order to gather data. It has primarily adopted a mixed qualitative methods approach, underpinned by ideas of comparative urbanism on the one hand and a commitment to seeing the peripheries from the 'everyday' perspectives of those who live within them, on the other. The research activities encompassed solicited diaries, auto-photography and interviews with residents in case study sites, accompanied by surveys of a sample of residents in these sites. In addition it included key informant interviews with government officials, planners, business representatives, developers and leaders. This field research was in turn underpinned by close virtual and physical communications between team members across three countries with joint



Figure 2.2 Tulu Dimtu, Addis Ababa

activities such as workshops ensuring a regular dialogue across the project and strong collaboration.

This chapter now moves to consider two conceptual issues that underpin the overarching aims of the project, namely how we conceptualise the periphery and what we understand ‘drivers of change’ to mean. It concludes with some reflections on methodological challenges and opportunities that have shaped the project.

Conceptualising the periphery

Globally, scholars have made various efforts to make sense of and conceptualise the peripheries of cities. These have informed the conceptualisations and framings that we detail below, but have also proved limited in adequately capturing the complexities evident in diverse African peripheries. Literature on peri-urban change (e.g. Mbiba and Huchzermeyer, 2002) has suffered from allegations of limited theoretical clout, though it does continue to provide important insights into particular forms of land use and tenure changes on the edges of some African cities. Nonetheless, the nature of changes increasingly documented, particularly in the African context, is evidently more complex and varied. The now extensive literature

(McKee and McKee, 2004; Phelps, 2012; Stern and Marsh, 1997) on edge city development, originating in North America (Garreau, 1991) but now applied globally, is arguably a poor lens through which to explore transformations on the edges of African cities. This is because of its assumptions about the pivotal role of private vehicle ownership, private-sector investment and the peripheralisation of economic opportunities and commercial functions. Many of these are poorly evidenced in African peripheries. However, given its foundational nature, we do speak to this literature but – cognisant of the limitations of this work – we argue that theorisations from a contextualised southern perspective are thus essential (Parnell and Robinson, 2012; Watson, 2014). Our work aims to contribute to this growing scholarship through our analyses of lived experiences of the peripheries to inform grounded, contextualised understandings of complex urban change.

Beyond conceptualisations of ‘urban edges’, literature on city regions is important in pointing to the spatial complexity of these places, particularly their economic multi-nodality, multi-directional movement patterns and multiple governance arrangements, which complicate concepts of peripherality. However, this literature has not paid much attention to African cities (Beall et al., 2015). Recent research on ‘global suburbanisms’ (Ekers et al., 2012), understood as ‘the combination of non-central population and economic growth with urban spatial expansion’ (Ekers et al., 2012: 407) has documented the diverse ways in which this growth is occurring internationally. It argues that ‘suburbanisation’ is now the dominant form of urban development globally (Keil, 2018). This research has included some work on African cities. Bloch (2011) has pointed to rapid growth on the urban periphery linked to economic expansion and the rise of the middle class, while Andreason et al. (2017) argue that informal residential development on cheaper land on the periphery might be seen as a form of suburbanisation in Dar es Salaam. Both describe quite particular forms of peripheral development. Mabin et al. (2013) review African literatures and demonstrate the diversity of forms of growth in African cities, and the need for deeper exploration of these patterns. Work in this realm is limited, however (Buire, 2014; Jenkins, 2013), particularly in relation to governance mechanisms, different forms of infrastructural investment and how these explicitly shape the lives of residents. Partly tied to this agenda and focusing specifically on the urban periphery is work by Sawyer (2014). She examines the differentiated nature of change across the peripheries of Nigerian cities, noting the

piecemeal ways in which urbanisation proceeds. This important work is highly relevant to our understandings and framings of the periphery but evidences a raft of processes that are less familiar or commonplace in both South Africa and Ethiopia. In these contexts, state coordination is more evident, although we can recognise that the extent of planning or state intervention is 'loosening' in the South African cases relative to that witnessed during the apartheid era (Harrison and Todes, 2015).

We explored the work of Caldeira (2017) and her concept of peripheral urbanisation but found it to be less useful. It collapses peripheral urbanisation into auto-construction, and uses it to describe practices of producing cities rather than examining urban peripheries per se. Auto-construction is a practice we see within peripheral spaces, but we do not necessarily ascribe it as being *of* such spaces. In other words, we view peripheries as more multi-faceted than an emphasis on auto-construction suggests. Essentially, we are dissatisfied with much of the literature available to us in terms of its explanatory value and relevance, and we aim to contribute to this debate.

We conceptualise the peripheries as spaces where complex socio-political, spatial and economic processes work to complicate and inform urban change, including in ways that are contradictory and variable. We view the peripheries as layered, relational spaces. Our conceptualisations encompass an understanding of peripheries which privileges the 'peripheral' geographical location of settlements but recognises that the idea of 'being peripheral' is subjectively determined. It also does not assume that the peripheries are necessarily economically, politically or culturally peripheral to the city region or spatially marginal (Pieterse, 2018); hence we include wealthier investments, spaces of power and varying ways of living in our framing of urban change, although in reality gaining insights into everyday life in these wealthier spaces has proved tricky. Some of the key features of peripheries in our understanding are that they are generally spaces located geographically some distance from a main urban core, recognising that this in itself may be fluid and relative, and that they may be close to new growing cores. They are areas of changing land use, where development may be relatively less dense and where a lack of services and infrastructure may be evident. The spaces are commonly residential but not always, and can be heterogeneous, depending on their particular histories. They often offer elements such as fresher air, cheaper land, access to affordable housing and rural features (although the meaning of 'rural' in this context may

be complex and shifting). Such spaces often attract speculative investment and work as footholds in the city for particular residents, they may also show evidence of being incremental and unfinished, and they may be boring, feel dislocated and offer limited employment opportunities and transport facilities. Many of these spaces are in transition, and the temporal dimensions of urban change underpinning urban peripheries are key to our conceptualisations.

Drawing on the multiple forms of peripheral experiences and contexts we encountered in our research, we have through collaborative working initially identified five different categories of urban periphery which we aim to reassess, amend if needed, and expand upon in future publications and theorisations. We do *not* view these categories as hierarchical, exclusive, all-encompassing or finite: rather, they can operate in overlapping and hybrid ways, recognising that multiple categories can usefully be applied to each of our seven case study areas and that categories bleed into each other in important ways.

The five categories are as follows:

- The *speculative* periphery. As the labelling suggests, this refers to urban spaces targeted (usually but not always or not exclusively) by private capital investment for the purposes of profit generation. This may be in the form of housing estates, commerce, industry or agribusiness (or even major new multi-use developments) or may refer to spaces where particular investments generate and extend power bases of individuals or institutions. This category evidences the presence of relatively cheaper land, with sometimes easier (or less controlled) mechanisms of access, ownership and financing – although this is not a straightforward relationship.
- The *vanguard* periphery. This refers to peripheral spaces within cities, which are at the forefront of urban change or are spaces of urban experimentation, state ambition, innovation and development. These may include new forms of housing, including mixed and sustainable housing forms, areas of integrated development, or areas with experimental forms of urban governance, which seek to manage potentially conflictual histories of rule and power broking.
- The *auto-constructed* periphery. This is akin to Caldeira's (2017) conceptualisation, which privileges an understanding of the role of informality in parts of the urban periphery referring to both the efforts of poor households but also forms of investment which may overstep

or ignore planning legislation, building codes and environmental concerns. Hence, auto-construction can cut across wealth barriers and describe forms of urban change usually directed by individuals, but most commonly evidences poor informal housing developments on parcels of land on the edges of urban centres.

- The *transitioning* periphery. This captures many features of change often evidenced within peri-urban descriptors of spaces including changing land use from rural uses including agricultural to more urban uses such as residential, institutional or retail. Processes may include the densification of spaces through the reduction of plot size, growth in housing and other built forms as well as the building of infrastructure which transforms spaces, such as roads, electricity, water provision, bus shelters and shopping facilities. These may be areas with long settlement histories, but where change is very evident. This category also accounts for transitions in forms of governance across urban peripheries.
- The *inherited* periphery. This describes spaces on the urban edge which were often produced by the state and commonly evidence decline or a failure to progress in various ways, such as employment opportunities, investment (particularly in business), infrastructure and basic services. Such spaces may continue to exist as spaces of obligation for the state, created for particular political and historical reasons and which continue to exert expectations and pressures on a weak authority. Economic opportunities may be narrow and vulnerable to change. The areas may be spatially fragmented, and for some residents living there, they can be poorly connected or have unaffordable transport provision. These are areas where residents' narratives of change or the lack thereof evidence hopelessness, marginality, feelings of being trapped and neglected. At the same time, they may also contain social networks or investment in housing valued by residents, or be places where more diverse activities can occur, so they are not necessarily perceived in uni-dimensional ways. They may also include more middle-class residents with historical investment in housing or work in the area, and thus may be more differentiated than is immediately apparent. Finally, inherited peripheries may contain aspects of governance typifying that of the 'informal strong-man' who is powerful and effective but can also be dangerous, operating at times beyond the reach of the state or alongside relatively democratic structures.

As devices these labels are useful to us in several ways: they broadly categorise and summarise the types of urban peripheries we have encountered; they provide a shorthand to reflect differences and distinctions between them; and they suggest something of their 'status', role or trajectory within larger urban conglomerates. But, as noted, the categories are not mutually exclusive and may exist alongside one another in nearby localities, or form overlapping layers in an area undergoing change. We invoke these categories of urban peripheries in the three city regions studied in our project. This focus on the scale of the city region is a conscious spatial and analytical practice. We argue that the geographical peripheries of city regions are relatively absent in research terms, particularly in relation to African cities (aside from a few key analyses outlined above), and that there is a lack of understanding of the state and non-state developments they are attracting – and of their potential for dynamic change, intervention and decline.

Our struggles over our conceptualisations of the urban peripheries were keenly tested through the process of case study selection, where we debated various tensions around the multiple meanings of 'peripheral', including the geographic question of being peripheral relative to different legal and political boundaries around cities, regions and states. A case in point is that of Lufhereng, Protea Glen and Waterworks, which operates as a case peripheral to the city of Johannesburg but is less peripheral when considered within the wider city region of Gauteng. This case, as well as that of Yeka Abado in Addis, forced us to question the geographical and spatial assumptions inherent in the idea of the periphery and what centres or cores we were privileging in our analyses. We foreground the notion, identified above, that living in the urban peripheries is a relational practice, and we take as central residents' own interpretations of where they live and how they define their home spaces. Thus we view the periphery as geographic, relational and lived as these quotes from participant diaries indicate:

We are still a rural area of which they say we are urban. (PK, Diary, Ekangala)

Kangala is a township situated in a semi-rural area, although it being a township with semi urban lifestyle habits ... you still experience the beauty of African cultures around here; people still practise tradition and isiNdebele. (Q, Diary, Ekangala)

Living in this area has a distinct feeling. I mean, I've never lived in such an area before. It has very nice features. In any other part of Addis Ababa,

you don't see farmers farming, collecting, preparing and storing their harvest and that creates a certain form of joy. (010, Diary, Tulu Dimtu)

There is nothing unique about this area when you compare it to other areas. Considering that it's a rural area, I assume the change is that there is now water and power provision and a school is constructed. (039, Diary, Yeka Abado)

We recognise that distance, accessibility, visibility and mobility are all critical, but we ask from and to what or where, rather than assuming the city centre as the obvious focus. The siting of interventions and the relative governance practices and engagement all shape the lived experiences of the periphery.

Debating 'drivers of change'

Our project makes use of the idea of 'drivers of change' in order to capture the multi-scalar processes shaping urban change in the peripheries. This term allows us to explore a wide range of processes, including economic, governance, environmental, political, individual, etc., at multiple scales. We argue that the diversity of such drivers of change is significant and it suggests simplistic accounts of the peripheries are highly problematic. Our research reveals that in some areas, large-scale formal investment is evident (such as in Tulu Dimtu in Addis), while other areas are predominantly characterised by informal development or a complex mix of formal and informal processes, as in Molweni in eThekweni and Winterveld in Tshwane. We argue that theoretical framings, which focus only on growth, are misleading (although growth is evident, such as in northern eThekweni through planning and other forces) (Todes, 2017). Edges can also be places of economic and population decline, with Ekangala an example of decline of industrial opportunity over time. Governance can be weaker on the edge than in the core, or divided between adjacent authorities or between different forms of governance, as in Molweni or Yeka Abado/Legetafo. We use these ideas to move beyond work on African cities which either overlooked peripheral areas or focused on a donor-driven conception of the 'peri-urban' concerned primarily with changes to land use and farming (Mbiba and Huchzermeyer, 2002). However, we note that interactions with the land vary in such spaces, with some offering opportunities for subsistence farming or as places where traditional farming still occurs (as the quotes from residents above illustrate).

Rather than a conceptual focus on the interface between urban and rural, this research explores urban peripheries as distinct sites that can be subject to major investments, new urban visions, contingent governance practices and processes of growth and decline. It aims to understand how people live in these critical spaces of twenty-first-century urbanism, as well as the potential of these sites for economic development and poverty reduction. Given very high rates of urban growth and complex forms of urban spatial expansion across most of the African continent (Doan and Oduro, 2012; Fox, 2012; Parnell and Pieterse, 2014), the challenge of peripheral urban governance and poverty reduction is affecting African states and residents in complex and diverse ways. In South Africa, for example, city governments result from local government consolidation and often cover large areas, with some city regions crossing other administrative jurisdictions, e.g. Gauteng. Other countries on the continent are dominated by a capital or 'core' city in a highly unbalanced urban system, placing particular strain on the land surrounding one specific city (Thuo, 2013) and associated governance institutions. In Ethiopia and Uganda, this process of core city expansion is further complicated by ethnic dimensions of territorial governance, as the city spills over borders into the surrounding region (Goodfellow, 2010 and 2017; Gore and Muwanga, 2014) and as our Addis cases reveal, associated conflicts over land result.

Fringe locations, where local economic activities such as mining or manufacturing can either integrate into the city region or alternatively decline – through restructuring, for example – can be transformed through state housing or speculative land improvements. Development in these areas can result in mobility and access challenges which impact employment opportunities. However, our findings show that this is often very varied locally, with adjacent neighbourhoods experiencing quite significant differences. Developments in such areas can strain viable infrastructure and service delivery at scale, requiring private-sector (including transnational) investments in the face of energy, telecommunications and water shortages (Simone, 2014; Todes, 2014). Major infrastructure projects financed by foreign aid or international assistance, particularly from China as in the case of Addis (e.g. the light railway), are rapidly transforming urban edges in contradictory ways, fostering inclusion for some, but exclusion for others (Liu and Lefèvre, 2012).

Peripheries may also be characterised by environmental challenges (Aguilar, 2008), social exclusion and low levels of cohesion. In other instances, the benefits of smaller, well-served peripheral communities

may prove highly desirable. Similarly, cross-border ethnic or political differences can paralyse negotiations between actors, but simultaneously privilege those who are able to exploit different governance systems and policy approaches between bordering municipalities (Todes, 2014). For some residents, then, urban peripheries are localities of choice, but for others they represent spaces of curbed choice. Nonetheless, people's presence on the edge has significant implications in terms of services, welfare, employment, labour force and markets for current and future development by both state and private market actors. The relationships between particular drivers, including the private sector, and their associated 'markets' can be intense and complex in terms of the specifics of what is included in particular engagements: the importance and multi-functional role of the Spar supermarket in our northern eThekweni case is an example of the significance of such spatially particular relationships.

The ways in which infrastructure and economic changes are conceptualised, realised and distributed (given their unevenness) and how these relate to everyday urban practices are key (Simone, 2014). Much of the recent research on and interest in infrastructure, which dominates urban theory currently, focuses on larger-scale infrastructural investments (Nugent, 2018). Our project reveals how in fact it is the smaller-scale, localised infrastructure interventions which are often the most significant drivers of change for residents. These may include investments in toilet blocks, road surfacing and local transport. These 'micro drivers' of change only emerge through a focus on the lived experiences of urban change and would be easily missed if such an engagement had not occurred.

This appreciation of the lived experiences of places and these 'drivers' of change' processes has an important intellectual trajectory as well as methodology within urban studies, geography and planning. Often it draws on deep insights from urban anthropology (Bank, 2011; De Boeck and Plissart, 2004; Ross, 2010) and sociology (Mosoetsa, 2011) which are concerned with how people live, work, eat, move, consume, sleep, parent (Meth, 2013), love and die in place. Much urban research, particularly that informing meta-scale urban intervention, relies on limited survey instruments often assessing quantitative outcomes. Charlton (2013) and Meth (2015) have argued that there is a lack of understanding of the social outcomes and the lived experiences of major interventions, as well as of more micro-scaled material changes. These are arguably significant drivers of local change, including the provision of state-provided housing, or the upgrading of communal facilities in poor informal settlements.

Meth and Charlton (2016) and Charlton and Meth (2017) reveal how such housing shapes livelihood challenges and how it has mobility implications, positive impacts on identity and security, but with gendered distinctions around power, violence and sexuality. These insights inform an analysis of housing concerned with welfare, social change and poverty, i.e. a lived experience interpretation of key drivers of change. Our project thus uses a methodology closely attuned to lived experiences to shed light on how larger as well as more micro drivers of change are experienced, and how they shape the urban peripheries in complex ways.

Capturing the everyday: emphases and omissions

We have argued here that conceptualising the everyday and researching the lived experiences of urban change are valid intellectual exercises. In practice, however, as we have progressed through our data collection we have debated and faced challenges with the question of who or what characterises the everyday. As outlined above, we commenced with the intention of giving voice to varying everyday lives occupying the peripheries, no matter what social class or housing form they occupied – our aim was to ‘sample’ those who lived there in order to capture multiple experiences of the peripheries. Our starting position was to avoid producing a summary of poverty on urban fringes and also to avoid overstating ‘niche’ experiences. We have used multi-nodal cases (see [Figure 2.3](#)) to reach diverse ‘everydays’ in most of our case study areas (i.e. a mix of very different housing types which largely but not entirely maps onto different classes of residents).

However, a variety of factors worked to contort and subvert these aims while other events and decisions simultaneously worked to satisfy and extend our aims, in complex and varied ways. Our choice of case study locations and their multi-nodal components is an obvious starting point for recognising who or what gets included or excluded. Initial decisions about what to include were overruled and reconsidered as data collection proceeded, as we recognised that our findings were exclusionary or lacking, or where we sought parity between data sources. For example, our inclusion of Waterworks informal settlement in the Lufhereng case in Gauteng occurred relatively late as we recognised its significance within the area, particularly in relation to imminent economic investment plans.

Gatekeepers were important too in affecting who we connected with and sampled, usually played out along party political lines in the South African cases. For example, Waterloo and Hammond’s Farm exhibited

Downloaded from manchesterhive.com © Copyright protected it is illegal to copy or distribute this document

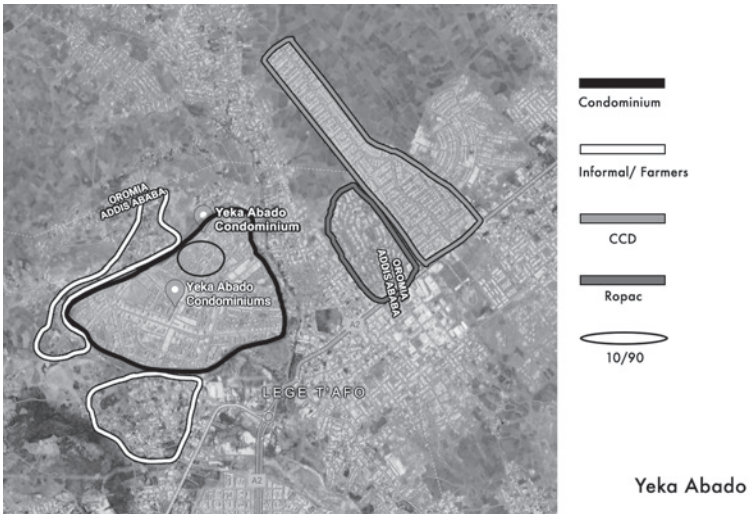
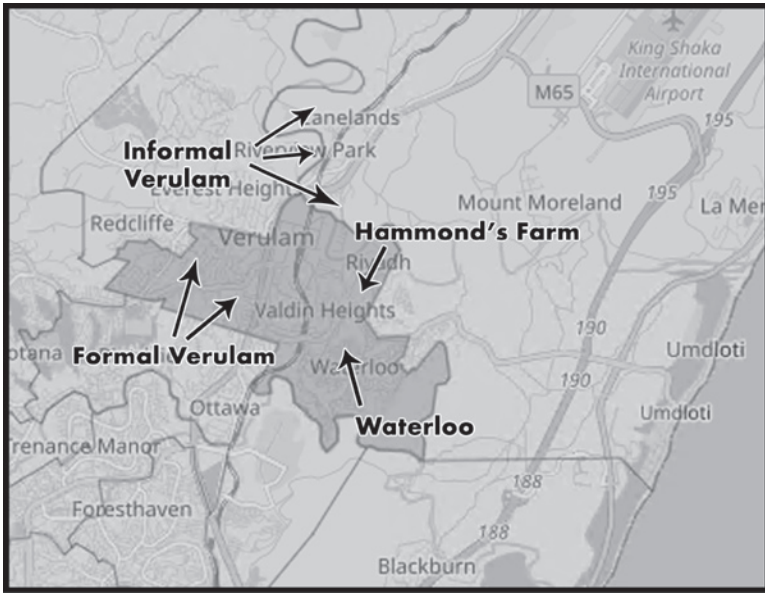


Figure 2.3 Examples of multi-nodal cases: (a) Northern eThekweni and (b) Yeka Abado

elements of gatekeeping by the African National Congress (ANC), perhaps in attempts to reclaim their power, given that the formerly ANC-controlled ward was now led by the opposition Democratic Alliance party. But gatekeeping was also tied to 'strong-man' politics in the Ekangala case, where implicit 'prevention' of access occurred or where engagement with participants was highly managed and circumscribed. Language played an important role in ex/inclusion and was significant in all case study areas. In the Gauteng cases, the variety of languages at times stretched beyond the capacity of the immediate research team, requiring the 'farming out' of transcripts and recordings to translators and reducing the ease of communication in face-to-face engagements. In contrast, different language skills among the research team meant that particular foreign nationals were engaged and included, picking up on quite distinct experiences in the peripheries.

The weekday working-hour timings of field research in South Africa inevitably shaped patterns of inclusion and exclusion, privileging those working at home, unemployed, elderly or young. Efforts were made during interviews and surveys to question beyond the individual present, but it is important to recognise the ways in which such temporally particular engagements tended to yield very specific insights into people, places and processes. In contrast, data gathering for the Addis cases commenced later than the South African cases and all qualitative data were gathered during weekends and work holidays, thereby extending the range of residents included in the research. Some of our cases were very peripheral and highly spatially fragmented, with Winterveld in Gauteng our most extreme example. The dispersed and hard-to-access nature of this and other cases really brought home the grind of peripheral living, but also directly affected the frequency, duration and timings of researcher engagement.

Additionally, some of our cases contained neighbourhoods and areas that felt and presented as open and accessible, including Lufhereng in Gauteng, Molweni and northern eThekweni – and in the two Addis cases, especially the areas of condominium housing. This openness was primarily a function of housing type, but also related to social structures, relative safety, political calm, street pattern and the daytime presence of residents in the area. These nodes within our case study areas were in distinct contrast to others which were highly secured, closed and impenetrable, including Crestholme and Crestview in eThekweni, and to a lesser extent Verulam and Protea Glen as well as Country Club Development in Addis

(in Yeka Abado). As sites of relative and extreme wealth, urban housing security in the form of gated access, walls, fencing, intercoms and guards, and more importantly a generic sense of mistrust, apprehension and 'busyness', worked to limit researcher access in sometimes small ways. These included the complete barring of access and non-engagement: e.g. the survey company we employed in South Africa struggled with accessing participants in 'wealthier white/Indian areas.' Similarly we faced challenges when trying to recruit for our diary-writing task, as well as in recruiting those to undertake interviews in these areas. We obviously took measures to overcome these moments of exclusion, in particular through using alternate methodologies to reach individuals, including WhatsApp message groups, or use of gatekeepers to facilitate access. Nonetheless, overall our data is somewhat biased towards less wealthy, more accessible residents who through their presence and willingness shared their everyday lives with our team.

Finally, the challenges of urban and political unrest and the reality and threat of crime both worked to stifle access to some of our cases and reduce time spent in the field. In Addis, the ability of our team of researchers to visit the farmers' settlement/informal areas of Yeka Abado, located right on the Oromia border, during mid-2018 was significantly undermined by ongoing political tensions. Access to various parts of Winterveld in Gauteng was reduced by concerns over researcher safety due to significant crime levels in the area.

This discussion has inevitably focused on the more restrictive realities that undermined data access, but the project has multiple 'good stories', too, of key individuals in each of the case study areas who extended themselves beyond what was expected to assist us in accessing participants and learning about their neighbourhoods. As examples, in northern eThekweni, two migrants from the Eastern Cape were pivotal in introducing us to the informal settlements of Canelands and Coniston, and in Lufhereng a local community development organisation worked with researchers to engage other participants in the area. These various factors have all worked together inevitably to emphasise some voices and omit others.

Comparability: cases, methods, stories, contexts ...

We avoided strictly uniform criteria for case selection, although ultimately areas that were within geographic peripheries and where some form of

investment had occurred were key. We aimed to include areas of decline, and we deliberately kept our notion of investment or intervention broad in order to capture diversity. Our cases are not necessarily comparable in size terms, population numbers, etc. As explained above, most are multi-nodal as they seek to capture a variety or diversity of lives in the periphery, but the characteristics of this multi-nodality varied from case to case. These variations shape processes of urban comparison, and we utilised multiple practices of comparison to structure analysis, conceptualisation and argument building. To support this we are able to use comparison to identify 'base' analyses, including comparisons of the history, rationale and length of settlement, along with the population figures and changes in these over the years. Our work compares the varied political affiliations and governance structures present within case study areas, identifying patterns across cases. These include identification of the generic and relative strength of the national governments of South Africa and Ethiopia in shaping the urban (in contrast to the kinds of governance identified in Sawyers' (2014) work, for example, in Nigeria) alongside the actions of local committees and civic groups; the relative weakness of certain municipalities in servicing and supporting particular areas within cases; and the presence of problematic strong-men in some cases where formal governance appears weak and stretched or even absent. Thus our comparisons reveal that governance patterns and structures vary dramatically, with evidence of strong party politics in some, alongside problematic clientelistic relationships, power-wielding individuals, effectively functioning local democracies and committee structures, and competing traditional leadership in others.

Comparisons also reveal the varied significance of city region, municipal authority and traditional leadership boundaries in shaping investment forms and the financial clout of investments, as well as the relationship between state policy (at different scales) and actual practices of implementation on the ground. Housing types, and investment in state housing in particular, prove a significant area of comparison across all cases, throwing into sharp relief the viability of different state-subsidised schemes and the successes and failings of different architectural forms on everyday lives and urban quality. Employment, and most significantly unemployment, presents as the single biggest point of comparison across all South African cases, providing insights into how joblessness and job seeking are explicitly shaped through peripherality or manifest in diverse forms of peripheral settlement. Comparisons of unemployment reveal how difficulties in access,

transport and affordability all work to undermine livelihood opportunities in seemingly very different spatial contexts. In Addis, having employment is a more dominant feature (and a prerequisite for access to condominium housing), but comparisons with the South African cases over declining affordability of new housing and the costs of living generate clear insights into the viability of life for many residents, supporting the findings of Yntiso (2008).

The role of capital in shaping the peripheries is an important comparative theme, but one which has no clear or singular narrative and is differentiated across cases depending on the types of investment (e.g. retail versus manufacturing), the relationship to residents (e.g. as prospective employee, or as customer) and the forms of capital (e.g. Chinese investors, global firms, local traders). Our findings do not point to a singular story about neoliberalism and the dominance of private capital to the detriment of state investment, although this may be important in some cases. Instead our material reveals that certain investments by the private sector – supermarkets and shopping malls in particular – can play a remarkably important role for residents locally, encouraging us to critique and counter more singular accounts of the dangers of capital penetration. Nonetheless, across our cases the volatility and fickleness of capital and its varying relationships (e.g. cosy, dominating, compromised) with different scales of the state produces patterns of investment, decline and change which directly shape access to work and services, usually revealing substantial inequalities in benefits to residents. Finally, we were struck by the significance of quality of life indicators across all cases and how influential these are to residents' well-being. Variations on a lack of access to water, electricity, services, health care, schools, local shops, the police, etc. are common points of comparison (obviously varying in their details) across the cases and illustrate the significant needs felt by residents for local infrastructural investments in their areas.

Having sketched out some of the initial points of comparison, we recognise the need to develop analytical tools, which enable us to conduct comparison alongside an appreciation of contextual specificity and beyond the intricacies within each case study. There is also a need to further compare cases within and across city regions, and across two countries. We note that Gauteng, eThekweni and Addis Ababa have different contexts but important similarities too and that thorough contextual awareness in relation to each case is critical to in-depth understanding, especially in relation to drivers of change.

Methodologically we have worked to ensure that the data collection instruments are the same in each case and follow the same analytical processes where appropriate, and that we rely on the overall research questions to drive comparative analysis. Our capacity for comparison will be affected by differentials in data depth and coverage, which relate to the variety, volume and depth of multiple data types across and even within case study areas. This is partly a function of a significant difference in access to information and to existing resources. For instance, the presence of the Gauteng City Region Observatory and Gauteng expertise means much stronger baseline statistical data and overall level of contextual information in some cases. Yet positive surprises have shaped 'better' data collection than expected, including the positive responses to completing solicited diaries in Addis Ababa, a method initially assumed to be unfeasible in this city region. Our abilities to ensure consistency in depth and range of data collection are also a function of differences in access and different modes of access to residents in case study areas (detailed above in relation to gatekeeping) or because of the sampling of surveys or the benefits of social media. Finally, variability may be shaped by the ordering of data collection as it rolled out in a different sequence (via surveys first or diaries and interviews first) for reasons beyond our control.

Conclusions: the diversity of the peripheries

This chapter has set out various intellectual and methodological realities and challenges as we reflect on how we have 'operationalised peripheries research'. We argue that there is no such thing as *an* urban periphery, rather we see *multiple peripheries* and *peripheries within the periphery*. We have produced an early categorisation of peripheries to illustrate this multiplicity, recognising its overlapping nature. The urban peripheries are significant and are experienced at multiple scales shaped through interventions, investments and other drivers of change, including many that are state directed. Importantly, we note how micro interventions, such as the building of a school or shop, are critical to everyday life and resident well-being. In contrast, we argue that big changes sometimes pass some residents by because of their lack of connections (political and/or physical), skills or social capital to benefit.

Our chapter has considered how a range of very real methodological choices and experiences worked to structure the production of knowledge and the breadth and depth of coverage of lives and voices across the

urban peripheries. While this chapter has focused in more detail on those that 'deviated' from initial plans and intentions, our collaborative working experiences have served to illustrate just how productive and insightful our research endeavours have been, and our abilities to generate arguments and publications which draw on the points of comparison briefly sketched out above illustrate this achievement. To conclude, we are more convinced than ever that the urban peripheries are a critical site of urban transformation which offers insights into a true diversity of urban change. We are confident that our methodological choices to examine these dynamic peripheries through the lens of the everyday, alongside an appreciation of wider structural change, have yielded important insights and understandings which will help pave the way for a better understanding of urban peripheries.

Acknowledgements

We are grateful for funding from the British ESRC (Project Grant Ref: ES/N014111/1) and South African NRF (Project number 101579), which made this project possible. We also wish to thank all residents and interviewees across our seven case study areas for their participation and engagement with this project.

References

- Aguilar, A. (2008). 'Peri-urbanization, illegal settlements and environmental impact in Mexico City'. *Cities*, 25(3): 133–45.
- Andreasen, M.H., Agergaard, J. and Møller-Jensen, J. (2017). 'Suburbanisation, homeownership aspirations and urban housing: Exploring urban expansion in Dar es Salaam'. *Urban Studies*, 54(10): 2342–59.
- Bank, L. (2011) *Home spaces, street styles: Contesting power and identity in a South African city*. London: Pluto Press and Johannesburg: Wits University Press.
- Beall, J., Parnell, S. and Albertyn, C. (2015). 'Elite compacts in Africa: The role of area-based management in the new governmentality of the Durban city-region'. *International Journal of Urban and Regional Research*, 39(2): 390–406.
- Bloch, R. (2011). 'Africa's new suburbs: Growth, expansion and governance'. Draft paper for the Global Suburbanisms Workshop on Suburban Governance, Leipzig, 1–2 July.
- Buire, C. (2014). 'The dream and the ordinary: An ethnographic investigation of suburbanisation in Luanda'. *African Studies*, 73(2): 290–312.

- Caldeira, T. (2017). 'Peripheral urbanization: Autoconstruction, transversal logics, and politics in cities of the global south.' *Environment and Planning D: Society and Space*, 35(1): 3–20.
- Charlton, S. (2013). 'State ambitions and peoples' practices: An exploration of RDP housing.' PhD thesis, University of Sheffield.
- Charlton, S. and Meth, P. (2017). 'Lived experiences of state housing in South Africa's cities: Johannesburg and Durban.' *Transformation*, 93: 91–115.
- De Boeck, F. and Plissart, M. (2004). *Kinshasa: Tales of the invisible city*. Ghent: Ludion.
- Doan, P. and Oduro, C. (2012). 'Patterns of population growth in peri-urban Accra, Ghana.' *International Journal of Urban and Regional Research*, 36(6): 1306–25.
- Ekers, M., Hamel, P. and Keil, R. (2012). 'Governing suburbia: Modalities and mechanisms of suburban governance.' *Regional Studies*, 46(3): 405–22.
- Fox, S. (2012). 'Urbanization as a global historical process: Theory and evidence from sub-Saharan Africa.' *Population and Development Review*, 38(2): 285–310.
- Garreau, J. (1991). *Edge city: Life on the frontier*. New York: Anchor Books.
- Goodfellow, T. (2010). "'The bastard child of nobody"? Anti-planning and the institutional crisis in contemporary Kampala.' Crisis States Research Centre Working Paper, LSE.
- Goodfellow, T. (2017). 'Taxing property in a neo-developmental state: The politics of urban land value capture in Rwanda and Ethiopia.' *African Affairs*, 116(465): 549–72.
- Gore, C.D. and Muwanga, N.K. (2014). 'Decentralization is dead, long live decentralization! Capital city reform and political rights in Kampala, Uganda.' *International Journal of Urban and Regional Research*, 38(6): 2201–16.
- Harrison, P. and Todes, A. (2015). 'Spatial transformation in a "loosening state": South Africa in a comparative perspective.' *Geoforum*, 61: 148–62.
- Jenkins, P. (2013). *Urbanization, urbanism and urbanity in an African city: Home spaces and house cultures*. London: Palgrave Macmillan.
- Keil, R. (2018). *Suburban planet: Making the world urban from the outside in*. Cambridge: Polity Press.
- Liu, X. and Lefèvre, B. (2012). 'Chinese influence on urban Africa.' Studies No. 06/12, Institut du Développement Durable et des Relations Internationales, Paris.
- Mabin, A., Butcher, S. and Bloch, R. (2013). 'Peripheries, suburbanisms and change in sub-Saharan African cities.' *Social Dynamics*, 39(2): 167–90.
- Mbiba, B. and Huchzermeyer, M. (2002). 'Contentious development: Peri-urban studies in sub-Saharan Africa.' *Progress in Development Studies*, 2(2): 113–31.
- McKee, D.L. and McKee, Y.A. (2004). 'Edge cities, urban corridors and beyond.' *International Journal of Social Economics*, 31(5/6): 536–43.

- Meth, P. (2013) 'Parenting in informal settlements: an analysis of place, social relations and emotions'. *International Journal of Urban and Regional Research*, 37(2), 537–55.
- Meth, P. (2015). 'The gendered contradictions in South Africa's state housing: Accumulation alongside erosion of assets through housing'. In C. Moser (ed.), *Gender, asset accumulation and just cities*, 100–16. London: Routledge.
- Meth, P. and Charlton, C. (2016). 'Men's experiences of state sponsored housing in South Africa: Emerging issues and key questions'. *Housing Studies*, 32(4): 470–90.
- Mosoetsa, S. (2011). *Eating from one pot: The dynamics of survival in poor South African households*. Johannesburg: Wits University Press.
- Nugent, P. (2018). 'Africa's re-enchantment with big infrastructure: White elephants dancing in virtuous circles?'. In J. Schubert, U. Engel and E. Macamo (eds), *Extractive industries and changing state dynamics in Africa: Beyond the resource curse*, 22–40. Abingdon: Routledge.
- Parnell, S. and Pieterse, E.A. (2014). *Africa's urban revolution*. Cape Town: UCT Press.
- Parnell, S. and Robinson, J. (2012). '(Re)theorising cities from the global south: Looking beyond neoliberalism'. *Urban Geography*, 33(4): 593–617.
- Phelps, N.A. (2012). 'The growth machine stops? Urban politics and the making and remaking of an edge city'. *Urban Affairs Review*, 48(5): 670–700.
- Pieterse, M. (2018). 'Where is the periphery even? Capturing urban marginality in South African human rights law'. *Urban Studies*, 56(6): 1182–97.
- Ross, F. (2010). *Raw life, new hope: Decency, housing and everyday life in a post-apartheid community*. Cape Town: UCT Press.
- Sawyer, L. (2014). 'Piecemeal urbanisation at the peripheries of Lagos'. *African Studies*, 73(2): 271–89.
- Simone, A. (2014). 'Infrastructure, real economies and social transformation: Assembling the components for regional urban development in Africa'. In S. Parnell and E. Pieterse (eds), *Africa's urban revolution*, 221–36. Cape Town: UCT Press.
- Stern, M.A. and Marsh, W.M. (1997). 'Editors' introduction: The decentered city: Edge cities and the expanding metropolis'. *Landscape and Urban Planning*, 36(4): 243–6.
- Thuo, D. (2013). 'Exploring land development dynamics in rural–urban fringes: A reflection on why agriculture is being squeezed out by urban land uses in the Nairobi rural–urban fringe?'. *International Journal of Rural Management*, 9(2): 1045–134.
- Todes, A. (2014). 'New African suburbanisation? Exploring the growth of the northern corridor of eThekweni/KwaDukuza'. *African Studies*, 73(2): 245–70.

- Todes, A. (2017). 'Shaping peripheral growth? Strategic spatial planning in a South African city-region'. *Habitat International*, 67: 129–36.
- Watson, V. (2014). 'The case for a southern perspective in planning theory'. *International Journal of E-Planning Research*, 3(1): 23–37.
- Yntiso, G. (2008). 'Urban development and displacement in Addis Ababa: The impact of resettlement projects on low-income households'. *Eastern Africa Social Science Research Review*, 24(2): 53–77.

Uncertain pasts and risk-sensitive futures in sub-Saharan urban transformation

Mark Pelling, Alejandro Barcena, Hayley Leck, Ibidun Adelekan, David Dodman, Hamadou Issaka, Cassidy Johnson, Mtafu Manda, Blessing Mberu, Ezebunwa Nwokocha, Emmanuel Osuteye and Soumana Boubacar

Introduction

The Sustainable Development Goals (SDGs) challenge urban planners, risk professionals, researchers and citizens to extend their focus from accounting for the status of risk towards understanding and acting on the processes that can enable a transition to more risk-sensitive and transformative urban development across all contexts. Risk-sensitive development is required to reduce risk that has accumulated in the city and to better consider risk when planning new developments (Jones and Preston, 2011). This includes building design, construction and land-use planning, enhanced infrastructure access and maintenance, risk awareness and planning for emergency response and reconstruction, including social safety nets and insurance. To deliver a sustainable city for all requires a more frank and comprehensive focus on procedure: Who makes decisions, under which frameworks, based upon what kind of data, and with what degree and direction of accountability?

This chapter explores the status and the scope for transition of risk-sensitive and transformative urban development in diverse cities of sub-Saharan Africa. Sub-Saharan Africa is important because of its large proportions of urban populations with high vulnerability and growing exposure to risks (Fraser et al., 2017). High rates of urban growth pose increasing risks as we go into the future, yet there is also opportunity to reduce risk through integrating risk management into development

(Satterthwaite and Bartlett, 2017). However, this opportunity space is often constrained by limited capacities to plan and manage the rapid urbanisation process, particularly in informal settlements. Limited capacities to prevent processes of risk accumulation pose threats to poverty reduction and sustainable development (Dodman et al., 2017). In this context, there is an increasingly urgent need for squarely recognising and addressing the underlying vulnerabilities of urban populations and their root causes. Transitioning towards such sustainable urban pathways will require the strengthening of capacities and accountability of city authorities and broader governance systems, both formal and informal (Pelling et al., 2018).

Complex relationships between risk (likelihood of future loss and damage) and vulnerability (propensity or predisposition to be adversely affected) and other elements of development and human well-being require detailed analysis and advanced understandings (Thomalla et al., 2018). This connects to the SDGs, which integrate risk management throughout, specifically in Goal 1: Eradicating Poverty, and Goal 11: Sustainable Cities and Communities. Particularly important for the SDGs is understanding and addressing the full spectrum of risk, encompassing everyday risks (e.g. environmental/public health risk; man-made hazards such as poor solid waste management), small and large events, their interlinkages and relative changes in their nature, scale and distribution (Fraser et al., 2017).

This chapter draws from a large multi-disciplinary, multi-country programme of research and capacity building – Urban Africa: Risk, Knowledge (Urban ARK) – focused on understanding risk in sub-Saharan Africa. The programme works in nine cities across eight countries and aims to address gaps in data, understandings and the capacity to break cycles of risk accumulation. This is pursued through a partnership between researchers, practitioners and city- and community-level activists. The experience and analysis of four cities in particular are considered here: Karonga, a small town in northern Malawi; Ibadan, a regional centre in Nigeria; Niamey, capital city of Niger; and Nairobi, capital city of Kenya and a regional core city. These four cities are chosen for their regional coverage across sub-Saharan Africa, the range of sizes, risk vulnerability profiles and breadth of illustrative blockages and opportunities for risk-sensitive development.

The second section presents a common analytical framework to help identify blockages and opportunities for a transition towards a risk-sensitive and transformative urban development. This framework was initially

proposed in Pelling et al. (2018) and is further developed and applied here through detailed investigations of blockages and opportunities to transition based on synthesised empirical research undertaken in the four key cities under the Urban ARK programme since 2015. The framework is illustrated through each city in turn: Karonga, Ibadan, Niamey and Nairobi. A concluding discussion reflects on city observations to draw out recommendations for city-level and wider action and research partnerships.

Blockages and opportunities for transition towards a risk-sensitive and transformative urban development

Risk management continues to be a policy archipelago, distanced from the mainstream of development activity and strategy. How can research work in partnership with practitioners and stakeholders at risk to support a transition towards a more integrated vision, process and practice of risk management? Figure 3.1 identifies three key blockages to this transition and three opportunities drawing from recent research under the Urban ARK programme in sub-Saharan Africa (Pelling et al., 2018). The figure shows that transition is constrained by fragmented governance, donor priorities and inadequate monitoring of hazards, impacts and vulnerability.

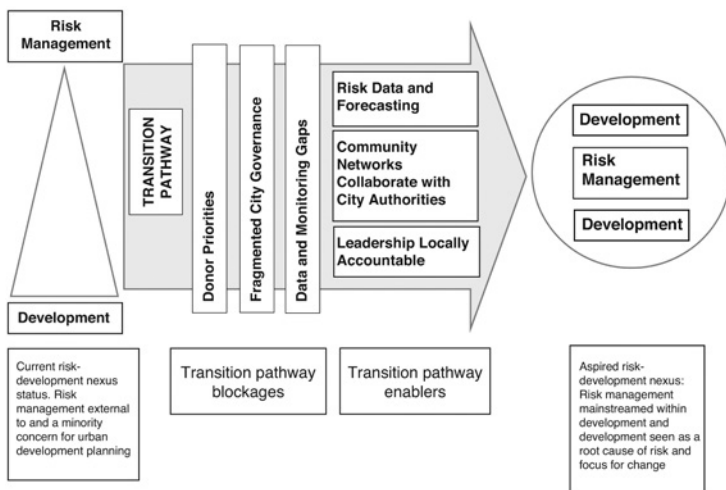


Figure 3.1 Blockages and opportunities for urban risk transitions

While there is no formal agreed-upon definition, transformative urban development implies a radical change to systems and shifts to new modes of urban planning, management and governance, thereby leading to new development pathways (Revi et al., 2014; Roberts and O'Donoghue, 2013). Building on this, Revi et al. (2014: 13) propose that effective city-based disaster risk management and risk reduction provide a strong foundation for transformative urban development and adaptation, which also necessarily entails 'effective multi-level urban risk governance, alignment of policies and incentives, strengthened local government and community adaptation capacity, synergies with the private sector and appropriate financing and institutional development'.

These issues are explored here through the application of our conceptual framework presented in [Figure 3.1](#). It investigates key constraints to achieving this in practice but also highlights important opportunities where pockets of transformative urban development are beginning to emerge in practice. Institutional gaps relating to weak capacities, inadequate resources, lack of systematic coordination and divisions between formal and informal systems are a priority blockage to data collection mechanisms and hazard-monitoring capabilities in urban sub-Saharan Africa. The frequent absence of systematic loss records, geo-referenced and gender disaggregated, constrains the possibility of correlating development drivers with risk.

Effective practices and policies in urban planning and governance in reducing risk are considerably less well documented than the reasons for ineffective planning systems and local governments in postcolonial African cities (Adelekan et al., 2015). This chapter responds to Adelekan et al.'s call to fill this lacuna through highlighting examples of effective partnerships between city governments, local populations and civil society organisations (e.g. Nairobi Mukuru SPA, documented later) that address gaps in the risk–development nexus. Ajibade et al. (2016) asked, 'who are the dominant actors that can trigger a transition?' and whether transition windows (e.g. political and institutional change) can be utilised to enhance equity and future risk reduction.

In this chapter, we show how opportunities for transition arise through several channels, notably when organised civil society collaborates with the city government and other actors (Pelling et al., 2018). Citizen-led approaches for risk-related data collection have been shown to be critical for advancing early warning of hazard (Fraser et al., 2017; Pelling et al., 2018). Political and institutional change can trigger processes of transition

and transformation (Kemp et al., 2007; Pelling, 2010). Transitions theory strongly recognises that innovations in multi-level governance can offer the potential for transition (Ajibade et al., 2016). There is also major opportunity for transition through the actions of networked civil society in many sub-Saharan African cities (Makau et al., 2012) that are driving demand-led and inclusive planning for risk (see below for the Nairobi case). There is further scope for transition if development donors partner with and provide finance opportunities to such independent actors at scale.

However, the interplay between actors and decision-making processes are continuously negotiated through unequal power relations and situated within broader political economic forces, which can disrupt transitions (Ajibade et al., 2016; Solecki et al., 2017). In cases where multi-level governance remains fragmented, top-down agendas often shape cities' decisions – with inadequate attention to local risk and development priorities. Fundamental shifts in institutional thinking are also required, from predominant disaster-focused, short-term views to longer-term perspectives that emphasise vulnerability reduction, addressing root causes and equity considerations (Conway and Schipper, 2011; Ziervogel et al., 2017). However, as Conway and Schipper's Ethiopian-based study shows, this is challenging to achieve, 'precisely because many institutions have been specifically set up to respond to emergencies, including food aid, whose *raison d'être* is put into question by a new approach' (Conway and Schipper, 2011: 235).

Using the above framework as a critical lens, the chapter now considers blockages and opportunities for transition towards risk-sensitive and transformative urban development through the four case study cities – Karonga, Ibadan, Nairobi and Niamey. Dodman et al. (2019) provide a detailed overview of the range of methods used across the programme for understanding the spectrum of risks in each study city. Here we have synthesised findings from studies in each city where multiple data types and results from a range of methods are used. These include documentary and institutional analysis, community data and participatory approaches (e.g. community-led risk assessment and resource mapping), as well as surveys and interviews for the four city cases. The city cases introduced above are based on the following core questions, guided by the theoretical framing in Figure 3.1: How is risk currently managed by the city? What are the donor priorities, city governance structures, and data and monitoring gaps? What are the barriers to transition and pathways to transition,

particularly related to risk data and forecasting, community networks in collaboration with city authorities, and locally accountable leadership?

Transition in the risk–development nexus: city cases

Guided by the theoretical framing summarised in [Figure 3.1](#), the next sections explore these findings in detail with illustrative examples for each city in turn.

Karonga, Malawi

The small but rapidly growing urban centre of Karonga (Karonga Town) is in the north of Malawi. Karonga's population is projected to increase from 41,000 inhabitants in 2008 to approximately 63,000 in 2018 (Wanda et al., 2017). The town is vulnerable to multiple small and large disaster risks and has been affected by earthquakes, drought and floods (Manda, 2014; Wanda et al., 2017). Everyday risks such as poor-quality and inadequate sanitation and unsafe water also pose significant threats for inhabitants (Holm et al., 2018). However, the nature and scale of risks in Karonga remains poorly understood (Manda and Wanda, 2017). This is partly attributable to the lack of political attention to small towns throughout Malawi (Wanda et al., 2017).

Disaster risk governance in Karonga Town faces considerable challenges. Firstly, the town's rapid growth has led to an increasing demand for services and risk-reducing infrastructure, yet provision is constrained by limited capacities and funding within local government (Holm et al., 2018). As with other urban centres in Malawi and across sub-Saharan Africa, growth in Karonga is largely informal (Manda, 2014). Secondly, the town council was dissolved in 2009, resulting in the town being governed by the Karonga District Council, a rural local government. The Karonga District Council is significantly over-stretched in governing urban development challenges. This weak governance structure has resulted in poor planning and project implementation, and consequently the accumulation of risk. A further major constraint to disaster risk governance is that there are no locally held systematic records on urban disasters and losses for Karonga Town. The district-level data mainly covers large intensive disaster episodes (e.g. earthquakes and large-scale floods). Moreover, when disaster records are in place, they are often inadequately taken into account. For example, while Karonga Town registered the largest number of disasters in Malawi between 1946 and 2008 in district and other available data sets, this has

not been well recognised in planning or policy (Lunduka et al., 2010). More systematic disaggregated data at the sub-district level (especially from extensive and everyday risks) is necessary for effective policy formulation and planning.

Malawi published its Disaster Risk Management (DRM) policy following significant pressure from development partners and donors. Though national and international partners committed to assist the country's response strategy during the extensive floods of 2015, their support was conditional upon a conducive policy framework being in place. This situation exemplifies the nature of policy and practice of urban planning in Malawi and indeed many cities in sub-Saharan Africa, which are largely influenced by external agents. The policy has notable weaknesses limiting its effectiveness. Significantly, Malawi's urban areas are not specifically addressed, despite the increasing trend of urban disasters, and resource allocation to lower governance levels is highly inadequate (Manda and Wanda, 2017). Donors' priorities play a significant role in shaping DRM agendas at all scales. The Malawi government has received major loans from multiple international agencies (e.g. the African Development Bank and the World Bank) which have mainstreamed disaster risk consideration in development initiatives. Yet, these loans have created large-scale debts. The implementation of policy in Karonga Town tends to be externally driven. The national government acts both to direct policy and to support implementation. Policy implementation often focuses on disaster response. Very little attempt is made proactively to reduce risks either through capacity building or infrastructure upgrading.

The accountability ladder is fragmented, occurring separately between state actors on the one hand and community groups and their traditional leaders on the other. City officials are mandated to report to national policymakers. Accountability at the city level is expected through the ward councillors, but there are no such wards in place in the case of Karonga Town (Manda, 2014). Instead, ward councillors report to the citizens through traditional leaders. NGOs who have presence in the community play a bridging role and participate in the local government meetings through the District Executive Committees (DEC). Sometimes, the DEC meetings are funded by the NGOs: the prominent influence of the latter risks the independence of the DECs. The 2015 DRM policy provides for interaction between communities and councils through a decentralised reporting mechanism – the lowest level is the village DRM committee, followed by the area DRM, the district DRM committee and

the National Platform at the highest level. In practice, the reporting chain is not always fully established and the committees do not always have a specific urban focus.

Recognising this gap, Urban ARK researchers from Mzuzu University sought to facilitate collaboration between the local government and the community. This was achieved through the establishment of a DRM committee in one of the neighbourhoods of Mzuzu, a small urban centre in northern Malawi. The committee is a significant platform for information sharing between researchers, local government representatives and community members. Furthermore, Mzuzu University and the Sierra Leone Urban Research Centre established local Community Hubs under Urban ARK in Karonga, Malawi and Freetown, Sierra Leone. The hubs are centres for learning and coordinating community programmes resulting from participatory risk assessments in the two urban centres.

Despite these opportunities, mainstreaming disaster risk reduction (DRR) for various hazards and a transition towards risk-sensitive development remains a significant challenge in Karonga due to multiple interacting factors, including the absence of a functional urban local government, inadequate financing, inherent failures to plan and regulate growth and silo-based approaches (Manda and Wanda, 2017).

Ibadan, Nigeria

The city of Ibadan, the capital of Oyo State in Nigeria, is the largest traditional urban centre in sub-Saharan Africa. It has one of the highest population densities in the country, with a considerable annual population growth (Adelekan, 2019) that is concentrated largely in informal areas. The city is exposed to a range of disaster risks including windstorms, flooding, fires, communicable and infectious diseases, road accidents and violent crime (Adelekan, 2019).

The management of risk in Ibadan is guided by the 2010 National Disaster Management Framework and the 2017 National Policy on Disaster Risk Reduction. The policy recommends a government-led approach, including multi-agency and development partners. While emphasis is given to proactive and multi-scalar risk governance, implementation remains fragmented (Ziervogel et al., 2017). Several government bodies are involved in the management of everyday and disaster risks in Ibadan, with varying degrees of success depending on resources and institutional capacity (e.g. the Bureau of Physical Planning and Development Control, the Ministry of Health, Environment and Water Resources, Nigeria Security

and Civil Defence Corps, and the Department of Fire Service). Significantly, international donors have funded the Ministry of Health in the implementation of programmes addressing public health risks (e.g., malaria, tuberculosis); however, systematic mainstreaming of DRR is missing. Limited coordination and overlapping responsibilities among various government ministries and agencies in risk management constrain their collective potential.

In practice, institutional attention remains focused on reactive and centralised efforts. Whereas the Oyo State Emergency Management Agency is mandated by law to address risk management in Ibadan (i.e. preparedness, mitigation, response and recovery), the agency has largely focused on emergency response, during small and large disaster events, including floods (Oyo State Law, 2008). The same law requires eleven Local Government Areas in Ibadan to establish Local Emergency Management Committees, but Olaniyan et al. (2018) found poor compliance due to inadequate funding, weak local government and an unstable political system.

Internal and external donors shape risk management priorities due to weaknesses in public financing, knowledge gaps and the low capacity of government staff. Local governments still depend on the federal and state governments for funding. For the most part, funding decisions are influenced by complex political motives, including the political affiliations of local populations and the loyalty of local government administrators to higher-level government functionaries. A significant example can be drawn from the 2011 floods in Ibadan, when the state government requested a credit facility to address infrastructural challenges related to the floods. However, the Global Facility for Disaster Reduction and Recovery recommended the Ibadan Urban Flood Management Project (IUFMP), which was shaped by Pillar Two of the World Bank's Africa Strategy, and the World Bank/Nigeria Country Partnership Strategy (2014–17). Furthermore, the state government identified forty-eight river canals for dredging and widening, of which only thirty-six were approved by the World Bank. Forty communities, not benefiting from this programme, continue to ask the government for assistance in this regard.

Risk data collection remains poor in Ibadan, as in other Nigerian cities. City data (i.e. socio-economic), where available, is mainly provided at the level of local government associations. The lack of census data at lower levels (i.e. wards and localities) remains a significant challenge for city risk assessment. The inventory of risk-related events is poor, incomplete and generally inaccurate, mainly limited to events with significant impacts.

Lack of city-wide risk data covering the whole spectrum of risks is a key limitation to informed risk-related decisions, including development planning. The Urban ARK Ibadan city programme has contributed to narrowing this gap by collecting city-wide data on everyday risks, as well as small and large disasters, disaggregated at ward level and using methods such as DesInventar, household/community assessments and consultations of city officials, household surveys and focus group discussions with community members. This information has the potential to inform the decision-making of city authorities.

Community organisations have shown a potential for risk-sensitive transitions in Ibadan. For instance, Community Development Associations (CDAs) are involved in risk-reduction activities (e.g. infrastructural development, maintenance of roads, water supply, and flood and erosion control) and community members played a significant role in the monitoring and enforcement of risk-related guidelines (e.g. waste disposal and construction areas). They are also increasingly engaged in risk-reduction decision-making, although their influence remains limited. For example, traditional leaders, CDAs and community organisations are engaged in risk-reduction meetings such as those of the IUFMP. Urban ARK's Ibadan programme has established a forum of exchange between community leaders, trade associations, city officials, NGOs, civil society groups and researchers. These spaces have allowed the identification of stresses and everyday hazards and the development of a city risk-reduction plan. This is a considerable opportunity for a transition in the risk–development nexus in Ibadan, but it will require ongoing advocacy and support.

Nairobi, Kenya

Nairobi is a large and rapidly growing city: the second largest in East Africa, with considerable regional economic and political significance. The majority of Nairobi's over 3.3 million population live in informal/unplanned areas, low-lying and flood-prone, with very limited basic services and infrastructure. Poverty, food insecurity and other environmental vulnerabilities are widespread. These challenges are compounded by multiple interacting shocks such as disease outbreaks. Nairobi's social and political environments are characterised by vast inequalities (Myers, 2016). Rapid and unplanned urbanisation has led to increased flood risk. Weak governance and consequent poor service delivery have exacerbated man-made hazards such as poor solid waste management, with significant negative health impacts (APHRC, 2017). This is typified by the Dandora

municipal open dumpsite, located close to public institutions, posing a range of health risks to an estimated 250,000 people (Kimani, 2007).

Climate risks and vulnerabilities are increasingly well recognised in the city, with several recent developments such as the Rockefeller 100 Resilient City status providing some impetus. There is increasing willingness for change among key city actors (i.e. risk managers and urban planners) (Pelling et al., 2018). However, as with many other sub-Saharan African contexts, risk management remains constrained by weak coordination between sectors and scales of governance, and complex policy landscapes where implementation is widely lacking. There is also a need to better understand interactions and cascading effects between different hazards and their potential effect.

The tensions between formal and informal planning systems and governance arrangements also require urgent attention. Disaster risk management in Nairobi is highly complex, with a lack of clarity in roles and responsibilities within the devolved governance structure. The devolved system of governance in Kenya came into effect in 2010 when the new Constitution of Kenya (ROK, 2010) was adopted. Under the constitution there are two overarching levels of governance – national and county government. Nairobi City County is further devolved into sub-county, ward and village levels. Within this formal structure, the chieftaincy plays a key role (albeit informally and contested in many cases) in linking communities with the lowest level of government, particularly in informal settlements which are often divided according to tribal affiliation (Mitra et al., 2017). The devolved system of governance has proved complex with ongoing challenges, fragmentation and conflicts across all governance scales. The constitution recognises disaster risk management as a developmental challenge that should be addressed at both county and national government levels, as well as local levels (ROK, 2010). A National Policy for Disaster Management (ROK, 2009) was formulated in 2009 with the intention of clearly identifying institutional mechanisms and responsibilities for DRR and unifying existing ad hoc policies relating to DRM in the country. However, more than a decade later, this is still awaiting cabinet approval and thus coordination challenges remain across all levels.

Transition pathways are evidenced in emergent innovative and inclusive approaches to governance, such as collective actions of networked civil society, often in collaboration with local government and other actors. For example, the Kenyan slum-dweller federation Muungano wa Wanavijiji led the advocacy campaign, with technical assistance from the Akiba

Mashinani Trust and Slum Dwellers International-Kenya (SDI-K), which concluded with the designation of the Mukuru informal settlement as a Special Planning Area (SPA). The Nairobi City County designated the SPA in August 2017. Interdisciplinary consortia including academic, government, private sector and civil society actors have synthesised data and generated policy briefs to inform risk-sensitive planning strategies. Muungano has adopted innovative approaches to mobilise residents and collect data, which have benefited from Urban ARK support. While the initiative is still in its early stages, this is a notable transition in state-civil society relations in Nairobi and could serve as a catalyst for governance reform in other urban centres across sub-Saharan Africa. Based on their research on slum upgrading in Kibera, Nairobi for Urban ARK, Mitra et al. (2017) explain that such integrative approaches can become important tools for strengthening resilience to risks such as flooding, conflict and security through building trust between communities, government and other actors.

Disaster risk governance in Nairobi is constrained by inadequate systematic data on everyday and large-scale disasters. However, findings from Urban ARK research in Nairobi and other sub-Saharan African cities have highlighted the potential of drawing on detailed risk data collected by civil society organisations to identify and act on disaster risk (Allen et al., 2017a and 2017b; Satterthwaite and Bartlett, 2017). For example, SDI have prepared detailed profiles and maps of informal settlements in Nairobi and use this information to support state engagement. This has been a major factor in supporting the development of the SPA. There is further opportunity for addressing the disaster risk data challenge through drawing on long-standing local data collection initiatives on risks, broader urbanisation processes and urban health and well-being statistics, especially for informal settlements in the city (Satterthwaite et al., 2019). These initiatives have been led by local, national and international research institutes such as the African Population and Health Research Center (APHRC) through the Nairobi Urban Health and Demographic Surveillance System from 2002 to date and the Nairobi cross-sectional slum surveys of 2000 and 2012.

In further recognition of the need to address fragmentation in DRM there have been recent calls from city actors, particularly the Nairobi City County, to develop a shared platform for information sharing and collaboration. Significantly, the Nairobi Urban Risk Partnership was proposed at an exploratory meeting initiated and facilitated by Urban ARK at the

APHRC on 10 May 2017. The partnership brings together stakeholders leading various urban risk efforts in the city and aims ultimately to inform the development of an urban risk management plan, pursuant to the 2015 Nairobi City County Disaster and Emergency Management Act. The partnership is a useful central coordination body and information source for external funders and donors undertaking research and development interventions in the city. Overall, the partnership holds considerable potential for strengthening DRR and DRM in the city and improving coordination; however, sustained momentum is constrained by local government transition, competing political priorities and budget limitations.

Niamey, Niger

Niamey is the state capital of Niger and has grown from 30,000 inhabitants in 1960 to over 1 million in 2012 (Issaka, 2015). It is one of the poorest cities in sub-Saharan Africa and is growing rapidly with immigration from drought-prone rural districts. The city is facing increasing risks, principally flooding, public health issues and disease, and food insecurity (Boubacar et al., 2017). These risks are exacerbated by widespread economic precariousness, increasing unemployment, delinquency and conflict in neighbouring countries.

Poor land-use planning and limited infrastructure, combined with mounting population pressure, have resulted in the increased occupation of flood-prone areas (Boubacar et al., 2017). The State of Niger has adopted a housing policy and sanctions to regulate development in an attempt to provide improved and adequate housing and to prohibit construction in risky areas (e.g. Law 2017–20 of 12 April 2017). The 1997 liberalisation of the land market, combined with a lack of control, has amplified informal practices in access to land and building construction. Informal settlements have proliferated throughout the city and consequently the risk landscape has been strongly exacerbated.

Although urban governance is shared between the state, local and regional authorities, traditional rulers, donors and NGOs, there is limited coordination between them. Since 2000, Niamey has experienced an ongoing political decentralisation process, yet the split of functions and responsibilities between local government, chiefs and central government remains unclear. The considerable government staff turnover has led to weak coordination and implementation of risk-related interventions. This fragmentation in governance results in a lack of accountability and monitoring of actions. Whereas the state is responsible for monitoring

all risk and development programmes, it lacks the resources to fulfil this responsibility. For instance, the large-scale cadastral survey undertaken by the Agence Française de Développement, meant to help support development and disaster management, came to an abrupt halt due to the agency's sudden disbandment and thus had very little impact.

In most development programmes, Niger relies heavily on the support of donors whose priorities often do not fundamentally align with urban dwellers' concerns. For example, while roads and sanitation are the major problems in the city, donors' principal interventions have been to finance the cadastral survey and draw up an urban plan. Similarly, Niamey depends on external aid to respond to emergencies. The most relevant example is the World Bank-funded Niger Disaster Risk Management and Urban Development Project (World Bank, 2018), which includes the construction of flood-protection infrastructure and capacity building for urban development and disaster risk management. Furthermore, the National Food Crisis Prevention and Management System has been created with the coordination unit of the early warning system, funded by multiple donors. There is poor coordination between these different initiatives, but the recent creation of a ministry in charge of disasters and humanitarian action signals a possibility for future improvement.

In recent years there has been growing attention on urban risks in Niamey. For example, Urban ARK researchers from Abdou Moumouni University undertook an adapted household economy baseline study of vulnerability to flooding, as well as an inventory of small-scale disasters using DesInventar (Issoufou and Lecumberri, 2015). The Network on Hydrometeorological Risks in African cities (RHYVA) has also undertaken extensive studies on the causes of flooding in Niamey. Research centres such as the Agro-Hydrometeorological Centre, the African Centre for Applications of Meteorology for Development and the Niger Basin Authority have also carried out work on the risks, leading to the production of the very first river flood risk maps in the city of Niamey. Data on disaster risks exist, but there is reluctance among many institutions to consolidate and make it openly accessible. There is no standardised flood-loss database for Niamey, yet multiple studies indicate a dramatic increase in the frequency and intensity of floods observed over the last decade (Casse and Gosset, 2015; Issoufou and Lecumberri, 2015). The state has failed to ensure coordination and to support open access data.

At the neighbourhood level, communities are increasingly self-organising and engaging with local authorities to help address local development

and risk-related challenges: for example, women's and young people's groups that are involved in addressing hygiene and sanitation issues. These activities are carried out under the patronage of the neighbourhood chiefs. However, they are often undertaken on an ad hoc basis, with limited influence at other levels. Greater collaboration between the state and local communities would help to support disaster risk reduction across the city (Sudmeier-Rieux et al., 2015). As Revi et al. (2014: 28) emphasise, it is critical to focus on and understand how linkages are established between local governments, community organisations, researchers and other urban actors in defining and then driving alternative forms of risk reduction.

Overall, risk reduction in Niamey is constrained by several key factors: donors' priorities do not align with local priorities; urban governance is highly fragmented with unclear and sometimes conflicting roles and responsibilities between actors; data sets relating to flooding and other risks are fragmented, incomplete and sometimes contradictory, with open access remaining a challenge; and monitoring and evaluation of risk-related interventions remain weak. These constraints notwithstanding, there is opportunity for movement towards transition and transformation in risk management and development through recent progressive policies and initiatives such as the creation of the Ministry for Disasters and Humanitarian Action and the Risk and Disaster Management Programme, as well as increasingly active self-organised community groups that are addressing key disaster issues at neighbourhood scales and lobbying the government.

Concluding discussion

The growing vulnerability of many African towns and cities to disasters has been increasingly recognised in recent years (Castán Broto, 2014; Pelling and Wisner, 2009). A significant proportion of current and future development will be concentrated in the towns and cities of sub-Saharan Africa. This offers vast potential but at the same time such development futures are intertwined with disaster risks (Fraser et al., 2017). This chapter has shown that risk management in the four case study cities are characterised by considerable gaps and blockages, yet there are also several significant emerging innovative initiatives for overcoming these barriers. These issues have been explored through the application of the conceptual framework presented in [Figure 3.1](#). This research is an important contribution given

the scale and rate of urbanisation and urban risk development worldwide, particularly in Africa. In consonance with the SDGs' call for integrative approaches to risk and development, this chapter has shown that efforts to address urban development and governance challenges can support risk reduction, as well as question underlying political and power relations between diverse urban actors.

Urban risk governance includes all institutions that affect risk, not only the formal administering and management of disaster risk (Fraser et al. 2017), which reflects the increasingly recognised principle of co-production. The research has shown that where the state does not have the ability to provide all the necessary services to citizens, partnerships with non-state actors have proven complementary in a way that enhances accountability and legitimacy (Allen et al., 2017b; Mitlin, 2008). This study has underscored that, for transition and transformation in risk management to be achieved, there is a need for clearer administrative procedures and inclusive governance. This will require a transition from fragmented governance to more joined-up governance between civil society groups, city government, local universities, research institutions and other urban actors. Indeed, as previously noted, transitions theory places emphasis on change being interconnected with innovation and shifting relationships between governance actors (Pelling et al., 2018; Roberts and O'Donoghue, 2013). While the case studies have revealed considerable fragmentation and a lack of coordination in urban risk governance landscapes, there is also clear evidence of increasingly joined-up and demand-led governance, as illustrated by the Nairobi Mukuru SPA example. Here, an innovative and collaborative governance transition is being driven by communities and stakeholders occupying informal settlements. This shows significant potential for a transition towards progressive multi-level risk governance through collective action.

There appears to be increasing willingness from civil society, NGOs and local government to collaborate over resilience building, disaster risk reduction efforts and the recognition of the limits of acting alone. As Fraser et al. (2017: 108) argue, 'holism and partnership are necessary to bring risk and development together in ways that address multiple everyday risks and the linkages across levels and scale that define urban risks for people'. However, there is also some concern that risk accumulation could be exacerbated by the involvement of external actors, particularly where priorities are not aligned, as discussed in the cases of Karonga and Niamey regarding recent donor-funded interventions. Similarly, Revi et al. (2014) also caution that care is required from governments and potential funders

in supporting alternative forms of risk reduction led by citizen movements as ‘this very support can co-opt and destroy the alternative ethos, governance form and pro-poor adaptation movement’ that is important for transformative development.

The examples presented here also illustrate the considerable potential for researchers to work in partnership with practitioners and stakeholders to support a transition towards more integrated risk management. For example, Urban ARK researchers supported the formation of the Nairobi Urban Risk Partnership, the formation of DRM committees in Mzuzu and the establishment of a city stakeholders’ platform on risk reduction in Ibadan, with the aim of developing a city risk reduction action plan. Furthermore, gaps in data and monitoring capacities require urgent attention and there is considerable potential for community-collected and owned data to help narrow this gap (Dodman et al., 2018).

It is well recognised that the diversity of urban sub-Saharan African contexts calls for flexible and context-specific approaches to risk management (Issaka, 2015). However, through the lens of the transitions framework presented, this chapter has demonstrated several key common mechanisms, blockages and opportunities for acting on the processes that can enable a transition towards more risk-sensitive and transformative urban development. As illustrated in Figure 3.1, achieving the SDGs will require a transition in the risk–development nexus where risk management is mainstreamed with development, and development is seen as a root cause of risk and as a focus for change. It also requires that we focus squarely on the processes and procedures that can enable a transition towards more risk-sensitive and transformative urban development across all scales and contexts. Moving forward to achieve this will require more inclusive governance, strengthened networked collaboration, locally accountable leadership and improved risk data and monitoring.

Acknowledgements

This research was supported by the Urban Africa: Risk Knowledge (Urban ARK) programme, funded by the UK Economic and Social Research Council (ESRC) and Department for International Development Humanitarian Innovation and Evidence Programme under Grant No. ES/L008777/1.

References

Adelekan, I. (2019). ‘Urban dynamics and vulnerability to everyday hazards and disasters in Ibadan, Nigeria.’ *Environment and Urbanization*, 29(2): 597–617.

- Adelekan, I., Johnson, C., Manda, M., Matyas, D., Mberu, B., Parnell, S., Pelling, M., Satterthwaite, D. and Vivekananda, J. (2015). 'Disaster risk and its reduction: An agenda for urban Africa.' *International Development Planning Review*, 37(1): 33–43.
- Ajibade, I., Pelling, M., Agboola, J. and Garschagen, M. (2016). 'Sustainability transitions: Exploring risk management and the future of adaptation in the megacity of Lagos.' *Journal of Extreme Events*, 3(3).
- Allen, A., Koroma, B., Osuteye, E. and Rigon, A. (2017a). 'Urban risk in Free-town's informal settlements: Making the invisible visible.' Urban ARK Briefing No. 6.
- Allen, A., Walnycki, A. and von Bertrab, E. (2017b). 'The co-production of water justice in Latin American cities.' In A. Allen, L. Griffin and L. Johnson (eds), *Environmental justice and urban resilience in the global south*, 175–93. New York: Springer Nature.
- APHRC (African Population and Health Research Center) (2017). *Solid waste management and risks to health in urban Africa – A study of Nairobi and Mombasa cities in Kenya*. Nairobi: APHRC.
- Boubacar, S., Pelling, M., Barcena, A. and Montandon, R. (2017). 'The erosive effects of small disasters on household absorptive capacity in Niamey: A nested HEA approach.' *Environment and Urbanization*, 29(1): 33–50.
- Casse, C. and Gosset, M. (2015). 'Analysis of hydrological changes and flood increase in Niamey based on the PERSIANN-CDR satellite rainfall estimate and hydrological simulations over the 1983–2013 period.' *Proceedings of the International Association of Hydrological Sciences*, 370: 117–23.
- Castán Broto, V. (2014). 'Planning for climate change in the African city.' *International Development Planning Review*, 36(3): 257–64.
- Conway, D. and Schipper, E.L.F. (2011). 'Adaptation to climate change in Africa: Challenges and opportunities identified from Ethiopia.' *Global Environmental Change*, 21(1): 227–37.
- Dodman, D., Leck, H., Rusca, M. and Colenbrander, S. (2017). 'African urbanisation and urbanism: Implications for risk accumulation and reduction.' *International Journal of Disaster Risk Reduction*, 26: 7–15.
- Dodman, D., Adelekan, I., Brown, D., Leck, H., Manda, M., Mberu, B., Pelling, M., Rusca, M., Satterthwaite, D. and Taylor, F. (2018). 'A spectrum of methods for a spectrum of risk: Generating evidence to understand and reduce urban risk in sub-Saharan Africa.' *Area*, 00: 1–9.
- Dodman, D., Leck, H., Pelling, M., Adelekan, I., Brown, D., Manda, M., Mberu, B., Rusca, M., Satterthwaite, D. and Taylor, F. (2019). 'A spectrum of methods for a spectrum of risk: Generating evidence to understand and reduce urban risk in sub-Saharan Africa.' *Area*, 51: 586–94.
- Fraser, A., Leck, H., Parnell, S. and Pelling, M. (2017). 'Africa's urban risk and resilience.' *International Journal of Disaster Risk Reduction*, 26: 1–6.

- Holm, R.H., Kamangira, A., Tembo, M., Kasulo, V., Kandaya, H., van Enk, P.G. and Velzeboer, A. (2018). 'Sanitation service delivery in smaller urban areas (Mzuzu and Karonga, Malawi)'. *Environment and Urbanization*, 30(2): 597–612.
- Issaka, H. (2015). 'Exode rural, urbanisation et sécurité privée à Niamey'. *Les Cahiers d'Outre Mer*, 2: 225–42.
- Issoufou, O.H. and Lecumberri, N. (2015). 'Urban profile: Flood risk areas and other risks in the city of Niamey (Niger)'. Urban ARK Working Paper No. 3.
- Jones, R.N. and Preston, B.L. (2011). 'Adaptation and risk management'. *Wiley Interdisciplinary Reviews: Climate Change*, 2(2): 296–308.
- Kemp, R., Loorbach, D. and Rotmans, J. (2007). 'Transition management as a model for managing processes of co-evolution towards sustainable development'. *International Journal of Sustainable Development and World Ecology*, 14(1): 78–91.
- Kimani, N.G. (2007). *Environmental pollution and impact to public health: Implication of the Dandora Municipal Dumping Site in Nairobi, Kenya*. Nairobi: Kutoka Network.
- Lunduka, R.W., Phiri, M.A.R., Kambani, C. and Boyer, C. (2010). *Malawi disaster risk reduction and climate adaptation research*. Lilongwe: Cordaid.
- Makau, J., Dobson, S. and Samia, E. (2012). 'The five-city enumeration: The role of participatory enumerations in developing community capacity and partnerships with government in Uganda'. *Environment and Urbanization*, 24(1): 31–46.
- Manda, M. (2014). 'Where there is no local government: Addressing disaster risk reduction in a small town in Malawi'. *Environment and Urbanization*, 26(2): 586–99.
- Manda, M. and Wanda, E. (2017). 'Understanding the nature and scale of risks in Karonga, Malawi'. *Environment and Urbanization*, 29(1): 15–32.
- Mitlin, D. (2008). 'With and beyond the state – Co-production as a route to political influence, power and transformation for grassroots organizations'. *Environment and Urbanization*, 20(2): 339–60.
- Mitra, S., Mulligan, J., Schilling, J., Harper, J., Vivekananda, J. and Krause, L. (2017). 'Developing risk or resilience? Effects of slum upgrading on the social contract and social cohesion in Kibera, Nairobi'. *Environment and Urbanization*, 29(1): 103–22.
- Myers, G. (2016). *Urban environments in Africa: A critical analysis of environmental politics*. Bristol: Policy Press.
- Olaniyan, F., Adelekan, I. and Nwokocho, E. (2018). 'The role of local governments in reducing disaster losses and vulnerabilities in Ibadan'. Urban Africa: Risk Knowledge Programme Working Paper 2018.
- Oyo State of Nigeria (2008). State Law, 2008, *Government Gazette*, Vol. 34, No. 4 (Part A).
- Pelling, M. (2010). *Adaptation to climate change: From resilience to transformation*. London: Routledge.

- Pelling, M. and Wisner, B. (2009). *Disaster risk reduction: Cases from urban Africa*. London: Earthscan.
- Pelling, M., Leck, H., Pasquini, L., Ajibade, I., Osuteye, E., Parnell, S., Lwasa, S., Johnson, C., Fraser, A. and Barcena, A. (2018). 'Africa's urban adaptation transition under a 1.5° climate.' *Current Opinion in Environmental Sustainability*, 31: 10–15.
- Revi, A., Satterthwaite, D., Aragón-Durand, F., Corfee-Morlot, J., Kiunsi, R.B.R., Pelling, M., Roberts, D., Solecki, W., Gajjar, S.P. and Sverdlík, A. (2014). 'Towards transformative adaptation in cities: The IPCC's Fifth Assessment.' *Environment and Urbanization*, 26(1): 11–28.
- Roberts, D. and O'Donoghue, S. (2013). 'Urban environmental challenges and climate change action in Durban, South Africa.' *Environment and Urbanization*, 25(2): 299–319.
- ROK (Republic of Kenya) (2009). *National policy for disaster management in Kenya*. Nairobi: Government of Kenya, Ministry of State for Special Programmes, Office of the President.
- ROK (Republic of Kenya) (2010). *Constitution of Kenya 2010*. Nairobi: National Council for Law Reporting.
- Satterthwaite, D. and Bartlett, S. (2017). 'Editorial: The full spectrum of risk in urban centres: Changing perceptions, changing priorities.' *Environment and Urbanization*, 29 (1): 3–14.
- Satterthwaite, D., Sverdlík, A. and Brown, D. (2019). 'Revealing and responding to multiple health risks in informal settlements in sub-Saharan African cities.' *Journal of Urban Health*, 96(1): 112–22.
- Solecki, W., Pelling, M. and Garschagen, M. (2017). 'Transitions between risk management regimes in cities.' *Ecology and Society*, 22(2): 38.
- Sudmeier-Rieux, K., Paleo, U.F., Garschagen, M., Estrella, M., Renaud, F.G. and Jaboyedoff, M. (2015). 'Opportunities, incentives and challenges to risk sensitive land use planning: Lessons from Nepal, Spain and Vietnam.' *International Journal of Disaster Risk Reduction*, 14: 205–24.
- Thomalla, F., Boyland, M., Johnson, K., Ensor, J., Tuhkanen, H., Swartling, Å.G., Han, G., Forrester, J. and Wahl, D. (2018). 'Transforming development and disaster risk.' *Sustainability*, 10(5): 1458.
- Wanda, E., Manda, M., Kamlomo, D., Kushe, J., Mphande, C., Kaunda, J. and Msiska, O. (2017). 'Governing WASH for disaster risk reduction in Karonga Town, Malawi.' *International Journal of Disaster Risk Reduction*, 26: 69–77.
- World Bank (2018). 'Niger disaster risk management and urban development project.' Implementation status and results report, 9 April.
- Ziervogel, G., Pelling, M., Cartwright, A., Chu, E., Deshpande, T., Harris, L., Hyams, K., Kaunda, J., Klaus, B., Michael, K., Pasquini, L., Pharoah, R., Rodina, L., Scott, D. and Zweig, P. (2017). 'Inserting rights and justice into urban resilience: A focus on everyday risk.' *Environment and Urbanization*, 29(1): 123–38.

Beyond self-help: learning from communities in informal settlements in Durban, South Africa

Maria Christina Georgiadou and Claudia Loggia

Introduction

In South Africa, over 50 per cent of the population lives in urban centres, where more than 2,700 informal settlements exist, accounting for around 20 per cent of total households (SERI, 2018). Due to rapid urbanisation and population growth, informal settlements have become a major challenge in the urban landscape, exacerbating issues related to poverty, inadequate infrastructure, housing and poor living conditions. Reflections on past upgrading efforts in South Africa suggest that top-down policies have not been successful to date. By contrast, participatory techniques in the design and construction of housing have been used to enhance community empowerment and a sense of local ownership. However, participation and collaboration can mean various things for informal housing upgrading, and often the involvement of local communities is limited to providing feedback in already agreed development decisions from local authorities and construction companies.

This research lies under the umbrella of sustainable bottom-up urban regeneration. As part of a large collaborative project between UK and South African research institutions (the ISULabaNtu project), this chapter presents findings from Phases 1 ('Context analysis') and 4 ('Project management and skills enhancement in construction') and explores various interpretations of 'self-help' housing. The overall research adopted a postcolonial perspective to urban transformations and explored community-led approaches for

informal settlement upgrading in the Durban metropolitan area (eThekweni) (McEwan, 2009; Pieterse, 2010; Watson, 2014). ISULabaNtu was framed around the holistic view that informal settlement upgrading is not about physical housing per se but rather a socio-technical approach that delivers social capital, livelihood development, empowerment and skills to local residents.

The overarching aim of this chapter is to uncover the benefits and challenges of moving towards a more participatory, incremental approach focusing on construction management and integrated environmental management systems, which can enhance quality of life, livelihoods and ultimately community self-reliance. The study explores the concept of 'self-building' in the context of community-led upgrading in South Africa. Participatory action research methods have been applied to 'co-produce' knowledge with residents and community researchers in three case studies in the Durban metropolitan area: Namibia Stop 8 (Phase 1), Piesang River and Havelock. The research seeks to identify critical success factors in managing self-build upgrading projects, discussing the crucial roles of stakeholder management, procurement and project governance. It also explores community-led approaches in informal settlement upgrading in Durban, highlighting the drivers and constraints of inclusive participatory approaches to design, construction and overall project management.

In particular, the study seeks to uncover the challenges in 1) formal v. informal forms of procurement; 2) the need to acquire 'the right resources at the right time' from local industry and/or construction practice; and 3) compliance with rigid municipality processes. The findings of this study seek to build capacity both for local communities seeking to improve their quality of life and for local authorities seeking to enhance their upgrading planning programmes, plans and policies.

Background context

Housing has been a key challenge throughout the post-apartheid era in South Africa, with the commitment to provide access to adequate housing for all (Department of Human Settlements, 2009). Migration and poverty are major causes of informal settlements, as dwellers cannot afford to build or buy their own houses or to access formal housing schemes (Mutisya and Yarime, 2011; Wekesa et al., 2011). Misselhorn (2008: 5) emphasises that 'it is important that any analysis of the current situation is premised on an appreciation for why informal settlements exist and what functionality

they afford to those who reside in them'. Informal settlements are considered a major concern for many urban areas as they pose health and environmental risks, both to informal dwellers and also formal residents living in the same neighbourhoods. Informal settlements are characterised by self-help efforts, often illegal, and considered 'informal' as they do not align with prevailing regulations. In their self-help efforts, residents make use of the limited resources available to them for the purposes of erecting shelter on interstitial or marginal land (Dovey and King, 2011), often close to places that offer economic, social or survival benefits.

According to the 2011 census, 12 per cent of all households in the Durban metropolitan area live in informal settlements, with 29 per cent renting their dwellings (Housing Development Agency, 2013). eThekwin's urbanisation has, over time, incorporated low-density urban settlements and adjoining farmlands. This structure has been influenced by an extreme topography; the city centre is fragmented, and economic opportunities are spatially segregated from formal housing and residential spaces (eThekwin Municipality, 2016). Post-apartheid consequences have therefore led to spatial inequalities, social segregation and various housing typologies (Western, 2002; Williams, 2000). These include high-density residential developments, such as inner-city flats in abandoned buildings, private rental housing schemes in informal settlements and social housing schemes. There are also subsidised houses in urban townships, informal backyard shacks adjacent to formal housing on both public and privately owned land, and rural housing dwellings. Some of the negative consequences of spatial fragmentation and low-density include an inefficient public transport system with high transport costs per low-income household, inefficient infrastructure and overall environmental pollution (eThekwin Municipality, 2016).

Definitions of informal settlements

Informal settlements are defined by physical, social and legal characteristics; hence, it becomes difficult to define the term 'adequate' housing in the South African context (Housing Development Agency, 2013). Many scholars emphasise the dwelling type (shacks with poor-performing building materials), while others refer to the issue of land tenure (Housing Development Agency, 2015a). A clear departure from the apartheid terminology included the term 'slum' being replaced by 'informal settlements' (Huchzermeyer, 2011). Informal settlements are related mostly to the legal standing of the scheme: namely, settlements that mushroom on vacant land, within

and around places of opportunities, without proper planning, building regulations or standard construction methods (Khalifa, 2015). Informal settlements have been traditionally considered as 'urban substandard' schemes, providing low-cost housing to the urban poor under poor living conditions, health risks and environmental hazards (Sutherland et al., 2016). However, Roy (2011) suggests a progressive interpretation of informal settlements as spaces of habitation, livelihood, self-organisation and politics. As stressed by Huchzermeyer (2011), informal settlements are complex, popular and spontaneous neighbourhoods offering an immediate response to housing needs and with their location critical for the socio-economic activities of the involved community. This concept moves away from the pathology of informal settlements, envisaging instead their potential as dynamic places of living.

History of upgrading models

Physical upgrading of informal settlements takes two general approaches: demolition and relocation, or *in situ* development (Del Mistro and Hensher, 2009). Demolition and relocation is the process of moving inhabitants from their settlements to another 'greenfield' site. However, a growing body of literature favours *in situ* upgrading, as this involves the formalisation of informal settlements in their original location (Del Mistro and Hensher, 2009; Huchzermeyer, 2006; Massey, 2014). One of the main critiques of demolition and relocation is the macro-economic target of the government to meet the physical aspects of housing shortage and infrastructure provision rather than the improvement of poor living conditions. This has led to conflicts and significant socio-economic disruption, with little regard given to displacement, poverty, vulnerability and the impact of these actions on social inclusion. *In situ* upgrading is the process undertaken to improve the conditions of an informal settlement in its current location through the provision of basic services and secure tenure to people. *In situ* models can be wide-ranging, from simply dealing with land tenure to incremental housing improvement and/or the provision of site-and-services associated with formal settlements.

In South Africa, the post-apartheid period offered various top-down approaches to low-cost housing provision. Government authorities have been responsible for decision-making on behalf of the local inhabitants. Top-down models have been criticised as unsustainable in the sense that they continue the legacy of segregation in housing delivery, as they have not engaged directly with low-income communities, nor properly

understood the social capital required or the nature of the vulnerabilities of the affected populations (Huchzermeyer, 2011).

Informal settlement upgrading in Durban

Informal settlement upgrading in South Africa is dominated by the work of the South African Shack/Slum Dwellers International (SASDI) alliance. The approach of the SASDI and its community partners are explored by Bolnick and Bradlow (2010), Bradlow (2015), and Mitlin and Mogaladi (2013). Focusing on the Durban metropolitan area, analysis of informal settlement upgrading has been presented by van Horen (2000) and Charlton (2006), who focus on Besters Camp, a settlement where community participation in planning was attempted but with poor tenure arrangements. Charlton (2006) and Patel (2013) discuss Ntuthukoville in Pietermaritzburg-Msunduzi, Briardene, Cato Crest and Zewlisha case studies. These highlight the value of 'informal continuity' – i.e. sustained activity after formal upgrading – and criticise the lack of capacity at a municipality level which reinforces power relations that may not serve or be relevant to all community groups and individuals. Cross (2006) and Huchzermeyer (2006) emphasise the resistance, reluctance and/or inaction of local government, despite national policy and legislation promoting community-led upgrading (e.g. the government housing strategy 'Breaking New Ground').

Community participation

Community participation can be viewed as 'an instrument of empowerment' (Samuel, 1987: 3). A growing body of literature promotes participatory techniques as a key method to enhance a sense of local ownership within an upgrading project (Aron et al., 2009; Botes and van Rensburg, 2000; El-Masri and Kellett, 2001; Frischmann, 2012). Self-reliance is also a relevant term associated with community participation and self-help activities. It refers to communities defining and making their own choices through shared knowledge, skills enhancement and planning activism. However, even though 'bottom-up', participatory methods for community upgrading are often discussed theoretically in international development discourses, in practice the tools, methodologies and processes needed to ensure a successful upgrade on the ground have not seen widespread dissemination or uptake, particularly in the Durban metropolitan area.

Self-help housing involves practices in which low-income groups resolve their housing needs mainly through their own resources in terms of labour

and finance topping up government subsidies (Marais et al., 2008). Self-help activities are interrelated to community self-reliance and are not new to South Africa, as since the 1950s an incremental, step-by-step, self-building approach on serviced sites was considered the cheapest and most efficient solution to slum upgrading (Landman and Napier, 2010). Community participation derives from self-help activities and refers to grassroots planning processes where the local populations themselves decide the future of their own settlement (Lizarralde and Massyn, 2008). In reality, however, community participation often remains 'formal, legalised and politicised' (Jordhus-Lier and de Wet, 2013: 2). In informal settlements, key conceptual and practical challenges hinder active community participation. Residents value nine factors in informal settlements: comfort, cost, environment, facilities, local economy, safety, security, social value and space (Jay and Bowen, 2011). In practice, there is often a lack of social and physical resources, as well as conflicting interests in individual and community expectations from involvement in development projects (Emmett, 2000). In addition, these nine factors need to be viewed in relation to livelihood creation and employment opportunities, particularly in the case of relocation (Hunter and Posel, 2012). Muchadenyika (2015) discusses the problematic relationship between local communities and local authorities and governments, whereby issues of legislation, politics, power and identity play a major role in resource management, distribution and implementation of the upgrading project. Patel (2015) describes the effect of devolved housing allocation leading to exclusion of non-favoured groups in Durban, thus negatively affecting community engagement. Devolved housing increases competition between residents around ethnicity, nationality and/or political party views.

Community-led upgrading in the Durban metropolitan area

Methodology

This study adopted a participatory action research method, utilising 'co-production of knowledge' as the process through which residents in selected case study areas have an active role in research (Mitlin, 2008; Ostrom, 1996). Fieldwork in three case studies, Namibia Stop 8 (Phase 1), Piesang River and Havelock was conducted between May 2016 and February 2018 to assess the level of 'good available practice' in community-led upgrading of informal settlements in the Durban metropolitan area. The case study selection criteria involved community leadership, presence

of an active support organisation, community self-organisation practices (e.g. saving groups), good documentation of historical development and upgrading models used in the past. Empirical data was gathered by means of twenty-five household interviews in each case study, ten focus group discussions with community members and twelve focus groups with external stakeholders from eThekweni municipality and the construction industry in Durban.

Self-build houses in Namibia Stop 8

Located on Haffajee's Land in Inanda, a northern outskirts of Durban in the KwaZulu-Natal province, the first case study refers to Phase 1 of Namibia Stop 8, built between 2010 and 2014. Namibia Stop 8 has been a greenfield project, to which residents were largely moved from two neighbouring areas (Namibia and Stop 8) as part of a re-blocking exercise for services and housing. The housing that was built was a mixture of government-provided Reconstruction and Development Programme (RDP) housing and a small number of houses built through the Federation of the Urban and Rural Poor (FEDUP). uTshani Fund, a support organisation partner of the SASDI alliance, provided the finance facilities to FEDUP, who acted as community contractors and led the provision of self-build housing. The site has piped water, electricity lines, access roads (although these do not reach all properties) and a sewage system. The area suffers from water shortages and intermittent electricity supply.

At the project preparation stage, the community undertook detailed profiling. Three women-led savings groups established an 'Urban Poor Fund' to finance the delivery of housing. A culture of continuous saving was developed so FEDUP households could provide funds for larger structures, tiles, ceiling board and/or furniture compared to the RDP houses. One FEDUP member mentioned that:

with group savings we want to make sure that everything is going according to the plan ... You are building your own thing and you make sure it is done properly ... We are also able to hire more people to help with construction and ensure hardware stores deliver the building materials that we need. (Namibia Stop 8 focus group)

The project involved ninety-six houses using the participatory People's Housing Process model that is predicated on a community-driven participatory approach. FEDUP construction was slower but this collaborative approach delivered substantially larger (56 square metres), better-designed

and better-sized houses than those constructed under the government-driven RDP model (40 square metres). FEDUP households developed a sense of ownership and control and invested in self-building through helping community contractors and builders. Some of the respondents said that they learned how to collaborate and tolerate each other, and this process created new social ties within the community, thus enhancing social cohesion. Moreover, many have become financially literate and have developed habits of saving for household needs and personal goals. On the practical side, respondents said that some of the beneficiaries have acquired new skills and experience in construction. This made the process quicker and reduced labour costs. Initially, FEDUP leaders built a demonstration house and asked community members to give feedback on the foundation, structure and material selection. People that were offered RDP houses, on the other hand, had little input on those discussions and the overall self-building process.

In terms of materials and construction techniques, the FEDUP houses were built with concrete blocks, wooden roof trusses, tiles, plastering inside and out and floor screeding. By contrast, RDP houses were unplastered,



Figure 4.1 Self-help housing in Namibia Stop 8

with smaller windows, and residents argued that the foundations were poor. RDP households also required additional waterproof paint on walls and doors for rain protection, which was done privately if the residents could afford this extra cost. As a community leader stated, 'the majority of people continued to live in the houses after the upgrading, while the comparative figures for the municipality houses are about 50 per cent. This is because paying someone to do it is more expensive than doing it yourself.' In effect, the high costs incurred mean that residents may end up renting out the property and then move elsewhere: sometimes back to the informal settlements, where living is cheaper. The construction method of FEDUP entails delivery by community contractors and the establishment of community construction management teams (CCMTs), supervised by uTshani Fund and approved professional contractors, who ensured technical support. In terms of procurement, CCMTs and uTshani Fund compared three local hardware stores in Kwabester, Mtshebheni and KwaMashu and chose the supplier (who was the sole provider of all building materials) based on a cost-benefit assessment of quality and cost. According to the CCMT members, the community faced some problems during the construction (for example, negotiations with the municipality on the dimensions of the slab and the theft of construction materials), but the project was successful since all ninety-six houses were completed on time and all the listed beneficiaries received their houses according to plan.

FEDUP households pointed out a number of challenges and lessons learned. Residents are still awaiting their title deeds from the municipality. Consequently, they are reluctant to rent their homes as they do not trust potential tenants without formal tenure recognition. From a technical perspective, FEDUP foundations replicated the RDP module, which proved rather small and needed to be extended during construction. There was also no guttering for rainwater collection or a ventilation strategy: for example, trees could provide thermal comfort and prevent overheating in the house. Other non-technical challenges involved the lack of wider community trust. Building materials were stolen during the construction process, particularly single units, such as doors and windows. Residents had to move back to their old homes until this was fixed, thus increasing frustration. Moreover, not all FEDUP members contributed to the self-building approach and some were controlling with others, leading to conflict and/or trust issues. There was also the question of access and connectivity to the main road and the lack of spatial integration. Households developed a culture of fencing their yards due to the lack of pathways,

thus hindering community development. In terms of construction, technical support would enable a better redesign of the roof and therefore save resources (such as timber) that could be used elsewhere. The community emphasised the need for training or hiring skilled workers for future upgrading projects. Lastly, it was noted that the youth were not engaged in group savings after the project ended. This inevitably meant that the knowledge and skills that CCMTs developed were lost.

Project management in Piesang River

Piesang River is a historical informal settlement, similar to Namibia Stop 8, which pioneered strong elements of community leadership and negotiations with the South African government around housing delivery. Piesang River is located near the townships of Inanda and KwaMashu, twenty-five kilometres north-west of Durban. The settlement was established through the purchase of land and its subdivision, followed by the gradual settling of adjacent land in the 1970s and 1980s. Civic structures were formed in the late 1980s by the United Democratic Front, eventually leading to land regularisation and the extension of infrastructure into the settlement (Huchzermeyer, 2004).

Since the early 1990s, Piesang River has undergone a gradual process of formal development involving multiple actors. In the early 1990s until 1995 the civic organisation in Piesang River was supported by the Built Environment Support Group (a local NGO) acting as project manager for the development of infrastructure and site allocation. The Homeless People's Federation (and its supporting NGO, People's Dialogue) later rose to prominence in Piesang River, prioritising the construction of individual houses for its members. At around the same time the NGO Habitat for Humanity established itself in the settlement, offering loan funding for housing construction. The local authority eventually organised the election of a representative committee to resolve some of the tensions and differences between the priorities of these organisations and to resolve the question of which households would have to be relocated.

The aim of community-led building was to improve the living conditions in mud houses and issues with water shortage. Women in Piesang River are empowered in this process: they initiated group savings and are responsible for book keeping and fund management. Group saving was initiated by women asking residents to contribute from 50 cents per person per day, and demonstrated to the government that Piesang River was an organised community worth supporting. Subsidies were then received from the government through uTshani. In particular, uTshani Fund enabled

FEDUP to support housing construction through a process of pre-financing (bridging finance) by making a loan to assist 'sweat equity' (time and labour), allowing beneficiaries to repay the loan at a later stage. Thereafter, the community undertook the actual construction of the houses. As a community leader argued: 'FEDUP did not wait for the government to deliver housing, we put effort and we succeeded. Also, we decided not to pay the construction professionals and therefore we were able to save and build larger houses.'

FEDUP leaders built a cardboard module of the 'ideal house' with four rooms. This caused conflict with RDP residents, who only had two rooms (40 square metres). A Steering Committee was established which divided semi-skilled inhabitants into seven groups of four to ten members (which was easier to manage), and each according to their specific skills, namely:

- *technical (design and construction)*: bricklaying, foundation, plumbing;
- *management*: supporting labour, finance (book keeping), quantity surveying and costing;
- *social facilitation*: mobilisation, negotiation and communication around a 'shared' vision.



Figure 4.2 Self-building in Piesang River

The Steering Committee managed the whole building project, but the skills learned from individual FEDUP members involved mostly bricklaying and group savings. As a FEDUP member stated: 'We were taught to do things that are difficult to achieve when working alone ... We were taught to negotiate about land, electricity, water and construction. FEDUP houses do not have cracks and are of better quality compared to the RDP ones.'

Piesang River also showcases the role played by women in project management and construction: for instance, women were trained how to lay out the foundation of the houses. FEDUP brought professional builders on site to provide assistance and training to the individual groups. The community felt that training members would save money compared to hiring professional builders throughout the construction. The community was open to learning new skills (such as bricklaying), and this process facilitated formal skills transfer. In contrast to Namibia Stop 8, FEDUP members engaged in training youth groups and managed to pass on the culture of saving to the next generation. In terms of the construction method and selection of building materials, the houses are quite similar to Namibia Stop 8. FEDUP community leaders commented that criteria for the procurement strategy included price, quality, durability, cost (affordability) and safety when visiting different hardware stores for a quote. Respondents mentioned that they gained communication skills and links to the municipal officials. Overall, the process created better social interactions and interrelations within the community, reducing many social tensions amongst them. Also, the upgrading created job opportunities for the youth and resulted in a reduction of crime.

Nevertheless, households pointed out a number of challenges and lessons learned. FEDUP households still have not received their title deeds, which has caused some issues when installing water meters: the community had to hire a private company to connect them to the mains water pipe. Piesang River features double-storey buildings; however, their construction was not successful. A community member mentioned that accepting customs and culture in the upgrading process is key, as 'people prefer to live in their own houses and the double-storey construction caused issues with older and disabled people.' Another challenge was the need for further reinforcing metal to support the structure, which increased total costs in addition to a suspended concrete floor. In term of community engagement and participation, residents pointed out that it was challenging to carry on investing in group savings and labour when an individual house was completed. Quite often people were not willing to participate after their

house was built. Finally, some respondents pointed out that one of the major issues was that the project had started during the apartheid era and so the change of administration hindered the full completion of the project. As a result, services like water and electricity were not properly connected and still, some twenty years on, they lacked meters.

Socio-economic challenges in Havelock

Havelock is an informal settlement located eight kilometres from Durban city centre, with an estimated 200 dwellings and approximately 400 people living in the settlement (SASDI, 2012). The informal settlement dates back to 1986 when a jobseeker in the area decided to build a house on the site in the absence of other places to stay. The land, a steep incline with a river at the bottom, had been overgrown by trees and bushes prior to the construction of the settlement. Havelock sits on both private and municipal land, with various hazards including illegal electrical connections, dangerous electrical cables sprawled across paths, fire hazards and flooding. The municipality have installed ablution blocks and a detailed assessment has been conducted for the proposed re-blocking of the settlement. However, the abundance of water from the river, which overflows during heavy rains, has discouraged private owners from reclaiming the land and carrying out the demolition.

Unlike Piesang River and Namibia Stop 8, Havelock has not undergone an upgrading process (at the time of the writing of this chapter) despite ongoing negotiations. The previously established saving schemes have not been successful due to a lack of long-term commitment among residents and the additional pressures of high unemployment and temporary work. According to community leaders, prioritisation of immediate needs ahead of savings for future upgrading has added to the set of obstacles. Furthermore, many inhabitants still have homes in rural areas elsewhere and view Havelock as temporary accommodation to access employment, meaning they have little interest in the long-term upgrading of the settlement. Besides weak social cohesion and the public-private ownership of the land, the settlement also faces other challenges, including a lack of skills and training in construction, particularly in the passing on of this knowledge to the younger generation. The situation is complicated further by the settlement's conflictual relationship with nearby formal neighbourhoods who do not support improvement and upgrading efforts, arguing that this would turn Havelock into a permanent settlement and decrease the value of their properties.



Figure 4.3 Informal dwellings in Havelock settlement

Notwithstanding these issues, there is a clearly articulated need to improve living conditions in the settlement, which is prone to flooding, fire hazards and other accidents caused by uneven pathways, lack of places for children to play (with the road being the only alternative) and the overall density of housing. With the presence of professional

bricklayers and people with construction skills, residents believe there is some existing capacity in the settlement to enable them to carry out upgrading *in situ* themselves. However, without any formal opportunities to get involved, people become discouraged and such potential remains unused.

Even if help was to become immediately available to the households, lack of space to build houses is also perceived as a barrier. Services like roads with speed bumps, public spaces (such as a playground for children), paved pathways and a way of separating the settlement from the overflowing river were seen as highly important. Potential building materials for the houses, as expressed by focus group participants, would have to be fireproof to protect from the fire hazards stemming mostly from the wires of illegal electrical connections in the settlement and the use of paraffin stoves. Strong foundations able to withstand flooding were also a critical necessity highlighted in the discussions. A preference for more expensive materials was expressed in order to ensure the long-term quality and durability of the improved houses, rather than cheap materials which would need to be replaced frequently or added to. This long-term thinking about building materials and ways of improving the physical conditions of the houses was in contrast to the feeling that the settlement was only a temporary place to live, one where 'we know that we will not be here for the rest of our lives' – a sentiment expressed by one of the respondents and shared by many others in the settlement. To date, however, only cheap, reclaimed materials from dumps and from networks of contacts have been used for building the houses and making any improvements.

Besides affordability, what is also preventing residents from seeking more expensive and solid materials is the fear of fire and the potential loss of those materials. Hence, only temporary and low-cost fixes are applied to the houses. After a fire incident, the municipality claimed to have provided some relief to two houses. However, one of these households reported that they did not receive the materials in time and sourced their own materials to rebuild, while the other house did not manage to secure any materials from the municipality as the supply ran out and it had to obtain materials later independently. Although eThekweni officials stated that in the event of an emergency 'the disaster teams are the first to respond [followed by] a quick enumeration [that] will be done to see who has been affected', in the case of Havelock the system did not deliver and the assessment was either inaccurate or the distribution of materials was not efficient.

A new approach to informal settlement upgrading

The importance of leadership in local government was outlined during a focus group with the Community Organisation Resource Centre (CORC) and uTshani Fund, who stated that 'you have a local government and a state, they are mandated to provide services and to respond'. However, their approaches are in contrast to that pursued by NGOs.

The municipality are again feeling challenged by others. They offer support but our processes [CORC/FEDUP], bottom-up community led is immediately an issue. The municipality want to come and deliver the emergency materials. As where we would have processes, re-blocking in the case of a disaster, if it was a fire which destroyed dwellings to rethink their space and how they can lay it out more effectively, and that would undermine our processes if the municipality just come and deliver materials and people haphazardly do their own thing again, and you lose that opportunity to do that re-blocking. (Focus group with CORCP and FEDUP representatives)

Furthermore, it was made evident in most household interviews and focus groups with CORC and FEDUP that there is a need for enhanced interaction by the municipality with the community and vice versa. This is fundamental for the improved delivery of housing, services and further clarity of all parties' plans, management of expectations and alignment of agendas.

The importance of local government leadership leads to the need for effective communication in upgrading negotiations. Regarding the shortcomings of the delivery of housing, in an interview the municipality argued, 'we have the silo mentality of working, where we are not connected, and it is killing the end product and there is no kind of bond'. The focus group discussion also revealed that there is no alignment between individual departments and complex political agendas that need to be navigated, along with long bureaucratic processes. Departmental communication issues are then magnified by the time they reach the communities due to the extended timescales and increased tension.

In addition, the municipal tendering process for public works ensures that there are various further requirements measured against the tendered price submitted. These are: Black Economic Empowerment, the percentage of women in the workforce, the number of young adults and evidence of how the company will transfer benefits to the local community. An example of this would be skills development and mentorship. The municipality will then use criteria to assess the contractor's performance post-completion

for future contracts. This is a very beneficial practice that could help develop necessary skills for community members and allow for the retention of labour in the communities, creating a more reliable network of local construction workers.

Current estimates in eThekweni municipality indicate that there are about 327,615 households in 476 informal settlements, without any clear plans for upgrading or signs of a participatory process (eThekweni Municipality, 2015). An innovative participatory action planning approach has been proposed by the Housing Development Agency and was endorsed during the focus group discussions with external stakeholders. This is because full upgrading with services and subsidised housing is not a viable option for South Africa in general, and the Durban metropolitan area in particular. This approach also underlines the fact that the challenge to upgrading is not just housing, but a manifestation of structural social change and political endurance. In this context, a new approach to informal settlement upgrading should adopt the following key principles, to be:

- *city-wide*: inclusive of all the informal settlements;
- *incremental*: with a range of different improvement as opposed to traditional housing delivery;
- *in situ*: considering relocation as a last resort;
- *partnership-based*: instead of purely state service oriented;
- *participatory and more community-driven*: collaborative informal settlement action and co-management to develop acceptable solutions;
- *programmatically and area-based*: instead of project delivery-focused;
- *context related*: differentiated, situationally responsive (as opposed to 'one-size-fits-all');
- *statutorily and regulatorily flexible*: working with and not against informality (Housing Development Agency, 2015b).

The above approach has been consolidated and adopted in the form of a strategy (eThekweni Municipality, 2017) by the 100 Resilient Cities Programme (100RC) for the city of Durban. The 100RC team has recognised the need to rethink new perspectives on informality and accepting it as part of the city. Informal settlement is a dynamic space that changes continuously and requires appropriate planning strategies that meaningfully involve residents themselves. Currently, the housing targets (performance goals) are reducing the approach to informal settlements to a mere set of numbers (delivery targets). The key strategy to address this challenge

is represented by collaboration and partnership between local government and the other main stakeholders. There is a lack of understanding about the dynamics of informal settlements and a need to coordinate all the interventions from the different departments of the municipality. Moreover, the involvement of settlement dwellers in planning processes is generally poor and reflects a high level of mistrust between communities and the municipality. The contexts in different settlements vary significantly, too, and so responses need to be diversified and move beyond a narrow focus on targets. Finally, long-term funding is a major challenge.

Concluding remarks

South Africa has a strategy for slum management and response, particularly under the post-2015 UN Sustainable Development Goals (e.g. SDG11) and the Habitat III New Urban Agenda. This chapter sought to provide recommendations on how the above experiences and lessons learned from 'good available practice' in community-led approaches could be effectively incorporated into existing upgrading programmes, such as the new Integrated Urban Development Framework and the city-wide participatory upgrading of informal settlements that are part of the 100 Resilient Cities initiative in Durban.

eThekweni municipality's targets are at present difficult to achieve due to an increasing backlog on housing delivery. Focus group participants claimed that there were currently about 535 informal settlements, comprising around 25 per cent of the population of KwaZulu-Natal province. Most informal settlements are upgradable and are already part of the urban fabric. The government view on informal settlements suggests that conventional upgrading (i.e. state-funded housing and a full package of services) with tenure security and formal town planning is an unviable solution due to the increasing backlog, the costs involved, complex land schemes, higher density and the long timescales. This is why an incremental, city-wide, partnership-based participatory upgrading approach is proposed with lessons learned from communities that have undertaken (even partially) aspects of community-led upgrading.

The research undertaken in this chapter has broadly highlighted some of the major shortcomings which were also brought out within the literature review. Further investigation is necessary to enumerate the possible long-term impacts of these issues, but it is clear that the internal communication methods of eThekweni municipality need immediate improvement and

a new dynamic to align work between departments. It is also important to strengthen external municipal communication with NGOs, the private sector and residents.

All three case studies pioneered strong elements of community leadership due to a set of participatory methods embedded in project preparation and implementation. These include: community profiling and assessments, savings groups, community-driven project management and the 'sweat equity' (time and labour) of beneficiaries. The above processes created a legacy for local residents in terms of income generation, skills upgrading and sense of local ownership from the early planning stages. A key factor in their success has to do with skills enhancement and 'learning by doing.' Continuous improvement enabled community organisations (e.g. FEDUP) to ensure lower costs and better quality in the construction of the houses. However, the case study research revealed that there is a need for further training and skills development on best practice relating to construction and procurement of materials and services. FEDUP and CORC have provided a foundation of knowledge for many residents through savings groups and training sessions. The continuation of such training in line with further support offered by the municipality could facilitate improvements in the processes adopted, enhancing the time, cost and quality of self-building. There are also many inefficiencies within the current municipal tendering and procurement processes, despite good intentions and policies which have been implemented. Shortcomings were found in the tendering process, internal and external communication, stakeholder management and training and development of communities. NGOs such as uTshani, CORC and FEDUP have filled these gaps through bottom-up approaches to the delivery of housing.

Finally, it is important to note that the level of a successful upgrading project is measured differently between local authorities and communities. This is potentially why the government-led upgrading of informal settlements is not providing the results intended. For eThekweni municipality, it refers mainly to successful delivery of infrastructure and services. Empirical data from the three communities, on the other hand, revealed that a successful project is about full ownership of the upgrading, social cohesion, livelihood development and tenure security (ultimately by obtaining the title deeds). This means that upgrading is not just housing delivery but also consideration and development of the social fabric, such as access to job opportunities, health facilities, schools and public transport. eThekweni municipality has practised limited community-led approaches

and currently acts as a mere housing *provider*, rather than being an *enabler*. It is therefore essential to build capacity and invest in further training in both communities and local authorities by understanding the minimum preconditions that unlock community participation in an upgrading project.

Acknowledgements

This work is based on two research funded projects: a Royal Society Newton Advanced Fellowship (NA150082) and an Economic and Social Research Council (ESRC) award (ES/N014006/1) as part of the Newton Fund, in collaboration with the National Research Foundation (NRF) in South Africa (www.isulabantu.org). The project was led jointly by the University of Westminster (UK), the University of KwaZulu-Natal (SA) and, together with University College London (UK), an NGO uTshani Fund (SA) and the eThekweni Municipality (SA). The authors would like to thank the project team, the officers of uTshani Fund and particularly Jeff Thomas for his precious assistance and support; Bashintshile (Sibongile) Buthelezi and Duduzile (MaDudu) Khumalo from the University of KwaZulu-Natal (UKZN), community researchers from Namibia Stop 8, Piesang River and Havelock communities as well as UKZN Master students for providing support with data collection and translation during fieldwork in Durban.

References

- Aron, J.-E., Kayser, O., Liautaud, L. and Nowlan, A. (2009). *Access to energy for the base of the pyramid – Final report*. Paris: Hystra and Ashoka.
- Bolnick, J. and Bradlow, B. (2010). “‘Rather a better shack now than wait twenty years for a formal house’ – Shack Dwellers International and informal settlement upgrading in South Africa.” *Trialog*, 104(1): 35–41.
- Botes, L. and van Rensburg, D. (2000). ‘Community participation in development: Nine plagues and twelve commandments’. *Community Development Journal*, 35(1): 41–58.
- Bradlow, B.H. (2015). ‘City learning from below: Urban poor federations and knowledge generation through transnational, horizontal exchange’. *International Development Planning Review*, 37(2): 129–42.
- Charlton, S. (2006). ‘Learning from the local: Experiences of informal settlement upgrading in Kwazulu-Natal’. *South African Review of Sociology*, 37(1): 48–64.
- Cross, C. (2006). ‘Local governance and social conflict: Implications for piloting South Africa’s new housing plan in Cape Town’s informal settlements’. In M.

- Huchzermeyer and A. Karam (eds), *Informal settlements: A perpetual challenge?*, 250–73. Cape Town: UCT Press.
- Del Mistro, R. and Hensher, D. (2009). 'Upgrading informal settlements in South Africa: Policy, rhetoric and what residents really value'. *Housing Studies*, 24(3): 333–54.
- Department of Human Settlements (2009). *National housing code: Part 3*. Pretoria: Republic of South Africa.
- Dovey, K. and King, R. (2011). 'Forms of informality: Morphology and visibility of informal settlements'. *Built Environment*, 37(1): 11–29.
- El-Masri S. and Kellett, P. (2001). 'Post war reconstruction participatory approach to rebuilding villages of Lebanon: A case study of Al-Burjain'. *Habitat International*, 25 (4): 535–57.
- Emmett, T. (2000). 'Beyond community participation? Alternative routes to civil engagement and development in South Africa'. *Development Southern Africa*, 17(4): 501–18.
- eThekweni Municipality (2015). *eThekweni integrated development plan*. eThekweni: eThekweni Municipality.
- eThekweni Municipality (2016). *eThekweni built environment performance plan*. eThekweni: eThekweni Municipality.
- eThekweni Municipality (2017). *Durban 100 resilience city strategy 2017*. eThekweni: eThekweni Municipality.
- Frischmann, B. (2012). *Infrastructure: The social value of shared resources*. New York: Oxford University Press.
- van Horen, B. (2000). 'Informal settlement upgrading: Bridging the gap between the de facto and the de jure'. *Journal of Planning Education and Research*, 19(4): 389–400.
- Housing Development Agency (2013). *KwaZulu-Natal: Informal settlements status*. Johannesburg: HDA.
- Housing Development Agency (2015a). *Informal settlement upgrading: Incrementally upgrading tenure under customary administration*. Johannesburg: HDA.
- Housing Development Agency (2015b). *Participatory action planning for informal settlement upgrading*. Johannesburg: HDA.
- Huchzermeyer, M. (2004). *Unlawful occupation: Informal settlements and urban policy in South Africa and Brazil*. Trenton: Africa World Press.
- Huchzermeyer, M. (2006). 'The new instrument for upgrading informal settlements in South Africa: Contributions and constraints'. In M. Huchzermeyer and A. Karam (eds), *Informal settlements: A perpetual challenge*, 41–61. Cape Town: UCT Press.
- Huchzermeyer, M. (2011). *Cities with 'slums': From informal settlement eradication to a right to the city in Africa*. Claremont: UCT Press.
- Hunter, M. and Posel, D. (2012). 'Here to work: The socioeconomic characteristics of informal dwellers in post-apartheid South Africa'. *Environment and Urbanization*, 24(1): 285–304.

- Jay, I. and Bowen, P. (2011). 'What residents value in low-cost housing schemes: Some South African concepts'. *Building Research and Information*, 39(6): 574–88.
- Jordhus-Lier, D. and de Wet, P.T. (2013). 'City approaches to the upgrading of informal settlements'. Chance2Sustain Policy Brief No. 10. Bonn, Germany: Chance2Sustain.
- Khalifa, M. (2015). 'Evolution of informal settlements upgrading strategies in Egypt: From negligence to participatory development'. *Ain Shams Engineering Journal*, 6: 1151–9.
- Landman, K. and Napier, M. (2010). 'Reconsidering state provision, aided and unaided self-help in South Africa'. *Habitat international*, 34(3): 299–305.
- Lizarralde G. and Massyn, M. (2008). 'Unexpected negative outcomes of community participation in low-cost housing projects in South'. *Habitat International*, 32: 1–14.
- Marais, L., Ntema, J. and Venter, A. (2008). 'State control in self-help housing: Evidence from South Africa'. Paper presented at the European International Housing Network Research Conference, Ireland.
- Massey R. (2014). 'Exploring counter-conduct in upgraded informal settlements: The case of women residents in Makhaza and New Rest (Cape Town), South Africa'. *Habitat International*, 44: 290–6.
- McEwan, C. (2009). *Postcolonialism and development*. New York: Routledge.
- Misselhorn, M. (2008). 'Position paper on informal settlements upgrading: Part of a strategy for the second economy for the Office of the South African Presidency'. Compiled for Urban LandMark. www.pptrust.org.za/wp-content/uploads/delightful-downloads/informal-settlement-paper.pdf (accessed 7 September 2020).
- Mitlin, D. (2008). 'With and beyond the state: Coproduction as a route to political influence, power and transformation for grassroots organizations'. *Environment and Urbanization* 20(2): 339–60.
- Mitlin, D. and Mogaladi, J. (2013). 'Social movements and the struggle for shelter: A case study of eThekweni (Durban)'. *Progress in Planning*, 84: 1–39.
- Muchadenyika, D. (2015). 'Slum upgrading and inclusive municipal governance in Harare, Zimbabwe: New perspectives for the urban poor'. *Habitat International*, 48: 1–10.
- Mutisya, E. and Yarime, M. (2011). 'Understanding the grassroots dynamics of slums in Nairobi: The dilemma of Kibera informal settlements'. *International Transaction of Engineering, Management and Applied Science and Technologies*, 2(2): 197–213.
- Ostrom, E. (1996). 'Crossing the great divide: Coproduction, synergy, and development'. *World Development*, 24(6): 1073–87.
- Patel, K. (2013). 'The value of secure tenure: Ethnographic accounts of how tenure security is understood and realised by residents of low-income settlements in Durban, South Africa'. *Urban Forum*, 24(2): 269–87.

- Patel, K. (2015). 'Sowing the seeds of conflict? Low income housing delivery, community participation and inclusive citizenship in South Africa.' *Urban Studies*, 53(13): 2738–57.
- Pieterse, E. (2010). 'Cityness and African urban development.' *Urban Forum*, 21(3): 205–19.
- Roy, A. (2011). 'Slumdog cities: Rethinking subaltern urbanism.' *International Journal of Urban and Regional Research*, 35(2): 223–38.
- Samuel, P. (1987). 'Community participation in development projects: The World Bank experience.' World Bank discussion paper. Washington, DC: World Bank.
- SASDI (South African Slum Dwellers International) (2012). 'Havelock, informal settlements upgrading'. 27 August. www.sasdialliance.org.za/projects/havelock (accessed 7 September 2020).
- SERI (Socio-Economic Rights Institute) (2018). *Informal settlements and human rights in South Africa*. Johannesburg: SERI.
- Sutherland, C., Braathen, E., Dupont, V. and Jordhus-Lier, D. (2016). 'Policies towards substandard settlements.' In V. Dupont, D. Jordhus-Lier, C. Sutherland and E. Braathen (eds), *The politics of slums in the global south: Urban informality in Brazil, China, South Africa and Peru*, 49–78. Abingdon: Routledge.
- Watson, V. (2014). 'Co-production and collaboration in planning – The difference.' *Planning Theory and Practice*, 15(1): 62–76.
- Wekesa, B., Steyn, G. and Otieno, F. (2011). 'A review of physical and socio-economic characteristics and intervention approaches of informal settlements.' *Habitat International*, 35: 238–45.
- Western, J. (2002). 'A divided city: Cape Town.' *Political Geography*, 21: 711–16.
- Williams, J. (2000). 'South Africa: Urban transformation.' *Cities*, 17(3): 167–83.

Turning livelihood to rubbish? The politics of value and valuation in South Africa's urban waste sector

*Henrik Ernstson, Mary Lawhon, Anesu Makina,
Nate Millington, Kathleen Stokes and Erik Swyngedouw*

Introduction

Urban waste is increasingly garnering attention for multiple reasons. Cities are responsible for producing – and thus managing – a growing proportion of global waste flows, now about 80 per cent of the world's waste (Myers, 2005). Waste produces a variety of negative socio-ecological externalities, and these are exacerbated by the high densities of population and waste in cities. Concerns over the health impacts of proximity to decomposing materials and the plastics that clog waterways have recently been complemented by worries over the greenhouse gas emissions that arise from waste and its management.

But in many cities across the global south, the positive potential of waste has long been recognised. Actors, particularly in the informal sector, harness the value of this waste: waste makes essential contributions to the precarious livelihoods of millions of poor urban dwellers through waste-picking for use, recycling, recuperation and sale, and through practices, markets and production processes associated with urban waste circulation processes (Miraftab, 2004; Samson, 2010a and 2010b). More recently, public policies and discourses in the north and south (often promoted by the state, environmentalists and international donors) are seeking to reframe waste as a resource and to promote a more regular and efficient capturing of value through the construction of metabolic value chains.

It is not surprising, therefore, that urban sustainability and socio-ecological transition policies consider the urban waste metabolic cycle as a key leverage point for securing more ecologically benign, economically viable and socially inclusive waste management technologies, procedures, policies and mechanisms. While attention is paid to reducing or avoiding waste, significant effort has been focused on how to move from waste as useless and dangerous 'excrement' or as 'matter out of place' (Douglas, 2004 [1966]) to incorporating (part of) the waste cycle within a value chain (Crang et al., 2013; Lepawsky and Billah, 2011). The idea here is to render waste 'valuable' in economic terms as well as ecologically more 'sustainable', while also generating positive social outcomes.

And yet, as we argue through our examination of recent efforts to intervene in the South African wastescape, it is extremely difficult to address this triad of objectives. Competing interests, dynamic economies and the very real materiality and thus heterogeneity of waste shape the ability of various actors to make either cents or sense of what is and ought to be. Instead of a well-ordered, efficient system of waste management (in the sense of the modern infrastructure ideal as defined by Graham and Marvin (2001)), we see in practice a diverse, highly politicised, multi-scalar set of interventions seeking to push waste management towards an implausible set of countervailing goals.

This chapter is a summary of research into different types of waste interventions in South Africa. In a context of growing global and local inequality and deteriorating socio-ecological conditions, the case of South Africa is particularly instructive. The neoliberalisation of the South African state, the widening socio-ecological polarisation and the discursive emphasis on pursuing a more socially inclusive and ecologically benign development trajectory turn the South African case into an emblematic example of urban waste transition. The examination of interventions in the urban metabolic waste stream provides a lens through which to capture some of the key processes, contradictions and transformations. We chose these interventions as being indicative of wider trends in waste management, particularly in southern cities seeking to harness global finance, create more 'modern', uniform and universal (and therefore legible and countable) economies, generate employment opportunities and demonstrate due diligence towards responsible ecological governance. We are ultimately interested in how change happens and how the impact of specific interventions interacts with officially stated objectives of poverty reduction.

The chapter therefore describes the dynamic institutional, technical, social and political ecological landscape of waste management in South Africa and how this in turn is shaping the practices by which waste is transformed into economic and social value, who is allowed to claim such benefits, and what makes for successful claims. We call attention to the competing mandates of government – to manage waste, support social development and increase employment while limiting the cost of both and nurturing a green sustainable transition model – and the ways in which various actors respond to these often countervailing mandates. The empirical work is based on investigations into: 1) the technologisation of waste management; 2) the differential impacts of the internationalisation of waste management finance; and 3) initiatives that emphasise collaborative governance and community participation and awareness as means of improving waste management. Before we examine this triad, we provide a conceptual and theoretical entry into the problem.

An urban political ecology of waste metabolism

We mobilise theoretical and empirical insights from urban political ecology (UPE) (Heynen et al., 2006; Swyngedouw, 1996) while extending and reformulating this perspective through the inclusion of theoretical and empirical insights from the global south (Ernstson et al., 2014; Robinson, 2011; Roy, 2009). Urban scholars have increasingly demonstrated that research on ‘ordinary’ cities is necessary for understanding future urbanisation, particularly as urbanisation is happening most rapidly in cities of the south (Robinson, 2011; Simone, 2011). This demands a reconsideration of the universality of aspects of urban theory, and the development of new theory from new locations. Importantly, this argument is not a rejection of the ability of theory to travel; it is an argument for a more careful and grounded consideration of which aspects of theory can and ought to travel (Ernstson and Sörlin, 2019; Lawhon and Truelove, 2020; Lawhon et al., 2020; Parnell and Oldfield, 2014). Specifically, therefore, we seek to develop a situated urban political ecological analysis that is grounded in the challenges of cities in the global south and that has the potential to inform practice that is based on this context, while still inform wider circulations of theory (Lawhon et al., 2014).

We use this as an entry point for further developing the range of theoretical innovations and interventions in the field of urban political ecology. Urban political ecologies show how socio-material flows (e.g. of water,

electricity or waste) produce cities and their ‘hinterlands’ and influence their socio-physical environments. Such studies forefront the ways in which these socio-material flows shape and are shaped by ecological, social, political and economic relations and the associated distribution of use values and exchange values. Viewing waste as a socio-material flow that can be reworked by social actors to extract value through the mobilisation of specific knowledges, technologies and infrastructures provides a lens through which to unpack social, cultural, economic and political relations, winners and losers, and to understand how urbanisation structures society and the environment (Heynen et al., 2006). This chapter combines insights from southern cities with UPE to understand everyday environmental injustices in the context of political economic forces and everyday micropolitics (Ernstson and Sörlin, 2019; Lawhon et al., 2014 and 2020; Loftus, 2012; Rademacher and Sivaramakrishnan, 2013). We build on and inform such theoretical frameworks by simultaneously exploring the impact of international capital, decision-making strategies and expectations about modernity, employment and the moral value of work on local contestations over waste beneficiation.

Much of the existing literature on contestations over waste management draws from cases in the global north (for example, Bulkeley et al., 2007). As argued in urban studies more generally, this provides limited grounding through which to study cases where informality and poverty significantly shape waste practices. A large part of the current research on waste in the global south focuses on the practices of informal waste collectors (Gutberlet, 2012; Millar, 2014; Millington and Lawhon, 2019; Mitchell, 2008; Samson 2010a; Schenck and Blaauw, 2011; Thieme, 2013) and broader patterns of neoliberalisation, privatisation and enclosure (Fredericks, 2014; Gidwani, 2015; Gidwani and Reddy, 2011; Gutberlet, 2012; Holifield, 2004; Millington and Lawhon, 2019; Miraftab, 2004; Njeru, 2006; Rosaldo, 2016; Samson, 2015). Our work draws from these analyses in order to develop understandings of the links between policy, technology, poverty, power and waste itself, particularly in light of the changing political economy of waste internationally, regionally and nationally and associated political and technological interventions. This is to say, we argue that the possibilities for making a decent livelihood from waste are shaped by factors as diverse as global carbon finance, the roll-out of kerbside collection of recyclables and the amount of food a household is willing to throw away. As a study of urban political ecology, therefore, we include much more explicit consideration of the material flows – and

their social, technical and economic impacts – and frame questions of power within a wider, multi-scalar set of impacts.

Waste interventions: the perverse social ecologies of 'greening' waste

Waste management in the global south is a growing concern, although data and trends are difficult to obtain (Idris et al., 2004). While uncontrolled landfilling remains the dominant strategy in many places – for example, estimates in India suggest 90 per cent of household waste goes to uncontrolled sites (Talyan et al., 2008) – in the global north, regulations are reducing the overall use of landfilling, replacing it with recycling as well as more technologically intensive alternatives (Giusti, 2009). In the global south, development agencies often support small-scale activities such as enabling and organising informal recycling or increased governance capacity. International capital, however, has also demonstrated interest in large-scale projects such as waste-for-energy incineration and harnessing the Clean Development Mechanism (CDM) for international finance (Plöchl et al., 2008).

South Africa has undergone significant changes since the end of apartheid in 1994, yet poverty remains widespread and inequality has increased (Bhorat and van der Westhuizen, 2010; Sulla and Zikhali, 2018), with continuing deep differences between the rural countryside and the city, and within cities (Sinclair-Smith and Turok, 2012; Swilling, 2006; Turok, 2001). While the economy has grown, much of this is considered 'jobless' growth or even 'job-shedding'. Inequality has provocative consequences for waste: high-income lifestyles produce much waste, and the precarious conditions of the urban poor result in 'willing' labourers. While ethically problematic, the juxtaposition of rich and poor creates opportunities such as economically viable, labour-intensive recycling, and extensive recirculation of used goods. The ability to capitalise on the demand for waste, however, is limited for various reasons, including a complex, unclear and inconsistent political and institutional context (Godfrey and Oelofse, 2008).

Nevertheless, the growing dissatisfaction with the economy has led the state – across national, regional and municipal levels – to create campaigns and initiatives encouraging volunteerism and community-led projects more vigorously as well as workfare and entrepreneurial opportunities. Waste work (the labour that goes into transforming waste at different

stages of the metabolic value chain) is increasingly being recast as both a speculative process for financial gain and a civic obligation. Legislatively, waste has increasingly been identified in policy documents and practices as a resource from which to generate wealth and create jobs, including in the 2010 New Growth Path and the 2008 National Environmental Management Waste Act (Republic of South Africa, 2008; South Africa, 2010). As a sector that is seen to possess low barriers to entry, waste has been framed as a means of generating low-income jobs throughout the nation. In the remainder of this chapter, we critically evaluate these efforts by the state and multiple other actors to rework the wastescape, highlighting South Africa's capacity to shed light on similar dynamics in other developing countries.

Technology and labour

High rates of unemployment mean that the relationship between technology and labour is critical to contemporary conversations about waste management throughout the global south, and has particular salience in South Africa (Lawhon et al., 2018). Contemporary recycling and waste management facilities are marked by the complex interplay between the manual and the technical in the management of waste (Zapata Campos and Hall, 2013). While 'technical' may evoke images of expensive automated systems of waste sorting, manual recycling and waste collection by salary-paid workers within a formalised industry, it also encompasses a series of small-scale technological interventions outside the more formalised industry that intersect with existing infrastructures of waste collection and processing, such as trolleys and bicycles. Waste management in the global south is often a labour-intensive and largely manual operation, given the low cost of labour. Nevertheless, the small margins associated with the industry, as well as pressures to innovate, compel the technological advancement of productivity through technologies such as conveyors, sorting assemblages, sophisticated trucks, compressors and mechanisms for tracking global and local price fluctuations. (For a textured illustration of the diversity of the waste industry, see the online film by Kruger et al., 2019).

In spite of these dynamics, the increasingly sophisticated nature of recycling and waste management in the global north has put pressures on countries of the global south to keep up with trends (see also analyses of the quest for modernity: Ferguson, 1999; Graham and Marvin, 2001; Mitchell, 2002). This is occurring at the same time that waste is increasingly articulated as a 'commodity frontier' (Demaria and Schindler, 2016;

Moore, 2015; Samson, 2019), one whose profitability is dependent on new technologies of extraction and material remaking. These include the value that can be found in waste objects through recycling, but also through more sophisticated mechanisms of using waste to generate energy through processes such as anaerobic digestion and incineration. As detailed in other work (Lawhon et al., 2018), the possibility of automating waste collection in South Africa is appealing to waste managers and professionals. The low cost of labour coupled with state pressures for job creation, however, limit the development of automated waste management systems. Waste remains a largely manual operation throughout much of the country, partly at the level of collection, and at the level of sorting. Efforts to develop separation-at-source initiatives throughout the country are ongoing. However, they remain complicated by the cost dynamics associated with recycling, especially the high costs of transport and fuel, in part an effect of the apartheid legacies of South Africa's cities with long distances between different segregated areas (Turok, 2001). These dynamics in turn intersect with the fluctuating national and, in particular, international prices of recyclables and can render collection financially unviable.

Given financial costs and continued reliance on manual sorting and collecting, technologies such as incineration, waste-to-energy and landfill gas extraction have played a limited, albeit symbolically important role within waste initiatives in Africa. Nevertheless, energy professionals and other actors are increasingly marketing them as win-win solutions that can reduce the externalities of waste while generating other benefits, especially energy. Such technologies are being promoted in the global south as private capital seeks new outlets given the increasing regulatory control and stringent regulation in the north (Gandy, 2004; Platt, 2004). For example, in the 1970s and early 1980s municipal governments in São Paulo and Buenos Aires had contemplated the expansion of incinerators for household waste. However, at that time social mobilisation and the high cost of this technology prevented its establishment. Waste incineration has now re-emerged in many places around the global south as waste-to-energy plants, and typically involves processes of anaerobic digestion of organic wastes (Demaria and Schindler, 2016; Gutberlet, 2012; Platt, 2004). Unlike incineration more broadly, which involves complex conflicts with local recyclers due to the shared material feedstock, anaerobic digestion mainly involves organic waste and is subsequently somewhat disconnected from the politics surrounding recycling and waste-picking. In South Africa's case, anaerobic digestion investments have largely been led by the private

sector, while the state has primarily pitched job creation in the waste sector at the level of collection. These imply very different numbers and types of jobs that can be created, from low-wage collecting and sorting jobs, to higher-skill engineering jobs at the management level.

Small-scale renewable energy generation

Commonly referred to as waste-to-energy, anaerobic digestion and biogas production are positioned as a source of waste minimisation that furthers sustainability through the production of energy and reducing methane emissions. A nascent biogas industry exists in South Africa, largely financed through international development agencies as well as private financing more generally. In 2017, a large-scale anaerobic digestion plant was built in Cape Town, designed to handle roughly 10 per cent of the city's organic waste. Developed by New Horizons Energy, a 'disruptive waste-to-energy company' that offers 'revolutionary waste management and cost-effective green energy', the project was entirely funded by private financiers and development banks in spite of some late attention from Cape Town's municipal government (Cloete, 2017; New Horizons Energy, n.d.). The stated reason for the plant's applicability to the Western Cape context was the combination of high landfill and gas prices, which rendered anaerobic digestion more cost effective than in other provinces or cities. Without these effective subsidies, the project would have not been viable (Ernstson and Swyngedouw, 2018). While efforts to link waste-to-energy projects to global climate finance marked the South African waste sector in periodic moments over the last decade, the collapse of the global carbon price has meant that carbon finance has played a minimal role in environmental projects throughout the country since 2012, despite the fact that both international organisations and the private sector considered them the key in the process of reducing greenhouse gas emissions (Ernstson and Swyngedouw, 2018).

Turning the city's organic waste into energy has proved difficult, however, as waste compositions have not matched existing calculations and plans. When discussing the development of the project, a South African energy professional noted that the project needed to be reworked once it was established due to changing compositions of organic waste materials being produced by urban residents; increasing composting rates for wealthy households were matched by decreased amounts of waste materials in increasingly poor households (Ernstson and Swyngedouw, 2018). The statistics used to provide the economic rationale to build the plant were not adequate to operate in a new and changing material reality of waste

management in the country. The designed and existing operational arrangement in the new plant had to be reconfigured in order for it to remain financially viable for the foreseeable future. While intimately linked to the specificities of Cape Town's social, physical and energy landscape, not least the steep inequality between its households, the city's attempts at turning waste into energy were complicated by the specific materialities of organic waste in the city. Given shifts in the nature of waste itself, its changing quantity and its highly heterogeneous character as a commodity, these efforts intersected with the infrastructures of waste collection and processing to create a situation where existing frameworks were inadequate. These shifts in waste are intimately linked to historically persistent and deepening inequality, and the broadening degree to which consumption patterns and waste practices are connected to class and its racialised geographies.

Anaerobic digestion, as with the broader biogas industry, is dependent on infrastructural and institutional dynamics related to existing grids and accessibility. In South Africa currently, energy producers do not have the right to sell back electricity to the grid except in very specific arrangements or agreements between certain public and private actors. This produces a situation where the governance dynamics yield situations in which renewable energy (via waste or otherwise) is only possible in very particular circumstances. In the case of South Africa, ongoing dynamics at the federal level are working to curtail the nascent renewable energy industry. Waste, in this permutation, again comes in and out of focus depending on the forms into which it is inserted. Its relationality is crucial to its ability to be rendered profitable or productive, but in its materialised form – exhibiting a high degree of heterogeneity, in contrast to water and electricity, for instance – it seems a quite undisciplined and uncooperative commodity that makes profits and the building of an industrial sector for job creation around it difficult. As such, rendering value from waste through the development of energy is by no means an intuitive process, even though it can be presented as such in design sketches and spreadsheets, but rather one that entails complex negotiations with existing inequalities and their materialisations in infrastructure.

Wasting climate finance

The internationalisation of waste financing

The formal adoption of the CDM through the 1997 Kyoto Protocol has reconfigured waste finance at the international scale, aiming to source

finance capital in the global north to be invested in plants and technologies in the global south to reduce the global amount of greenhouse gas emissions. Its implications for sustainable development and poverty reduction remain unclear (Olsen, 2007), however, particularly as the international markets for Certified Emission Reductions (CERs) collapsed after 2012, dropping from an initial high at over €20 per ton of carbon dioxide equivalents (tCO₂e) in June 2008, to €6 in the financial crash in September 2008, to only around €0.30 from 2013 to today (Ernstson and Swyngedouw, 2018). The most notorious of these CDM waste-to-landfill projects is the Durban Bisasar Road Landfill project (Bond, 2007; Couth et al., 2011), but nine other projects have been approved by the South African Designated Authority as of April 2017 (SADNA, 2017). Eight were eventually registered with the United Nations Framework Convention on Climate Change (UNFCCC), the institutional linchpin for managing the CDM architecture. Thus, a first observation is that while South Africa initially seemed to look like a perfect country for the rolling-out of CDM projects, as it has a considerably well-developed high-tech industry with know-how and management capacity while still holding low- to middle-income status and dynamics, there has been in retrospect a fairly small output in realised CDM projects in the country.

Urban waste has been considered as an important quilting point in the process of transforming the urban socio-ecological imprint. As a 2010 United Nations Environment Programme (UNEP) report stated, 'the waste sector is in a unique position to move from being a minor source of global emissions to becoming a major saver of emissions' (UNEP, 2010). Silver, based on his case study of a contested CDM-initiated waste project in Uganda, concurs that this is also how waste and CDM finance have been portrayed: 'alongside the potentials bound up in capturing its material value (and in addressing under-funded waste system operations through new circulations of finance) it is likely [international and local actors have argued] that waste infrastructure will become a crucial site of urban carbon governance' (Silver, 2017: 1481).

From its very inception in the aftermath of the Kyoto Protocol, advocates of the CDM portrayed the system as potentially generating financial flows to the developing world, mitigating climate gas emissions and nurturing employment and economic growth. The relationship between urban ecological modernisation policies, financialisation of urban socio-ecological infrastructure and internationally agreed climate mitigation instruments like the CDM has often been acknowledged in the literature. This includes

investigations into its chequered history, the complexity of its institutional arrangement, the pseudo-commodification of (part of) the atmosphere and the speculative nature of turning non-human material like CO₂ into financialised assets to be traded on an uncertain, volatile and now basically defunct market (Lane and Newell, 2016; Newell, 2012; Stephan and Lane, 2014). In addition, the uneven socio-ecological consequences are also widely acknowledged, while the contribution to greenhouse gas reductions is negligible, as confirmed by leading climate scientists (Anderson, 2012). Nonetheless, despite these critical accounts of the mechanism and the fact that it has basically stopped performing since the price of CERs collapsed after the financial crisis, we maintain that the CDM nonetheless played a critical role in sustaining and nurturing the assetisation and financialisation of nature, while nudging investments in the direction of techno-managerial ecological modernisation (Ernstson and Swyngedouw, 2018). In this aspect, South Africa, perhaps in particular because of its high-tech industrial sector, became an important testing ground to roll out CDM; albeit not producing effective greenhouse gas emission 'sinks', South Africa served to showcase the realisation of CDM and was useful to produce examples that could be deemed 'successful' regardless of whether they fulfilled the grand goals of the scheme. With this double goal, discursive window-dressing and producing concrete examples, the huge landfills found in and outside South Africa's major cities were prime sites.

Landfill gas projects in South Africa were considered an easy option to obtain a large number of tradable carbon credits: 'From the outset of CDM projects, landfill gas projects may have been viewed as the most viable and easiest to implement, offering a perception of quick access to realising emission reduction credits. An omnipresent description phrase to landfill gas CDM projects has been "low hanging fruit"' (Strachan et al., 2005).

The production of a tradable permit, however, is a complex, time-consuming, expensive and highly bureaucratic process that involves a wide range of actors, institutions, companies and bureaucracies in many different places and operating at diverse geographical scales. These include local project developers, local governments, the host national authority, the CDM executive board, project operators, private or state funders, the ever-present row of 'expert' consultancy companies that generate their own profits from this process through their technical, legal and accounting services, and on top of that a string of spreadsheets, reports and calculations that dot any CDM-related research report (Couth et al., 2011). The CDM

is at heart an institutional arrangement that produces a tradable 'permit to pollute'. The average cost of a project to go through an uncertain validation process is on average between US\$20,000 and US\$35,000 (Ernstson and Swyngedouw, 2018; Michaelowa and Jotzo, 2005) and generates all manner of profits for participating private actors, consultants and beyond. The price of CERs has to be sufficiently high to merit the risk of initiating a validation process.

The production of CERs as potential new assets resides precisely in their ability to generate capital that would co-produce investment in a process deemed to both save on carbon emissions and support the profitability of the overall investment (Ernstson and Swyngedouw, 2018). CERs are therefore a linchpin for legitimising the financial viability of waste-to-value projects. This markedly undermines local and national governmental policies to increase the number of jobs that are hoped to be gained from formalising the waste value chain. CDM works to cut job creation from the supposed economic values that lie in waste. From the viewpoint of a CDM-initiated gas-to-energy project, the economic value of large landfills lies in the biochemical process of methane production that unfolds in the deeper layers of anaerobic waste metabolism, which starts some 2 to 3 metres below the surface. Digging down vertical and horizontal pipes leads the methane gas produced in these deeper layers out of the landfill to be flared, producing heat and water – but also CO₂. The heat can, in turn, power a turbine to produce energy and electricity that could be sold to further enhance the financial viability of the project. As methane is officially accounted as twenty-three times more potent as a greenhouse gas than CO₂, the flaring of methane thus saves on total carbon emissions (while still producing it). However, what makes this value capture possible, as argued by Gidwani (2013), lies in enclosing and privatising the commons of waste. CDM thus translates the waste commons into the material base that permits the institutional-regulatory construction of CERs as a private asset.

We examined ten South African waste-flaring or waste-to-energy projects that were submitted to the UN authority on CDM, the UNFCCC (Ernstson and Swyngedouw, 2018). Of a total of 358 CDM projects submitted to the South African Designated National Authority as of 21 April 2017, only eighty-six had passed the first pole and been registered by the CDM Executive Board in Geneva (SADNA, 2017). Only twelve of the eighty-six had received CERs after verification and validation. Of the ten waste-to-gas projects, one had been rejected and one was no longer operational. Only

two had chosen to, and successfully generated electricity. Five projects went through a CER validation process during their first official crediting period and obtained a specified and verified amount of CERs (Bhailall, 2015). Of these, only three projects renewed their application for the second crediting period. All registered projects that issued CERs (except one) had been able to sell most of their CERs, but not always at the anticipated price. There was also notable discrepancy between the ex ante predicted emission savings and the actual amounts eventually certified (Ernstson and Swyngedouw, 2018).

CDM: financially legitimising waste-to-value projects

The CDM insisted on the additionality principle in order to approve a project. This conditionality, combined with assuring the economic viability of the project, nurtured a general tendency among South African projects to inflate the anticipated greenhouse emission avoidance in the project formulation stage. While waste-to-electricity projects based their profitability calculation on the combination of the sale of electricity (whose price and corporate structure is highly monopolised and regulated in the South African context), the economic feasibility of methane flaring depended crucially on the income generated through the offsetting market.

In sum, and confirmed in our interviews (Ernstson and Swyngedouw, 2018), in all cases the promise of generated tradable CERs, with an anticipated price level commensurate with the market conditions and expected trends at the time of preparation of the project, was crucial to get the project off the ground. This is also confirmed in other studies:

As such, the sale of the CERs is often considered to be a critical part of the project design. Without the sale of the CERs the projects are often not economically viable for project developers. 'You know it is not at all uncommon for a project to become viable and unviable several times while you're going through the development stages just because of the carbon price changing.' (South African CDM project developer, quoted in Varughese, 2012: 27–8)

All interviewees (Ernstson and Swyngedouw, 2018) confirmed that the initial project financing plans included a significant input from climate finance as the financial planning rested fundamentally on two income streams: the sale of electricity to the state electricity company (accounting for around 70 per cent of anticipated revenue) and carbon finance. It is precisely these anticipated returns that provided the economic rationale

for the project's implementation, while the environmental benefits, in particular the 'avoidance of emitting' greenhouse gases, sustained the political rationale for supporting the project as part of a supposedly emergent 'green economy'.

The promise, therefore, of significant transfers of ecological rents from the global north to the global south, articulated within an overall discursive framework of climate mitigation policies that conform to market rule, was a recurrent theme at the project preparation stage. The hugely inflated ex ante calculations of anticipated CERs permitted the production of a rosy financial calculation of the project's economic viability, and therefore assisted greatly in the efforts to privatise, commodify and enclose the commons of waste. Of course, the financial architecture of the project would also assure that the local project would become embedded in global or transnational flows of capital, which, as noted above, had little concern for generating jobs. Of the five projects that had CERs issued, they initially all entered into Emission Reduction Purchase Agreements with international financiers of a variety of kinds (Ernstson and Swyngedouw, 2018). Tracing these from landfill to purchaser reveals a network from anaerobic methane production, institutional-legal processes of enclosing methane as a privatisable commodity, socio-technical transformations of methane into H₂O, CO₂ and, in two cases, electricity, on to national and international climate institutions and investors elsewhere who agreed to purchase the CERs.

While the architecture of the CDM was built around the transfer of capital from the global north to the global south, thereby further nurturing the transnational flows of capital in the financing of local development projects as a means to contribute to the Sustainable Development Goals, the case of CDM in South Africa speaks to the nexus of capital, technology, policy, consultancy and poverty, including the scalar implications of international carbon finance. This elucidates the impacts of the internationalisation of waste finance, the commodification of carbon and whether the redistribution of climate finance to waste projects primarily enables established elites to benefit from the reframing of waste as a resource. The enclosure of the landfill sites to permit gas extraction and flaring is confronted with significant social protest and contestation as different social groups hold different claims to waste. From the more established literature on 'informal' waste-pickers, in particular in South Africa (Samson, 2015 and 2019), we know how more formally established (as through CDM) or informally 'appropriated' entitlements to accumulated waste

(as in landfills) open up a space of contestation. Waste-pickers, who eke out a precarious albeit crucial livelihood, are negatively affected by enclosing the commons of waste, as they build their livelihoods on sorting through and selectively appropriating discarded items for their own use, for resale and/or entry into a recycling process. Their practice of value generation from waste is blocked by the process of enclosing waste, often manifested in gates, fences and security guards that physically shut off the landfill and turn it into a gated space with triaged access. The promised economic return of such projects in terms of economic growth and employment generation overlooks the value creation and actually existing employment already invested in the landfill.

When drawing on our South African study of CDM projects, it seems clear that at the national level the CDM architecture, because of its international and financialised structure, risks disconnecting from local and national governmental policies that aim to generate jobs in relation to a reconfigured waste value chain. And in spite of the quite meagre results of selling CERs and 'avoiding' greenhouse gas emissions through them, these projects have still served the purpose of advancing a techno-managerial and ecological modernisation architecture (Ernstson and Swyngedouw, 2018). However, since CDM also leads to direct labour displacement when landfill sites and waste streams are enclosed for private gains, there has been significant social unrest and mobilisation that demonstrate more clearly just how contentious the production of CERs is (Bond, 2007; Ground Work South Africa, 2013).

Community waste management

In recent years, waste has been increasingly recognised as a multi-sectoral issue which can be responded to by diverse actors, including government, business, civil society and individual citizens within a regime of participatory environmental governance (Davies, 2008). Governance often strives to translate that which is politically contestable into the managerial and apolitical (Ernstson and Sörlin, 2013; Swyngedouw, 2009). This has been true for waste in many African cities, evident in Myers' (2005) analysis of the Sustainable Cities Programme in Africa. In South Africa, following the Waste Act (Republic of South Africa, 2008), cities have made coordinated efforts to reduce waste through ongoing educational and awareness campaigns and community-focused waste and recycling initiatives which seek to establish partnerships for improved waste governance (Stokes, 2020). State efforts to reduce waste, increase recycling and link so-called

'formal' waste management with livelihoods have resulted in a proliferation of monthly clean-ups, media campaigns, work opportunity initiatives and community procurement schemes. In a context where risks of automation and surplus labour forces are met with challenges of municipal capacity (Palmer et al., 2017), community waste management efforts are an important tool within the commodification of waste and the devolution of state service provision, particularly in marginalised communities.

Although national clean-up days and recycling weeks long occurred in South Africa, municipalities in recent years have begun to organise monthly clean-up days where political officials come out and join residents to clean up their local areas (Stokes, 2020). At the launch of Johannesburg's 'A Re Sebetseng' campaign in August 2017, Mayor Herman Mashaba joined local waste workers, community members and even Miss Earth South Africa to clean up the inner-city neighbourhood of Yeoville. Translating as 'Let's Work', A Re Sebetseng invokes environmental hazards, civic duty and community pride in the bid to get residents to do their part, suggesting the city will become cleaner as a result (City of Johannesburg, 2018). Through mixed media announcements and by offering bags and gloves to participating communities, the campaign attempts to encourage public participation in community clean-ups on the third Saturday of each month. A similar campaign has been run in the neighbouring metro of Ekurhuleni, under the banner 'Clean Neighbourhood Fridays'. These clean-ups have inspired similar initiatives in Rwanda and Nigeria (Umuganda and Environmental Sanitation Day, respectively), where public cleaning was deemed mandatory for able-bodied adult residents on set days.

State efforts are not limited to nurturing voluntary work. Indeed, other community labour arrangements are being incorporated into waste management service provision. In particular, state programmes target waste for job creation through public employment schemes run by all spheres of government. These schemes have a dual purpose of providing social protection for working-age adults while contributing towards necessary public works and services (Stokes, 2020). National public schemes like the Expanded Public Works Programme and Community Works Programme fund temporary and part-time work opportunities for unemployed or underemployed community members, with an increasing emphasis on youth, given their disproportionately high unemployment rates: 38.8 per cent of 16–34-year-olds in the second quarter of 2018 compared to national official unemployment rate of 27.7 per cent (Statistics

South Africa, 2018). Municipalities are not supposed to use public works schemes to replace existing work. However, tracking this can be difficult – if a service is insufficiently provided, permanent jobs might not be displaced, but they also might not be created.

In recent efforts to transform waste management services, the mayor of Ekurhuleni launched another programme, Clean City/Keep Ekurhuleni Clean, which was promoted as a mass employment opportunity through the formation of community cleaning brigades. While ambitious, it also encountered significant challenges in operations at the start, leading to the contracting of an external service provider to oversee the programme in the early stages of the pilot. In its second iteration, the programme has been significantly delayed, purportedly due to internal political difficulties and the inability to pay service providers. Despite officially launching and recruiting participants in October 2017, the programme had difficulties getting off the ground, with talk of the project being delayed indefinitely or abandoned altogether (as of end of fieldwork in May 2018; Stokes, 2020).

Alongside local works schemes, waste management services have also been outsourced to community-based small, medium and macro enterprises (SMMEs) and cooperatives, particularly in low-income areas (Stokes, 2020). In 2014, the mayor of Johannesburg launched Jozi@Work, a landmark procurement scheme which offered service contracts for community-based SMMEs and cooperatives. Municipal departments were required to use 20 per cent of their budget for the initiative. However, the programme abruptly stopped following the 2016 municipal elections, amidst claims of clientelism surrounding procurement and capacity agents. Despite this, the programme's legacy is still in question. The current Democratic Alliance-led municipal government promised that an equivalent community uplift programme would replace Jozi@Work in due course. Yet regular protests by ex-Jozi@Work participants resulted in the mayor announcing the insourcing of approximately one-third of eligible Jozi@Work employees. This shift-change means insourced workers will be formally recognised as municipal employees, raising their wages from approximately 2,200 rand to 6,000 rand per month (Dludla, 2018).

In Cape Town, the municipal campaign WasteWise ran from 2001 until 2014, promoting community-led initiatives through partnerships with local government, schools/communities and businesses to establish partnerships (for an evaluation of WasteWise, see Armien-Ally, 2013; Stokes, 2020). While the campaign was originally framed as a response

to littering and dumping, a broader environmental imperative led to recycling, cleaning, composting, crafts and gardening projects. The framing used in this programme suggests that win-win solutions can be obtained through empowerment, cooperation, education, recycling, training community facilitators and developing tripartite business models. While community participants recognise the potential of such initiatives, they equally challenge the power relations and outcomes of such partnerships, questioning how expectations of community empowerment and cooperative governance in waste relate to wider socio-political concerns such as crime, poverty, service delivery and a neighbourhood sense of place.

As decentralised infrastructures and devolved governance are promoted across global policy imperatives and institutions like the New Urban Agenda and World Bank, institutional consensus appears to suggest that localising services, political participation and material concerns are the most effective means of addressing residents' needs and improving livelihoods. While not necessarily incorrect, critiques of this perspective caution against embedded inequalities that can be exacerbated through devolving finance, political capacity and representation. Such instances are highlighted by literature considering splintering urbanism and incremental infrastructures, where agency and empowerment is present, yet reinforce, depoliticise or exacerbate existing inequalities (Graham and Marvin, 2001; Kooy and Bakker, 2008; Silver, 2014). However, in most community-focused waste initiatives, labour is framed as an opportunity to find more secure work in the future, one's responsibility, or simply a civic duty for collective social reproduction (Stokes, 2020). Depoliticised and devalued, community waste efforts do provide immediate economic benefits to some participants in the form of stipends or payment for materials recovered. For many participants, getting to work and contribute towards a state service is a point of pride and dignity. And with increasing numbers of people participating in such programmes, we cannot help but wonder if this is the basis for a civic workforce who can make greater claims on the basis that they contribute towards the functioning of state services.

Conclusion

In line with broader development goals, waste is increasingly being seen as a resource for state actors, community groups and urban citizens throughout the global south. Waste is being reformulated as a way to

generate jobs, to harness international development financing and to create more sustainable communities.

This chapter considered how waste is narrated as a resource at the state level in South Africa and the material politics of waste at the community, urban and global scale. We analysed the contemporary waste economy in South Africa in light of broader processes that mark (waste) governance in the global south, in particular the technologisation, formalisation and financialisation of waste materials.

These three 'lenses' are clearly intertwined. The labour–technology nexus proves to be intractable as the (capital-intensive) lure of fully automated and 'green' technology meets the extreme low cost of labour. The trade-off between labour-substituting technology and the mass availability of cheap labour produces a conundrum that slows down both more technologically efficient waste technologies and the provision of stable and well-paid jobs. Furthermore, as we demonstrated, the move towards 'green' technologisation is further nurtured by the climate change agenda. While legitimised on its green credentials, the way in which the CDM articulated with new waste management practices and technologies did indeed nurture a socio-technical shift, but one that intensified conflicts over waste while hardly – if at all – contributing to mitigating climate change.

Given the extraordinary number of people securing a livelihood from working in and with waste, there is increasing emphasis on community-focused waste initiatives. While offering the possibility of securing work, they often lead to a shift in responsibility from the state to civil society, and re-enforce a process of de-politicisation.

Taken together, the socio-ecological metabolic flow of urban waste demonstrates the contradictory and conflicting mechanisms that infuse processes of transforming urban waste circulation in the direction of a more ecological sensible and socially equitable manner. In sum, in this chapter we asked about who benefits from the reframing of waste as a resource and in what ways.

Acknowledgements

This chapter has been a collaborative effort among the authors, who are listed in alphabetical order. The work is an initial synthesis of various empirical studies in our project 'Turning livelihoods to rubbish? Assessing the impacts of formalisation and technologisation of waste management on the urban poor', funded by the UK's ESRC-DFID Poverty and

Alleviation Grant (reference number ES/M009408/1). Our website is www.situatedupe.net/tlr.

References

- Anderson, K. (2012). 'The inconvenient truth of carbon offsets'. *Nature*, 484: 7.
- Armien-Ally, J. (2013). 'An evaluation of the City of Cape Town Municipality's waste wise sustainable education and school recycling programme'. Master's dissertation. University of Cape Town.
- Bhalilall, S. (2015). 'Landfills gas emissions and the associated air quality, energy and climate change implications in South Africa'. PhD thesis. University of Witwatersrand.
- Bhorat, H. and van der Westhuizen, C. (2010). 'Poverty, inequality and the nature of economic growth in South Africa'. In N. Misra-Dexter and J. February (eds), *Testing democracy: Which way is South Africa going?*, 46–70. Cape Town: IDASA.
- Bond, P. (2007). 'Privatisation of the air turns lethal: "Pay to pollute" principle kills South African activist Sajida Khan'. *Capitalism, Nature, Socialism*, 8(4): 6–37.
- Bulkeley, H., Watson, M. and Hudson, R. (2007). 'Modes of governing municipal waste'. *Environment and Planning A*, 39: 2733–53.
- City of Johannesburg (2018). 'What is A Re Sebetseng?'. www.joburg.org.za/Campaigns/Pages/Campaigns/Aresebetseng/What-is-Aresebetseng.aspx (accessed 7 September 2020).
- Cloete, K. (2017). 'Ground-breaking waste-to-energy plant opens in Cape Town'. *Engineering News*, 24 January. www.engineeringnews.co.za/article/ground-breaking-waste-to-energy-plant-opens-in-cape-town-2017-01-24 (accessed 7 September 2020).
- Couth, R., Trois, C., Parkin, J., Strachan, L.J., Gilder, A. and Wright, M. (2011). 'Delivery and viability of landfill gas CDM projects in Africa – A South African experience'. *Renewable and Sustainable Energy Reviews*, 15: 392–403.
- Crang, M., Hughes, A., Gregson, N., Norris, L. and Ahamed, F.U. (2013). 'Rethinking governance and value in commodity chains through global recycling networks'. *Transactions of the Institute of British Geographers*, 38(1): 12–24.
- Davies, A. (2008). *The geographies of garbage governance: Interventions, interactions and outcomes*. London: Routledge.
- Demaria F. and Schindler S. (2016). 'Contesting urban metabolism: Struggles over waste-to-energy in Delhi, India'. *Antipode*, 48(2): 293–313.
- Dludla, S. (2018). 'City of Joburg to insource 1,400 former Jozi@Work employees'. *Independent Online (IOL)*. 5 April. www.iol.co.za/news/south-africa/gauteng/city-of-joburg-to-insource-1-400-former-joziwork-employees-14264448 (accessed 5 September 2020).
- Douglas, M. (2004 [1966]). *Purity and danger: An analysis of concepts of pollution and taboo*. London and New York: Routledge.

- Ernstson, H. and Sörlin, S. (2013). 'Ecosystem services as technology of globalisation: On articulating values in urban nature.' *Ecological Economics*, 86(C): 274–84.
- Ernstson, H. and Sörlin, S. (eds) (2019). *Grounding urban natures: Histories and futures of urban ecologies*. Cambridge, MA: MIT Press.
- Ernstson, H. and Swyngedouw, E. (2018). 'Wasting CO2: The remarkable success of a climate failure'. Paper for the Heterogeneous Infrastructures in African Cities Workshop, Makerere University, Kampala, Uganda, 12–15 November. Available at the Situated UPE Collective: <https://bit.ly/3c9nXOZ> (accessed 7 September 2020).
- Ernstson, H., Lawhon, M. and Duminy, J. (2014). 'Conceptual vectors of African urbanism: "Engaged theory-making" and "platforms of engagement"'. *Regional Studies*, 48(9): 1563–77.
- Ferguson, J. (1999). *Expectations of modernity – Myths and meanings of urban life on the Zambian copperbelt*. Berkeley: University of California Press.
- Fredericks, R. (2014). 'Vital infrastructures of trash in Dakar'. *Comparative Studies of South Asia, Africa and the Middle East*, 34(3): 532–48.
- Gandy, M. (2004). *Recycling and the politics of urban waste*. London: Routledge.
- Gidwani, V. (2013). 'Six theses on waste, value, and commons'. *Social & Cultural Geography*, 14(7): 773–83.
- Gidwani, V. (2015). 'The work of waste: Inside India's infra-economy'. *Transactions of the Institute of British Geographers*, 40(4): 575–95.
- Gidwani, V. and Reddy, R.N. (2011). 'The afterlives of "waste": Notes from India for a minor history of capitalist surplus'. *Antipode*, 43(5): 1625–58.
- Giusti (2009). 'A review of waste management practices and their impact on human health'. *Waste Management*, 29: 2227–39.
- Godfrey, L. and Oelofse, S. (2008). 'Systems approach to waste governance: Unpacking the challenges facing local government'. Paper presented at the Waste 2008 Conference: Waste and Resource Management – A Shared Responsibility. Stratford-on-Avon, 16–17 September.
- Graham, S. and Marvin, S. (2001). *Splintering urbanism: Networked infrastructures, technological mobilities and the urban condition*. London: Routledge.
- Ground Work South Africa (2013). 'Nov. 8 march against incineration: Waste incineration is wasting jobs in South Africa!' Global Alliance of Waste Pickers, 7 November. <https://globalrec.org/2013/11/07/march-against-incineration> (accessed 7 September 2020).
- Gutberlet, J. (2012). 'Informal and cooperative recycling as a poverty eradication strategy'. *Geography Compass*, 6(1): 19–34.
- Heynen, N.C., Kaika, M. and Swyngedouw, E. (eds) (2006). *In the nature of cities: Urban political ecology and the politics of urban metabolism*. Oxford: Routledge.
- Holifield, R. (2004). 'Neoliberalism and environmental justice in the United States environmental protection agency: Translating policy into managerial practice in hazardous waste remediation'. *Geoforum*, 35(3): 285–97.

- Idris, A., Inanc, B. and Nassir-Hassan, M. (2004). 'Overview of waste disposal and landfills/dumps in Asian countries.' *Journal of Material Cycles and Waste Management*, 6(2): 104–10.
- Kooy, M. and Bakker, K. (2008). 'Splintered networks: The colonial and contemporary waters of Jakarta.' *Geoforum*, 39: 1843–58.
- Kruger, Y., Millington, N. and Ernstson, H. (2019). *Turning livelihoods to rubbish?* Film and associated resources, Situated Urban Political Ecologies. www.situatedupe.net/tlr/turning-livelihoods-to-rubbish (accessed 7 September 2020).
- Lane, R. and Newell, P. (2016). 'The political economy of carbon markets.' In T. Van de Graaf, B. Sovacool, A. Ghosh, F. Kern and M. Klare (eds), *The Palgrave handbook of the international political economy of energy*, 247–67. London: Palgrave Macmillan.
- Lawhon, M. and Truelove, Y. (2020). 'Disambiguating the southern urban critique: Propositions, pathways and possibilities for a more global urban studies.' *Urban Studies*, 75(10): 3–20.
- Lawhon, M., Ernstson, H. and Silver, J.D. (2014). 'Provincialising urban political ecology: Towards a situated UPE through African urbanism.' *Antipode*, 46(2): 497–516.
- Lawhon, M., Millington, N. and Stokes, K. (2018). 'A labour question for the 21st century: Perpetuating the work ethic in the absence of jobs in South Africa's waste sector.' *Journal of Southern African Studies*, 44(6): 1115–31.
- Lawhon, M., Le Roux, L. Makina, A. and Truelove, Y. (2020). *Making urban theory: Learning and unlearning through Southern cities*. Abingdon and New York: Routledge.
- Lepawsky, J. and Billah, M. (2011). 'Making chains that (un)make things: Waste-value relations and the Bangladeshi rubbish electronics industry.' *Geografiska Annaler: Series B, Human Geography*, 93(2): 121–39.
- Loftus, A. (2012). *Everyday environmentalism: Creating an urban political ecology*. Minneapolis: University of Minnesota Press.
- Michaelowa, A. and Jotzo, F. (2005). 'Transaction costs, institutional rigidities and the size of the clean development mechanism.' *Energy Policy*, 33(4): 511–23.
- Millar, K. (2014). 'The precarious present: Wageless labor and disrupted life in Rio de Janeiro, Brazil.' *Cultural Anthropology*, 29(1): 32–53.
- Millington, N. and Lawhon, M. (2019). 'Geographies of waste: Conceptual vectors from the global south.' *Progress in Human Geography*, 43(6): 1044–63.
- MirafTAB, F. (2004). 'Neoliberalism and casualisation of public sector services: The case of waste collection services in Cape Town, South Africa.' *International Journal of Urban and Regional Research*, 28: 874–92.
- Mitchell, C.L. (2008). 'Altered landscapes, altered livelihoods: the shifting experience of informal waste collecting during Hanoi's urban transition.' *Geoforum*, 39(6): 2019–29.

- Mitchell, T. (2002). *Rule of experts – Egypt, techno-politics, modernity*. Berkeley: University of California Press.
- Moore, J.W. (2015). *Capitalism in the web of life: Ecology and the accumulation of capital*. London: Verso Books.
- Myers, G. (2005). *Disposable cities: Garbage, governance, and sustainable development in urban Africa*. Aldershot: Ashgate.
- Newell, P. (2012). 'The political economy of carbon markets: The CDM and other stories'. *Climate Policy*, 12(1): 135–9.
- New Horizons Energy (n.d.). 'New Horizons Energy (Pty) Ltd'. LinkedIn profile. www.linkedin.com/company/new-horizons-energy-pty-ltd/about (accessed 7 September 2020).
- Njeru, J. (2006). 'The urban political ecology of plastic bag waste problem in Nairobi, Kenya'. *Geoforum*, 37(6): 1046–58.
- Olsen, K.H. (2007). 'The Clean Development Mechanism's contribution to sustainable development: A review of the literature'. *Climatic Change*, 84(1): 59–73.
- Palmer, I., Moodley, N. and Parnell, S. (2017). *Building a capable state: Service delivery in post-apartheid South Africa*. London: Zed Books.
- Parnell, S. and Oldfield, S. (eds) (2014). *The Routledge handbook on cities of the global south*. Abingdon and New York: Routledge.
- Platt, B. (2004). *Resources up in flames: The economic pitfalls of incineration versus a zero waste approach in the global south*. Washington, DC: Institute for Local Self-Reliance.
- Plöchl, C., Wetzler, W. and Ragošnić, A. (2008). 'Clean Development Mechanism: An incentive for waste management projects?'. *Waste Management & Research*, 26(1): 104–10.
- Rademacher, A. and Sivaramakrishnan, K. (2013). *Ecologies of urbanism in India: Metropolitan civility and sustainability*. Hong Kong: Hong Kong University Press.
- Republic of South Africa (2008). *National Environmental Management: Waste Act 2008*. (No 59 of 2008). Government Gazette, 10 March 2009.
- Robinson, J. (2011). 'Cities in a world of cities: The comparative gesture'. *International Journal of Urban and Regional Research*, 35(1): 1–23.
- Rosaldo, M. (2016). 'Revolution in the garbage dump: The political and economic foundations of the Colombian recycler movement, 1986–2011'. *Social Problems*, 63(3): 351–72.
- Roy, A. (2009). 'The 21st-century metropolis: New geographies of theory'. *Regional Studies*, 43(6): 819–30.
- SADNA (South African Designated Authority) (2017). 'South Africa's Clean Development Mechanism projects portfolio [last entry 21 April 2017]'. South African Designated National Authority. www.energy.gov.za/files/esources/kyoto/2017/South-African-CDM-Projects-Portfolio-up-to-13July2017.pdf (accessed 7 September 2020).

- Samson, M. (2010a). *Reclaiming livelihoods: The role of reclaimers in municipal waste management systems*. Pietermaritzburg: GroundWork.
- Samson, M. (2010b). *Reclaiming reusable and recyclable materials in Africa: A critical review of English language literature*. Cambridge, MA: WIEGO.
- Samson, M. (2015). 'Accumulation by dispossession and the informal economy: Struggles over knowledge, being and waste at a Soweto garbage dump'. *Environment and Planning D: Society and Space*, 33(5): 813–30.
- Samson, M. (2019). 'Whose frontier is it anyway? reclaimer "integration" and the battle over Johannesburg's waste-based commodity frontier'. *Capitalism, Nature, Socialism*, published online, December. <https://doi.org/10.1080/010455752.2019.1700538> (accessed 7 September 2020).
- Schenck, R. and Blaauw, P. (2011). 'The work and lives of street waste pickers in Pretoria: A case study of recycling in South Africa's urban informal economy'. *Urban Forum*, 22: 411–30.
- Silver, J. (2014). 'Incremental infrastructures: Material improvisation and social collaboration across post-colonial Accra'. *Urban Geography*, 35(6): 788–804.
- Silver, J. (2017). 'The climate crisis, carbon capital and urbanisation: An urban political ecology of low-carbon restructuring in Mbale'. *Environment and Planning A*, 49(7): 1477–99.
- Simone, A. (2011). *City life from Jakarta to Dakar: Movements at the crossroads*. London: Routledge.
- Sinclair-Smith, K. and Turok, I. (2012). 'The changing spatial economy of cities: An exploratory analysis of Cape Town'. *Development Southern Africa*, 29(3): 391–417.
- South Africa (2010). 'The new growth path'. Government Programmes, South African Government. www.gov.za/about-government/government-programmes/new-growth-path (accessed 7 September 2020).
- Statistics South Africa (2018). *Quarterly labour force survey (Quarter 2: 2018)*. Pretoria: Statistics South Africa.
- Stephan, B. and Lane, R. (eds) (2014). *The Politics of Carbon Markets*. London: Routledge.
- Stokes, K. (2020). 'Waste labour and infrastructural citizenship: Promises and perils of state-led community waste initiatives in South African cities'. PhD thesis, Department of Geography, University of Manchester.
- Strachan, L.J., Pass, J., Couth, B. and Broomfield, M. (2005). 'Realising landfill gas potential for climate change and renewable energy goals'. www.landfillconservancies.com/docs/strachan_paper_landfill_2005.pdf (accessed 7 September 2020).
- Sulla, V. and Zikhali, P. (2018). *Overcoming poverty and inequality in South Africa: An assessment of drivers, constraints and opportunities*. Washington, DC: World Bank Group.
- Swilling, M. (2006). 'Sustainability and infrastructure planning in South Africa: A Cape Town case study'. *Environment and Urbanization*, 18(1): 23–50.

- Swyngedouw, E. (1996). 'The city as a hybrid: On nature, society and cyborg urbanisation.' *Capitalism Nature Socialism*, 7(2): 65–80.
- Swyngedouw, E. (2009). 'The antinomies of the postpolitical city: In search of a democratic politics of environmental production.' *International Journal of Urban and Regional Research*, 33(3): 601–20.
- Talyan, V., Dahiya, R.P. and Sreekrishnan, T.R. (2008). 'State of municipal solid waste management in Delhi, the capital of India.' *Waste Management*, 28(7): 1276–87.
- Thieme, T.A. (2013). 'The "hustle" amongst youth entrepreneurs in Mathare's informal waste economy.' *Journal of Eastern African Studies*, 7(3): 389–412.
- Turok, I. (2001). 'Persistent polarisation post-apartheid? Progress towards urban integration in Cape Town.' *Urban Studies*, 38(13): 2349–77.
- UNEP (United Nations Environment Programme) (2010). *Waste and climate change: Global trends and strategy framework*. Osaka/Shiga: UNEP.
- Varughese, A. (2012). *Strategic issues facing the development of Clean Development Mechanism projects in South Africa*. Cape Town: University of Cape Town.
- Zapata Campos, M.J. and Hall, C.M.(eds) (2013). *Organising waste in the city: International perspectives on narratives and practices*. Bristol: Policy Press.

'Candles are not bright enough': inclusive urban energy transformations in spaces of urban inequality

*Federico Caprotti, Jon Phillips, Saska Petrova,
Stefan Bouzarovski, Stephen Essex, Jiska de Groot,
Lucy Baker, Yachika Reddy and Peta Wolpe*

Introduction: from voices to energy transformations

The gangsters can rob us because there is no electricity and no one can see them coming. (SEA, 2016)

There is not sufficient light for our children to study at night – candles are not bright enough. (SEA, 2016)

These statements were made by people living in shacks in informal settlements in Cape Town, South Africa. These settlements are not serviced by the city authorities, with limited, unaffordable or in some cases no access to electricity or running water in each shack. A few shared toilets were provided, located a short distance away. Although the city authorities were seeking to rehouse some of these communities, the ever-present insecurity of potential relocation to new formal accommodation on the outskirts of the city, far from economic opportunities and serviced infrastructure (SEA, 2010), created a very precarious day-to-day existence.

Amid this context of marked and enduring socio-spatial and environmental-economic inequalities (explored more fully in the next section), there have been calls for a national transition away from carbon-intensive and inefficient energy practices. This call is due, in part, to the broader global policy-making context of concern about the impact of climate change, as well as worldwide development trends, such as those enshrined in the UN's Sustainable Development Goals (SDGs), the New

Urban Agenda (Caprotti et al., 2017) and the 2030 Agenda for Sustainable Development. In part, there have been calls to reconfigure the national energy landscape in South Africa, including energy supply, energy mix and the legal and jurisdictional framework through which energy currently flows. This context leads us to argue that the move towards a new energy landscape cannot simply be described as a transition, but more accurately – in light of the need to involve multiple scales and actors, and to manage complex development outcomes – as a societal transformation.

However, while a low-carbon and energy-efficient transformation is crucial for the country, and many policies and strategies support a climate-friendly future, it is particularly important in the South African context to consider how such a transformation can be made inclusive. Many cities have developed climate and energy strategies, but many municipalities face significant financial, technical and socio-economic challenges in terms of mainstreaming climate responses into their planning and operations. The primary mandate of local government is to provide basic services for their citizens and, in particular, the poor. At the same time, the notion of a ‘just’ energy transition has been gaining increasing prominence in national climate and energy discourse in South Africa (Swilling et al., 2016), including as part of its nationally determined contribution on climate change (Government of South Africa, 2016). The concept of a ‘just’ transition points towards a sustainable future that places the needs of the poor and their communities as paramount to the attainment of such a future.

In light of these emerging and challenging agendas, this chapter first presents a brief overview of the electricity landscape in South Africa, followed by a discussion of the key issue of how to define and think about a just, fair and equitable energy transformation. The discussion then moves on to consider the theme of decentralisation in South Africa’s energy landscape, before offering some concluding reflections, including a brief vision of how we might hope a just and energy-efficient city might look in South Africa in 2030. The chapter was co-written by scholars with multiple theoretical perspectives and backgrounds, and by practitioners at Sustainable Energy Africa (SEA), a Cape Town-based organisation centrally involved in promoting urban energy transformations that are both low carbon and equitable.

The quotes above encapsulate the experience of urbanisation in South Africa for many of the urban poor. South Africa was 66 per cent urbanised

in 2017, according to the World Bank (2018). This proportion is growing, as poor people move from rural areas to cities in search of employment and better opportunities. At least 10 per cent of South Africa's population (4.7 million people) reside in urban informal settlements, comprising more than 1.3 million households (Misselhorn, 2010). South Africa's nine largest cities alone are estimated to be home to 23 per cent of households deemed to be without adequate shelter. Nearly 50 per cent of South Africa's population are considered energy poor, on the basis that the poor spend more than 10 per cent of their household income on energy compared to 2–3 per cent for mid- to high-income households (DoE, 2012). Moreover, the poor spend a disproportionately high share of their income on transport relative to mid- and high-income households. Thus, inequality and poverty have become entrenched in South Africa, despite redistributive policies that include free basic electricity and a system of social grants.

At the end of apartheid in 1994 only 36 per cent of the population had access to electricity. While the newly elected democratic government in South Africa implemented a national housing and electrification programme, as a result of which the domestic household connection rate has risen to 88 per cent (DoE, 2014), the national commitment to provide universal and affordable access to electricity has not yet been achieved. Approximately 3 million houses have been built and delivered to the poor since 1994. In an attempt to address the massive housing backlog (a legacy of the previous oppressive apartheid regime), the decision of the new government was to build as many houses as swiftly as possible in a cost-effective manner. As a consequence, while many houses were built, they lacked important thermal insulation: many even lacked ceilings (Naicker et al., 2017; SEA, 2017). These homes were predominantly located in the urban periphery, where land was cheap. In turn, this house-building programme resulted in resource-inefficient cities, with the poor being located on the margins of cities far from economic opportunities and social resources (Reddy and Wolpe, 2014). This population continues to be burdened with high transport costs to access economic and social opportunities, which further deepens the poverty cycle. This situation has served to perpetuate the spatial inequality of apartheid, characterised by the sprawl of low-density 'white' suburbs in contrast to the concentrations of high-density 'black' areas (Wolpe et al., 2012). It is in this context of pressing need and complex governance, legal and infrastructural

sticking points that a sustainable energy transformation is seen as a necessity.

Energy transformations and South African cities

Realising low-carbon urban energy transformations is dependent upon a range of factors and preconditions beyond the availability and implementation of new technology and innovations. The generation and supply of energy is essential to continued economic growth, while the associated emissions lie at the core of debates about climate change. The associated aspiration for the transformation to be inclusive and 'just' within society adds another layer of complexity and tension to the process. In South Africa, the historical legacy of apartheid, political governance structures and capacity, the form and structure of urban areas, rural-to-urban immigration and societal attitudes have a fundamental influence on the path that a low-carbon energy transformation might take.

Historically, South Africa's industrial policy has been dominated by the availability of cheap electricity, which was generated using the country's cheap and plentiful coal reserves to power the expansion of the mining and minerals-beneficiation industry. As a result, the country's 'minerals-energy complex' became dominant in protecting the requirement for, and monopoly of, cheap power coupled with cheap labour (Fine and Rustomjee, 1997). These interests became institutionalised by the state with the 1922 establishment of the state-owned electricity utility Escom (now Eskom). Eskom is 'the fulcrum on which the input of coal and outputs of cheap electricity turned', with large mining houses providing coal at one end and receiving electricity for the extraction and refining of commodities at the other (Baker et al., 2015).

Despite attempts to reform Eskom in line with global trends in electricity liberalisation in the 1990s and 2000s, Eskom continues to own the centralised transmission grid and holds majority control over the country's generation capacity, overseeing approximately 60 per cent of electricity distribution, with municipalities responsible for the rest. In 2005, as part of the continued focus on cheap coal-fired electricity for industry, Eskom's capacity expansion programme included two coal-fired power stations, Medupi and Kusile, which at 4,800 MW each will be the largest on the continent. Renewable energy had a minimal role in this programme, consisting only of the 1,352 MW Ingula pumped storage programme and the 100 MW Sere wind farm now funded by the World Bank.

Following important legislative changes to allow for the procurement of privately generated power, the Renewable Energy Independent Producer Procurement Programme was introduced in 2011. By the end of 2018, 6,422 MW had been procured from ninety-two utility-scale independent power producers (IPPs) and 99 MW from twenty small-scale IPPs (1–5 MW) under five bidding rounds. However, the programme's initial success in its early years was undermined by severe delays between 2015 and 2018, in large part due to strong political and ideological resistance by Eskom. Notably, Eskom refused to sign outstanding power purchase agreements (PPAs) from Round 4, arguing that it would make a loss from having to purchase energy from IPPs. It wasn't until April 2018, following the inauguration of President Cyril Ramaphosa, that the outstanding PPAs were signed. It is apparent that the institutional strength and accompanying inertia signified by Eskom represents a considerable barrier to the emergence of a low-carbon energy transformation in South Africa. By 2019, the failure to control mounting debts at Eskom raised the prospect of imminent restructuring and a redistribution of responsibilities among the national institutions that govern energy. How this process is directed and controlled will be highly significant in opening up or closing down pathways of energy transformation.

A further constraint on the emergence of a low-carbon energy transformation in South Africa is the way in which electricity is distributed. Municipalities are responsible for just over 40 per cent of electricity distribution in South Africa and supply about two-thirds of the country's customers, buying electricity in bulk from Eskom at wholesale prices, which they then mark up and sell on to the end user. Municipal distributors are dominated by the country's eight large metropolitan distributors, who reap significant profits from their on-selling of electricity, which they use to cross-subsidise electricity for the poor and municipal rates for services such as waste collection and roads (Baker et al., 2015).

This arrangement originated from the end of apartheid in 1994, when municipalities were given a role as 'developmental local government'. The vision of the ruling party, the African National Congress (ANC), was to rebuild the country's economy while bridging the gap between the rich and poor (Mohlakoana, 2014). Electricity was central to this vision because it was perceived as a convenient, modern networked infrastructure with the potential to create business opportunities as well as reduce the negative health effects of indoor air pollution from traditional energy sources. Local government was perceived as being the closest to the people and

so was considered to be best placed to implement subsidised rights-based service access. After some political ‘horse-trading’ in establishing the post-apartheid state, municipalities secured an electricity distribution function (Palmer et al., 2017: 30–3). According to the National Treasury (2016, cited in Palmer et al., 2017: 200), surpluses on electricity distribution are typically about 5–10 per cent of the budgets of the large metropolitan distributors. At the end of 2018, municipalities were not yet permitted to procure their own electricity, with the exception of generation for own consumption in their own buildings or on their estate.

To achieve universal access to modern energy services in South Africa, two key pro-poor measures were introduced. First, the state’s Free Basic Electricity Tariff of 50 KWh per month was introduced in 2003. The scheme is partly funded by the Local Government Equitable Share Grant from the National Treasury and, in the case of shortfalls, partly by surpluses generated by the municipalities’ sale of electricity (including for Eskom service areas within urban centres, who refuse to provide these pro-poor subsidies). Second, the distribution of electricity to low-income households by municipalities is also subsidised through an ‘Inclining Block Tariff System’, whereby charges increase with consumption. This system means that users with higher consumption rates are charged at a higher rate and in turn facilitate cross-subsidisation for low-income consumers who are charged at the lower rates. The higher charges for high consumption are also intended to promote energy conservation. Although the adequacy of these schemes is heavily criticised, they are only made possible by cross-subsidisation from the resale of Eskom electricity generation.

Therefore, any challenge to this funding model, such as reduced consumption because of higher electricity prices, energy efficiency initiatives or distributed renewable energy generation by private residential customers (small-scale embedded generation), increases the financial vulnerability of municipalities and their ability to deliver pro-poor programmes. Paradoxically perhaps, the promotion of some policies to reduce energy demand threaten the potential of municipalities to fund redistributive policies and remain as viable concerns. This situation places municipalities in an awkward role as drivers of low-carbon energy transformations, irrespective of their variable capacity to delivery low-carbon initiatives (Baker and Phillips, 2019). Thus, reform at the municipal level, as well as the enablement of spaces of innovation and practice around sustainability (Barnes et al., 2018), appears to be an essential prerequisite for energy transformation.

Another important barrier to the implementation of a low-carbon energy transformation is the structure of most South African cities. As mentioned above, the spatial structure of cities was inherited from the apartheid era. Many South Africans were displaced during apartheid based on the racial composition defined for every residential area by the Group Areas Act of 1950 (Field, 2001). This legislation resulted in racially segregated neighbourhoods, designated as 'White, Black, Indian and Coloured' (Crankshaw et al., 2000; Lemanski, 2009; Turok, 2014). Apart from the White areas, neighbourhoods were usually located at the urban periphery in so-called 'townships' or, for rural areas, 'homelands.' These settlements were characterised by little or no service provision by municipalities, were generally outside areas with economic opportunities and were poorly connected by public transport (Knox et al., 2017). While electrification has extended access to modern energy services, some areas remain unconnected or inhabitants do not have the ability to pay for the electricity supplied. In these cases, illegal connections and/or the continued use of traditional fuels thwart universal energy access, let alone a managed low-carbon energy transformation.

The expansion of informal settlements at the edge of most South African cities represents an additional significant challenge. In Cape Town, over 39 per cent of the population growth between 2001 and 2011 comprised new arrivals from outside the Western Cape (City of Cape Town, 2014). The provision of public services for such migrants on private land is problematic because of property ownership and because the land has usually not been zoned for such uses in terms of the city's spatial planning framework. The unpredictability of in-migration flows and locations for informal settlements makes forward planning almost impossible. Nevertheless, informal settlements have become a permanent feature of South African cities, which points to the need to integrate energy planning with spatial planning to achieve any low-carbon energy transformation.

Distributed generation is, theoretically at least, well suited to the sprawling and informal nature of much of South Africa's urbanisation. Renewable energy technologies have the potential to generate electrical power for households which are often located in informal settlements or rural areas. Indeed, international donor-funded schemes for the generation of renewable energy in informal areas have had some (small-scale) impact. There are, nevertheless, considerable limitations to the decentralised use of renewables on a larger scale. Buildings in informal settlements, often no more than shacks, do not necessarily have the required space or are

not capable of bearing the weight of a solar panel of sufficient size to generate a worthwhile amount of electricity. Solar home systems, for example, consist of a compact solar panel which can be installed on the roof, but small systems are only sufficient to power a light, television and heater for a few hours per day. Larger panels can also be mounted on poles, but these are subject to the risks of theft and wind damage. However, the infrastructural development required for energy access to 'temporary' informal settlements on undeclared land is not legally permitted, because ultimately informal settlements can be cleared by the municipality.

The transformation of urban form is being attempted in some South African cities to facilitate a low-carbon transformation through applying the principles of the compact city, densification and transit-oriented development. The reconstruction and remodelling of townships and informal settlements creates opportunities for energy efficiency. In Cape Town, the city's 2012 Spatial Development Framework and its 2013 Integrated Transport Plan have provided a coordinated approach to densification along the main transport corridors. For example, the densification of the Voortrekker Road Corridor – from a residential density of fifteen to twenty dwelling units per hectare at present to seventy-five dwelling units per hectare by 2034 – might achieve a 50 per cent reduction in energy and carbon emissions compared with the continued sprawling scenario (SEA, 2014). However, high-density housing options are not desirable within South African society as they are typically associated with public housing and the hostels provided for black South Africans during apartheid. Freestanding houses with their 'own' plot represent both a traditional and contemporary cultural living aspiration, which people had been denied during the apartheid era (Mbatha and Mchunu, 2016). The 'one house, one plot' approach of government housing schemes is at odds with the development objectives of accessibility and compact cities (Rode et al., 2014), increases the cost of energy provision and infrastructure, and can contribute to energy vulnerability in these areas of mobility (Knox et al., 2017). At the same time, private development applications have been received for new satellite towns, such as WesCape in Cape Town, which offer a utopian, but inequitable, alternative for those who can afford the exclusive nature of these new urban forms (Cirolia, 2014). These new models of urban form present a challenge to entrenched societal attitudes, aspirations and expectations.

While the contextual discussion above has outlined some of the key ways in which South Africa's energy and urban landscapes interact in

inequitable ways, there have been calls to make certain that any societal transformation is just and equitable, and to ensure positive outcomes for the poor and socio-economically marginalised. The next section turns to examine what a 'just' transformation may mean in this context, and highlights some of the main complexities and issues involved in thinking about, and planning for, a 'just' transformation.

Conceptual considerations

In recent years, 'just transition' has emerged as one of the key conceptual framings with which to capture the relationship between energy sector reconfigurations and social justice. Originally a term used to discuss the job losses associated with the movement away from fossil fuels (McCauley and Heffron, 2018), there has recently been an effort to employ it as a wider explanatory approach to unravel the systemic mechanisms via which social inequalities are reproduced (or transformed) as a result of sustainable development objectives. A key departure point for just transition debates has been the burgeoning body of energy justice scholarship, with its multi-faceted treatment of issues of affordability, access, security and reliability of supply, and the integration of democratic and representative processes, as well as its emphasis on the recognition of vulnerable populations (Goddard and Farrelly, 2018). Some of these tenets are also contained in the 'transitions management' approach which argues that socio-technical change and innovation in the energy sector can be steered and governed by acknowledging the roles of relevant actors in system transformations, and by paying attention to the pathways of knowledge and learning implicated in these processes (Avelino and Grin, 2017; Frantzeskaki et al., 2012; Markard et al., 2012).

Transition management and energy justice have, however, been criticised for failing to incorporate the power dynamics and political processes associated with socio-technical shifts. Starting from the need to overcome these lacunae, Goddard and Farrelly (2018) have developed the just transitions debate in the direction of articulating the 'political sensitivity of the energy justice field' and overcoming the traditional 'jobs v. environment' dilemma. A case study of Queensland's effort to move towards renewable systems of energy production identifies structural challenges such as the lack of bipartisan support in governing transitions, the absence of clear management approaches guided by long-term visions, as well as the reluctance of unions and communities to engage with wider narratives

of change. The embodiment of principles of energy justice in addressing these barriers, argue Goddard and Farrelly (2018), can provide 'democratic legitimacy' to efforts to bring about accelerated change in the energy sector, and turn adversarial actors into advocates.

McCaughey and Heffron (2018) define 'just transitions' as a way of moving towards post-carbon scenarios in ways that are both fair and equitable. Moving the debate beyond traditional concerns around jobs and resources, they develop an explicit focus on inequality-inducing dynamics throughout the energy chain. In this line of thinking, a three-pronged approach towards justice (focusing on its distributional, procedural and restorative aspects) allows for understanding how individuals and communities are affected by shifts in how energy is consumed and transported, where energy infrastructure is cited, and the kinds of compensation mechanisms that can help ameliorate and restore the 'harms' resulting from energy-related shifts. In this approach, they position the just transition concept 'beyond its original strategic purpose' so as to unite 'climate, energy and environmental justice scholarships' (McCaughey and Heffron, 2018: 5) through a global ethic of care.

Affecting an 'energy transition with due attention to social justice in an unequal world' (Jasanoff, 2018: 11) is a central concern in a recent exploration of the ethical conundrums associated with imaginations and enactments of energy futures. Jasanoff argues in favour of a proactive and reflective environmental policy to create a more robust base of knowledge and technologies for transformative action. This response is predicated upon an 'inclusive politics' of technological transformation, attentive to 'issues of local capacity, whether in the form of social institutions, technical know-how or more material supports' (Jasanoff, 2018: 12). This calls for the development of new 'technologies of humility' (Jasanoff, 2018: 14) in science and policy, recognising the importance of communal practices and norms, the influence of history and culture, normative concerns to energy policy deliberations, and the design of new participatory strategies.

A further point highlighted by several scholars (Jaglin and Verdeil, 2017; Rutherford and Coutard, 2014) is that infrastructural formations are capable of driving processes of exclusion and marginalisation, often as a result of liberalisation and privatisation policies. In this context, Bouzarovski et al. (2017: 37) highlight how 'transitions create displacements that are reflected within multiple spatial scales, temporal horizons and thematic areas of activity'. The corollary is that any resultant vulnerabilities need to be considered as phenomena that are distributed throughout the

'energy chain' (Chapman, 1989) as opposed to being concentrated in particular aspects of production or consumption. Furthermore, it becomes necessary to 're-think the conceptual assumptions that inform sustainability transitions frameworks, by considering the material and infrastructural characteristics of place and space as contingencies that deserve customised conceptual attention' (Bouzarovski et al., 2017: 37). The next section tackles these questions by attempting to ground debates around just energy transitions in the specific context of the South African urban and energy landscapes.

Technological decentralisation in South Africa: (some) people's power?

In academic and policy debates, visions of inclusive or 'just' energy transitions often invoke principles of technological and political decentralisation (Bulkeley et al., 2013). If technological transformation is to become more attuned to local capacities – as Jasanoff (2018) suggests – then some form of decentralisation would seem to be necessary and desirable for a just energy transformation. Technological decentralisation can imply reorganisation of the highly centralised infrastructure by which energy is produced, distributed and consumed, while calls for political decentralisation typically seek to ensure a meaningful voice for citizens or local institutions in decision-making. For many urban policymakers and practitioners, the 'trilemma' of energy security, equity and environmental sustainability (Heffron et al., 2015) demands a greater role for local governments that are hampered by restrictive national policies and centralised infrastructures that limit the scope for responsive energy policy. In many ways, South Africa's metropolitan municipalities fit the popular narrative of cities driving climate change action and energy innovation 'from below' (Moloney and Horne, 2015). However, where residents, businesses and municipalities have embraced renewable energy, questions of justice arise between low-carbon and equitable energy transformations that require explicit attention to the politics of producing and resolving the injustices of energy transformation (cf. Goddard and Farrelly, 2018). To explore the complexities of what an inclusive energy transformation looks like, it is instructive to consider the relationship between technological and political decentralisation.

In recent years, the centralised infrastructure and governance of electricity has become threatened by so-called 'disruptive technologies'. In the

case of South Africa, the term 'embedded generation' generally refers to rooftop or ground-mounted solar panels that connect directly to the distribution grid. It may involve a shopping mall reducing its electricity bills by installing solar panels, or a household motivated by power outages to install solar power as a backup for an unreliable grid supply. The technologies and processes involved in decentralisation are often celebrated as disruptive innovations, notwithstanding prominent failures (Caprotti, 2017; Knuth, 2018). In South Africa, this kind of technological disruption could indeed be cause for celebration: a bottom-up, demand-driven, consumer push for decentralised renewable energy that challenges the monopoly of Eskom, the vertically integrated electricity utility that is heavily invested in coal power and has proved resistant to renewable energy policies and procurement (Baker and Phillips, 2019). Where it is explicitly sanctioned by municipal governments, embedded generation might also provide a case of local government making in-roads against national government inertia.

Yet, as explored by Baker and Phillips (2019), embedded generation has the potential to entrench racial and socio-economic inequalities in South Africa. As introduced above, distributed solar power reduces the electricity revenue that municipalities collect from high-income consumers, revenues which are used to cross-subsidise energy for the poor and fund public services. During the transition from apartheid to democracy, South Africa underwent a significant process of political decentralisation, in which local governments were given the constitutional responsibility for delivering basic services such as water and electricity. However, changes to the financing of municipal service provision saw the reduction of revenue transfers from national to local government and the adoption of principles of full cost-recovery in the financing of basic services (Wolpe and Reddy, 2016: 19). While the generation of electricity and the planning of energy policy remained highly centralised, municipalities became more reliant on revenues from the sale of electricity to fund their budgets. As such, rooftop solar panel installations by commercial and industrial consumers and to a lesser extent, wealthy residents, may threaten the very financial survival of local government.

Embedded generation provides a characteristic example of trade-offs between low-carbon and equitable energy transformation. Since embedded generation threatens municipal revenue, it has provoked a concerted institutional response to technological change. For the managers

of electricity in South Africa's largest cities, it requires nothing short of reformulating the 'business model' of municipal government to ensure that they are able to survive and thrive through a coming transformation. In the case of South Africa, the relationship between technological and political decentralisation raises a series of important questions for an inclusive energy transformation. These include how 'the generation of renewable energy by and for the wealthy does not take place at the cost of service provision for the poor' (Baker and Phillips, 2019: 179) and how public institutions should operate policy levers and manage incentives. It also reiterates the importance of analytical principles, such as the myopia of studying (energy) poverty in isolation from (energy) abundance.

Yet this framing of technological decentralisation provides a partial picture of an urban energy transformation, framed by the view from municipal finance. A brief example demonstrates the silences that are generated from this inevitably partial view. When expanding upon the details of a policy document during an interview in 2018, a representative of local government explained the democratisation of energy in terms of citizens co-owning assets and scaling up community involvement in energy generation. It is a vision of energy transformation with significant social and political changes, but in which democratisation is conflated with liberalisation and market participation:

Democratisation is linked to *customer centrality*. For example, a customer should have the *liberty* to generate their own electricity for their own use, in the way that they want, and they should have the ability *to sell* whatever they are not using to the grid. So it's mainly about opening up the market. Everyone has a role to play. There is no use in keeping people imprisoned by legislation, and stifling *innovation*. So when we focus on democratisation we are focusing on *opening up the entire market*. (Interview with representative of local government, 2018: emphasis added)

In contrast, some activists locate the potential for democratic control of energy squarely at the local scale by arguing for participatory democracy and community management of energy infrastructure, which arguably promotes a similarly liberal (if not individualised) vision of an inclusive energy transformation and those responsible for realising it. Alongside analysis of who wins and who loses from technological changes such as embedded generation, considering who defines the vision of what inclusive

energy looks like (including the relationships between infrastructural and political decentralisation, or between state and citizen) has profound implications for how plural energy futures unfold, or do not.

Discussion and conclusion: identifying and moving towards inclusive energy transformations

We want to offer, here, concluding reflections on what an inclusive energy transformation might look like. Based on our discussion above, the following tackles this topic through three interrelated angles. First, we offer some thoughts on a conceptual and theoretical approach to just energy transformations. Following that, we offer a brief snapshot of what this may mean in reality for the South African city. Finally, we discuss what the just and energy-efficient city may actually mean in terms of the transformations needed in South Africa.

Theoretical perspectives

How might we approach (from a theoretical standpoint) the normative question of building a socially inclusive energy transformation? First, the literature on the subject emphasises the importance of including all relevant actors in decision-making processes through appropriate dynamics of recognition and consultation. As argued by Bouzarovski (2014), this process brings to the fore the kinds of populations that are recognised as worthy of support, and the procedures through which households and communities can access assistance. Of no less importance in this context is the mobilisation of planning frameworks so as to ensure that some of the broader injustices around energy restructuring processes can be dealt with in a systematic and comprehensive manner, alongside fiscal policies to support the low-carbon transformation. This more equitable approach can entail measures such as supporting neighbourhoods, cities and regions to address energy injustices via the development of affordable and locally sourced low-carbon energy, ensuring the pooling of household resources via various informal or formal networks so as to reduce individual energy needs, formulating regulatory processes and practices that can support fuel/supplier switching and facilitate energy efficiency investment and the implementing of information campaigns and area-based policies (while building the capacity of community organisations and local authorities) in order to address retrofits in 'hard-to-treat' properties. Nonetheless, it is important to remain conscious of the very real practical obstacles and

hurdles encountered (in both less affluent and affluent countries) in attempting to stimulate this kind of transformation.

Second, the distributional aspects of energy use are central to any efforts to move towards a low-carbon future. As argued by Bouzarovski (2014), the broad consensus in the literature is that taxes on carbon (and energy) are generally regressive – as are, in principle, all fiscal instruments of this type targeting consumption. The fact that lower-income households have greater energy expenditure burdens than those with higher incomes means that a carbon tax is expected to have a negative impact on the distribution of income (despite the issue above, with energy burdens being lower among the poorest households). Overall, however, the distributional impacts of carbon levies are highly dependent on issues such as household size, location and the nature of consumption, rather than income (Dresner and Ekins, 2006; Gough, 2013). Depending on the method used, a carbon tax may be shown to have almost no regressive impacts at all (Tiezzi, 2005).

Third, it is important to think beyond conventional approaches of transitions and justice, because they may suffer from the limitations of transition and justice framings themselves (Bridge et al., 2013; Newell and Mulvaney, 2013; Velicu and Kaika, 2017). As a partial alternative, energy precarity thinking (Petrova, 2018a) offers novel insights into the political and spatial dynamics upon which vulnerabilities are predicated and performed. It is also evident that the nexus of justice and energy transitions needs to incorporate inequalities arising throughout the pathways involved in delivering a variety of socio-technical services to households (Petrova, 2018b; Walker and Cass, 2007). This perspective necessarily extends the field of inquiry beyond traditional north–south divides, and on to a wider variety of energy use and production modalities, as well as enlarging the area of inquiry to include themes such as geopolitics (Caprotti, 2015), gender (Pearl-Martinez and Stephens, 2016), intergenerational aspects of transition, and other important issues.

Fourth, it is key to interrogate critically the ways in which concepts of justice and equity are used in advocating specific transformational trajectories. This analysis is key in the context of South Africa, where societal transformation has been an enduring reality: the complex and shifting post-apartheid socio-political landscape is an example of transformation in process. For example, Farmbry (2014: 528) points out how a key transformational moment was the development and application of the South African constitution from 1994: this was 'a transformative

constitution, with a goal of building the nation as one with opposing norms than its predecessor and with a set of articulated goals around how a new South Africa might be better than the old'. Ensuring a transformation towards a 'just' energy landscape therefore means not simply establishing technical and political aims and (at times vague) recourse to simplistic notions of justice and fairness, but engagement with the realities of how specific visions of justice can be reified (Farmbry, 2014) throughout civil society in South Africa.

2030 snapshot: a just and energy-efficient city?

Conceptualising energy transformations is a foundational requirement for identifying transformational pathways and for elaborating political and economic strategies. Nonetheless, we have found that it is also key to think about the grounded, material question of what the characteristics of such a transformation may actually look like.

Looking ahead to 2030, what would we imagine an inclusive energy transformation to manifest as, in the South African context? We offer this brief snapshot, which is not meant to be exhaustive:

- Everyone will have access to a reliable, affordable and safe supply of electricity.
- Everyone will have access to an energy-efficient, reliable and affordable public transport system.
- People will live in thermally efficient homes close to the job opportunities and social resources that cities have to offer.
- People will be actively engaged in decision-making around important social developments in the communities in which they live.
- There will be true, affordable, universal basic service coverage for all urban dwellers.

We recognise that these points represent one articulation of an ideal destination for transformational pathways. We also recognise that they raise more questions than can be answered here. For example, when considering the need for public transport, it is key to define 'public' transport in a 2030 South African city as compared to understandings of public transport systems in the country today. Questions about whose visions are included in transformational plans and pathways, and whose are crowded out or silenced, also need to be answered – and nowhere more so than in a country still grappling with a shifting post-apartheid landscape.

Nonetheless, we list these points as markers, or broad performance aims, of transformational strategies. The reality may be one of underperformance, but without a transformational ambition, any desire for social, technical and political change is likely to be vague and short-lived.

Challenges to inclusive energy transformations

Before the above snapshot can be achieved, several key challenges need to be addressed. These are summarised below, and may be usefully thought of as pointing towards the establishment of a broad 'roadmap' that is essential for thinking about transformational trajectories and realms of possibility and practicality.

Firstly, cities, as well as the different spheres of government, will need to work cohesively and in unison. Multi-level governance, strong leadership, cooperation and innovation will need to be at the core of this endeavour. The 1996 Constitution of South Africa stated very clearly that the three spheres of government (national, provincial and local government), while having their own independent mandates, should work together in cooperation and align their functions. This cooperation has not happened (for many reasons), as is clearly demonstrated when examining case studies within cities. There are overlaps in mandates, and regulations do not always make desired transformations possible.

Secondly, an inclusive energy transformation requires a radical change in current practices and thinking if the intended levels of transformation by 2030 (as imagined above) are to be reached. South Africa would need to consider a new picture and new ways of understanding and approaching development. To some extent, a change towards sustainable energy is happening. However, to achieve the desired scale of change, it is clear that this needs to be undertaken in a manner that addresses poverty, unemployment and inequality: the triple challenges facing South Africa. Many of the systems currently in place (such as procurement processes, regulations, vested interests and institutional support) have tended to resist the level of change needed. Planning and investment decisions made today will shape South African communities, and the economy, well into the next several decades.

Some municipalities have already been able to work towards transformations from the bottom up, signifying pioneering change from the local level, with national government taking heed and direction from the local level to develop support in this regard. For example, the city of Johannesburg

implemented a small electricity levy that helped to finance the installation of over 80,000 solar water heaters for low-income houses, thus providing these houses with affordable access to hot water. Some cities have embarked on widespread electrification of informal settlements using the maypole method of electrification, which has been very successful.¹ The city of Cape Town, in considering the best way to achieve its climate objectives and address poverty, has developed a system that attempts to align its various departments. While many officials trying to tackle climate change as well as service delivery claim that there is need for greater political support and decision-making, the examples of implementation taking place are already leveraging influence in this arena.

In conclusion, while challenges to an inclusive energy transformation persist, there is clear evidence of good work happening within cities, and communities themselves are increasingly demanding that their voice be heard. Much still needs to change at different scales of governance, including, for example, in how mandates and regulations are interpreted and perceived, how finances flow to the local sphere, how investment can be enhanced, how decisions are made and how information is made available. Engaging with communities and learning by doing are key to successful transformations in South Africa. This collaborative approach will pave the way for coordinated urban development and good urban governance, and ultimately to an inclusive and equitable energy future. This is the outcome that the communities want: candle-lit dinners for a special occasion, safe lighting for all their energy needs and, above all, better-quality lives.

Acknowledgements

The research presented in this chapter was supported by the Economic and Social Research Council (Grant number ES/N014138/2).

Note

- 1 The 'maypole' method of connecting an informal house to electricity is amongst the most cost-efficient technology choices, as service connections to households are simple and effective. Maypoles provide enough elevation to connect up to twenty-seven households, as they can accommodate up to three pole boxes with nine connection points each, but one or two nine-way boxes are usually adequate (Gaunt et al., 2012).

References

- Avelino, F. and Grin, J. (2017). 'Beyond deconstruction: A reconstructive perspective on sustainability transition governance'. *Environmental Innovation and Societal Transitions*, 22: 15–25.
- Baker, L. and Phillips, J. (2019). 'Tensions in the transition: The politics of electricity distribution in South Africa'. *Environment and Planning C: Politics and Space*, 37(1): 177–96.
- Baker, L., Burton, J., Godinho, C. and Trollip, H. (2015). *The political economy of decarbonisation: Exploring the dynamics of South Africa's electricity sector*. Cape Town: University of Cape Town Energy Research Centre.
- Barnes, J., Durrant, R., Kern, F. and MacKerron, G. (2018). 'The institutionalisation of sustainable practices in cities: How sustainability initiatives shape local selection environments'. *Environmental Innovation and Societal Transitions*, 29: 68–80.
- Bouzarovski, S. (2014). *Social justice and climate change: Addressing energy poverty at the European scale*. Brussels: Spring Alliance.
- Bouzarovski, S., Herrero, S.T., Petrova, S., Frankowski, J., Matoušek, R. and Maltby, T. (2017). 'Multiple transformations: Theorizing energy vulnerability as a socio-spatial phenomenon'. *Geografiska Annaler: Series B, Human Geography*, 99: 20–41.
- Bridge, G., Bouzarovski, S., Bradshaw, M. and Eyre, N. (2013). 'Geographies of energy transition: Space, place and the low-carbon economy'. *Energy Policy*, 53: 331–40.
- Bulkeley, H., Castán Broto, V. and Maassen, A. (2013). 'Governing urban low carbon transitions'. In H. Bulkeley, V. Castán Broto, M. Hodson and S. Marvin (eds), *Cities and low carbon transitions*, 29–41. London: Routledge.
- Caprotti, F. (2015). 'Golden Sun, green economy: Market security and the US/EU–China "solar trade war"'. *Asian Geographer*, 32(2): 99–115.
- Caprotti, F. (2017). 'Protecting innovative niches in the green economy: Investigating the rise and fall of Solyndra, 2005–2011'. *GeoJournal*, 82(5): 937–55.
- Caprotti, F., Cowley, R., Datta, A., Castán Broto, V., Gao, E., Georgeson, L., Herrick, C., Odendaal, N. and Joss, S. (2017). 'The New Urban Agenda: Key opportunities and challenges for policy and practice'. *Urban Research & Practice*, 10(3): 367–78.
- Chapman, J.D. (1989). *Geography and energy: Commercial energy systems and national policy*. Harlow: Longman.
- Cirolia, L.R. (2014). '(W)escaping the challenges of the city: A critique of Cape Town's proposed satellite towns'. *Urban Forum*, 25: 295–312.
- City of Cape Town (2014). *State of Cape Town report, 2014*. Cape Town: City of Cape Town.
- Crankshaw, O., Gilbert, A. and Morris, A. (2000). 'Backyard Soweto'. *International Journal of Urban Regional Research*, 24: 841–57.
- DoE (Department of Energy) (2012). *A survey of energy-related behaviour and perceptions in South Africa: The residential sector*. Pretoria: Department of Energy.

- DoE (Department of Energy) (2014). Integrated National Electrification Programme. Department of Energy and South African Local Government Association briefing.
- Dresner, S. and Ekins, P. (2006). 'Economic instruments to improve UK home energy efficiency without negative social impacts.' *Fiscal Studies*, 27: 47–74.
- Farmbry, K. (2014). 'Justice as "fairness" reified: Lessons from the South African Constitutional Court.' *Public Administration Quarterly*, 38(4): 521–43.
- Field, S. (ed.) (2001). *Lost communities, living memories: Remembering forced removals in Cape Town*. Cape Town: David Philip Publishers.
- Fine, B. and Rustomjee, Z. (1997). *South Africa's political economy: From minerals-energy complex to industrialisation*. Johannesburg: Wits University Press.
- Frantzeskaki, N., Loorbach, D. and Meadowcroft, J. (2012). 'Governing societal transitions to sustainability.' *International Journal of Sustainable Development*, 15: 19–36.
- Gaunt, T., Salida, M., Macfarlane, R., Maboda, S., Reddy, Y. and Borchers, M. (2012). *Informal electrification in South Africa: Experiences, opportunities and challenges*. Cape Town: Sustainable Energy Africa.
- Goddard, G. and Farrelly, M.A. (2018). 'Just transition management: Balancing just outcomes with just processes in Australian renewable energy transitions.' *Applied Energy*, 225: 110–23.
- Gough, I. (2013). 'Carbon mitigation policies, distributional dilemmas and social policies.' *Journal of Social Policy*, 42: 191–213.
- Government of South Africa (2016). 'South Africa's Intended Nationally Determined Contribution (INDC)'. <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/South%20Africa%20First/South%20Africa.pdf> (accessed 7 September 2020).
- Heffron, R.J., McCauley, D. and Sovacool, B.J. (2015). 'Resolving society's energy trilemma through the Energy Justice Metric.' *Energy Policy*, 87: 168–76.
- Jaglin, S. and Verdeil, É. (2017). 'Emerging countries, cities and energy: Questioning transitions'. In S. Bouzarovski, M.J. Pasqualetti and V. Castán Broto (eds), *The Routledge research companion to energy geographies*, 106–20. London: Taylor & Francis.
- Jasanoff, S. (2018). 'Just transitions: A humble approach to global energy futures.' *Energy Research & Social Science*, 35: 11–14.
- Knox, A., de Groot, J. and Mohlakoana, N. (2017). 'Post-apartheid spatial inequalities and the built environment: Drivers of energy vulnerability for the urban poor in South Africa'. In N. Simcock, H. Thomson, S. Petrova and S. Bouzarovski (eds), *Energy poverty and vulnerability: A global perspective*, 61–80. London: Routledge.
- Knuth, S. (2018). "'Breakthroughs" for a green economy? Financialisation and clean energy transition.' *Energy Research & Social Science*, 41: 220–9.
- Lemanski, C. (2009). 'Augmented informality: South Africa's backyard dwellings as a by-product of formal housing policies.' *Habitat International*, 33(4): 472–84.

- Markard, J., Raven, R. and Truffer, B. (2012). 'Sustainability transitions: An emerging field of research and its prospects'. *Research Policy*, 41: 955–67.
- Mbatha, S. and Mchunu, K. (2016). 'Tracking peri-urban changes in eThekweni Municipality: Beyond the "poor-rich" dichotomy'. *Urban Research & Practice*, 9(3): 275–89.
- McCauley, D. and Heffron, R. (2018). 'Just transition: Integrating climate, energy and environmental justice'. *Energy Policy*, 119: 1–7.
- Misselhorn, M. (2010). 'A new response to informal settlements'. SANGONet, 10 March. www.ngopulse.org/article/new-response-informal-settlements (accessed 7 September 2020).
- Mohlakoana, N. (2014). *Implementing the South African Free Basic Alternative Energy policy: A dynamic actor interaction*. Enschede: University of Twente.
- Moloney, S. and Horne, R. (2015). 'Low carbon urban transitioning: From local experimentation to urban transformation?'. *Sustainability*, 7(3): 2437–53.
- Naicker, N., Teare, J., Balakrishna, Y., Wright, C.Y. and Mathee, A. (2017). 'Indoor temperatures in low cost housing in Johannesburg, South Africa'. *International Journal of Environmental Research & Public Health*, 14(11): 1410.
- Newell, P. and Mulvaney, D. (2013). 'The political economy of the "just transition"'. *Geographical Journal*, 179(2): 132–40.
- Palmer, I., Moodley, N. and Parnell, S. (2017). *Building a capable state: Service delivery in post-apartheid South Africa*. London: Zed Books.
- Pearl-Martinez, R. and Stephens, J.C. (2016). 'Toward a gender diverse workforce in the renewable energy transition'. *Sustainability: Science, Practice and Policy*, 12(1): 8–15.
- Petrova, S. (2018a). 'Encountering energy precarity: Geographies of fuel poverty among young adults in the UK'. *Transactions of the Institute of British Geographers*, 43: 17–30.
- Petrova, S. (2018b). 'Illuminating austerity: Lighting poverty as an agent and signifier of the Greek crisis'. *European Urban and Regional Studies*, 25(4): 360–72.
- Reddy, Y. and Wolpe, P. (2014). *Tackling urban energy poverty in South Africa*. Cape Town: Sustainable Energy Africa.
- Rode, P., Floater, G., Thomopoulos, N., Docherty, J., Schwinger, P., Mahendra, A. and Fang, W. (2014). 'Accessibility in cities: transport and urban form'. New Climate Economy Cities, Paper 3, LSE Cities. <https://lsecities.net/wp-content/uploads/2014/11/LSE-Cities-2014-Transport-and-Urban-Form-NCE-Cities-Paper-03.pdf> (accessed 7 September 2020).
- Rutherford, J. and Coutard, O. (2014). 'Urban energy transitions: Places, processes and politics of socio-technical change'. *Urban Studies*, 51: 1353–77.
- SEA (Sustainable Energy Africa) (2014). *Voortrekker Road Corridor densification in Cape Town: Energy and carbon emissions analysis*. Cape Town: Sustainable Energy Africa.

- SEA (Sustainable Energy Africa) (2016). 'Your piece of the sun: Energy poverty and gender in urban South Africa'. www.youtube.com/watch?v=1hGPui9ls3s (accessed 7 September 2020).
- SEA (Sustainable Energy Africa) (2017). *Sustainable energy solutions for South African local government: A practical guide*. Cape Town: Sustainable Energy Africa.
- Swilling, M., Musango, J. and Wakeford, J. (2016). 'Developmental states and sustainability transitions: Prospects of a just transition in South Africa'. *Journal of Environmental Policy & Planning*, 18(5): 650–72.
- Tiezzi, S. (2005). 'The welfare effects and the distributive impact of carbon taxation on Italian households'. *Energy Policy*, 33: 1597–612.
- Turok, I. (2014). 'South Africa's tortured urbanisation and the complications of reconstruction'. In G. McGranahan and G. Martine (eds), *Urban growth in emerging economies: Lessons from the BRICS*, 143–90. London: Earthscan.
- Velicu, I. and Kaika, M. (2017). 'Undoing environmental justice: Re-imagining equality in the Rosia Montana anti-mining movement'. *Geoforum*, 84: 305–15.
- Walker, G. and Cass, N. (2007). 'Carbon reduction, "the public" and renewable energy: Engaging with socio-technical configurations'. *Area*, 39: 458–69.
- Wolpe, P. and Reddy, R. (2016). 'South African cities of the future: A low carbon urban development path: The challenges and the opportunities'. Paper presented at the African Centre for Cities Conference, 1–3 February.
- Wolpe, P., Reddy, Y. and Euston-Brown, M. (2012). 'Energising urban South Africa: Poverty, sustainability and future cities'. Paper presented at the Strategies to Overcome Poverty and Inequality, Towards Carnegie III Conference, University of Cape Town.
- World Bank (2018). 'Urban population (as % of total)'. <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS> (accessed 7 September 2020).

Risky urban futures: the bridge, the fund and insurance in Dar es Salaam

Irmelin Joelsson

It was spring 2016. *Mzunguko wa pesa umekatika*, ‘money’s stopped circulating’, was an expression on everybody’s lips. It put the current hardship of life in Dar es Salaam into words and, reiterated in daily conversations, it took the form of a contemporary proverb. Cash flow was low. *Maisha magumu*, ‘life’s hard’. The austerity narrative had many expressions. Informal greetings would be met with a shrug and a casual *tunapambana na hali hii*, ‘we’re struggling with this situation’. After all, life went on but *vyuma vimekaza*, ‘it’s tight’.

During a meeting in Dodoma, Tanzania’s capital, the country’s president, John Pombe Magufuli, coined a new phrase that soon went viral, both in approval and ridicule: *watu wanasema vyuma wimekaza – weka grisi*, ‘people say the steel is tight – use grease to lubricate it’. The meaning risks being lost in translation, but the message was clear. It called for patience, endurance and self-reliance in the face of austerity. More than half a century after independence, the phrase seemed to echo the moral legacy of *baba wa taifa*, the father of the nation and the mastermind behind a prominent strand of African socialism, *Ujamaa* (a Swahili word that translates as ‘familyhood’ or ‘extended family’): the late Julius Kambage Nyerere.

While Nyerere’s idea of self-reliance, *kujitegemea*, was based on agrarian socialism (Nyerere, 1967), the concept translated well into an increasingly urban Tanzania. Money might be short, and formal work out of reach but, as a *boda boda* (motorcycle taxi) driver argued while waiting for

customers in the busy Morocco intersection in Dar es Salaam, 'If you're unemployed or without money in the regions it'll be trouble. But here ... there's *mishemishe* [a phrase loosely understood as "hustle"]. You can survive a month on ten thousand shilling [£3.50]. *Mishemishe* ... there is always some hustling keeping you afloat.

This depicts a general argument one can make about urban life in Tanzania in that it entails a lot of 'making do' with very tight resources at hand and uncertainty over whether living conditions will ever change for the better; perhaps the only certainty is that the future will always be uncertain. It requires intricate skills, *ujanja*, a Swahili concept cleverly describing a sort of trickster intelligence, an ability to turn things around. But urban life is also formed, as my ethnography would soon reveal, by the negotiation of connections and of anticipation. Before long, a theme would surface that cut through my initial engagements and let the study diverge unexpectedly.

'I'm doing it for the connections,' Yahya, a teacher, asserted.¹ 'We don't have insurance here, you see, we make connections and friendships, it's our insurance.' After graduating with a BA in public relations, Yahya had not secured a job in the marketing sector but instead ventured into teaching. By teaching Swahili to foreigners, the idea was that the proximity to foreign revenue, potential investors and people with extensive networks would draw the teachers into the same circles, generating opportunities and opening doors. Securing those elusive connections by forming professional friendships was insurance that money could not buy and that a university degree could not grant. It was a practice that had to be learned and then refined, with daily posts on social media depicting business-like situations, surrounded by laptops and smartphones in the exclusive environments his job lent access to. The imagery invokes the idea that the display of a successful lifestyle, albeit 'staged', would also attract success; proximity to money would attract money in turn. However, the excessive display of wealth in that setting, working as a sort of backdrop, did not necessarily reflect his everyday calibration of relationships, which on the other hand were discrete and kept out of the public eye. The connections were, after all, leverage and Yahya was careful not to put his insurance at risk.

Some time later I was walking home after watching the World Cup Finals at a makeshift cinema together with a young artist known as 'Smart'. He was on the verge of a breakthrough in his career and had an elaborate set of strategies for keeping luck, *bahati*, on his side. 'They are not connected, you need to act on the same level,' he explained. For Smart, 'luck

was a practice of ‘levelling up’, of forging connections, knowing what and whom to hold on to and when to let go, detaching oneself when the connections were no longer viable or ‘out of the league’, to not put luck at risk. Sometimes it included occult rituals. As a prospective star there were many dangers along the road, and Smart had often described the risks of forming friendships, of having too many connections to maintain at the same time, as betrayal and jealousy often accompanied them. ‘Irmelin, I’m a.k.a “Wires” now because I’m working even when connections are lost. You lose the network [on the mobile phone] but I’m still connected. I’m connected, like wires,’ he said as we were wandering the narrow streets between the one-storey buildings in the *uswahilini* (dense, informal neighbourhood). Later he would sing a song describing how *maisha ni digitali*, ‘life is digital’, *wanawake ni digitali*, ‘women are digital’ and *upendo ni digitali*, ‘love is digital’. Dar es Salaam and its residents had levelled up from manual to digital, entered a new era which Smart called unruly, *mtundu* (a word often used to describe naughty children) and ever-changing. An era that called for improved ways of how to cope with an increasingly unpredictable city.

In another part of town, ‘smart city’ discourse was live. Whether Dar es Salaam would become ‘smart’ was fervently discussed. Ironically the city was already known as Bongo (‘brain’). It was already a deeply embedded ‘fact’ that you have to have brains to operate in Dar es Salaam. The smart city was more than just semantics. Bongo, in contrast, epitomised the smart city quite literally, a fact repeated in the urban vernacular describing the types of intelligence the residents of the city needed (such as *ujanja* and *akili*, trickster-ness and wit) to navigate urban life successfully. The smartness of the smart city was already running in the veins of Bongo’s citizenry, who were no longer operating at a manual level, but as Smart had it, were *digitali*.

The three protagonists – the *boda boda* driver, teacher and artist – came from different walks of life, were heading in different directions and had different strategies for how to work with connections (*uhusiano*), when the network (*mtandao*) is shaky, in order to seize opportunities (*fursa*) and carve out space (*nafasi*)² for future actions. However, their stories shared a strong emphasis on anticipating future scenarios and the ways these could be controlled, which Yahya in the vignette above described as ‘insurance strategies’, Smart as ‘practised luck’ and the *boda boda* driver as ‘clever hustling’. The interpretation of ‘insurance’ as a means of negotiating risky futures is important, neither corresponding directly with the Swahili

word for formal insurance, *bima*, which connotes private insurance schemes, nor with the word for social security, *hifadhi ya jamii*, connoting large-scale welfare programmes. The way in which ‘insurance’ surfaces is rather through a series of practices and manifestations, as a set of skills and assets that often, but not always, include networking, speculation, building (and burning) bridges, hedging and hinging, plotting and scheming, making investments and sometimes withdrawing from those investments. As such, ‘insurance’ is a form of infrastructure that draws social and material life together in order to hedge against risk in times of uncertainty.

But for me it begins with a material connection, in the form of a bridge.

The bridge, the fund and insurance

Drawing upon eighteen months of ethnographic fieldwork between 2016 and 2018, this chapter gives an ethnographic account of how we might make sense of urban futures in cities like Dar es Salaam. The fieldwork on which the chapter is based was mainly conducted in close proximity to two ‘field sites’ – the Nyerere Bridge (popularly known as the Kigamboni Bridge) and one of East Africa’s largest parastatal pension funds,³ a key institution for Tanzania’s nascent welfare state, having financed the bridge together with the Tanzanian Ministry of Works in a 60/40 per cent split. The chapter begins by setting out on a short journey some 680 metres across the Kurasini Creek, the tidal creek stretching through central Dar es Salaam, dividing the dense downtown neighbourhoods from the lofty Kigamboni district in the south. As we venture over the Nyerere Bridge we are, however, embarking on a much longer journey. From the journey a story of various insurance practices unfolds, based on participant observation, mapping and archival work, extended interviews and conversations with operators, civil servants, managers, politicians, worker, engineers and residents, all implicated in ‘city-making’.

In this chapter I illustrate how the infrastructural investment in the bridge cannot be understood on its own – it is not freestanding. The bridge’s connections reconfigure the cartography of the city, but its arrival was also meant to generate through tolled crossings an infinite supply of funds into the emerging ‘modern’ urban welfare system. This system in turn was tied to the ways in which citizens of Dar es Salaam might create providential safety nets to safeguard their own future by joining the

associated social insurance schemes that were meant to flow from the bridge as cars flowed across it. The agency of the infrastructure, however, interferes with other city systems, rewrites its legacy and reconfigures the DNA of Dar es Salaam.

The inception of the Nyerere Bridge – named after Julius Nyerere – on 19 April 2016 came with bold promises that Tanzania was to move from the fringes of the global economy to a more prominent place, as claimed by the president in the opening speech. The bridge was, after all, funded independently of foreign aid, in a south–south as well as south–east partnership, involving the same Chinese engineering company that in the 1970s built the famous TAZARA railway (connecting Tanzania with Zambia) and a consultant engineering firm from Egypt. More than eight decades earlier, plans for a bridge had been included in the 1933 colonial administration's maps of Dar es Salaam, and every consecutive master plan thereafter had depicted a bridge crossing the Kurasini Creek. For three-quarters of a century colonial experts and Dar es Salaam's urban planners alike saw the bridge as central to the symbolic future of the city and infrastructural drivers of urban economic development. The bridge plan had traversed colonial, postcolonial, socialist, liberalising and developmentalist governments, finally to arrive in a globalised Tanzania in the twenty-first century. It was implicated in an extensive political planning strategy, given that the city could now access by road a part of town that was relatively little developed, where once the utopian 'Kigamboni New City' (Lindell et al., 2016; Møldrup Wolff, *forthcoming*) plans were rolled out, and where the largest oil terminal in the country sat. The bridge is, in the long run, supposed to connect to a large-scale roads initiative that would take much of the cargo from the harbour over the bridge (instead of through the city) and flow from the city to the regions and the neighbouring land-locked East African countries, while efficiently collecting tolls on every crossing. The state pension fund had a number of housing investments in the southern district, a district that had become a popular place for the wealthy to invest in large tracts of land, and the city had plans for industrialising its fringes. With the bridge, connections were now secured between people, places and plans.

In principle the tolls on the bridge would allow the infrastructure to pay for itself in the long term and also then to be added to the parastatal pension funds. However, the money – the pension savings invested by individuals added to government funding, primarily in order to hedge

against market volatility – seemed highly restricted. Previous investments by the fund had not paid out as planned, and a majority of the individual members' instalments were being withdrawn prematurely, prior to reaching retirement age, which put a strain on cash flow. As a result, the pension fund was rumoured to be struggling to maintain its long-term liquidity. To tackle the risk of insufficient funds, new disclaimers were introduced or discussed, making it harder to make untimely withdrawals. The pension fund had traditionally been used as a sort of bank by people on the ground, a pay-as-you-go scheme where the members had the right to withdraw at any point, take their savings and pursue their plans elsewhere. Now, however, this practice has become increasingly difficult, to the great distress of the insurance collective – the members themselves.

Nyerere Bridge was just about to open officially when I arrived in Dar es Salaam, yet I was met with disbelief – 'I don't believe it before I see it' – when asking about its status, as if the busy news reporting, and the fact that you actually could see the structure almost complete if you went down to Kurasini, was nothing but 'fake news'. But the bridge was there, ironically epitomising the obscene inequalities of urban life: a behemoth with a six-lane highway leading to a narrow dirt road that was forced to close during the rainy season when it turned into a stretch of mud. Yet if the bridge's appearance was meant to be a symbol of growth and stability, it also assumed an agency of its own, acting on the DNA of the metropolis: soon it was featuring as a backdrop in music videos, wedding photos, WhatsApp profile pictures, even as the logo for the city's new Kigamboni district. Besides the everyday practices and plans it facilitated – its primary function as a bridge, connecting people and places – it impacted on things in and beyond the city, generating future-oriented responses at another level. This could, perhaps, be understood in parallel to the pension fund itself: smooth in appearance but not yet in operations and reach. The bridge is highly aspirational and globally generic in its aesthetic, a symbol of what could be achieved but was not yet accessible to the larger public, with many who struggled to pay the vehicle toll or regarded the bridge's location as inaccessible choosing alternative crossings instead. As Larkin notes, the significance of infrastructure projects sometimes is more about gaining access to certain clientele or government networks than it is about their technical function, and 'this is why roads disappear, factories are built but never operated, and bridges go to nowhere' (Larkin, 2013: 334). Certain that the Nyerere Bridge led somewhere, but not

exactly sure where, I began to enquire into its workings, and my study set course.

Tanzania hosts some of Africa's oldest and most extensive social insurance schemes, which together with a growing private sector as well as community-based savings and insurance schemes make up an important, yet overlooked, arena for inquiry. Although the insurance sector is certainly not new, the scope and scale of its operations in Africa are. In the northern hemisphere, cities are rising vertically due to the influx of insurance companies establishing new urban bases, but little is known of the workings of insurance capital in Africa (Bähre, 2020), in particular the materialisation of national social insurance, or localised forms, in the continent's urban metropolises.

In sub-Saharan Africa an important aim of social insurance schemes has been – apart from the expansion of social security – to accumulate finance for socio-economic development (Charlton and McKinnon, 2000; Kpessa and Béland, 2012). Traditionally, the insurance schemes have anchored their assets in private equity and government bonds, but increasingly have come to include long-term investments in infrastructure. Such investments are of diverse nature, including public projects (such as schools and hospitals) and economic infrastructure (such as roads, bridges and electricity) and involving different forms of financing (debt, equity, public–private partnerships, etc.). In search of diversification of investment risk and new sources of return, institutional investors are spreading their investments across a wider spectrum, enlarging their portfolios, in contrast to what investment strategies previously have prescribed (Inderst, 2009; Sy, 2017; Wentworth, 2013).

Historically the preserve of governments and local authorities, infrastructure has become an asset in its own right for investors in the public as well as the private sector. The long-term liability associated with social security schemes corresponds with the temporal aspects of infrastructure and connotes a socially responsible investment – a long-term commitment of welfare as a promise from the state to its citizenry (Rankin, 2009). Despite the longer investment horizon, the financial hedging of Tanzanian insurance schemes is speculative, measuring investment risk against future returns, yet sometimes – paradoxically – with an increased risk as the outcome. As such, the promises infrastructure brings does not necessarily hold, and while performing stability, infrastructure might, on the contrary, operate through dissimulation, concealing the inherent provisional rhythms and uncertain times through which many African cities function

(Archambault, 2013; Cooper and Pratten, 2014; Myers, 2011; Simone, 2004).

Looking at the historical circumstances in which modern insurance emerges, a number of scholars have emphasised its colonial legacy (Baucom, 2001 and 2005; Borscheid, 2012; Rupprecht, 2007), connected to forms of financial governance beyond the state (Baker, 2010; Defert, 1991; Ericson and Doyle, 2004; Ewald, 1991 and 2019), and its development as a technology of managed risk (Knight, 1912; Lazzarato, 2015; Lobo-Guerrero, 2011 and 2016). Others have emphasised the particular imaginaries insurance is contingent on, inciting self-conscious attitudes of the self-insured subject towards risk, reserve funding and management for potential losses (Baker and Simon, 2002: 8). While insurance as a financial system has roots deep in the violent history of slavery, which arguably could be interpreted as an example *par excellence* of Foucauldian biopower (Baucom, 2005; Defert, 1991; Ewald, 1991 and 2019; Lobo-Guerrero, 2011), the more recent forms of practice effected by the independent Tanzanian nascent welfare state, in the form of social insurance (and particular pension savings), could also be understood as the localised continuation of the same governmentalising apparatus.

While insurance as a technology of risk management and financial governance has become embedded in life in the 'global north', life in Africa is often lived uninsured, within crumbling formal infrastructure systems, where only a small percentage is enrolled in a social security scheme (van Ginneken, 1999). State-supported social insurance is often aimed at the formal private sector and for public and civil servants, but the insurance market is slowly expanding to include also the informally employed majority.

Yet when formal institutions do not hold, were never in place or perhaps 'failed' to eclipse the totality of life, its double stepped in. The 'absent presence' of formal physical and bureaucratic infrastructures gives life to various 'instructures' (De Boeck and Baloji, 2016: 109) that become operational in the inoperability of its formal twin. 'Doing it for the connections', then, as Yahya put it, is what that absent presence of infrastructure incites when the connections that should be 'in place' prove inoperative and people search for 'insurance' elsewhere.

When this study set out, in spring 2016, the money, the pension savings invested – allegedly in order to hedge against market volatility and to promote socio-economic development – was highly restricted, and benefits

were not always paid out to the members in a timely manner. Together with a general downturn in the Tanzanian economy, money seemed to be unusually short in Dar es Salaam.

Infrastructure's tripartite structure

I have so far introduced some of the key concepts central to my study that illustrates how insurance is a practised infrastructure enacted by different actors in the city, where the notion of risk might have multiple meanings and be negotiated on different levels and timescales. In the following section I will outline the general methodological question this chapter asks: On what terms is it possible to study simultaneously how the city connects a financial infrastructure (the fund), a material form (bridge) and the social life of insurance?

Studying risky futures in Dar es Salaam requires a different theoretical lens and methodology from that used to study the enclosed community residential quarter. My work is located in a 'relational force field' (Simone and Pieterse, 2017: xii) between a bridge, a social security fund and the notion of 'insurance', embedded within the legacy of anthropological research, which allows for the making-sense of data of different kinds. Attending to 'relational ontologies' (Benjamin, 2015; Pieterse, 2014) and 'urbane scholarships' (Macamo, 2018) as ways of understanding contemporary urban practices, however, is not a theoretical imposition but the very condition for being attuned to the field and surrendering to the world of empirical knowledge. Though admittedly everything is potentially relational, contingent and interactive, urban environments are also indisputably volatile and unequal, spatially and socially set within a history of colonial subjugation and resistance, still often governed by documents and declarations that proliferate historical inequalities. This chapter neither understates these structural inequalities nor champions endless chains of association, but argues instead for taking serious social, financial, temporal and spatial relations.

Given the complexity of the field, it can be both a methodological frustration and a conceptual difficulty to, in the words of Marilyn Strathern (1996), 'cut the network' – to delineate where the field begins and where it ends, and further, to decide and argue for what information is important to engage in and to relay, and what information is irrelevant and better kept out.

Ethnography reveals modes of reflection and reasoning that are embedded in everyday practices and are inextricable from material forms of existence (Da Col and Graeber, 2011). While local articulations and concepts are a source of theoretical inspiration in their own right, I have strived to develop theoretical terms that arise from ethnographic engagement, are grounded in local historical legacies, but resonate with certain established theoretical currents. Motivated by empirical findings from the field, a tripartite structure crystallised where I put the bridge, the fund and insurance to action as a heuristic device in order to conceptualise the themes of my work but also as a tool through which to make connections and uncover relational bonds. Each of the three has agency in its own right, but they also act on each other as well as work as an ensemble. By studying a material urban form (the bridge) and a providential organisation (the fund), I address a set of strategies and financial cultures/hedging repertoires that those engender (insurance) and engage in different aspects of risk and risk calculation, consequently making visible risky futures – how risks are envisioned, anticipated, remembered, acted upon and/or ignored. Here insurance is understood as a generator of the bridge and fund and not simply the linear consequence of the same, hence their interdependence. Rather than the traditional dialectical triad, I establish three ‘platforms’ (Guyer, 2016) from where to make connections.

As part of my work, I also conducted a three-month internship with the pension fund that funded the bridge. By attending to the ‘lifeworld’ of financial infrastructures, I lent myself to the conditions of working with and for the Tanzanian emerging welfare state. However, the ethnographic literature accounts for the administration (Bennet, 2001; Blundo, 2009; Das and Poole, 2004; Gupta, 1995), bureaucracy (Bear and Mathur, 2015; Ferguson, 1994; Strathern, 2000), financialisation (Bähre, 2012 and 2020) and organisation (Moeran, 2005; Wright, 1994) of forms of social insurance, but gave few hands-on clues how methodologically to approach an African social security fund and understand its emergent practices as set in the urban crucible. While anthropologists have explored the full spectrum from the insurance of life (Dao and Mulligan, 2016; Golomski, 2015) to the non-insured bare life (Duffield, 2008), the concept engages a much longer tradition of anthropological inquiry. As such, insurance could be placed in the motley crew of diviners, magicians, prophets, sheiks and other cultural brokers who trade with speculation to mediate the present with future uncertainties (Golomski, 2013: 10). But uncertainties

have of course also been mediated through gifts, friendships and other reciprocal practices, involving human and non-human actors. And it is partly, but not only, within this tradition I locate the tripartite structure: the bridge, the fund and insurance.

The bridge is the material infrastructure putting places, people and things in connection. It constitutes a physical orientation point, an identifiable place in Dar es Salaam connecting two different parts of the city. Architecturally generic in its aesthetics, the bridge becomes universally recognisable and performs on the same scale as other large-scale projects in other global cities, a 'point of orientation' that structures urban imaginaries of which Dar es Salaam is intrinsically part (Weiss, 2004: 201). By generating circulation, spanning spaces and inciting global imaginaries, it holds a promise of future investments, in Dar es Salaam and in Tanzania. Its temporality is so vast that it came to life in urban plans decades prior to its inception and long had a life beyond the city not only in various documents, but also in popular culture and mythology. A focus on the bridge as a public infrastructure/public good (Bear and Mathur, 2015) reveals how the economic governance of Tanzanian social insurance schemes produces a tension between the collective hedging against various contingencies and the extractive aspects of investments and the returns on capital. Here the bridge, rather than hedging, protecting and securing, instead might institutionalise new architectures of risk through unexpected (material, political and ethical) effects.

The fund is understood as a social security infrastructure. It operates as a policy assemblage performing a number of bureaucratic tasks. Its operations aim to encourage a particular new financial behaviour among members of the public, based on providential planning. The fund is also a financial epicentre, holding large sums of capital, managing investments and safeguarding retirement savings against financial risks. It operates as an economic reserve where revenues might be channelled into alternative streams, financial 'secondary circuits' (Goodfellow, 2018), to places where access to finance is otherwise constrained. As such it is used as an economic reservoir by the government and by its members alike. Beyond the conceptual form, as an institution for social insurance, it sits in a particular historical place as one of Africa's oldest pension funds. While the fund conceals much of its governing documents and bureaucracy from the public, it reveals itself in investments that (often) take physical forms (such as the bridge) and in the daily compliance operations throughout the city.

Insurance is in one sense a conceptual spin-off from the bridge and the fund. Insurance could be understood as a practice of a certain kind of rational governance, with complex historical underpinnings, which take localised forms when hitting the ground in Tanzania and Dar es Salaam. It is a set of institutional and popular arrangements to provide a guarantee for compensation against loss, working through a number of co-existing economic and financial regimes. Formally, insurance is a technology of risk management operating through documents and bureaucracy. In one form it is integral to the formal policy assemblage, performing as conventional social insurance (such as the pensions scheme). It also performs in investments made to allocate money in the expectation of future benefits (returns). With respect to the private and public (and parastatal) infrastructures that promise to hold social security in place, I provisionally hold 'popular insurance' as the social practices of insurance that have been built up over long-term experience with everyday uncertainties, risks and hedging, and the marginal role of the formal sector in many people's lives. Insurance in its popular instance 'shadows' or 'doubles' the insurance schemes at times when policies 'fail' its formal workings. It implies a speculative mode of managing the future, generating speculative practices of calculation and anticipation, and emerging collective forms of financial rationality. As a concept it invokes urgent questions of how self-reliance, collective responsibilities and dependence are negotiated in one of the world's fastest-growing cities, Dar es Salaam.

The tripartite structure has an infrastructural logic, all being particular sites for infrastructural operations, whether they are material, bureaucratic or social. They are tightly interrelated, where formal functions are contingent on the informal. In an economy on the fringes of global finance, Tanzania is aiming at, but not fully achieving, the financialisation of everyday life. In the absence of a national context that permits the premises of a global financial market, a shadow market is maintained in its absence, both from below and from within. I provisionally conceptualise these financial strategies of market performativity as 'popular insurance'.

By looking at how two institutionalised infrastructures (the bridge and the fund) operate both in 'generic' economic systems (neoliberal/financialisation) and in the 'popular economy' (Gago, 2017), I try to understand the co-existence of different development models and how Tanzania negotiates the reverberating ideals of African socialism, Ujamaa,

and self-reliance (*kujitegemea*) through notions of insurance in a contemporary urban context.

Studying 'risky futures' in Dar es Salaam entails a flexible and mobile methodology, ready to follow urban operation systems, but also to diverge and explore its 'leakages' (Simone and Pieterse, 2017: 96). The tripartite structure does not only reflect but is also defined by the engagement with these social and material operation systems, and from the viewpoint of the bridge, the fund and insurance, the constant shifting of the cityscape is conveyed.

Speculations

'I need "world-class insurance"', a jovial gentleman dressed in *kanzu* and *kofia* told the officer at the registration desk at third floor at Mafao House ('Benefits House'), the local pension fund office. 'I want the very best, full coverage, I don't care about the cost, just give me your best package. World-class, top-notch ... Enrol me!' Bupe, the officer who was sitting behind the glass, carefully pencilled down his details on a yellow registration form and then transferred the information to a digital tablet, collecting biometric data. 'Give me your finger,' Bupe ordered. The man pressed his right thumb, and then his left, against the touch sensor for the tablet to register his fingerprints. He was instructed to move to a chair in front of a blue screen for his picture to be taken. Bupe tilted the tablet and took a headshot. Before the registration procedure was over, she presented an inkpad and asked the prospective member to sign the yellow form and mark it with his fingerprint, pressed against the yellow in blue ink. He laughed and rubbed the remaining ink off against his white *kanzu*. 'Wait!' Bupe said and turned on the printer that was standing on the desk behind the glass in her registration booth. Before long the printer spat out a plastic ID card, complete with the member's picture, number and the fund's familiar logo. Just like a credit card, it contained a small golden chip. 'It holds all your account details and biometric data, so you can use it at every pension fund office, even out in the regions. You can check your balance everywhere,' Bupe continued. 'This is how it works ... First you have to make three consecutive instalments of at least 10,000 shilling per month. After those three months you can register for health insurance benefits and enrol with a hospital close to your home for comprehensive healthcare for you and four family members – only ONE

WIFE and only three children.' They both laughed. 'After fifteen years you are eligible for pension benefits.' The man already looked close to retirement age.

* * *

In my work in Dar es Salaam, insurance works as hedging in contexts where institutionalised insurance programmes are being reformed or implemented but are not (yet?) comprehensive. Further, ethnographic fieldwork demonstrated how future-oriented expectations and idealisations, as well as past- and present-grounded critiques of these programmes and their effects, structure everyday life. Urban futures thus constructed, envisioned and narrated become involved in wider politics and economics. This provokes questions of what kinds of 'risk' are articulated and assigned in urban research, what forms of 'infrastructure' are assumed and assembled, what communities define, take up, redefine and broker concepts and practices such as 'investment', 'insurance' and 'hedge'. To the extent that social insurance programmes are directed towards reform and/or development, who and what are being 'reformed'? What kind of actors, institutions and social forms? As new forms of insurance backed by international financial institutions and development organisations are implemented throughout the world, how are the roles and practices of different organisations and communities – acting as international, national and local actors – reinforced or redefined?

With the global expansion of insurance – whether it is state or corporate, private, financed by development aid or in its popular form – are we also experiencing an ontological shift of temporality in relation to the concept of crisis? While crisis has been perceived as a short-term episode of hardship, now hedging is often against an imminent risk. Does insurance, then, engender an altogether different restructuring of individual financial behaviour against a new time horizon where the proliferation of risks is a mode of state, corporate and self-governance? Or did the residents in cities like Dar es Salaam always operate on multiple timescales concurrently, navigating an array of financial and economic modes?

The Tanzanian pension funds build upon generations of insurance, of hedging future uncertainties into the present as a means of acting upon them. Consistently, old and prospective members are to be convinced into taking these particular uncertainties that the fund *can* insure very seriously. The value of the pension fund is not self-evident. It is 'marketed'

to potential members by making the future relevant through the depiction of certain risk scenarios communicated by the fund through its outreach and education programmes. The modern city subject of Dar es Salaam needs to believe in insurance and be attracted to the idea that there are very considerable benefits to being insured. Members pay for the guarantee of protection, yet the conditions that promise this protection do not always arrive, so they might have been paying for certainty in a situation of absolute uncertainty. This is of course not only true for Tanzania but seems to be the global irony of the insurance market: it often does not pay out when things are actually at stake. The future of pension funds globally in the wake of the 2008 global crisis or the COVID-19 pandemic is one where assumed certainties generated by pension promises melt into air in the face of market crashes.

But the bridge, then, becomes the tangible representation that guarantees that the fund will keep on giving, and that there is a prospect for comprehensive welfare – a concrete welfare utopia. And the insurance becomes something material, spanning time as the bridge spans the creek. But how can the traffic be guaranteed, a flow that secures income at the bridge, and by extension secures insurance from the fund? And what happens if, or when, the members become indifferent to the insurance process altogether – if the futures at hand simply stop mattering? What does this mean for intergenerational ethics with an ageing older generation and a rapidly expanding population of urban youth? Many young people are outside formal employment. Formal social insurance may seem utterly inaccessible or simply irrelevant to them because their starting point is based on other imaginaries and other risk scenarios that the insurance will never cover. The fact that many youth are occupied in the large informal domestic sector as servants (so-called *dadas*) or ‘house boys’, security guards (*walinzi*), ambulating street traders (*wamachinga*), female food hawkers (*mama lishe*) or self-employed in the urban transport sector, driving *boda boda* or *bajaji* (three-wheeled taxis), makes them unlikely recipients of insurance packages, due to the inherent precarity and informality of the respective sector. To accept even a small cut in monthly earnings, contributing to the membership fees of a pension fund, might be a price too high to pay for those who already live hand-to-mouth. The ‘flow’ of people constituting the very basis of the fund risks drying up if the idea of formal insurance is not believed in by those that need to buy in. Only 3.6 per cent of the working-age population – 4.3 per cent of the total labour force aged 15 to 64 – contributed to the Tanzanian pension

funds in 2015 (ILO, 2017: 357), the overwhelming majority of whom were employed in the formal sector.

The residents of Dar es Salaam are involved in a lot of ‘spanning’ and ‘speculation’, perhaps similarly to the bridge, living in a certain temporality where things cannot be spanned, however, and the gap between formal and informal life will perhaps never be crossed, but where a lot of bridging nevertheless takes place.

Conclusion

It was a regular day interning with the pension fund. I was posted with one of the compliance officers, *afisa utumishi*, to participate on an inspection round, leaving the office in Illala by car. We were to perform a number of routine visits, checking whether business owners and employers enrolled in the pension scheme followed the procedures, contributed to their employees’ monthly pension savings and kept up the correct paperwork. To avoid the traffic jam, we took the shortcut from Kigogo roundabout, leading through Jangwani valley, ending up in Msimbazi, at the back of Kariakoo, the beginning of my colleague Jalala’s sector. Tekno’s super-hit ‘Pana’ played on the USB stick, connected to the stereo: ‘We go drive around for my Porsche, oh, Baby, Pana, They say you like *wahala*, oh.’ We parked deep into the Kariakoo grids outside a small tyre shop on a corner of one of those streets, trading with everything automobile. Dunlops, Continental, Bridgestone, mixed with anonymous brands from India and China in stacks, balancing on the landing in front of the mechanics. The owner immediately showed up, greeting us with oily hands. Blue-collar hand shaking white-collar hand, smearing the white shirtsleeve slightly, while white-collar hand firmly grabbed its counterpart, ignoring the stains. Compliance visit behaviours often involved a calibration on both parts: for the employer, balancing the ducking and diving, sometimes escaping thorough inspection and excessive transparency, perhaps delaying contributions, while not being perceived as too difficult, risking reprimands; for the compliance officer, artfully extracting information, articulating convincing arguments for cheques to be signed, policies to be adhered to, while avoiding reaching an impasse or being rude. Customer service (*huduma kwa mteja*) was, after all, part of the pension fund’s mission.

The members in each sector were few enough for officers and employers to develop a relationship, to have some knowledge of each other. Today Jalala was to find out how many mechanics the corpulent owner employed

– i.e. new potential members to the pension fund collective – and whether they complied with the minimum wage as stipulated by Tanzanian law. And yes, there were more mechanics employed now than last time, as Jalala pointed out, but, *bahati mbaya*, unfortunately, they were not in at the moment, the owner said, so it was impossible to have them fill in the registration forms and pay the statutory fees. *Labda kesho au kesho kutwa*, maybe tomorrow or the day after. And then the paperwork, showing the payrolls, might be ready too. Maybe. *Karibu tena*, welcome back. We took off, it was still early.

We slowly worked our way through the day's schedule: a regular update with the human resources manager at one of the city's luxury hotels, greeting their new sushi chef; a surprise visit to a local bank whose manager had mysteriously gone missing; a scheduled meeting with the regional administrative director of a well-known international airline to confirm the registration of new employees; and finally a drop-in at a small accountancy service, tucked away behind another office – nothing more than a crammed room – deep in a courtyard, which took so long to penetrate that the owner had fled through a second back door before we arrived.

* * *

In daily conversations in Dar es Salaam, there is constant repetition of the importance of meeting new people, to be in new situations, experiencing new things, to get exposure and acquire new ideas and alternative world-views, to circulate in extensive networks. What accounts as exposure is roughly anything unexpected and novel, although it does not necessarily have to last very long. Quite the opposite, in fact: exposures are sometimes better kept short, before they become complicated and create annoying implications or raise expectations higher than the relationship merits. Exposure presents opportunities for the speculative potentialities togetherness brings: of multiplying the chances for valuable experiences, for new things to happen, 'things' to add to the life narrative, as the author of one's own life, and make those new insights part of one's 'background' (Simone, 2019). This background gives a sense of the propensity of infrastructure, forming a social context for something to happen in the future that potentially could bridge previous gaps or prepare for new unexpected situations. Being exposed to something – whatever that may be – generates sensitivity to disparate dispositions, so that when the moment

arrives the exposure will play out in a favourable way for the exposed. Curated, long-term exposures might eventually materialise in solid connections, yet only repeated experience with exposure can determine whether a relationship should be allowed to linger, as Smart in the introductory vignette claimed: too tight connections might indeed be a disadvantage.

Working for the pension fund constituted a serial cycle of exposures, not only to local situations but also to the lifeworld of other professionals, of aspirational lifestyles. During the inspection rounds I participated in during the internship, the compliance officers made connections with disparate social groups and individuals that enabled a kind of continuous education, a social grooming, that graduated in a scholarship, in savvy communication and how to navigate the world. Of course, it was just a job too, but it came with perks that transcended the routine tasks, and that did not necessarily come through formal education. It was, however, not just the compliance officers that accumulated exposure in their professional life. Yahya, Smart and the *boda boda* driver featuring in the beginning of the chapter all had their separate tactics for how to acquire a sort of life insurance, a background against which the exposures could be made sense of.

Dunia ni kijiji, ‘the world is a village’, is a popular expression, too, repeated in daily conversations across the city. Beyond the familiar cliché, it suggests that Dar es Salaam is an immanent part of the world, a cosmopolitanism not necessarily ‘claimed’, but rather taken for granted, as part of life as lived in the twenty-first century. While it perhaps could be recognised as a travelling trope widely popularised due to increased interconnectedness and digitalisation, it might also be understood as an expression of urban ‘worldliness’ (*mondialité*), of an urban citizenry belonging to the whole-world (*tout-monde*) (Britton, 2009; Glissant, 1997). It implies being residents of the global city, or the urban global village, on other terms than the financialised or contractual relationship with certain national or international policies or institutions, or restricted by physical borders – regardless of whether those same institutions or bordering regimes recognise Bongo as either a global or a ‘smart’ city. The extensive ‘exposure’ accumulated in life is the passport to urban citizenship, a guarantor that one is not a *mshamba*, a hick, or a nobody in the periphery, but an eligible member of the whole-world, a protagonist central to where global dramas play out.

The taxonomy of world cities embraces places like Dar es Salaam, making them the ‘background’ for national as well global dramas to be acted out, through universally recognised phenomena: here a bridge, the providential institution, and insurance, in localised forms and shapes, but nevertheless part of the whole-world. As such, Dar es Salaam is constructed in everyday practices and articulations through affective associations with the larger world map as a node in a global, urban network on no less equal terms than other global cities. The infrastructures of the bridge interface with the financial infrastructures of the ‘modernising’ state but are mediated by the cultural calculus of risk. Risky futures in Dar es Salaam demand an understanding of this triple interface.

Acknowledgements

This study could never have been realised without the support from friends and colleagues in Dar es Salaam who over the years have generously shared their knowledge, insights, friendship and kindness, and guided me through my first hesitant interactions with the city. I am particularly indebted to the pension fund, and the colleagues at the fund, allowing me to conduct a three-month internship, sponsored by the Economic and Social Research Council (ESRC) Doctoral Training Centre, from September to December 2017 to enhance my understanding of the parastatal insurance sector in Tanzania. The Tanzania Commission for Science and Technology, as well as my host institutions, Ardhi University and the University of Dar es Salaam, are also recipients of my unreserved gratitude. Moreover, I am endlessly grateful to Professor Michael Keith and Dr Ramon Sarró for their patience, generosity and invaluable guidance. I would also like to thank AbdouMaliq Simone, Alphonce Kyessi, Ben Kirby, Claire Mercer, Colman Msoka, Garth Myers, Mauricio Rogat, Mike Degani, Nathalie Jean-Baptiste, Peter Bofin, Rasmus Hundsbaek Pedersen, Ruy Blanes, Stina Møldrup Wolff and Thomas Cousins for critical engagement with my writing at different stages in the process.

My very first engagement with Dar es Salaam in 2014 was facilitated by the Department of Human Geography, University of Stockholm, and Dr Ilda Lindell, to whom I am deeply indebted. Fieldwork, as part of my studies at the Institute of Social and Cultural Anthropology, University of Oxford, between 2016 and 2018, was enabled by generous funding from the ESRC Migration Pathway, as well as the Royal Institute of

Anthropology, Funds for Women Graduates and St Cross College travel grant.

Notes

- 1 All names in the chapter are anonymised.
- 2 *Nafasi* is a multi-faceted term in Swahili that could be translated as ‘space’, ‘opportunity’, ‘place’ or ‘chance’.
- 3 Before the harmonisation reform in 2017 and 2018 – where five of the country’s pension funds were reduced to two – Tanzania hosted a number of pension schemes, directed at different sectors.

References

- Archambault, J.S. (2013). ‘Cruising through uncertainty: Cell phones and the politics of display and disguise in Inhambane, Mozambique’. *American Ethnologist*, 40(1): 88–101.
- Bähre, E. (2012). ‘The Janus face of insurance in South Africa: From cost to risk, from networks to bureaucracies’. *Africa*, 82(1): 150–67.
- Bähre, E. (2020). *Ironies of solidarity: Insurance and financialisation of kinship in South Africa*. London: Zed Books.
- Baker, T. (2010). ‘Insurance in sociolegal research’. *Annual Review of Law and Social Science*, 6: 433–7.
- Baker, T. and Simon, J. (eds) (2002). *Embracing risk: The changing culture of insurance and responsibility*. Chicago: University of Chicago Press.
- Baucom, I. (2001). ‘Spectres of the Atlantic’. *South Atlantic Quarterly*, 100(1): 61–82.
- Baucom, I. (2005). *Spectres of the Atlantic: Finance capital, slavery, and the philosophy of history*. Durham, NC: Duke University Press.
- Bear, L. and Mathur, N. (2015). ‘The public good: For a new anthropology of bureaucracy’. *Cambridge Anthropology*, 33(1): 365–92.
- Benjamin, A. (2015). *Towards a relational ontology: Philosophy’s other possibility*. New York: State University of New York Press.
- Bennet, J. (2001). *The enchantment of modern life: Attachments, crossings, and ethics*. Princeton: Princeton University Press.
- Blundo, G. (ed.) (2009). *The governance of daily life in Africa: Ethnographic explorations*. Leiden: Brill.
- Borscheid, P. (2012). ‘Sub-Saharan Africa: Overview’. In P. Borscheid and N.V. Haueter (eds), *World insurance: The evolution of a global risk network*, 311–24, Oxford: Oxford University Press.
- Britton, C. (2009). ‘Globalisation and political action in the work of Édouard Glissant’. *Small Axe*, 13(3(30)): 1–11.

- Charlton, R. and McKinnon, R. (2000). 'Beyond mandatory privatization: Pensions policy options for developing countries'. *Journal of International Development*, 12(4): 483–94.
- Cooper, E. and Pratten, D. (eds) (2014). *Ethnographies of uncertainty in Africa*. New York: Palgrave Macmillan.
- Da Col, G. and Graeber, D. (2011). 'Foreword: The return of ethnographic theory'. *HAU: Journal of Ethnographic Theory*, 1(1): vi–xxxv.
- Dao, A. and Mulligan, J. (2016). 'Towards an anthropology of insurance and health reform: An introduction to the special issue'. *Medical Anthropology Quarterly*, 30(1): 5–17.
- Das, V. and Poole, D. (eds) (2004). *Anthropology in the margins of the state*. Santa Fe: School of American Research Press.
- De Boeck, F. and Baloji, S. (2016). *Suturing the city: Living together in Congo's urban worlds*. London: Autograph ABP.
- Defert, D. (1991). "'Popular life" and insurance technology'. In G. Burchell, C. Gordon and P. Miller (eds), *The Foucault effect: Studies in governmentality*, 211–34. Chicago: University of Chicago Press.
- Duffield, M. (2008). 'Global civil war: The non-insured international containment and post-interventionary society'. *Journal of Refugee Studies*, 21(2): 145–65.
- Ericson, R.V. and Doyle, A. (2004). 'Catastrophe risk, insurance and terrorism'. *Economy and Society*, 33(2): 135–73.
- Ewald, F. (1991). 'Insurance and risk'. In G. Burchell, C. Gordon and P. Miller (eds), *The Foucault effect: Studies in governmentality*, 197–210. Chicago: University of Chicago Press.
- Ewald, F. (2019). 'The values of insurance'. *Grey Room*, 74: 120–45.
- Ferguson, J. (1994). *The anti-politics machine: 'Development', depoliticisation and bureaucratic power in Lesotho*. Cambridge: Cambridge University Press.
- Gago, V. (2017). *Neoliberalism from below: Popular pragmatics and baroque economies*. Durham, NC: Duke University Press.
- van Ginneken, W. (ed.) (1999). *Social security for the excluded majority: Case studies of developing countries*. Geneva: International Labour Organization.
- Glissant, É. (1997). *Traité du tout-monde*. Paris: Gallimard.
- Golomski, C. (2013). 'Crisis, risk, control: Anthropologies of insurance'. *Anthropology News*, 54(9–10): 10–11.
- Golomski, C. (2015). 'Compassion technology: Life insurance and the remaking of kinship in Swaziland's age of HIV'. *American Ethnologist*, 42(1): 81–96.
- Goodfellow, T. (2018). 'Property and land value capture in the financial periphery'. Paper presented at the Governing the Future City, ESRC End of Grant Workshop, London.
- Gupta, A. (1995). 'Blurred boundaries: The discourse of corruption, the culture of politics, and the imagined state'. *American Ethnologist*, 22(2): 375–402.

- Guyer, J.I. (2016). *Legacies, logics, logistics: Essays in the anthropology of the platform economy*. Chicago: University of Chicago Press.
- ILO (International Labour Organization) (2017). *World Social Protection Report 2017–19. Universal social protection to achieve the Sustainable Development Goals*. Geneva: International Labour Organization.
- Inderst, G. (2009). 'Pension fund investment in infrastructure'. OECD Working Paper on Insurance and Private Pensions No. 32.
- Knight, F.H. (1912). *Risk, uncertainty, and profit*. New York: Dover.
- Kpessa, M. and Béland, D. (2012). 'Transnational actors and the politics of pension reform in sub-Saharan Africa'. *Review of International Political Economy*, 19(2): 267–91.
- Larkin, B. (2013). 'The politics and poetics of infrastructure'. *Annual Review of Anthropology*, 42: 327–43.
- Lazzarato, M. (2015). *Governing by debt*. South Pasadena: Semiotext(e).
- Lindell, I., Nordström, J. and Byerley, A. (2016). *New city visions and the politics of redevelopment in Dar es Salaam*. Uppsala, Sweden: Nordiska Afrikainstitutet.
- Lobo-Guerrero, L. (2011). *Insuring security: Biopolitics, security and risk*. New York: Routledge.
- Lobo-Guerrero, L. (2016). *Insuring life: Value, security and risk*. London: Routledge.
- Macamo, E. (2018). 'Urbane scholarship: Studying Africa, understanding the world'. *Africa*, 88(1): 1–10.
- Moeran, B. (2005). *The business of ethnography: Strategic exchanges, people, and organizations*. Oxford: Berg.
- Møldrup Wolff, S. (forthcoming). 'Dream faculties: Polyphonies of planning and becoming in Kigamboni, Dar es Salaam'. PhD thesis, University of Copenhagen.
- Myers, G. (2011). *African cities: Alternative visions of urban theory and practice*. London and New York: Zed Books.
- Nyerere, J.K. (1967). *The Arusha declaration and TANU's policy on socialism and self-reliance*. Dar es Salaam, Tanzania: Publicity Section, TANU.
- Pieterse, E. (2014). 'Epistemological practices of southern urbanism'. Draft paper presented at the African Centre for Cities Academic Seminar, 21 February, Cape Town.
- Rankin, W.J. (2009). 'Infrastructure and the international governance of economic development, 1950–1965'. In J.-F. Auger, J.J. Bouma and R. Künneke (eds), *Internationalisation of infrastructures*, 61–75. Delft: Delft University of Technology.
- Rupprecht, A. (2007). 'Excessive memories: Slavery, insurance and resistance'. *History Workshop Journal*, 64(1): 6–28.
- Simone, A. (2004). *For the city yet to come: Changing life in four African cities*. Durham, NC: Duke University Press.
- Simone, A. (2019). 'Dialogues in development: Lives through an extending urbanism'. Lecture given at the Bartlett Development Planning Unit, University College London.

- Simone, A-M. and Pieterse, E. (2017). *New urban worlds: Inhabiting dissonant times*. Cambridge: Polity.
- Strathern, M. (1996). 'Cutting the network.' *Journal of the Royal Anthropological Institute*, 2(3): 517–35.
- Strathern, M. (2000). 'Introduction: New accountabilities.' In M. Strathern (ed.), *Audit cultures: Anthropological studies in accountability, ethics and the academy*, 1–18. Abingdon: Routledge.
- Sy, A.N.R. (2017). *Leveraging African pension funds for financing infrastructure development*. Washington, DC: African Growth Initiative of the Brookings Institution and the United Nations Office of the Special Advisor on Africa.
- Weiss, B. (2004). 'Street dreams: Inhabiting masculine fantasy in neoliberal Tanzania.' In B. Weiss (ed.), *Producing African futures: Ritual and reproduction in a neoliberal age*, 193–228. Leiden: Brill.
- Wentworth, L. (2013). *Financing of infrastructure*. Johannesburg: South African Institute of International Affairs, WITZ.
- Wright, S. (1994). *Anthropology of organisations*. London: Routledge.

Conclusion: from an 'infrastructural turn' to the platform logics of logistics

Michael Keith with Andreza Aruska de Souza Santos

The history of modernity is not so much about the progress of reason as it is about the history of reason's unreason. (Mbembe, 2017: 208)

When we started this volume with a research council-funded set of projects, we invited successful members of a collective endeavour to share their results across diverse teams and research interests. The collection reflects the equally diverse answers to the sorts of questions we were trying to address. Many chapters also implicitly or explicitly ask what it means to invoke a notion of the 'African city'. Some of the reasoning that informed this curation of work we explored in the introduction. In the conclusion of the volume we want instead to suggest, if tentatively, routes out of the collection that point to different sorts of scholarship on urban futures. These might also be understood as different dispositions that emerge logically from the chapters collected here.

In the nature of academic production times we finished the volume (and rewrote this conclusion) some time after the research was completed, at a moment when the COVID-19 global pandemic in the space of three months rewrote the script of normality. What had been normal in daily life, work life, state actions and economic governance was up for grabs. As the pandemic made global connections at a speed rarely anticipated, what happened in Wuhan suddenly became profoundly relevant in Tehran, in Madrid, in Lombardy, London, New York and New Orleans as much as in Cape Town, Kampala, Lagos, Dar es Salaam or Johannesburg.

In spite of media rhetoric that COVID-19 democratised death globally, the reality was quickly seen to be very different. New demographics of vulnerability built the foundations of new social divisions. They legitimised equally new demographics of future surveillance. The elderly were most affected, the youngest and women less so, but other categories of morbidity and vulnerability were identified and at times subject to specific controls through new measures such as social distancing. But most significantly it was – as always – the poorest and the stigmatised that were most at risk. In New York City black residents were twice as likely to die of the virus.

In cities without sophisticated public health infrastructures, these disparities manifest disproportions across different demographic dividing lines. Cities coped with varying degrees of success, some with inventive solutions. There were major differences in death rates at the scale of the nation state. Counterintuitive geographies challenged conventional understandings of public health outcomes. Successful South African city organisation of community-based networks of tracking and tracing on the ground contrasted with the grim spectacle seen in the capital of global finance in New York. Between countries, differences were commonly attributed to the particular combinations of strong public health infrastructure, successful state surveillance of private mobility data and social control in places with strong state institutional capacity such as China and Korea, reflecting national political contexts and institutional forms. Clearly, what was at stake was a moment when global forces landed locally, reconfiguring the DNA of cities through multiple drivers that distinguished unevenly between urban concentrations on the planet. Such diversity reflected distinctive combinations of social and material conditions in different cities that qualify the propensity of cities to respond to sudden change, partially traced to what has been described as an ‘infrastructural turn’ in studies of the contemporary city.

As we suggested in the introduction, the recognition of the powers of combination of social, cultural and material forms at the heart of the putative ‘infrastructural’ turn in urban studies could be traced back a decade or more in anthropology and other disciplines. In the introduction we also drew genealogically on the twentieth-century research of anthropologist Jane Guyer that influenced Achille Mbembe’s breakthrough volume *On the postcolony* (Mbembe, 2001). In the conclusion we turn to their work again heuristically, instead to consider how what is shared by some of the authors of this volume might take this ‘turn’ forwards. For Guyer,

in her more recent work reflecting on a long career, the particularities of (normally African) context demand an analytical imagery appropriate for the third machine age. She characterises the ‘real economy’ in any place at a particular time as an aggregation of ‘platforms’. Her definition of the *platform economy* is both more analytically specific and more long term than in most common usages of the term. The platform for her is an infrastructural framework for diverse applications, but also ‘a stage for amplification of some voices and presences over others; a focus of collective access and attention; a way of enabling specific owners and engineers to reorient it for new purposes; and a place for announcing originality’ (Guyer, 2016: 4).

In Guyer’s coinage the platform economy is not just something *becoming* but is a form that in some ways has *always been*. As invoked today it most commonly tends to be seen as the invention of disruptive tech corporates, either FAANG (Facebook, Amazon, Apple, Netflix and Google) in the US or BATX (Baidu, Alibaba, Tencent and Xiaomi) in China. But these platforms are merely a logical end point to the geographically and historically contingent architecture of markets, impure mixtures of cultural life, law and economics. The platform for Guyer is instead an architecture that connects infrastructures through the triplet of ‘legacies, logics and logistics’ (Guyer, 2016). In the chapters of this volume these infrastructures make visible systemic combinations of resilience, informality, city morphology, food, water, waste and power. Guyer’s framing closely corresponds to these themes: the sense of the path dependencies of urban form (their legacies), the structures of scientific knowledges that make the workings of cities visible (their logics) and the forms of infrastructural combinations that lubricate their working (their logistics).

Because – as some of the authors we considered in the introduction also stress – for all the litanies of dysfunctional facets of urban life, African cities do in many ways ‘work’. How they are made to work is a matter of logistics, however durable. This is why ‘the platform as an image also invokes an architectural structure in the most literal sense; vulnerable to heedless neglect of the need for repair or updating; weakened by zealous hacking into its foundations and pillars, open to renovation and embellishment’ (Guyer, 2016: 4). In one sense logistics emerges as a category of analysis as the combination of infrastructures, networks and urban speed. And so the logistics of the city highlight a focus of study that is both substantive and dispositional, a descriptive inquiry into why cities

work the ways that they do alongside a translational obligation for scholarship to consider how things might configure differently. This links the introduction's consideration of epistemology and disposition to a possibly emergent nuancing of urban studies by the considerations of such platform logistics.

In the introduction we used the work of Achille Mbembe to highlight what we suggested are diverse understandings of what the interdisciplinary project of urban studies might mean in an African context. We focused in particular on issues of *epistemology* and sensibilities of *disposition*.

In terms of the *epistemologies* of different natural sciences and social sciences we suggested that diverse disciplines, professions, forms of knowing the city, are based on sometimes incommensurable analytic structures. They cannot always be reconciled. They may be logically correct in their own terms but, as they land in the cities of distinct parts of Africa, the interface between one logical system and others locally disturbs complex systems differently, disrupts existing configurations of social, economic and ecosystem life in unique patterns and combinations. We argued for a recognition that different epistemologies make visible different subjects *in* the city and *perform* very differently in city halls, stock markets and community halls alike. They privilege diverse scales of time and space. This makes it important to render visible how privileging one discipline at the expense of another excludes some concerns and generates trade-offs between competing ways of making sense of urban dynamics. In this way it is important to ask, for example: What do engineering solutions not consider? What do resilience strategies create as well as prevent? What does a priority on energy transition disrupt in informal economies that sometimes sustain the majority of city residents?

In terms of *disposition* we argued for a commitment to forms of *translational* research. The chapters in this volume echo a theme about the shortcomings of different approaches to the city. They highlight what is not achieved and what is (not always but too often) excluded by certain kinds of research as well as what they address. For example, at times both neoclassical economics and critical urbanism can share an ethical complacency: the former by burying ethical dilemmas in norm-free science, the latter by complacently assuming the moral high ground. Sustainability science can exclude the impossible dilemmas of intergenerational ethics. Engineering, hydrology, architecture and planning are as situated in place as the cultures and the calculus of risk examined in Dar es Salaam in

Irmelin Joelsson's chapter here. So the sense of the dispositional that we argue for in this volume is one that maintains a respect for both the critical deconstruction of existing conditions of the city and for the careful deployment of new forms of social scientific data analytics alongside it: the logics of utility-optimising forms of economics, the array of natural scientific techniques for diagnosing pathology and pattern. The sense of the translational is no more nor less than an invocation to researchers to combine a small dose of disciplinary humility with a commitment to make sense of why particular circumstances of history and geography might occasionally undermine their innate presuppositions. Reason and the rational are invariably situated.

One translator of his writing suggests that Mbembe offers an alternative 'cartography (of reason) in two senses: a map of terrain sedimented by centuries of history, and an invitation to find ourselves within this terrain so that we might choose a path through it – and perhaps even beyond it' (Dubois, 2017: ix). In his more recent work, *Critique of black reason*, Mbembe argues that it is *contact* between two worlds (Western and African) that has produced two narratives: the Western consciousness of blackness and the black consciousness of blackness (Mbembe, 2017: 27–9). He draws heavily on the work of Franz Fanon to situate his configuration of 'Black Reason' and the genealogy of such contact zones. Fanon's studies were in turn themselves rooted in a space that crossed medicine, psychiatry and political philosophy, and Mbembe suggests that Fanon's interdisciplinary reasoning demands a positioning of writing on Africa that is clearly *located*, a form of 'situated thinking, born of lived experience that was always in progress, unstable and changing' (Mbembe, 2017: 161). And so it is in this vein that David Theo Goldberg summarises in his reading of Mbembe's work that 'black reason is itself constituted ambiguously, partly from the outside, partly self-constituting' (Goldberg, 2018: 208).

This raises a dilemma that is directly relevant to the contributors of this volume. Mbembe's metaphor of contact is productive. *Contact* is experiential, cultural, ephemeral, based on difference of practices, pronouncements and discourses. It is *inside* the city where contact, contamination, creolisation take place. But it is also *outside* the city in transnational domains of teaching and practising, across diverse urban professions and a spectrum of urban sciences where different ideas flow. And it is outside the city that longer-term processes of global change and inter-national [*sic*] governance are realised.

It is in the contemporary urban arena that international knowledges that aspire to universal science come into contact with different morphological forms of the built environment and diverse conjunctural configurations of governance and rule. International finance flows across boundaries. Contact takes place in the recent past and the geographical present, evidenced in short-term historical legacies and diverse urban path dependencies. Professionals brought up in Africa, educated in the US and working for multinational European corporations may be at the helm of generic infrastructural regimes in specific city sites. In the search for universal reason scholars similarly seek excellence in medicine, engineering, waste disposal, hydrology and flood protection. And so it should be. It is after all better if a building stands up and a bridge does not fall down. Academics also cross boundaries. The taxonomy of African (or for that matter Chinese, Indian, Latin American) academics is likewise not straightforward when universities have built three decades of claims of elitism on the premise of liberalised international recruitments that configure common rooms of (limited) diversity and a transnational credentialising of area-based research expertise. To repeat an argument in the introduction of this volume, this is not making a case to surrender knowledge foundations of the natural sciences to any form of cultural relativism. It is instead making a case to make visible the routes through which both academic expertise and scientific practice travel and land.

Like Mbembe's characterisation of black reason, the 'African city' is constituted ambiguously, partly from the outside, partly self-constituting. Any understanding of it demands an analytical gaze that sees inside the urban but also places the city in global and relational context. A tension of critical distance. So in the conclusion it is some of these forms of contact that we considered it appropriate to consider, the dimensions of what might lie outside the definition of the African city that structure what goes on inside the categories of urbanism that are captured by the descriptor. We identify four such *contact zones* (Pratt, 1992) here, but they are offered more as exemplary rather than exclusive regimes of exchange through which these chapters might insert themselves into further stories of global urban transformation.

It is perhaps these contact zones that define some of the themes that emerge from this volume and suggest some, not all, possible avenues for further study in the field. They relate in turn to the sometimes fragile forms of global governance and international city networks, claims made

in the name of the Anthropocene understanding of the urban system at the planetary scale, the dynamics of climate change and the contours of global political economy. All of them constitute what we might understand as urban 'platforms'.

The contact zones of city networks internationally

It is clear that a growing number of international networks generate forms of exchange between cities. Michele Acuto and Steve Rayner (2016) identified a database of 170 city networks in 2015 to represent the range of formal organisations of cities in national and international affairs. These networks cover a wide range of alliances, consortia and coalitions, constituting the basis for formal and informal modes of exchange, learning and conversation. They range from the C40 network of the world's megacities committed to addressing climate change or grassroots networks such as Slum Dwellers International (SDI) to more formal structures, such as the United Cities and Local Government, more curatorial institutions working under the aegis of the United Nations (UN) such as UN-Habitat and its regular World Urban Forum or semi-formal groupings like the U20, set up to provide an urban voice to shadow the meetings of the G20 (Acuto and Rayner, 2016).

Some argue that cities are closer to realities on the ground than nation states: cities are forced to reconcile pragmatically the multiple demands and interests that structure governance of the here and now as much as high principles of the organisation of economy and demography. This argument generates a genre of writing that valorises the transformative power of cities individually to shape their own futures, even when faced with nation states either in denial about scientific truths or uncertain how to act in the face of issues that may be contentious in public opinion. In the US, city recognition of the demands of climate change were more realistic and more urgent than those found in the corridors of Donald Trump's Washington. The same is true for cities that form the Amazon Region, across nine different Latin American countries, whose climate policies may have more similarities with one another than their own nation states. The reality of irregular or 'illegal' migrants on the streets of urban Europe prompt actions that are obliged to consider public health in the light of people rendered invisible at the scale of the nation state but present in the hospital wards of the city.

The study of the proliferation of such city links across boundaries and the contact zones created in their wake has begun to be codified and researched. But there is perhaps limited demonstrable evidence of the extent to which they represent 'flat' networks of finite points of contact showcasing 'best practice' and mayoral missions or more embedded multidimensional forms of exchange between the complicated landscapes of urban governance internationally (Acuto and Rayner, 2016). It is also less clear how effective these networks are in providing meaningful flows of practice horizontally or leverage vertically within structures of global governance that are not themselves in the rudest of health. But they do represent arenas in which it becomes progressively less persuasive to speak entirely in the language of national or international exceptionalisms of urban transformation.

If one argument of this volume is that the 'local' matters in histories of the present and how forms of scientific expertise 'land', then it is also the case that city networks are arenas that provide contact zones between the designers, rulers, campaigners, civil society and private interests alike in a fashion that crosses borders. But such contacts and exchanges imply forms of communication that are themselves dependent on what political theorists would normally describe as the public sphere or spheres. Publics as well as public spheres do not exist in a social vacuum and their constitution needs to be situated similarly in terms of their geography and history. So any consideration of the efficacy of such city networks in Africa might need to make sense not just of the traffic of communication they facilitate but also the ways in which such communication surfaces in the arenas where community voices, political power and private interests meet across the continent.

Wale Adebani (2017) has argued recently that such publics in an African setting might be understood by revisiting the work of 1970s sociologist Peter Ekeh and placing his writing in dialogue with Foucauldian understanding of regimes of governmentality. Of significance here, Adebani argues that the conventional reading of the bourgeois public sphere needs to be rearticulated through a history of Africa's 'two publics', the civic and 'primordial' domains formed through colonialism that remain a facet of political life in the present. The case is strong and in some ways echoes the argument Mahmood Mamdani made two decades ago, also discussed in the introduction. But most straightforwardly the diverse existence of the forums of urban public debate, pedagogy and professional practice

nationally as much as in Africa itself might be deemed worthy of further research consideration in framing continental city futures.

The contact zones of the Anthropocene

To the extent that the configurations of the African city are particular and unique, some of the drivers of urban form and city futures also share influences that operate at a planetary scale. Most obviously a burgeoning field of interest across social and natural science has focused on how the long history of humanity is worthy of recognition in geological time in its duration and analytical scrutiny in consideration of the many, sometimes catastrophic, impacts humanity has delivered to the globe (Lewis and Maslin, 2015). In this definition of the ‘Anthropocene’, the move of humanity to cities has been a clear marker, structuring its dynamics of environmental degradation and depletion.

In a productive sense this may foreground the ethical dimensions of the global contact zone of the Anthropocene for the African city, where ‘ethical discourse ... must account for the indebtedness and responsibility of human life to the “inhuman” and also “non-vital” forces of the earth’ (Skrimshire, 2019: 64). After all, the city belongs to those who have yet to be born and those who are yet to arrive, not least in Africa itself. But thinking ethically, juxtaposing human and geological times of the Anthropocene generates its own problems, not least the surfacing of the rational foundations of diverse traditions of philosophical thought (De Landa, 1997). Stefan Skrimshire has argued that the rooting of such discussions cannot ignore the historical genealogies and influence of European thought in particular, arguing for the continued relevance of post-secular processes that acknowledge that many of the ethical debates about city futures owe more to the *longue durée* of Christian legacies and other faith-based traditions (Gray, 2002). It also defines a territory where different forms of scientific knowledge engage with multiple forms of moral philosophy.

As a professor in the philosophy of science, Isabelle Stengers’ work over recent decades working across both natural sciences and philosophy has pioneered a critical analysis of the ways in which such scientific knowledges can be simultaneously both analytically powerful and instrumentally appropriated. Among other areas, her writing has examined how scientific findings are established and verified and in particular how technical facts translate into political problems rather than as straightforward trade-offs between technical solutions (Stengers, 2003). Building on this corpus of

work considering the ways in which science comes into the world, Stengers also has a cautionary take on what she critiques as the ‘intrusion of Gaia’ (Stengers, 2015: 41). Her work *In catastrophic times* outlines how the ‘cold panic’ induced by looming ecological crises such as climate change is actively produced by the so-called ‘guardians’ of the status quo. Crisis is for her too often translated into new regimes of governance that privilege some interests over others while claiming legitimacy in the name of all.

For Stengers the ethical dilemmas of the indifference of Gaia to humanity’s fate can only be addressed by living with the ecological damage done by humanity and to engage with it on a temporality that is plausible. Her powerful analyses at the interface of natural science and philosophy work across the borders of both. She considers how the early history of the twenty-first century demonstrates the manner in which the appropriation of the catastrophic serves particular interests. It amplifies securitisation and division in New Orleans and across the US in the aftermath of Hurricane Katrina. Science in the face of catastrophe can be manipulated by urban actors, logically today perhaps in the wake of the COVID-19 global pandemic. It has the propensity to camouflage specific interests in the guise of public goods.

In a sense the issue is again dispositional. Carelessly considered, the stinging analysis of how the ecological crises are manipulated by particular interests at particular times is one of many hallmarks of Stengers’ work. But more recently, historical examples of how ecological crisis can be manipulated by ‘guardians’ of specific interests leads to the assertion by Stengers (2015: 74) that ‘the state must not be trusted’. One problem with such an assertion is that such a disposition opens the way for an equivalence (not made by Stengers herself) between culpability and interest. There might just be enough guilt to go round. So while her work is extremely powerful, we may yet need research that interrogates the distribution of interests but does not sacrifice the imperatives to organise around how states generate institutional capacity and scientific expertise internationally, nationally and at the city scale to intervene in the social and economic domains as well as the regimes of ecosystems. In a post-COVID-19 world the appeals to strip the state or the city of their capacity to intervene in social, economic and ecosystem domains in situations of pressing need may appear less appealing than in recent decades, even if we might remain cautious about who controls the levers of their powers.

For example, waste ‘brings into sharp resolution the interplay between geological processes stretching through deep time, and humanity’s short-run

but significant activity' (Hird, 2017). Waste connects here and there, past and present. Shipped between places, produced in one place to service the demands of another, it creates its own contact zones. Hird suggests that its 'placelessness' exemplifies Stengers' critique of the limits of logics of (localised, placed) citizenship. But if we do not trust the state naively we would be foolish to understate its propensity to act, to regulate and to intervene. It is this context that the chapter by Henrik Ernstson and colleagues in this volume needs to be considered alongside their critique of the vein of thinking and writing through the lens of the Anthropocene, or what they elsewhere describe as the 'Anthropo-obScene' (Swyngedouw and Ernstson, 2018). They catalogue what they describe as a series of views through this lens that they call 'Anthropo-obScenes' ranging from geo-engineering and earth system science to more-than-human and object-oriented ontologies that 'place' things and beings, human and non-human, suggesting that such framing is unhelpful. For Erik Swyngedouw and Henrik Ernstson, such thinking is hermetic, it has no outside that allows engagement from alternative points of view. Hence their argument in this volume that waste in contemporary Africa needs to be understood socially, economically, ecologically and politically at the same time. They start from an alternative lens while not undermining Stengers' consideration of the relationship between interests and scientific knowledges, a recurrent theme that describes one of the key contact zones we are trying to analyse in this collection and that may be generative of pragmatic, locally engaged urban research that is aware of its planetary setting. It also begins to foreground a sense less of 'not trusting the state' in urban contexts than surfacing the terms of engagement between government and people, the transactional flows between 'states' and 'publics' in shaping city futures in Africa and elsewhere.

The contact zones of the climate crisis

But perhaps the most pressing contact zone of the Anthropocene for African urban futures is the domain of global climate change, realised globally but with profoundly spatialised differences of outcome. This is already witnessed in evidenced and imminent sea-level change, global warming and associated processes driving agricultural systems, population mobilities and the propensity to flood massive demographic concentrations in many African cities but also in locations as diverse as the eastern seaboard of China and large areas of Bangladesh. For the UN the continent of Africa is particularly vulnerable to such climate change in key domains

of water supply, coastal ecosystems, food security and public health (ACPC, 2013).

Cities globally may often witness the most severe forms of 'lock-in' challenges as optimal long-term locations for urban settlements on floodplains and coasts become rapidly susceptible to extreme weather events. More positively, Harriet Bulkeley et al. (2014) have argued that the diversity of city forms allows room for a more positive sense of the possibilities of developing new interventions in the urban fabric to address issues of climate change adaptations. Cities in the global north have become locked in to environmentally wasteful norms and practice. In principle this opens up scope for more ecologically sustainable urban transformations. At a mundane level there is no need to mix brown and white water and supply potable water through domestic toilets as in most of Europe. There is no need – as in much of the Americas and the developed north – for buildings to depend on such high demands for air conditioning and cooling systems that ignore nature-based and architectural alternatives that might be cheaper and more ecologically friendly.

But principle and practice can be at a distance from one another, in turn highlighting the multi-scalar lenses necessary for the urban responses to such profound environmental reshaping of the planet, the capacity of nations and cities to adapt to rapid change. This is sometimes highlighted through discourses of adaptation and of resilience, as Mark Pelling and colleagues explore in this volume. And as their chapter demonstrates, it is possible to learn resilience transnationally while acknowledging urban differences between and within nation states, at the same time being careful how resilience interventions can serve to amplify rather than mitigate divisions of economy and society.

Dipesh Chakrabarty (2008) has argued that global demographics are the 'elephant in the room' in the age of climate change, an elephant that undermines humanistic reason. National debate and single actions are limited in the face of rapidly evolving developmental trends internationally. For Chakrabarty this demands a sensibility that recognises transnational senses of obligation and a metric of intergenerational ethics. It surfaces the moral debts that exist across borders of time and space at a time when the approximately 3 billion combined populations of China and India, let alone the additional forecast demographics of Africa, require much in the way of carbon-fuelled emissions and development to catch up with the economies most responsible for global warming over centuries. Whichever way the calculation plays out, African cities may be the source

of innovative adaptation and localised solutions but their power will always be dependent on alliances that stretch beyond metropolitan and national boundaries.

Chakrabarty has questioned the implicit logic of an increasingly global debate on climate change. He suggests that the International Panel on Climate Change (IPCC) focus on greenhouse gases and the technological wit to retrofit global systems for a carbon-zero future privileges knowledge centres in the global north. Their positionality is contrasted with an alternative disposition that suggests that climate change should be seen as 'part of a complex family of interconnected problems, all adding up to the larger issue of a growing human footprint on the planet that has, over the last couple of centuries and especially since the end of the Second World War, seen a definite ecological overshoot on the part of humanity' (Chakrabarty, 2017: 29).

In part, the latter perspective leads in a direction similar to Stengers because it also became clear who set the terms of the discourse. It was the scientists of nations that played a historical role in precipitating the problem of global warming through their emission of polluting greenhouse gases – for example, the United States, the United Kingdom, Australia and other developed countries – who played two critical roles: as scientists, they discovered and defined the phenomenon of anthropogenic climate change, and as public intellectuals they took care to disseminate their knowledge so that the matter could be debated in public life in an informed manner. (Chakrabarty, 2017: 35)

But when highlighting the geographies and forms of expertise that are made visible in the domain of climate change, and the work of the IPCC in particular, Chakrabarty may be at least in part missing the point. In this vein Nicholas Beuret (2017) cites the argument from a prominent NGO worker present at a recent IPCC round of talks that were heading for impasse. They asserted:

the best deal would be no deal as any deal would just make the problem worse ... any international agreement between governments would in all likelihood make the problem worse by enshrining the particular economic processes that produce climate change, making them legitimate and giving them the veneer of being solutions to a problem rather than its cause. An international agreement would make things 'more fucked', rather than less. (Beuret, 2017: 259)

And while Chakrabarty's scepticism about the geographies of scientific expertise may or may not be well justified, there is always a danger that

the flaws of the geopolitical present might prompt an unintended politics of the global future of similar nihilism. In contrast perhaps, several of the chapters in this volume attempt to think through what local interventions might be possible; how African cities might make their own sustainable futures, if not in global conditions of their own making. In thinking about risk, resilience, energy poverty, dwelling and waste, various chapters ask what sorts of interventions might be most likely to realise more sustainable urban transitions.

When prioritising the sorts of intervention most effectively championed by philanthropic organisations and funding, the Rockefeller Foundation has powerfully analysed the importance of energy poverty as a major barrier that might be susceptible to fundable interventions that can generate a step change in economic fortunes. It has identified sustainable energy transitions as a focus to define the most effective interventions in some parts of the world (Rockefeller Foundation, 2019). And certainly while energy poverty is critical to systemic ‘underdevelopment’, it is also the case that landing Western systems out of context can produce catastrophic failures. Notoriously, the US Agency for International Development (USAID), hardly the most radical voice, condemned attempts to fund a standard power plant and grid system in Haiti in the wake of the 2010 earthquake which wasted US\$30 million or more through failing to understand a context of weak state structures and poor private-sector capacity, resulting in ‘misjudged demand, stalled reforms and deficient oversight’ (USAID, 2018).

Set against such high-profile failures, the Rockefeller Foundation advocates for local community-based solutions and ownership of small-scale micro-grids, recognising the challenges and disasters of trying to create twentieth-century utility infrastructures in sites where both private and public providers are institutionally weak, financially challenged and vulnerable to capture of public goods by private interests. Its investment in India in particular is scaling up, but some challenge how the new interventions will hit the ground in informal settlements where ‘generator wallahs’ provide power to invisible majorities in some urban spaces and a subsistence living for themselves in contexts where informal realities may outweigh the logics of formal and ostensibly rational city protocols and public goods.¹

Similarly, in South Africa, where municipal revenues are in part tied to energy provision, the local context may provide paradoxical problems while still recognising the imperative for sustainable energy transitions. Informal settlements may not be able to manage the solar panels that

could potentially provide immediate power, while municipalities are incentivised to power cities on grid rather than off grid through a distributed network by the architectures of city governance that tie their ability to intervene in just urban transitions to revenues on the ground.

In this spirit, as the chapter by Federico Caprotti and colleagues explores in this volume, the influence of global institutions in rethinking the carbon consequences and practical development of energy systems can be seen on the ground but also invokes the local configurations of human needs. Infrastructural systems are socio-technical systems. An appropriate understanding of both the social construction of need and the technological construction of digital platforms and how new technologies land in place will caution against a straightforward celebration of an African platform urbanism (Caprotti, 2018). Again the domains of climate change knowledges, practices and politics stretch beyond the inside of the South African city but simultaneously valorise the contributions of this volume to a wider debate.

The contact zones of economy and finance

As various chapters in the volume describe and imply, the development of cities across Africa is structured by both local and international capital (Goodfellow, 2018). Modes of investment create forms of contact between global norms, local interests and fiscal architectures that become financial infrastructures in their own right that interface with the built form of the city. Within urban studies there has been both a long-standing recognition of how the city is made 'in the image of capital' and a more recent strand of work on the manner in which built forms such as housing and major infrastructural interventions become a focus of contemporary city life through the increasing 'financialisation' of urban development. Financialisation is generally understood as the increasingly sophisticated ways in which major investments can be managed through the appropriate stewardship of debt financing, whether by the state or by markets, structuring investment as a return on a calculable risk. This can at times be too easily equated with the forms of economic governance reforms characterised most often in terms of the histories of neoliberalism (Davies, 2014). Some authors have made the point that this is too simplistic, that implicit in the financialisation of urban transformation are both new temporalities (Grafe and Hilbrandt, 2019) and new demographics (Loftus and March, 2017). As Aeron Davis and Catherine Walsh argue, it is analytically

important to distinguish financialisation from the neoliberal because the former involves sometimes overlapping but fundamentally different ways of 'knowing' the city, making sense of city futures. Financialisation for them requires specific epistemologies involving the creation of money in financial markets, the transactional focus of finance, the centrality of financial markets to economic management, the orthodoxy of shareholder value, and the intensely micro-economic approach to financial calculation (Davis and Walsh, 2017).

What this might mean in the contact zones of the African context is uncertain. As we described in the introduction, a significant World Bank report has argued that what holds back the 'African lions' of urban development is the insufficiently open markets (Lall et al., 2017). But markets have different architectures (Hall and Soskice, 2001), and how such markets might be regulated begins to define a contact zone between international investment and the African context. As the cautionary chapter by Joëlsson demonstrates, it should be straightforward to use the financialisation of a long-awaited bridge in Dar es Salaam to generate a reasonable return on capital investment from China, support from the World Bank and technical engineering knowledge from Egypt. But the contact zones of finance and city generate new disruptions between economy, emergent state welfare and local articulations of risk management. In this sense, perhaps, emerging contact zones of international finance and African urbanism demand a close scrutiny of how economic expertise and new financial instruments, flows and infrastructures also land in place.

Implications for the everyday reader, for city hall, for scholarship

This message of the chapters of this volume, its introduction and conclusion share an appeal not to discount the knowledge of 'experts'. But it is also an assertion that such knowledges are invariably going to privilege some logical structures and causal chains over others. In the most basic rules of complex urban systems, the interdependencies of these forms of knowledges and practices sit at the interfaces of different city systems – in the way that electrification reconfigures markets, waste disposal reconfigures hydrology, behavioural norms and forms reconfigure the public health interventions of new systems of governance by surveillance.

These interfaces surface ethical dilemmas. They do not provide straightforward answers. Their architecture defines their structure as urban

'platforms'. If it is the role of critical scholarship to make visible the inequities of emergent forms of urban life, it is also the imperative of the social sciences to make clear what is social about the adoption of different diagnostic forms of expertise and the trade-offs that are at stake when comparing different city logics. At times urban studies has been stronger on the former than the latter. So as the African studies specialist Elísio Macamo advocates in understanding specifically *urban* studies in Africa:

We don't study the urban for the sake of the urban. We study it in order to know how to study it. ... Scholarship is not defined solely by the conclusions we can draw about our study objects. It is also, and perhaps more fundamentally, defined by the ability to reflect on the best way to organize our ways of knowing. (Macamo, 2018: 8)

As we submitted this volume to a UK publisher, politicians at the heart of the COVID-19 global pandemic repeated *ad nauseam* every night on mass media that their actions 'followed' the science. They were obliged to reconsider the critique of 'experts' that was central to the global rise of populist leaders such as Bolsonaro, Modi, Putin, Johnson and Trump in the 2010s. In part this might be seen as a responsible alternative to the nostrum that 'you can have your own opinions but not your own facts,' so strongly critiqued in the piece by Nobel economist Paul Krugman which we quoted in the introduction. But it also worked transparently as rhetoric, an early attempt to shift the blame for uneven numbers of the dying between cities and between nations away from the domain of the political, a strategy of what some might describe as the 'post-political'. If it was the scientists who got it wrong in anticipating the scale of the pandemic, then perhaps logically it was scientific reason rather than weak political will or entrenched social divisions that was at fault for the variations in mortality. But perhaps inevitably it also inadvertently politicised the science as divisions arose between different scientific disciplines measuring epidemiology against virology against World Health Organization policy. In this volume, in the wake of such 'post-truth politics' across the globe, we have gently suggested not simply that the science should be 'politicised' for African cities in the face of the exponential urban growth across the continent. Instead we argue for an understanding of how science lands in place in the shaping of infrastructural urban futures; how the platforms of urban life are lubricated by the logistics of knowledge flows and governance practices. The difference is more a matter of disposition. Because, as Mbembe suggests in an African context, 'the history of modernity is

not so much about the progress of reason as it is about the history of reason's unreason' (Goldberg, 2018: 208).

Note

- 1 This insight was generated in an ethnographic project by Bhawani Busawala as part of the PEAK Urban programme (www.peak-urban.org). See also Oda and Tsujita (2015: 11).

References

- ACPC (African Climate Policy Centre) (2013). 'Vulnerability to climate change in Africa: Challenges and recommendations for Africa'. *Clim-Dev Africa*, Policy Briefing 2.
- Acuto, M. and Rayner, S. (2016). 'City networks: Breaking gridlocks or forging (new) lock-ins?'. *International Affairs*, 92(5): 1147–66.
- Adebanwi, W. (2017). 'Africa's "two publics": Colonialism and governmentality'. *Theory, Culture & Society*, 34(4): 65–87.
- Beuret, N. (2017). 'Review: Isabelle Stengers, *In catastrophic times: Resisting the coming barbarism*'. *Theory, Culture & Society*, 34(7–8): 259–64.
- Bulkeley, H., Castán Broto, V. and Edwards, G.A.S. (2014). *An urban politics of climate change: Experimentation and the governing of socio-technical transitions*. London: Routledge.
- Caprotti, F. (2018). 'Future cities: Moving from technical to human needs'. *Palgrave Communications*, 4(35): 1–3.
- Chakrabarty, D. (2008). *Humanism in an age of globalisation*. Barcelona: Centre de Cultura Contemporània de Barcelona.
- Chakrabarty, D. (2017). 'The politics of climate change is more than the politics of capitalism'. *Theory, Culture & Society*, 34(2–3): 25–37.
- Davies, W. (2014). *The limits of neoliberalism: Authority, sovereignty and the logic of competition*. London: SAGE.
- Davis, A. and Walsh, C. (2017). 'Distinguishing financialization from neoliberalism'. *Theory, Culture & Society*, 34(5–6): 27–51.
- De Landa, M. (1997). *A thousand years of nonlinear history*. New York: Zone.
- Dubois, L. (2017). 'Introduction'. In Mbembe, A., *Critique of black reason*, ix–xv. Durham, NC: Duke University Press.
- Goldberg, D.T. (2018). "'The reason of unreason": Achille Mbembe and David Theo Goldberg in conversation about *Critique of black reason*'. *Theory, Culture & Society*, 35(7–8): 205–27.
- Goodfellow, T. (2018). 'Property and land value capture in the financial periphery'. Paper for Governing the Future City, ESRC End of Grant Workshop, London.

- Grafe, F-G. and Hilbrandt, H. (2019). 'The temporalities of financialisation: Infrastructures, dominations and openings in the Thames Tideway Tunnel.' *City*, 23: 606–18.
- Gray, J. (2002). *Straw dogs: Thoughts on humans and other animals*. London: Granta.
- Guyer, J. (2016). *Legacies, logics, logistics: Essays in the anthropology of the platform economy*. Chicago: University of Chicago Press.
- Hall, P.A. and Soskice, D. (eds) (2001). *Varieties of capitalism: The institutional foundations of comparative advantage*. Oxford: Oxford University Press.
- Hird, M.J. (2017). 'Waste, environmental politics and dis/engaged publics.' *Theory, Culture & Society*, 34(2–3): 187–209.
- Lall, S., Henderson, V. and Venables, A. (2017). *Africa's cities: Opening doors to the world*. Washington, DC: World Bank.
- Lewis, S. and Maslin, M. (2015). 'Defining the Anthropocene.' *Nature*, 519 (7542): 171–80.
- Lofthus, A. and March, H. (2017). 'Integrating what and for whom? Financialisation and the Thames Tideway Tunnel.' *Urban Studies*, 56(11): 2280–96.
- Macamo, E. (2018). 'Urbane scholarship: Studying Africa, understanding the world.' *Africa*, 88(1): 1–10.
- Mbembe, A. (2001). *On the postcolony*. Berkeley: University of California Press.
- Mbembe, A. (2017). *Critique of black reason*. Durham, NC: Duke University Press.
- Oda, H. and Tsujita, Y. (2015). 'Rural electrification revisited: The Case of Bihar, India.' IDE Discussion Paper No. 547.
- Pratt, M.L. (1992). *Imperial eyes: Travel writing and transculturation*. London and New York: Routledge.
- Rockefeller Foundation (2019). *Stimulating rural development through energy access*. Washington, DC: Rockefeller Foundation.
- Skrimshire, S. (2019). 'Deep time and secular time: A critique of the environmental "long view".' *Theory, Culture & Society*, 36(1): 63–81.
- Stengers, I. (2003). *Cosmopolitiques*. Paris: La Découverte.
- Stengers, I. (2015). *In catastrophic times: Resisting the coming barbarism*. London: Open Humanities Press.
- Swyngedouw, E. and Ernstson, H. (2018). 'Interrupting the Anthro-po-obScene: Immuno-biopolitics and depoliticizing ontologies in the Anthropocene.' *Theory, Culture & Society*, 35(6): 3–30.
- USAID (2018). *Misjudged demands, stalled reforms and deficient oversight impeded USAID/Haiti's sustainable electricity goals*. Audit report. Washington, DC: USAID.

Index

Page numbers in *italic* refer to figures.

- 100 Resilient Cities (100RC) [63](#), [89](#), [90](#)
- actor network theory [22](#)
- Acuto, Michele [172](#), [173](#)
- Addis Ababa [31–3](#), [45](#)
- data collection [38–9](#), [44](#), [45](#)
 - housing [31–2](#), [33](#), [45](#), [47](#)
 - Legetafo [32](#), [39](#)
 - major infrastructure projects [40](#)
 - Tulu Dimtu [31](#), [33](#), [38–9](#)
 - Yeka Abado [31–2](#), [38](#), [39](#), [43](#), [45](#)
- Adebanwi, Wale [173](#)
- African National Congress (ANC) [44](#), [125](#)
- Agence Française de Développement [66](#)
- anaerobic digestion [102–4](#)
- Anthropocene [174–6](#)
- auto-construction [35](#), [36–7](#)
- Barry, Andrew [18–19](#)
- Beuret, Nicholas [178](#)
- 'Black Reason' [170](#)
- borders [2–3](#), [175](#)
- boundaries [3](#), [4](#), [12](#), [171](#)
- Built Environment Support Group [82](#)
- Caldeira, Teresa [35](#), [36](#)
- Cape Town
- densification of urban form [128](#)
 - energy transformation [138](#)
 - informal settlements [121](#), [127](#)
 - provision of services [127](#)
 - waste-to-energy plant [103–4](#)
 - WesCape [128](#)
- carbon tax [135](#)
- catastrophic, the [175](#)
- Certified Emission Reductions (CERs)
[105](#), [106](#), [107–8](#), [109](#), [110](#)
- Chakrabarty, Dipesh [177](#), [178](#)
- Chari, Sharad [13](#)
- China [40](#), [168](#), [177](#)
- Christianity, fundamentalist [16–17](#)
- Clean City/Keep Ekurhuleni Clean programme [112](#)
- Clean Development Mechanism (CDM)
[100](#), [104–8](#), [114](#)
- financially legitimising waste-to-value projects [108–10](#)
- climate change [114](#), [131](#), [172](#), [175](#)
- contact zones [176–81](#)
 - collaboration [4](#), [5](#)
- colonial legacies [5–6](#), [150](#), [151](#), [173](#)
- commensuration [4](#), [6–7](#), [21](#)
- community
- participation [77–8](#)
 - waste management [110–13](#), [114](#)
- community construction management teams (CCMTs) [81](#), [82](#)
- Community Development Associations (CDAs) [62](#)
- community-led upgrading of informal settlements *see* [informal settlements in Durban metropolitan area, community-led upgrading of](#)
- Community Organisation Resource Centre (CORC) [88](#), [91](#)
- contact zones [170–2](#)
- Anthropocene [174–6](#)
 - city networks internationally [172–4](#)
 - climate crisis [176–80](#)
 - economy and finance [180–1](#)
- Conway, Declan [57](#)
- co-production [68](#)
- COVID-19 [166–7](#), [175](#), [182](#)

- Dar es Salaam
 gap between formal and informal life 157–8
 making connections in 144–6, 150, 159–60
 Nyerere Bridge 146–9
 tripartite structure of pension fund, insurance and 151–5
 peripheral developments 34
 self-reliance 143–4
 smart city 145
 urban imaginaries 153
 world city 160–1
- Davis, Aeron 180–1
- decentralised energy 127–8, 131–4, 137–8
- demographics, global 177
- densification of urban form 37, 128
- DesInventar 62, 66
- diaries 38–9, 45, 48
- disaster risk management and reduction 56, 57, 68
 in Ibadan 60–2
 in Karonga 58–60
 in Nairobi 63–4
 in Niamey 66–7
- Disaster Risk Management (DRM) policy, Malawi 59–60
- donor priorities 55, 59, 61, 66, 67, 68–9
- drivers of change 39–42
- Durban
 100 Resilient Cities Programme (100RC) 89, 90
 community participation in housing upgrades 77–8
 housing typologies 75
 see also informal settlements in Durban metropolitan area, community-led upgrading of
- ecological crises 175
- Economic and Social Research Council (ESRC) Urban Transformations programme 2
- economics 7–10, 16–17, 169
- economy and finance, contact zones of 180–1
- Ekers, Michael 34
- Ekurhuleni 111, 112
 embedded generation 132–3
- employment
 informal youth 157
 migrating in search of 85, 123
 in periphery 37, 40, 46, 47
 in waste value chain 107, 110, 111, 112, 113, 114
- energy poverty 123, 179–80
- energy transformations in South Africa 121–42
 in 2030 136–7
 access to electricity 123, 124, 126, 127–9
- barriers to moves to low-carbon energy 124–8, 179–80
- bottom-up 131–2, 137–8
- carbon tax 135
- challenges to inclusive 137–8
- decentralised energy 127–8, 131–4, 137–8
- democratisation of energy 133–4
- 'disruptive technologies' 131–2
- electricity distribution 125–6, 132
- embedded generation 132–3
- 'just transition' 122, 129–31, 135–6
- moving towards inclusive 133, 134–6
- pro-poor subsidies 126, 132
see also renewable energy
- epistemologies 15–23, 169, 171, 174, 178, 181
- Eskom 124, 125, 126, 132
- eThekweni 31, 32, 39, 41, 42–4, 43, 45
see also informal settlements in Durban metropolitan area, community-led upgrading of
- ethics of research 4
- Ethiopia 57
 urban peripheries *see* Addis Ababa
- everyday, the 42–5
- Fanon, Franz 170
- Farrelly, Megan 129, 130, 131
- Federation of the Urban and Rural Poor (FEDUP) 79–81, 83–4, 88, 91
 Namibia Stop 8 79–81, 80
 Piesang River 83–4, 83
- financialisation 180–1
 of waste 105–10
- Free Basic Electricity Tariff 126
- futurity 144, 145–6, 147, 148, 154, 156–7, 157, 159
- Gauteng
 data collection 48
 the everyday in 42–4
 languages 44
 Lufhereng, Protea Glen and Waterworks 38, 42, 44, 45
 waste management in Ekurhuleni 111, 112
 Winterveld 39, 44, 45
- Global Facility for Disaster Reduction and Recovery 61
- global north
 climate change debate 178
 'lock-in' challenges 21, 177
 urban theory 12
 waste management 99, 100, 101, 105, 109
- global south
 potential to avoid city 'lock-ins' of global north 21

- urban political ecology of waste
98–100
- urban scholarship 12–14
- waste management 100–1, 102, 113–14
- 'global suburbanisms' 34
- Goddard, George 129, 130, 131
- Goldberg, David Theo 170, 183
- governance
collaborative 63–4, 68, 110–13, 138
energy transformation in South Africa
and 104, 131–2, 137, 138
financial 150
fragmented 57, 59, 60–1, 63, 64, 65–6,
67, 68
global 171, 173
in Kenya 63–4
multi-level 57, 63, 64, 65, 137
in Niamey 65–6, 67
systems of rural 6
of Tanzanian social insurance schemes
153, 154, 156
in urban peripheries 36, 37, 39, 40, 41,
46
urban risk 56, 57, 58, 60, 62, 68
waste 100, 104, 110–13
- grassroots approaches
to planning processes 78
to supply of energy 131–2, 137–8
see also *informal settlements in Durban*
metropolitan area, community-led
upgrading of
- greenhouse gas emissions 96, 103, 178
CDM projects to reduce 104–8, 109,
110
- Guyer, Jane 11–12, 16–17, 152, 167–8
- Habitat for Humanity 82
- Haiti 179
- Havelock 85–7, 86
- Heffron, Raphael 129, 130, 131
- histories in place 5–6
- Homeless People's Federation 82
- housing
backlog on delivery 90, 123
condominium 31–2, 44, 47
densification challenges 128
as driver of local change 41–2
new satellite towns 128
policy in flood-prone Niger 65
self-build 75, 77–8, 78–9
Havelock 85–7, 86
Namibia Stop 8 79–82, 80
Piesang River 82–5, 83
spatial inequalities of apartheid 75,
123–4, 127
state 31, 40, 41, 46
top-down models for low-cost 76–7
types in eThekweni 75
in urban peripheries 31–2, 33, 35, 37,
40, 44–5, 46, 123
- Ibadan 60–2
- Idaban Urban Flood Management Project
(IUFMP) 61, 62
- Inclining Block Tariff System 126
- India 12, 100, 177, 179
- informal settlements
community participation in upgrading
77–8
definitions 75–6
demolition and relocation model 76
electrification 121, 127–8, 138, 179–80
incremental approach to upgrading 78,
89–90
local government leadership 88–9
in Nairobi 62, 63–4
new approaches to upgrading 88–90
in Niamey 65
prevalence in South Africa 73, 75, 89
services 121, 127–8
in situ upgrading models 76
solar panels 128, 179–80
- informal settlements in Durban
metropolitan area, community-led
upgrading of 78–87
challenges and lessons learned 81–2,
84–5, 90–1
community benefits 80, 84, 91
Havelock 85–7, 86
materials procurement 81, 84, 87, 91
methodology 78–9
Namibia Stop 8 79–82, 80
Piesang River 82–5, 83
savings groups 79, 82, 85
skills training 80, 84, 88–9, 91
tendering process 88, 91
women's involvement 79, 82, 84
- infrastructure 17–19, 167–8
of crowded cities 7
development in informal settlements
82, 91, 121, 128, 179
driving processes of exclusion and
marginalisation 130
energy 104, 124, 128, 130, 131–4,
179–80
financial 151–5, 161, 180
insurance as a form of 146
local small-scale interventions 41–2
major investments in 39, 40, 41, 180,
181
- Nyerere Bridge 146–9
tripartite structure of pension fund,
social insurance and 151–5
- in peripheries 34, 37, 40, 41, 47
significance of projects 148
upgrading to reduce urban risk 59, 61,
62, 66
waste 101, 104, 105, 113
- insurance
connections as a form of 144–6, 150
global expansion of 156

- history of modern 150
 operations in Africa 149
 popular 154
 in times of uncertainty 144, 146, 156–7
see also pension fund; social security
 interdisciplinarity in urban studies 2–3,
 3–4, 6–7
 International Panel on Climate Change
 (IPCC) 178
 investment
 attracting global 8
 contact zones 180, 181
 insurance schemes and 146, 147–8, 149,
 150–1, 153, 154
 major infrastructure 39, 40, 41, 180, 181
 in peripheries 34, 36, 37, 39, 40, 41, 46, 47
 promise of future 153
 ISULabaNtu project 73–4

 Jasanoff, Sheila 130, 131
 Johannesburg
 Jozi@Work 112
 Lufhereng, Protea Glen and Waterworks
 38, 42, 44, 45
 ‘A Re Sebetseng’ campaign 111
 solar water heaters 138
 Jozi@Work 112
 ‘just energy transition’ 122, 129–31, 135–6

 Karonga 58–60
 Kenya 62–5
 Krugman, Paul 9, 10
 Kyoto Protocol 1997 104

 Lall, Somik 7, 8, 181
 landfill gas projects 102, 103, 105, 106,
 107–8, 109, 110
 landfilling 100
 language issues 44
 Larkin, Brian 18, 19, 148
 Latour, Bruno 18, 22
 lived experience 41–2
 capturing the everyday 42–5
 loans from international agencies 59
 local 173
 collaborations on urban risk reduction
 58–60, 63–4, 66–7
 community participation 77–8
 energy policies 131–2, 133, 137–8, 179–80
 infrastructure interventions 41–2
 recognition of climate change 172
 systems of commensuration 4, 21
 waste management 110–13, 114
 Lufhereng, Protea Glen and Waterworks
 38, 42, 44, 45

 Macamo, Elisio 151, 182
 McCauley, Darren 129, 130
 McKinsey Global Institute 8

 Malawi 58–60
 Mamdani, Mahmood 5–6
 markets 7–8, 41, 181
 Mbembe, Achille 10–12, 23, 166, 167, 169,
 170, 182–3
 Watts’ response to 10–11
 methane flaring 107, 108, 109
 migration 13–14, 65, 74, 85, 123, 127, 172
 mixed methods research 31–3
 mobility
 population 174, 176
 surveillance of 20, 167
 in urban peripheries 36, 37, 40, 41, 47,
 123
 Molweni 31, 32, 39, 44
 Mukuru SPA 64, 68
 Muungano wa Wanavijiji 63–4

 Nairobi 62–5
 Mukuru SPA 64, 68
 Nairobi Urban Risk Partnership 64–5
 Namibia Stop 8 79–82, 80
 National Disaster Management
 Framework, Nigeria 60
 National Policy for Disaster Management,
 Kenya 63
 National Policy on Disaster Risk
 Reduction, Nigeria 60
 neoliberalism 16–17, 47, 180–1
 Network on Hydrometeorological Risks in
 African Cities (RHYYA) 66
 networks, international city 172–4
 New Horizons Energy 103
 ‘new urban sciences’ 20–1
 Niamey, Niger 65–7
 Niger Disaster Risk Management and
 Urban Development Project 66
 Nigeria
 Ibadan 60–2
 peripheries of cities 34–5
 Port Harcourt 10
 waste clean-up days 111
 non-governmental organisations (NGOs)
 59, 68, 82, 88, 91
 Nuttall, Sarah 10, 11, 12
 Nyerere, Julius Kambarage 143
 Nyerere Bridge 146–9
 tripartite structure of pension fund,
 social insurance and 151–5

 Oyo State Emergency Management
 Agency 61

 participatory action research methods 74,
 78–9
 PEAK Urban 21
 pension fund 146–8
 compliance visits 158–9, 160
 enrolment 155–6

- investments 146, 147–8, 150–1
 membership 157–8
 tripartite structure of bridge, social insurance and 151–5
 uncertainty 156–7
- People's Housing Process model 79–80
- peripheries 30–52, 123
 capturing the everyday 42–5
 case selection 38, 45–6
 categories of urban 36–8
 auto-constructed 36–7
 inherited 37
 speculative 36
 transitioning 37
 vanguard 36
 comparisons 45–8
 conceptualising 33, 35–6, 38–9
 diversity 46, 48–9
 drivers of change 39–42
 literature review 33–5
 mixed methods research 31–3
- Piesang River 82–5, 83
 Pieterse, Edgar 1, 12, 13–14, 40, 74, 151, 155
- platform economy 168–9
- popular insurance 154
- power purchase agreements (PPAs) 125
- public health 61, 65, 167, 172, 181
- public spheres 173
- qualitative methodology 32–3, 48–9
- Rayner, Steve 172, 173
- Reconstruction and Development Programme (RDP) housing
 Namibia Stop 8 79–81, 80
 Piesang River 83, 84
- recycling 101, 102, 110, 111, 113
- renewable energy 124–5, 131
 embedded generation 132–3
 Eskom's resistance to 124, 125, 132
 limitations in informal settings 127–8, 179–80
 small-scale waste-to-energy generation 103–4
- Renewable Energy Independent Producer Procurement Programme 125
- resilience 63, 64, 68, 177
- Revi, Aromar 56, 67, 68–9
- risk
 hedging and networking to mitigate 143–6, 150, 159–60
 insurance schemes and management of 149, 150, 152, 153, 154, 156–7
 popular insurance and 154
 risk-sensitive and transformative development, transitioning towards 53–72, 55
 accountability of local leadership 59, 65–6, 68
- blockages and opportunities 55–8, 55
 collaborations between government and communities 59–60, 62, 63–4, 64–5, 66–7, 68, 69
 data and forecasting 64, 66
 data and monitoring gaps 56, 58–9, 61–2, 66, 67, 69
 donor priorities 55, 59, 61, 66, 67, 68–9
 exposure to risk in sub-Saharan Africa 53–4
 fragmented governance 57, 59, 60–1, 63, 64, 65–6, 67, 68
 in Ibadan 60–2
 in Karonga 58–60
 in Nairobi 62–5
 in Niamey 65–7
- Robinson, Jennifer 12–13, 34, 98
- Rockefeller Foundation 179
 100 Resilient Cities (100RC) 63, 89, 90
- Roy, Ananya 12–13, 76, 98
- Rwanda 111
- savings groups 79, 82, 85
- Sawyer, Lindsay 34–5, 46
- Schipper, E.L.F. 57
- science and technology studies 20–1
- science of cities 20
- segregation, racial 123–4, 127
- self-build housing 75, 77–8, 78–9
 Havelock 85–7, 86
 Namibia Stop 8 79–82, 80
 Piesang River 82–5, 83
- self-reliance 77, 78, 143–4
- services
 in informal settlements 76, 87, 88, 90, 121, 127–8, 138, 179–80
 partnerships to provide 68
 in peripheries 37, 40–1, 47
 responsibility for delivery of basic 132
- Sierra Leone 60
- Simone, AbdouMaliq 13–14, 40, 41, 98, 150, 151, 155, 159
- social security 147, 149, 150, 156, 157
 tripartite structure of bridge, pension fund and 151–5
- socio-material flows 98–9
- solar
 panels 128, 132–3, 179–80
 water heaters 138
- South Africa
 constitution 135–6, 137
 COVID-19 167
 densification of urban form 128
 energy poverty 123
 exceptionalism 5–6
 governance 40, 104, 110–11, 137, 138
 housing
 challenge 74–5, 90, 123
 top-down 76–7

- prevalence of informal settlements 73, 75, 89
- racially segregated neighbourhoods 123–4, 127
- social inequalities in 100, 103, 104, 113, 123
- unemployment 111
- urbanisation 122–3
- urban peripheries *see* eThekweni; Gauteng
- see also* Cape Town; Durban; energy transformations in South Africa; eThekweni; Gauteng; informal settlements in Durban metropolitan area, community-led upgrading of; Johannesburg; waste management in South Africa
- South African Shack/Slum Dwellers International (SASDI) 77, 79, 85
- Special Planning Areas (SPAs) 64, 68
- Stengers, Isabelle 174–5
- Strathern, Marilyn 22, 151, 152
- suburbanisation 34
- Sustainable Development Goals (SDGs) 53, 54, 69, 90, 121
- Tanzania 143–4, 147, 154
- welfare 146–7, 149, 150, 153, 157
- see also* Dar es Salaam; pension fund
- temporality 15–17, 19, 149, 153, 156, 158
- Thomas, W.I. 15
- transformative urban development *see* risk-sensitive and transformative development, transitioning towards
- transitions theory 57, 68
- translational research 14, 169–70
- transport
- 2030 and public 128
- corridors, densification along 128
- facilities 36, 37, 41, 127
- high costs for low-income households 75, 123
- infrastructure *see* Nyerere Bridge
- Uber 22–3
- Uganda 40, 105
- uncertainty 144, 146, 152, 156–7
- unemployment 46–7, 101, 111
- United Nations Environment Programme (UNEP) 105
- United Nations Framework Convention on Climate Change (UNFCCC) 105, 107
- United States of America (US) 167, 172, 175, 179
- Urban Africa: Risk, Knowledge (Urban ARK) 54, 55, 60, 62, 64, 66, 69
- urban imaginaries 1–2, 12, 153
- urban planning 19–20, 56, 59, 65, 66
- grassroots processes 78
- urban political ecology (UPE) 98–100
- urban research
- diverse approaches to 7–10
- diverse dispositions to 10–14, 169–70
- diverse epistemologies of 15–23
- US Agency for International Development (USAID) 179
- uTshani Fund 79, 81, 82–3, 88, 91
- value extraction from waste 96, 97, 99, 101, 102, 104, 105, 107, 108–10
- Voortrekker Road Corridor 128
- Walsh, Catherine 180–1
- waste contact zones 175–6
- waste management in South Africa 96–120
- and across global south 96, 97, 100
- Clean Development Mechanism (CDM) financially legitimising waste-to-value projects 108–10
- internationalisation of financing 104–8
- community management 110–13
- Clean City/Keep Ekurhuleni Clean programme 112
- Jozi@Work 112
- WasteWise 112–13
- enclosing commons of 107, 109, 110
- international capital in 100, 102, 103, 109
- job creation and 107, 110, 111, 112, 113, 114
- literature review 99
- social ecologies of ‘greening’ 100–1
- as a socio-material flow 98–100
- technology and labour in 101–3, 114
- urban political ecology 98–100
- value extraction 96, 97, 99, 101, 102, 104, 105, 107, 108–10
- waste-pickers 96, 109–10
- waste-to-energy
- anaerobic digestion 102–4
- incineration 102
- landfill gas projects 102, 103, 105, 106, 107–8, 109, 110
- small-scale renewable energy generation 103–4
- WasteWise 112–13
- Watts, Michael 10–11, 12
- welfare 146–7, 149, 150, 153, 157
- see also* social security
- WesCape 128
- World Bank 7, 59, 61, 66, 123, 124
- world cities 160–1
- worldliness 160