

GENDER EQUALITY AND SUSTAINABLE DEVELOPMENT

For pathways to be truly sustainable and advance gender equality and the rights and capabilities of women and girls, those whose lives and wellbeing are at stake must be involved in leading the way.

Gender Equality and Sustainable Development calls for policies, investments and initiatives in sustainable development that recognize women's knowledge, agency and decision-making as fundamental. Four key sets of issues – work and industrial production; population and reproduction; food and agriculture; and water, sanitation and energy provide focal lenses through which these challenges are considered. Perspectives from new feminist political ecology and economy are integrated alongside issues of rights, relations and power. The book untangles the complex interactions between different dimensions of gender relations and sustainability, and explores how policy and activism can build synergies between them. Finally, this book demonstrates how plural pathways are possible, underpinned by different narratives about gender and sustainability, and how the choices between them are ultimately political.

This timely book will be of great interest to students, scholars, practitioners and policy makers working on gender, sustainable development, development studies and ecological economics.

Melissa Leach is Director of the Institute of Development Studies, University of Sussex, UK. Between 2006 and 2014 she directed the ESRC STEPS (Social, Technological and Environmental Pathways to Sustainability) Centre.

Pathways to Sustainability Series

Series Editors:

Melissa Leach, Ian Scoones and Andy Stirling

STEPS Centre at the University of Sussex

Editorial Advisory Board:

Steve Bass, Wiebe E. Bijker, Victor Galaz, Wenzel Geissler, Katherine Homewood, Sheila Jasanoff, Colin McInnes, Suman Sahai, Andrew Scott

This book series addresses core challenges around linking science and technology and environmental sustainability with poverty reduction and social justice. It is based on the work of the Social, Technological and Environmental Pathways to Sustainability (STEPS) Centre, a major investment of the UK Economic and Social Research Council (ESRC). The STEPS Centre brings together researchers at the Institute of Development Studies (IDS) and the Science and Technology Policy Research (SPRU) at the University of Sussex with a set of partner institutions in Africa, Asia and Latin America.

Titles in this series include:

Dynamic Sustainabilities

Technology, environment, social justice

Melissa Leach, Ian Scoones and Andy Stirling

Avian Influenza

Science, policy and politics

Edited by Ian Scoones

Rice Biofortification

Lessons for global science and development

Sally Brooks

Epidemics

Science, governance and social justice

Edited by Sarah Dry and Melissa Leach

Regulating Technology

International harmonization and local realities

Patrick van Zwanenberg, Adrian Ely and Adrian Smith

The Politics of Asbestos

Understandings of risk, disease and protest

Linda Waldman

Contested Agronomy

Agricultural research in a changing world

James Sumberg and John Thompson

Transforming Health Markets in Asia and Africa

Improving quality and access for the poor

Edited by Gerald Bloom, Barun Kanjilal, Henry Lucas and David H. Peters

Pastoralism and Development in Africa

Dynamic change at the margins

Edited by Ian Scoones, Andy Catley and Jeremy Lind

The Politics of Green Transformations

Ian Scoones, Melissa Leach and Peter Newell

Carbon Conflicts and Forest Landscapes in Africa

Edited by Melissa Leach and Ian Scoones

Governing Agricultural Sustainability

Global lessons from GM crops

Phil Macnaghten and Susana Carro-Ripalda

Gender Equality and Sustainable Development

Edited by Melissa Leach

Adapting to Climate Uncertainty in African Agriculture

Narratives and knowledge politics

Stephen Whitfield

‘Melissa Leach has brought together an outstanding team of practitioners and researchers to produce a crisply written and engaging review of the interlinkages among gender, environment and sustainable development. The forward-looking collection both challenges unsustainable pathways and charts new ones. A must read for all those working in the field of sustainable development.’

Wendy Harcourt, Associate Professor, Erasmus University, The Netherlands

‘This is an excellent volume, with both range and depth. It not only brings an essential gender perspective to the issue of sustainable development, but also highlights the insufficiency of recognising women’s contributions without providing them resources and voice. The lucid introduction, with its reflections on past and current debates, and on alternative pathways, is a significant contribution in itself.’

*Bina Agarwal, Professor of Development Economics and Environment,
University of Manchester, UK*

‘This timely book provides innovative and exciting ideas for both scholars and policy makers, challenging dominant market-led development models. It shows how pathways to achieve sustainable development and gender equality can be built through women’s collective action at the grassroots and supportive public investment and services.’

Diane Elson, Emeritus Professor, University of Essex, UK

‘This astute group of critical observers and participants dare to question the dominant narratives of capitalism, sustainability and development as well as facile gender and development formulas. They reiterate the critical feminist question “Sustaining what for whom?” and acknowledge the political choices embodied in green technologies, green economies and the feminization of planetary care work.’

Dianne Rocheleau, Professor of Geography, Clark University, USA

GENDER EQUALITY AND SUSTAINABLE DEVELOPMENT

Edited by Melissa Leach

First published 2016

by Routledge

2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge

711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2016 selection and editorial matter, Melissa Leach; individual chapters, the contributors.

The right of the editor to be identified as the author of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilized in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data

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

Library of Congress Cataloging-in-Publication Data

Gender equality and sustainable development / edited by Melissa Leach.

pages cm

1. Sustainable development. 2. Women in sustainable development. 3. Women's rights. I. Leach, Melissa, editor.

HD75.6.G46 2016

338.90082--dc23

2015009258

ISBN: 978-1-138-92130-6 (hbk)

ISBN: 978-1-138-92131-3 (pbk)

ISBN: 978-1-315-68645-5 (ebk)

Typeset in Bembo

by Saxon Graphics Ltd, Derby

CONTENTS

<i>List of boxes</i>	<i>ix</i>
<i>Notes on contributors</i>	<i>x</i>
<i>Preface and acknowledgements</i>	<i>xiii</i>
<i>Acronyms and abbreviations</i>	<i>xvi</i>
1 Sustainable development: A gendered pathways approach <i>Melissa Leach, Lyla Mehta and Preetha Prabhakaran</i>	1
2 Pathways towards sustainability in the context of globalization: A gendered perspective on growth, macro policy and employment <i>Elissa Braunstein and Mimi Houston</i>	34
3 Population, sustainable development and gender equality <i>Betsy Hartmann, Anne Hendrixson and Jade Sasser</i>	56
4 Re-framing food security as if gender equality and sustainability mattered <i>Sakiko Fukuda-Parr</i>	82
5 Gender and land grabs in comparative perspective <i>Michael Levien</i>	105
6 Transformative investments for gender-equal sustainable development <i>Isha Ray</i>	133

viii Contents

7	Gender equality and sustainable development: The limits and potential of global policy reports <i>Shahra Razavi and Seemin Qayum</i>	156
	<i>References</i>	167
	<i>Index</i>	202

BOXES

1.1 Forest pathways and gender equality	26
1.2 Different pathways in sanitation	28
4.1 Paradox of plenty: gender, ethnicity and race	86

CONTRIBUTORS

Elissa Braunstein is an Associate Professor in the Department of Economics at Colorado State University, USA. In her work she uses a feminist lens to better understand macroeconomic and international economic processes and outcomes, with particular emphasis on issues of economic development, growth and gender equality. She publishes widely in both academic and policy venues, and does regular consulting work for a number of international development institutions, including UN Women, the International Labour Organization and UN Research Institute for Social Development (UNRISD).

Sakiko Fukuda-Parr is Professor of International Affairs at The New School, New York, USA. She is a development economist interested in human development and capabilities, and the broad question of national and international policy strategies. Her current research includes projects on public policies and economic and social rights, and the impact of global goal-setting on international development agendas. From 1995 to 2004 she was lead author and director of the UNDP *Human Development Reports*. She currently serves as Vice Chair of the UN Committee on Development Policy. Her recent publications, in addition to the *Human Development Reports*, include *Fulfilling Social and Economic Rights* (with T. Lawson-Remer and S. Randolph, 2015) and *MDGs, Capabilities and Human Rights: The Power of Numbers to Shape Agendas* (co-edited with A. Yamin, 2015).

Betsy Hartmann is Professor of Development Studies and senior policy analyst for the Population and Development Program (PopDev), a centre for peace, population and the environment located at Hampshire College in Amherst, MA, USA.

Anne Hendrixson is Director of the Population and Development Program (PopDev), a centre for peace, population and the environment located at Hampshire College in Amherst, MA, USA.

Mimi Houston is a PhD student and special instructor at Colorado State University, USA, studying political, environmental and development economics. Her research focuses on the political economic dimensions of global climate agreements, including topics such as inequality and power across negotiating nations, social implications of climate policy, and alternative strategies that integrate community-based resource management.

Melissa Leach is Director of the Institute of Development Studies at the University of Sussex, UK. She founded and directed the STEPS Centre from 2006–14 and is co-Chair of the Science Committee of Future Earth. A social anthropologist and geographer, her research in Africa and beyond has addressed a variety of environmental, agricultural, health and technology issues, often integrating gender and feminist political ecology perspectives. Recent books include *Dynamic Sustainabilities: Technology, Environment, Social Justice* (2010); *Green Grabbing: A New Appropriation of Nature* (2013) and *The Politics of Green Transformations* (2015).

Michael Levien is an Assistant Professor of Sociology at Johns Hopkins University, Baltimore, MD, USA. He is currently working on a book about new forms of land dispossession in post-liberalization India and their implications for development, social inequality and democratic politics. His articles on this subject have appeared in *Politics and Society*, *Journal of Peasant Studies*, *Journal of Agrarian Change*, *Development and Change* and *Economic and Political Weekly*.

Lyla Mehta is a Professorial Research Fellow at the Institute of Development Studies at the University of Sussex, UK, and a Visiting Professor at Noragric, Norwegian University of Life Sciences. She is a sociologist working on gender and displacement, rights and access to natural resources and power/knowledge interfaces in policy debates, water and sanitation, and the politics of scarcity and uncertainty. She has research and field experience in southern Africa and South Asia. Lyla has engaged in advisory work with various UN agencies, and has also been active in advocacy and activist work on gender, environment and development issues with NGOs and social movements in Europe and India. She has authored *The Politics and Poetics of Water: Naturalising Scarcity in Western India*; edited *Displaced by Development: Confronting Marginalisation and Gender Injustice*; and co-edited *Shit Matters: The Potential of Community-led Total Sanitation*.

Preetha Prabhakaran has around ten years' experience in the development sector, principally in the areas of child rights advocacy, feminist social work practice and gender policy research. She is an alumna of the Tata Institute of Social Sciences in Mumbai, India and holds a Master's degree in Gender and Development Studies

xii Contributors

from the Institute of Development Studies, UK. Her earlier published work includes an analysis of global water discourses (specifically integrated water resources management) from a feminist political ecology perspective. She is currently working on sanitation and hygiene issues focusing specifically on community-led total sanitation in Asia and Africa.

Seemin Qayum is Policy Advisor on Sustainable Development at UN Women. Her areas of interest within the broad domain of gender and sustainable development are the articulation of sustainable livelihoods, access to resources, and community and landscape resilience, and the continuum from unpaid care to decent work. Recent publications include *Cultures of Servitude: Modernity, Domesticity, and Class in India* (with Raka Ray, Stanford University Press, 2009), *Multi-Stakeholder Decision-Making: A Guidebook for Establishing a Multi-Stakeholder Decision-Making Process to Support Green, Low-Emission and Climate-Resilient Development Strategies* (UNDP, 2012), and *The Bolivia Reader: History, Culture, Politics* (co-edited, in progress with Duke University Press).

Isha Ray is Associate Professor at the Energy and Resources Group, UC Berkeley, CA, USA and Co-Director of the Berkeley Water Center. She has a BA from Oxford University, UK and a PhD from Stanford University, CA, USA. Isha's research projects focus on access to water and sanitation for the rural and urban poor, and on the role of technology in advancing sustainable development goals. She has worked on water in India, China, Turkey, Mexico, Tanzania and California's Central Valley. She is co-editor (with Pranab Bardhan) of *The Contested Commons: Conversations between Economists and Anthropologists* (Wiley-Blackwell, 2008), and has extensive experience in the non-profit sector on international development and freshwater issues.

Shahra Razavi is Chief of the Research & Data Section at UN Women. Her work has been on gender dimensions of development, with a particular focus on livelihoods, agrarian issues, social policy and care. Since January 2013, when she joined UN Women, Shahra has been working on two of UN Women's flagship reports, 'Progress of the World's Women 2015' (on women's economic and social rights) and the 'World Survey on the Role of Women in Development' (on gender equality and sustainable development), as well as substantive work on the Commission on the Status of Women (CSW58 and CSW59). Before joining UN Women, Shahra was at the UN Research Institute for Social Development (UNRISD). Her recent publications include *The Global Crisis and Transformative Social Change* (with Peter Utting and Rebecca Varghese Buccholz, eds, 2012) and *Seen, Heard and Counted: Rethinking Care in a Development Context* (special issue of *Development and Change*, 2011).

Jade Sasser is an Assistant Professor in the Department of Gender and Sexuality Studies at the University of California, Riverside, CA, USA.

PREFACE AND ACKNOWLEDGEMENTS

The twin challenges of building pathways to sustainable development and enhancing gender equality have never been more pressing. This book shows why each is so important, but also why they must be addressed together, and how this might be done.

And this is a timely moment. As the world moves towards defining and implementing Sustainable Development Goals (SDGs) for the post-2015 era, there is much talk of integration – of environmental, social and economic dimensions of sustainability; of goals around climate change, water, food and land, health and reproduction, and other issues; and, with these, of gender equality and the empowerment of women and girls. But what does integration mean in practice, and how might it be achieved? In this book we offer an approach to these questions centred on the concept of pathways to sustainability, informed by feminist thinking around rights, relations and power. The book untangles the complex interactions between different dimensions of gender relations and of sustainability, and explores how policy and activism can build synergies between them. But further, it shows how plural pathways are possible, underpinned by different narratives about gender and sustainability, and how the choices between these are ultimately political.

Too often, discussions and action around gender and the environment have followed simplistic stereotypes that focus narrowly on women's roles, and assume them to be either victims or 'sustainability saviours'. These past tendencies have recently been brought to life again in the context of policy concerns with climate change, 'planetary boundaries' and green economies. In chapters focusing on work and industrial production; population and reproduction; food and agriculture; and water, sanitation and energy, the book's authors challenge and move beyond these stereotypes. They analyse the varied interactions between gender relations as intersected by other differences such as class, ethnicity and place, and different views of sustainability, asking 'sustainability of what, for whom'? They explore

xiv Preface and acknowledgements

how gendered livelihoods, work and control of resources – but also identities, bodily integrity, dignity and knowledge – are implicated in pathways to sustainability – or otherwise. Revealed are tensions and trade-offs, and some powerful ways in which dominant market-led development models and policy approaches lead to both gender inequality and unsustainability. But the reverse is also possible: gender equality and sustainability can powerfully reinforce each other in alternative pathways. Women's knowledge, agency and collective action are often central to these, whether in managing local landscapes, adapting to climate change, producing and accessing food, or securing sustainable water, sanitation and energy services.

Drawing from these illustrations, the book calls for policies, investments and initiatives in sustainable development that recognize women's knowledge, agency and decision-making as fundamental. Such gender-equitable approaches can improve resource productivity and efficiency, and enhance ecosystem conservation and sustainable use. They can also build fairer and greener economies, and more sustainable, low-carbon and climate-resilient food, energy, water and sanitation, and health systems. Ultimately, for pathways to be truly sustainable and to advance gender equality and the rights and capabilities of women and girls, the book argues that those whose lives and wellbeing are at stake must be involved in leading the way, through community groups, women's organizations and other forms of collective action; through appropriate forms of investment and public services; and through fostering a linked, progressive politics of both gender and sustainability.

The book emerged from discussions and background papers originally commissioned by UN Women to inform its 2014 World Survey on the Role of Women in Economic Development. In a series of workshops and informal interactions, chapter authors – from different disciplinary, theoretical and sectoral backgrounds, yet sharing a commitment to engaged feminist scholarship – agreed that a common book-length project was both valuable and timely. The process of putting it together has been exciting and rewarding. As Editor I owe deep thanks to UN Women for its initial catalytic role and subsequent support, as well as to the chapter authors for their endeavour and collaborative spirit – it has been a pleasure and a privilege to work together, and a nice example of international feminist networking.

The book's overall conceptualization and individual chapter drafts have benefited greatly from others' comments and insights, both at the World Survey Expert Group meetings in New York and Rome in 2013–14, and in written reviews and informal interactions. Amongst others, particular thanks are owed to Bina Agarwal, Peter Alstone, Wendy Harcourt, Andrew Fischer, Stacy Jackson, Saraswathi Menon, Marjorie Mbilinyi, Mohan Rao, Liane Schalatek, Stephanie Seguino, Gita Sen, Libor Stloukal and Simon Thuo for their inputs to particular chapters or overall. We gratefully acknowledge the helpful comments of anonymous reviewers, while several chapters benefited from excellent research assistance, including from Senti Sojwal and Jessa Orluk (Chapter 3) and Tanya Kar and Larissa Ushizima (Chapter 4).

Finally, I should like to thank Naomi Vernon for her superb and timely copy-editing, and the ESRC STEPS Centre for its support to the process of production and publication.

Melissa Leach
Falmer, Brighton
February 2015

ACRONYMS AND ABBREVIATIONS

AGRA	Alliance for Green Revolution in Africa
AoA	Agreement on Agriculture (WTO)
BC	black carbon
BPO	business process outsourcing
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CESCR	Committee on Economic, Social and Cultural Rights
CLTS	community-led total sanitation
DAWN	Development Alternatives with Women for a New Era
DFID	UK Department for International Development
FAO	Food and Agriculture Organization of the United Nations
FPE	feminist political ecology
GAD	gender and development
GED	gender, environment and development
GMO	genetically modified organism
GVC	global value chain
HAP	household air pollution
HDI	Human Development Index
HGU	land-use concessions (<i>Hak Guna Usaha</i>)
HLPE	High Level Panel of Experts
ICN	International Conference on Nutrition
ICPD	International Conference on Population and Development

ICTSD	International Centre for Trade and Sustainable Development
IFAD	International Fund for Agricultural Development
IFI	international financial institution
IFPRI	International Food Policy Research Institute
ILO	International Labour Organization
IT/ITES	information technology and services
IUCN	International Union for Conservation of Nature
LGBT	lesbian, gay, bisexual and transgender
LPG	liquefied petroleum gas
MARA	Malthusian Anticipatory Regime for Africa
MDGs	Millennium Development Goals
MMR	maternal mortality ratio
MWC	Mahindra World City
NAPM	National Alliance of People's Movements (India)
NEP	National Electrification Program (South Africa)
NFPE	new feminist political ecology
NISP	National Improved Stoves Program
NREGA	National Rural Employment Guarantee Scheme
PPP	public-private partnership
SC/STs	scheduled castes and tribes
SDGs	Sustainable Development Goals
SEZ	Special Economic Zone
SIE	semi-industrialized economy
SRHR	sexual and reproductive health and rights
SUN	Scaling Up Nutrition
TFR	total fertility rate
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	UN Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UN-REDD	United Nations collaborative initiative on Reducing Emissions from Deforestation and forest Degradation
USAID	US Agency for International Development
WANTO	Women in Apprenticeship and Nontraditional Occupations
WCD	World Commission on Dams

xviii Acronyms and abbreviations

WED	women, environment and development
WEDO	Women's Environment and Development Organization
WFP	World Food Programme
WFS	World Food Summit
WHO	World Health Organization
WID	women in development
WIEGO	Women in Informal Employment: Globalizing and Organizing
WiRES	Women in Renewable Energy Sector project
WOW	Wider Opportunities for Women
WTO	World Trade Organization

6

TRANSFORMATIVE INVESTMENTS FOR GENDER-EQUAL SUSTAINABLE DEVELOPMENT

Isha Ray

Introduction

This chapter develops an agenda for sustainable development, with particular emphasis on local priorities, poverty alleviation and gender equality. Sustainable development can take many different pathways, even within the dominant three-pillar paradigm (economy–environment–society) of sustainability (see Leach et al, Chapter 1 in this book). Following Sen, I adopt a capabilities-enhancement view of development, and argue that any sustainable development pathway must include an explicit commitment to gender equality in its conceptualization and implementation. To this end, I highlight four ‘mundane’ sectors in which socially transformative investments should be substantially increased: domestic water, safe sanitation, clean(er)-burning cookstoves, and domestic electricity services. These basic services are still thin for the lowest-income quintiles in low-income countries, and there is overwhelming evidence that their absence disproportionately affects women and girls. Inadequate access to these services prevents the realization of human rights for all, of gender equality and of environmental integrity.

I draw on the vast literature on access to basic services for the poor to argue that *universal and gender-equal access* cannot be guaranteed primarily by voluntary mechanisms (i.e. through market forces or through the non-governmental sector). Universal access needs low-cost innovations, certainly; it also needs a renewal of the civic contract between the state and its citizens; it requires strong public action for the protection of citizens and their environmental resources. As we move into the post-2015 era, promoting public action towards gender-equal development should become a priority for the ‘sustainable development’ agenda. I conclude with some thoughts on capabilities and the bodies they inhabit. Gender-equal sustainable development cannot be treated as a disembodied concept: an explicit

recognition of the biological and the social body is necessary when setting targets and indicators towards water, sanitation and energy services goals.

Sustainable development with gender equality

'Sustainable development' was a disarmingly value- and gender-neutral concept from its very inception. The Brundtland Report *Our Common Future* (Brundtland, 1987), stating that sustainable development was development that met the needs of the current generation while not jeopardizing the needs of future generations, established the standard definition of the term. The report cemented the three-pillar approach to sustainability, in which sustainability has environmental, economic and social components. Because it had little to say on the tensions and trade-offs among these three dimensions, the Brundtland Report provided no guidance on social or regional priorities for sustainability, or on the difficulties of deciding which development initiatives were or were not sustainable, or what was to be sustained and for whom (Leach et al, Chapter 1 in this book).

The global overtones of the Brundtland Report are reflected in the current concepts of 'planetary boundaries' (Rockström et al, 2009b; UNEP, 2013b) and 'planetary stability' (Griggs et al, 2013) as frameworks for sustainable development. These frameworks rightly place the crisis of climate change front and centre, but they remain high-level. As a result, everyone is generally in favour of sustainable development, but the distribution of costs, benefits, risks and uncertainties inherent in different realizations of sustainability remains highly contentious.

In the spirit of this book, this chapter follows a more normative, more explicitly value-laden understanding of sustainable development. Economic development has followed not one grand trajectory, but multiple pathways, in diverse historical conditions (Hart, 1998). Sustainable development can also follow multiple pathways (Sneddon et al, 2006; Leach et al, 2010). Each sustainable development pathway can be assessed with respect to different criteria, such as poverty alleviation, environmental integrity, or distribution of risks. Some economically attractive pathways to development may be unsustainable altogether, from the perspective of resource use relative to availability, or of greenhouse gas emissions. Some ecologically sustainable pathways may be less equitable than others with respect to the alignment of risks, costs and benefits. In short, sustainable development means making choices from amongst a range of desirable objectives.

Defining and assessing sustainable development within a multiple-pathways framework makes development outcomes, and conflicts and complementarities amongst these outcomes, transparent. Specific societal investments, for example in energy or health or transportation, can be seen as economic and political choices along development pathways, as opposed to appearing as inevitable or natural solutions to sustainability challenges. This approach makes explicit the conceptual and political differences *within* the idea of sustainability.

As the Millennium Development Goals (MDG) era comes to an end, laudable progress has been made along many of its targets and indicators, especially those

concerning human health (Sachs, 2013; UN, 2013b). But even when specific targets were achieved, many were not achieved in a gender-equal (or spatially even) manner (UN Women, 2013). This is to be expected within a multiple-pathways framework: target achievement by one metric might not lead to achievement by other desirable metrics. But gender equality is necessary for overall economic development (Seguino, 2000; Kabeer and Natali, 2013), and is fundamental to the fulfilment of universal human rights (CEDAW, 1979; Elson and Balakrishnan, 2012). The MDGs have been sharply critiqued for losing sight of the human rights framework that gave rise to them in the first place (Fukuda-Parr et al, 2013; Sen and Mukherjee, 2013). This chapter argues that the post-2015 sustainable development agenda, and the interventions and investments that are carried out in its name, should be firmly embedded within a gender equality-enhancing pathway.

We are interested here in substantive, as opposed to merely formal, gender equality. Whether gender equality should mean equality of opportunity or equality of outcome is an ongoing debate, but, in practice, the two are difficult to disentangle (UNDP, 2013b, p30; also World Bank, 2012c, p4). A sustainable development pathway with gender equality would improve women's (and girls') access to new opportunities and new possibilities. It would enhance women's capabilities, so they are more able 'to choose the lives they have reason to value' (Sen, 1999, p18). In Sen's framework, capability is not merely a skill set; it is akin to *freedom*, meaning the freedom and ability to lead a particular life as opposed to another. Capabilities prioritize choice and agency over wellbeing per se (Nussbaum, 2000; Vizard et al, 2011); they are thus only indirectly linked to specific bundles of goods and services.

A gender-equal development pathway can be assessed by the extent to which the relative capabilities of women, especially those of poor women and girls, can be (or have been) advanced as a result of societal investments. I use the term 'investment' to denote financial, social and institutional efforts aimed at a future stream of benefits – not exclusively monetary – for humans and their environments. Many investment domains could be socially transformative, as long as investments commensurate with the scale of the development challenge are made. But for the goal of gender equality we must ask: which domains affect women, especially poorer women, the most, relative to men? Here the gender, environment and development literature has repeatedly shown that the physical and emotional burdens of accessing daily necessities such as food, fuel and water (e.g. Cecelski, 1984; Agarwal, 1997; Ray, 2007), and the expectations of unpaid care work from girls and women (e.g. Elson and Çağatay, 2000; Razavi, 2007), reduce women's capabilities relative to their own potential and relative to those of men. This chapter therefore highlights four priorities for significantly higher investments in the service of sustainable development: domestic water services, sanitation, clean(er) cookstoves, and basic electricity services. The focus on these four sectors does not, of course, deny the importance of other services (such as education, health care and food security) that are necessary for gender equality.

These four domains offer strong transformative potential through which women's and girls' capabilities may be significantly expanded in low-income

countries. All four have improved (meaning efficient, lower-carbon, lower-cost, or all of these) technological possibilities at their core, but cannot effectively go to scale based on technological interventions alone. As is the case with all technologies, interventions in these domains are at once technical, social and thoroughly gendered – so we cannot assume that improved technologies for use by women will automatically improve women’s lives (see Bray, 2007). All four domains are directly connected to development and environment, and can be invested in along environmentally sustainable *or* unsustainable pathways. And all four are ‘mundane’ investments (cf. Kammen and Dove, 1997), in that they are concerned with everyday living and dying, they are the backbone of a decent quality of life, and yet they remain significantly under-invested in, relative to the global need.

The rest of this chapter is divided into five sections. First, I turn to the question of how we would assess (*ex ante*) or evaluate (*ex post*) a sustainable development intervention through the lens of gender equality. This section draws on the literature on the operationalization of capabilities and of wellbeing, and also argues that the gendered distribution of risks from societal investments is an important assessment criterion. I then discuss each of the four domains, focusing on technological and social approaches towards providing basic levels of service. The political and institutional barriers to services for low-income populations at scale, and in particular for ensuring gender equality or environmental integrity in their provision, are all too well known. The next section does not repeat the litany of barriers, but highlights the institutional contexts that may enable sustainable development pathways. It discusses the continued relevance of contractual theories of the state, and the public–private–civil alliances that are needed to support social investments at the necessary scales. The chapter concludes with some thoughts on female bodies, human capabilities and their implications for the goals and targets of sustainable development.

Assessing investments for gender equality

If we are going to promote some investments over others, we must have criteria for estimating their impacts before investing, or evaluating their impacts after the investment has been made. For gender equality, investments in the name of sustainable development should be assessed with *women’s capability enhancement* as a necessary (though, of course, not sufficient) component of sustainability. No development pathway can be considered sustainable if it decreases female capabilities. Thus if an investment in a low-carbon and efficient energy technology intended for the poor inadvertently increases unpaid care work for women, or undermines their ability to earn or to innovate (Agarwal, 1983; Cecelski, 2000), then it is not on a sustainable development pathway. This is not to deny the clear and urgent need to decarbonize the global economy, but to argue that an emissions-centric or planetary boundaries view of sustainability is inadequate without a gender equality perspective.

There are clearly overlaps between human capabilities and real incomes (Evans, 2002). The simplest proxy for capability enhancement for the poor is the quintile

axiom proposed by Basu (2006). Basu argues that to capture poverty and inequality, we should rank countries not by their overall GDP per capita, but by the per capita income of the lowest quintile. He argues that the quintile measure will track the broader indicators in the UN's Human Development Index,¹ such as life expectancy and gender-bias indicators, better than the traditional GDP per capita can do. The quintile axiom is easy to use and is explicitly oriented towards substantive equality. It emphasizes within-country inequality in addition to cross-country inequality. It could be used to assess the outcomes of specific investments in water, sanitation, energy or any other sector, at any scale from the regional to the local. But this one-dimensional proxy implicitly assumes that investments have the same impacts on poor women as they do on poor men, and we have already seen that this assumption is not justified. Capability enhancement is inherently a multi-indicator phenomenon (Nussbaum, 2000).

A better way to measure women's capability enhancement, while keeping the measure practical and parsimonious, is to choose a subset of indicators from those that already go into the UN's Human Development Index (HDI). The HDI is derived from Sen's influential capabilities and functionings approach (Sen, 1985; Ul-Haq, 1995), and can be seen as a way to operationalize capabilities. The HDI as a whole is very broad; socio-economic circumstances and local priorities will dictate which indicators of capability are most relevant, and for which domains, in specific cases. For instance, for investments in sanitation, we can imagine that an education indicator, such as secondary school enrolment for girls, might be a good metric of evaluation; field experience from Asia and Africa has shown that poor sanitary facilities keep girls out of school (UNDP, 2006). For investments in clean cooking energy for the poor, under-five infant mortality may be a better metric; indoor air pollution from burning solid fuels causes premature deaths throughout the global South (WHO, 2014b). The indicators of interest should be measured for the overall population, but also for the lowest quintiles, in the spirit of the quintile axiom. They can be measured at any scale, for the whole state or for a single community.

For water, sanitation, and energy services, two useful capability indicators for assessing whether investments are on a gender-equal pathway might be: the *female under-five mortality rate*; and the ratio of *female to male enrolment in secondary education*. These indicators are especially relevant for low-income communities or countries. Under-five mortality ratios, secondary school enrolment and anthropocentric measures of nutrition are themselves important capabilities, but are also the gateway to many other capabilities and functionings (Saith and Harris-White, 1999). Of these, anthropometric measures of nutrition are more difficult to measure, whereas child mortality and school enrolment data, imperfect though they may be (see Unterhalter, 2013), are routinely collected in a large number of countries.

The enrolment measure is the female-to-male ratio as this is a direct indicator of parity; however, the simple rate of female participation in secondary education is also a plausible capability metric. Secondary school enrolment is preferred to primary school enrolment: the literature has convincingly shown that more years

in school are associated with girls being able to better articulate their rights and to better protect themselves and their families against illness (e.g. Unterhalter, 2013). The under-five female mortality indicator is not a female-to-male ratio, as child mortality by gender tends in the same direction in a given country (though not always). As with most HDI components, both measures can be operationalized at the regional, state and community levels, as well as stratified by income quintile, depending upon the scale of the investment.

Two is a small number of indicators for the purpose of measuring gender equality across four substantive domains. These criteria can be interpreted as the minimum constituents of a sustainable pathway; actual investments may be assessed through additional environmental and economic criteria. However, the larger the number of outcome indicators, the more complex it is to attribute a causal connection between investment and outcome. Fukuda-Parr (2003) contends that parsimony and simplicity are essential for indicators to gain policy traction. Indeed, just one of the HDI indicators may be an adequate gender-equality assessment criterion in some contexts, depending on the pre-investment baseline conditions. A more fundamental critique could be that choosing an indicator such as secondary school enrolment assumes that the quality of a woman's life and aspirations has the same components as the quality of a man's life and aspirations (see Nussbaum and Sen, 1993). I follow the position that universal accounts of human capabilities are indeed defensible (Annas, 1993), because the capabilities framework emphasizes choice and agency (Nussbaum, 2003; Vizard et al, 2011), and does not insist upon specific outcomes such as paid employment.

This chapter proposes one additional indicator for gender-equal development: the reduction of unpaid care work. Every economy is dependent on 'non-market based social reproduction' (Razavi, 2007, p5), or the unpaid care economy, comprising cooking, cleaning, caring for children, elders or the sick, and community-based volunteering. In low-income economies, care work also includes fetching water and fuel, often over long distances. This sort of unpaid work is heavily feminized, and it may go up or go down as a result of ostensibly sustainable interventions. Interventions may even be counted as sustainable *because* they rely on uncounted work; much-lauded programmes such as rainwater harvesting and community-based natural resource management have been critiqued on this ground (e.g. Jackson, 1993; Kabeer, 2005). Reduction of unpaid care work, particularly in low-resource households, is essential if women and girls are to develop the full range of their capabilities. This indicator is not a component of the HDI, but time-use data for several countries exist (Budlender, 2010; Esquivel, 2013). Though this criterion may lead to additional burdens of data collection on developing countries, time use and care work data need to be systematically collected to monitor improvements in gender equality. Country-level data collection should strive to include at least the minimum set of gender indicators proposed by the UN Statistical Commission.²

Innovative technologies and programmes have a range of attendant risks as well as a range of intended outcomes, and these risks are at least as important as future

gains. For every investment in sustainable development, therefore, we must ask: What kinds of risks are we taking when we promote certain techno-social interventions, and who comprises the 'we'? Here I draw on the 'rights and risks' approach of the World Commission on Dams (WCD, 2000) – this work has been conceptually valuable in laying out a framework for responsible public investments, but it has been neglected in policy and practice. The Commission clearly distinguished risk-bearers from rights-bearers, arguing that risk-bearers often do not have rights with respect to investment decisions that are commensurate with their risks. The report presented examples of large dam projects, in which those without legal land title, such as poor women, the landless, or indigenous communities, were given no compensation for lost land and livelihoods in the submergence areas (WCD, 2000, pp104–105). In other words: when projecting the benefits of a specific intervention in any of our suggested domains, we must also make transparent who has the right to make investment choices, who is assessing the risks of these choices, and on whose behalf they are assessing them.

The WCD members concluded that the differential risk profiles and perceptions within and across communities call for public discussions with all the affected and the interested parties, recognizing that the two may not be the same, and acknowledging that unforeseen consequences are always possible. The broader risk literature on technology and social acceptance has indeed shown that risk cannot be understood simply as a probability distribution of known outcomes. People bring to their risk assessments not only the attributes of a technology, but also their cultural and political frames of reference (Rayner, 1984), their perspectives on 'how fair is safe enough' (Rayner and Cantor, 1987), and their own uncertainties and fears. These subjectively different perceptions are not a matter of better communication of technical risks (see Fischhoff, 1995); they require analysis of the multiple criteria by which the risks are perceived (Stirling, 2011). For many investments, risks, not just outcomes, will vary with the gender and class of the risk-bearer. Therefore assessing risks, with an emphasis on risk distribution, risk perception, and the voluntary or involuntary nature of the risks, is especially important for large-scale and irreversible investments.

Categories of investment for gender-equal sustainable development

I now turn to the four selected categories of investment for social transformation. These investments are reliable and affordable domestic water supplies, clean and dignified sanitation, cleaner cookstoves, and basic electricity services. All of these are 'basic' categories in two senses: they serve fundamental human needs regardless of socio-cultural characteristics, and their absence or inadequacy precludes the attainment of many other capabilities as well as human rights. They are the determinants of health and livelihood for the majority of women, whatever their class, and are the backbone of what has been called the 'environmentalism of the poor' (Guha, 2000; Martínez-Alier, 2002).

All four categories of investment have spillover effects that benefit users as well as non-users (e.g. safe sanitation for women increases overall community health, and efficient cookstoves improve household health as well as household budgets). Inadequate and unsafe water, unsafe sanitation, and indoor air pollution from solid fuels account for over 11 per cent of deaths in low-income countries (WHO, 2009). All four investments have a technological core, but investing in technology alone without a supporting social ecosystem cannot take them to a transformative scale. All four are merit goods, meaning that the social benefits from their provision are likely to exceed the private benefits. This means that all are candidates for investments in the public domain, though not exclusively so, and that markets alone will not deliver them at scale. All four categories are possible to invest in along *unsustainable* pathways that may not promote gender equality or environmental integrity, or along more sustainable and equitable pathways through which capabilities may be improved. For example, urban sanitation investments that provide a low toilet-to-user ratio preclude women from using them, because they cannot stand in long morning lines or walk to distant facilities at night. On the other hand, well designed cookstove interventions simultaneously improve household air pollution and women's health, especially if they replace coal-burning stoves.

The selected categories are 'mundane' investments, rather than technological innovations supposedly at the cutting edge of development practice (see Kammen and Dove, 1997). Absolutely everybody, whatever their age or gender or class, needs to drink water, go to the bathroom, breathe, eat cooked food, and see in the dark. It is mundane investments that touch everyone every day and expand everyday human capabilities. In addition, mundane quality-of-life innovations can occur anywhere, in low-income as well as high-income settings (e.g. Brokensha et al, 1980; Gadgil et al, 1993) they can be appropriated and modified by users, male as well as female, in line with local needs (e.g. Cecelski, 2000; de Laet and Mol, 2000); and they can occur at any scale, from national policy directives with centralized infrastructures, to decentralized community-based implementation. Furthermore, if an innovative technology or financing mechanism finds a local market, it can revitalize rural and urban economies. Mundane investments are, in this sense, potentially transformative with respect to local development processes as well as development outcomes.

Finally, in focusing on these categories, we cannot assume that more toilets or more stoves will inevitably lead to gender equality, or that these are the only worthwhile investments for sustainable development. This chapter emphasizes those investment categories that are directly linked to human and environmental health, and that can directly enhance the capabilities of poorer women, because they are disproportionately burdened with poor health and unpaid work in their absence (Cleaver, 1998; Antonopoulos and Hirway, 2010; Anenberg et al, 2013; Corbett and Mehta, 2013).

Water

A woman carrying water on her head or on her hips with the scorching sun in the background is the iconic image of development unmet. Well into the twenty-first century, close to a billion people live without access to improved water sources, defined by the WHO as water from a protected well, protected spring, collected rainwater or tap. Diarrhoea from inadequate water, sanitation and hygiene claims the lives of 1000 children a day (WHO, 2014a), and 140 million people are exposed to high levels of arsenic in their water (Ravenscroft et al, 2009). Many innovative approaches have been developed towards improving drinking water quality for the poor (Amrose et al, forthcoming), but I focus here on adequate, reliable and affordable quantities of water for domestic (i.e. productive and reproductive) use. For most poor women, a source of domestic water that is reliably and conveniently accessed is the first criterion of sustainable development.

Social expectations dictate that women and girls are the primary water carriers for their families; in over 70 per cent of households where water has to be fetched, women and girls do the fetching (WHO/UNICEF, 2013). Where rural water sources are distant, women may walk up to two hours to fetch water. Where urban water is from shared standpipes, they may wait in line for over an hour (see Ray, 2007 and references therein). The further the source of water, the less water the household uses (Howard and Bartram, 2003), and the more child health is likely to suffer (Pickering and Davis, 2012). Case studies from around the world show that water-related 'time poverty' translates to lost income for women and lost schooling for girls (UNDP, 2006). In addition, high levels of mental stress have been reported when water rights are insecure (Wutich and Ragsdale, 2008). All this fetching and carrying, usually from a young age, causes cumulative wear-and-tear to the neck, spine, back and knees; in effect, a woman's body becomes part of the water-delivery infrastructure, doing the work of pipes.

Global water access data conceal the many inequities in water access – all across the developing world, urban access to improved water is higher than rural access; core urban access is higher than peri-urban access; and access at the top quintile is much higher than at the bottom quintile (WHO/UNICEF, 2013). These trends are commensurate with the Human Development Report of 2006, which stated unequivocally that lack of access to water stemmed from inequality and lack of rights, and not from some generalized notion of 'scarcity' (UNDP, 2006). Even in urban areas, where the access percentages are usually higher, the reliability, quality and affordability of water for the lowest quintiles are all insecure (Ahlers et al, 2014). Continuous piped water has the greatest health benefits and lowest drudgery costs, but is technologically and financially viable only for densely populated communities. Piped water with a sewer connection for the developing world would have required US\$136 billion a year (in 2007 US\$) from 2000 to 2015 (just) to meet the MDGs; meeting the MDG targets using cheaper supply technologies, including low-cost pipes, roof-water capture, and wells, and without adding point-of-use treatments to improve water quality, was estimated at under US\$2 billion

annually (Hutton et al, 2007). According to the Joint Monitoring Program,³ the UNICEF/WHO effort that is the source of global water and sanitation data, the water access target for the MDGs was met ahead of schedule. But this achievement falls short of universal access, falls short of water security, has been achieved largely through urban rather than rural access, and is quite compatible with continued time poverty for women, high costs of access, and other indicators of what has been called 'water poverty' (Sullivan et al, 2003).

In rural areas, modest quantities of water are needed not just for consumption, but for livelihoods. Zwartveen (1997) argues that an exclusive focus on gender in the drinking water sector overlooks the increasing number of woman-headed farm households, and emphasizes the role of women as mothers rather than as producers as well. Rural systems that are 'multiple-use' – meaning that they provide water for domestic purposes, small plots and a few cattle or goats – are more likely to meet the range of basic needs that rural women must meet. They have a higher potential for cost recovery as they help to generate income (van Koppen et al, 2006), especially if credit is available. A drinking water-focused intervention, by contrast, such as a borehole with a pump, would have a *lifecycle* per person per year cost of US\$20–60 (WASHCost, 2011), with little chance of cost recovery from its low-income user base. From a user-centred perspective, investing in water services that go beyond just drinking water will be more capability-enhancing; it may also enable partial cost recovery, which donors and governments increasingly demand.

In addition to large storage-based water projects, decentralized water-augmenting technologies exist, and have collectively reached many millions. Many would count as 'multiple use' in today's terminology. Some of these are modernized traditional approaches, often rural and community-based. The best known example is rainwater harvesting, which is now being taken to scale by communities in partnership with several governments (e.g. Bruins et al, 1986; Raju and Shah, 2000). Another is the treadle pump, a foot-powered pump that extracts shallow water for domestic purposes as well as for small farms and kitchen plots (Shah et al, 2000; Mangisoni, 2008). The revival (or development) of these techniques is owed partly to recurrent droughts, and partly to counter the narrative that large dams are the only channel to water security (Gleick, 2000). A wide range of barriers – such as financial and political marginalization, and unsustainable implementation practices – has prevented these approaches from reaching truly transformative scales (see Sovacool, 2012). This is an active area of action research around the world, and one that has (mostly) learned that even the most promising technology can only go to scale in a supportive social, ecological and financial ecosystem.

A final word on water and women is in order. Failed water projects in rural and urban areas are legion, and a frequently cited reason for failure is that women's voices and views were ignored before and during these efforts. Women are the water users, and therefore the ones with knowledge and stakes (van Wijk-Sijbesma, 1998; IBLF, 2004). However, it is naïve to suggest that women's 'participation' is either necessary or sufficient for gender-equality or sustainability of outcomes (Prokopy, 2004; Meinzen-Dick et al, 2014). Women's leadership, when real rather

than tokenistic, has indeed been associated with more cost-effective water delivery, more households with access to water, and less corruption in water financing (e.g. Chattopadhyay and Duflo, 2004; Fisher, 2006). But, if mandated as part of a water investment, participation could as easily increase women's workload as their wellbeing (Agarwal, 1998; Cleaver, 1998; Ray, 2007). Everywhere water is another word for life; its reliable and affordable access for poor women is one of the highest priorities of development. But conflating women's participation in water investments with a sustainable water supply risks becoming another avenue to more (unpaid) work for women. Such a path cannot be considered 'sustainable'.

Sanitation

We now turn to sanitation. Everybody goes to the toilet. There is little choice about when to go, and often little choice about where to go. 'Improved' sanitation facilities, according to the WHO and UNICEF,⁴ include pour flush or flush toilets into a sewer, ventilated improved pits, and composting toilets, through the use of which pathogenic waste is likely to be removed from human contact. Many different toilet designs, from the simple pit with slab, to more complex but locally producible dry ('ecological') toilets, exist for low-income households (Nelson and Murray, 2008), and sustainable toilet design is an active research area. But over 2.5 billion people still have no access to an improved latrine; of these, 700 million use shared facilities, which the Joint Monitoring Program does not consider 'improved'. Open defecation rates have gone down in all developing countries (WHO/UNICEF, 2013), but it remains the norm for 1 billion people, 90 per cent of whom are rural residents.

Open defecation is a severe public health as well as environmental health hazard, causing widespread diarrhoeal disease and water pollution (Black and Fawcett, 2008). Relative to its previous neglect in comparison with drinking water programmes, sanitation programmes are on the rise, promoted vigorously by health researchers (e.g. Hutton and Bartram, 2008; Clasen et al, 2010), governments in concert with local communities, and international non-profits. It is still the case that for every US\$4 spent on water and sanitation programmes, sanitation receives about US\$1 (GLAAS, 2012). But a sea change has occurred in recent years with respect to recognizing sanitation as indispensable for 'health, dignity and development' (Lenton et al, 2005).

This chapter argues that basic sanitation that is clean, affordable to construct and to use, and safe to access is a particularly transformative investment for women's (and girls') capabilities. Women need more privacy than men when they use the facilities because of social norms, need more time in the toilet than men do (because they must sit or squat), need physical safety when they access outside toilets, and may need multiple daily visits during their menstrual period. For these reasons, sanitation access may be more germane to gender equality and dignity than even access to water. As with water access, sanitation access in low-income countries is highly unequal: urban coverage rates are significantly higher than rural coverage

rates (WHO/UNICEF, 2013), and within rural regions access is lowest for communities far away from main roads (WHO/UNICEF, 2010). Overall, it is estimated that children in the poorest quintiles of low-income countries (in South Asia and sub-Saharan Africa) suffer 20 times the health burden of inadequate sanitation as children in the top quintiles within those same countries (Rheingans et al, 2012).

New directions in sanitation research and promotion emphasize extending access through innovative new technologies, encouraging toilet uptake, improving markets for sanitation products, and encouraging a larger role for non-state actors (Jenkins and Curtis, 2005; Black and Fawcett, 2008). Significant donor efforts (e.g. the Gates Foundation's 'Reinvent the Toilet' initiative) and government-community efforts (e.g. community-led total sanitation, CLTS, campaigns) are now focused on sustainable sanitation specifically for the poor. CLTS emphasizes rural sanitation, as this reflects both its origins (Kar and Chambers, 2008) as well as where open defecation mostly occurs. But there are also city-based examples of urban sanitation with community leadership at their centre, using sanitation as a community-building as well as toilet-building exercise, from South Asia, Central America and southern Africa (Satterthwaite et al, 2005). These methods, once pilot projects but now becoming mainstream, represent a major change from previous supply-driven and facilities-driven methods. It is still unclear if these demand-driven means can be sustained over time in multiple settings, or if they can adapt to the political economies of different countries well enough to go to scale (e.g. Harris et al, 2011 on Vietnam). CLTS in particular has been praised as a revolutionary, subsidy-free approach to community mobilization for sanitation, but mutual 'encouragement' (Chambers in *The Guardian*, 2011) has been critiqued for morphing into 'community-backed shaming' (Chatterjee in *The Guardian*, 2011).

The definition of improved (or reinvented) latrines in the leading efforts remains hardware- and uptake-oriented, saying little about wastewater treatment before disposal, or about sludge removal if the toilet is a dry toilet. Untreated sewage and faecal sludge from overflowing pits are highly polluting and unsustainable. Baum et al (2013) estimate that if improved sanitation required sewage to be treated before its discharge into the environment, 4.1 billion rather than 2.5 billion would be unserved. Sustainable toilet design and programmes have to include not only the reduction of open defecation, but also the removal of pathogenic waste and its disposal or re-use (Nelson and Murray, 2008). Financing sanitation at the required scale remains a global-scale challenge, with great uncertainty in existing cost estimates and almost no data on spending by private households. Hutton and Bartram (2008) estimated that about US\$36 billion (2008 US\$) annually would need to be invested for ten years to meet (and maintain) the MDG target of reducing by half the population without access to improved sanitation. If primary treatment of toilet waste and long-term maintenance costs are added, the cost of 'sustainable sanitation' can be 5 to 20 times the cost of building the latrine alone (WASHCost, 2011). Innovative social enterprises that safely convert human waste into reusable sludge or renewable energy, such as Sanergy,⁵ are being piloted at the

scale of urban slums, exploiting the cost recovery possibilities from productive re-use (see also Murray and Ray, 2010), but these efforts are still at the proof-of-concept or pilot stage.

The emphasis on eliminating open defecation is absolutely critical. But we have to ask: is this enough for sustainable or gender-equal sanitation? Clean and secure sanitation can enable girls' education, women's mobility and sexual security. But gender equality means that toilet programmes have to go well beyond defecation and disease management, and take equally seriously the requirements of dignity of access and menstrual hygiene management. Menstrual hygiene is so private that it has usually fallen through the cracks of national and international sanitation promotions (Bharadwaj and Patkar, 2004); it is only now being acknowledged as the critical programmatic gap as we move towards the post-2015 targets (WHO/UNICEF, 2013). Sanitation facilities and products that are safe and respect privacy enable girls to stay in school (e.g. Ali and Rizvi, 2010) and reduce their discomfort (and sometimes shame) during menstruation (McMahon et al, 2011). In short, men and women have very different sanitation needs, for biological and social reasons. Investments in this area have to be designed and implemented with these bodily needs and the social norms that surround them upfront and centre, and this means sanitation uptake programmes should not be focused on prevention of open defecation alone.

Cookstoves

The recently published *Resource Guide* from the Global Alliance for Clean Cookstoves (Hart and Smith, 2013) opens with a clear statement of the stoves and gender parity link: 'Often spending many hours per day searching for fuel and cooking over open flames emitting harmful smoke, women are disproportionately impacted by dirty and inefficient cooking practices and reliance on biomass for fuels.' Biomass-burning traditional cookstoves (i.e. using wood, charcoal, animal manure or crop residues), especially when used indoors, are the primary contributor to household air pollution (HAP). Globally HAP is responsible for over 4 million deaths (WHO, 2014b), and HAP and ambient air pollution jointly are now the leading global environmental health risk. In South Asia and China, solid-fuel cookstoves – biomass-based in India, but significantly coal-based in China – are the single largest contributor to HAP. The cumulative burdens from diseases, from black carbon and inhaled particulate matter, are manifest in respiratory infections, lung inflammation, low birth-weight and cardiac events (Fullerton et al, 2008).

It is still the norm for women to do the daily cooking for their families. It is a central part of the unpaid care economy. They and their children, especially younger ones who are with adult females all the time, therefore suffer disproportionately from 'the killer in the kitchen' (Bailis et al, 2009). The time spent in collecting fuelwood or charcoal, also a job mainly delegated to women, is onerous and sometimes dangerous, for the women and also for the children who must accompany them (Masud et al, 2007). In addition, rural households are often

highly labour-constrained, especially during peak agricultural seasons, and the time that women spend collecting fuelwood has high opportunity costs (Deweese, 1989) – although empirical studies show wide variation on this front (see Cooke et al, 2008). Relative to water and sanitation, the data by country and by quintile on access to efficient cookstoves are rather sparse (Anenberg et al, 2013). In part, this is because cookstoves historically have not been a significant focus of public spending or routinely collected public data. The exception was China's massive and organized rural energy programme, the National Improved Stoves Program (NISP), which has since been discontinued, but which introduced 180 million improved stoves while it lasted (Sinton et al, 2004).

The health benefits from fewer diseases, and income benefits from saved fuel when households switch to cleaner-burning cookstoves, are important to communities overall. These investments, like those in water and sanitation, yield overall positive externalities well beyond gendered benefits. In South Asia and sub-Saharan Africa, for example, a large share of ambient (not just indoor) particulate matter is attributed to cooking with solid fuels (Zhou, 2011). Investing at scale in efficient solid-fuel stoves, especially in rural and peri-urban regions without liquefied petroleum gas (LPG) or natural gas for cooking, is simultaneously a gender-equal and a sustainable-pathway investment.

As with sanitation, there has been a welcome upsurge of attention to the need for clean(er) cookstoves in recent years. Despite this attention, these remain underinvested-in as public investments, as is generally the case with mundane technologies. First, the effects of cookstove interventions in the field have been widely varied – from no effect, to modest health improvements, to lower-than-anticipated improvements in indoor air pollution (Griehop et al, 2011; Anenberg et al, 2013). The designs and combustion efficiencies of 'clean' cookstoves also vary widely, from those that include a chimney so that the smoke is pushed outdoors, to those that simply use less fuel but retain particulate pollution indoors. The income effects of efficient stoves are more likely to be consistently positive, as many improved stoves burn between 30 and 60 per cent less fuel than their unimproved counterparts; this is a significant saving for rural households that can spend nearly 10 per cent of their monthly income on energy (see e.g. Miah et al, 2009).

Second, producing cookstoves that women want to use, and marketing these to low-income families, has been hard. Most cookstove interventions, even when they report satisfaction with the stoves and use of the stoves, also report the continued use of the traditional stove for staple foods. In addition, there is anecdotal evidence that women are unwilling to give up the convenience of two stoves despite the benefits of consistently using the efficient one. This form of 'device stacking' makes it harder to see health impacts and also harder to sell new stoves (Ruiz-Mercado et al, 2011). In the cooking arena especially, men and women may value different aspects of clean stoves. It has been argued that women value stove aesthetics and smoke-free environments more than men, who are concerned about timely meals and the traditional taste of food (e.g. Cecelski, 2000). Such views are

not necessarily in conflict, but they present marketing challenges. Though at-scale change remains elusive, encouraging stove uptake results have been reported by many NGOs, such as Practical Action and Potential Energy, working in Asia and Africa, and with women centrally involved in stove design, testing and social and conventional marketing (Hart and Smith, 2013).

The cookstove arena is now firmly enmeshed in the climate mitigation discourse. It is often asserted that with cleaner cookstoves we can empower poor women, improve human health *and* mitigate global warming, and therefore there is a win-win climate–energy–poverty nexus (e.g. Casillas and Kammen, 2010; Venkataraman et al, 2010). Reduced solid fuel use does reduce harmful emissions, even though all stoves in total produce a (very) small fraction of total emissions (1–3 tons of CO₂/year per stove: Lee et al, 2013). More troublesome than CO₂ is black carbon (BC, or plain old soot), which biomass and coal-burning stoves produce, and which is a forcing agent for near-term warming. In South Asia it is estimated that half the total emitted BC is from biomass-burning stoves (see Anenberg et al, 2013), and that BC disrupts the monsoons and therefore potentially threatens water availability. The most detailed research to date bounding BC from multiple sources shows that residential biofuel cooking has (maybe) a small positive net forcing from short-lived pollutants (about 0.025 W/m²), and the uncertainty around this estimate is extremely wide around zero (Bond et al, 2013, p5504). Residential coal burning has a slightly higher forcing effect, but also ‘with low certainty’ (Bond et al, 2013, p5505).

The apparent forcing impacts have made it possible to finance and market stove programmes through public–private partnerships (PPPs), the Clean Development Mechanism, the Clean Cooking Loan Fund, and other new forms of creative carbon financing.⁶ But the data (read carefully) give us little assurance that reducing biofuel-based cooking will meaningfully mitigate climate change. The so-called ‘co-benefits’ of climate mitigation from clean stoves, such as better health for (especially) women, and lower costs for fuel (in collection time or cash), in fact overwhelm the benefits of climate mitigation. This matters because discursive framings shape development practice (Cornwall and Brock, 2005). Development discourses around stoves promoting a climate–empowerment ‘nexus’, by placing a huge human health benefit alongside a relatively small and uncertain climate benefit, may reap a short-term financing advantage. But over time, they risk subtly and inadvertently linking the burden of climate mitigation with the daily actions of the poorest women.

Electricity

The final example of a transformative investment is electricity (see Goldemberg et al, 1985). Reliable, safe and affordable lighting, or a cell phone in an emergency, truly transforms lives. Electric lighting means that men and women can work longer or more flexible hours if needed, that children (or adults) can study in the evenings, and that cell phones, which have become an essential means of

communication for the working poor, can stay charged (Alstone et al, 2015). Electric lighting is safer by far than kerosene lamps or candles (Mills, 2012). Open wick-based lighting, such as kerosene lamps without a surrounding cover, generates high levels of BC, an indoor pollutant and regional climate disruptor (see above; also Lam et al, 2012). Overall, not having basic electricity automatically puts a household in the category of 'poor', and over 1.3 billion people remain poor by this metric (IEA, 2012).

Basic electricity access is most commonly defined as having a connection in the home. Access to electricity services is a prerequisite for gender equality and not just for overall economic development (Cecelski, 2000; Cabraal et al, 2005). The primary target of MDG 3 (Promote gender equality) was the elimination of gender disparity in education, and access to electricity has allowed more women to read and watch television across all income classes (Pereira et al, 2011, and ESMAP, 2004 cited therein). While low-cost, stand-alone lighting is a necessary near-term intervention (see Alstone et al, 2015), it is access to electricity that improves nighttime safety and health care infrastructure (because clinics can function after sunset, vaccines can be kept cold, etc.). The maternal mortality ratio (MMR) in particular is strongly correlated with access to electricity (Sovacool, 2012). A high MMR is not by itself a sign of gender inequality in health care, but we do know that women aged 15–34 years die in disproportionately high numbers on account of maternal mortality (Saith and Harris-White, 1999), and deliveries in the dark, or without functioning equipment, are known to be significant causes of infections and death. These data are evidence that basic electricity access is essential for the expansion of women's capabilities.

Cost estimates to bring modern electricity services to the 1.3 billion unserved vary widely, from US\$36 billion to US\$60 billion per year until 2030 (Guruswamy, 2011). The *World Energy Outlook* of the International Energy Association estimates US\$49 billion per year until 2030 (IEA, 2012). The range depends on how capital costs are estimated, but also on what is assumed about fuel prices and appliance efficiencies. Ongoing operations and maintenance are usually included for assessing grid electricity costs, but are most often left out of calculations for smaller home-based or community-based systems. Centralized grid extension remains most efficient for densely populated middle-income urban areas such as in China or South Africa. But capital cost considerations and low prospects for revenue recovery have prevented private sector utilities from entering low-income, sparsely populated, rural markets, even as many developing countries have been pushed, for reasons of efficiency but also of ideology, in the direction of privatizing their energy services (Williams and Ghanadan, 2006).

Many authors have noted the current tension between bringing electricity to the unconnected and increasing greenhouse gas emissions, because the conventional model of provision is a centralized grid based on fossil-fuel energy (e.g. Bazilian et al, 2011; Girod et al, 2013). Overall, the majority of those in the dark are rural residents, and their low capacity to pay, high level of need, and global climate change considerations have combined to make decentralized, renewables-based

small systems a leading policy recommendation.⁷ Microgrid systems can be extremely small, 10 W or so ('pico'), supporting simply a couple of lights and cell-phone charging; or solar home systems, supporting fans, four or five efficient lights, and a television, averaging about 30–40 W for commonly sold units; or mini-grid systems which offer several community-scale services, require higher upfront investments, but generate electricity at significantly lower cost than home systems (Alstone et al, 2015). Microgrid systems may be faster to scale up and replicate than a centralized grid in low-resource communities, but – as with water and sanitation – case studies show that costs and capacity for ongoing maintenance cannot be an afterthought in the cost–benefit analyses (Schnitzer et al, 2014). Hybrid renewable-conventional systems are also possible, at the community or multi-community scale, combining photovoltaics with wind, or even with (admittedly polluting) diesel, providing grid-like reliability and a range of productive applications beyond just residential use.

Basic electricity services for the 1.3 billion unserved, which could mean a fan (where it is hot), two fluorescent lights and a radio (or, moving up the ladder a bit, a television), all on for perhaps five hours a day, would add approximately 1 per cent a year to current global electricity consumption (Peter Alstone, personal communication). Therefore the climate is not in immediate danger from minimal service provision for the poor, even if their entire consumption were to be powered by fossil fuels. But integrating renewables into the grid, and expanding decentralized options using clean power sources that minimize local health impacts and particulate pollution (Markandya et al, 2009), are important for preventing the lock-down of new fossil fuel-based infrastructures. The provision of rock-bottom basic services is only a start, after all; poverty alleviation will require moving well beyond that (Sovacool, 2012; also Schnitzer et al, 2014). As with the cookstove arena, the discourses of sustainability for basic electricity services should more closely reflect the relative effects on climate versus on capabilities of on-grid and off-grid, conventional and renewable, options for the unserved.

As with all interventions, decentralized electrification programmes have succeeded in some areas, but have failed for financial, political and social reasons in others. And while basic electricity services remain essential for sustainable development, no technology, regardless of its cost, climate resilience or mode of dissemination, can ensure the electricity generated will, in fact, improve gender equality. Studies on women and electricity have reported that, once there are electric lights, women have more time to be with their children, perform their chores more quickly, and read more (Barnes and Foley, 2004; ESMAP, 2004). But with extremely small home systems, cooking, studying and television could compete for the limited electricity (Jacobson, 2004); intra-household allocation and power may determine who uses the watts and for which purposes (see Guyer and Peters, 1987; Agarwal, 1997). It is likely that systems with a higher capacity than simply 'pico' – somewhat higher per-user or lifecycle costs notwithstanding – will be needed for electricity services to actively promote gender equality in the home.

Transformative alliances for transformative investments

I turn now to a discussion of the institutional context of investing in sustainability and capabilities. Each of the four priority sectors identified depends on innovative and/or affordable technologies, and technologies can easily become the central actors in theories of access and in stories of social transformation. But technology is only a part of any investment story – technologies are disseminated (and even developed) in an institutional and financial context, to users with their own values and views, and within specific political economies. The institutional context significantly determines who has access, and on what terms. Projects on water, sanitation and energy are no longer parachuted into communities, but try to engage women users at every level – from design to marketing to finance. This is particularly true for market-based interventions such as clean cookstoves (Hart and Smith, 2013) or efficient off-grid lighting (Alstone et al, 2011); it is also increasingly the case for water and sanitation. But the institutional demands of going to scale for the approximately 1.3 billion without electricity or the approximately 2.5 billion without sanitation are truly daunting.

Water, sanitation and electricity historically have gone to scale through public sector investments, as networked utilities have traditionally been monopolies (see Hanemann, 2006). Since the 1980s, these services in developing countries have opened up to the private sector. In part this was because the public sector did not provide basic services to the low-income public, and the global political economy became more market-friendly and more state-sceptical (e.g. World Bank, 2004). Over the same period, civil society provision and decentralization became more and more mainstream in these service sectors. Cookstoves, our final priority area, were never developed and provided primarily in the public domain. Stoves have historically been seen as stand-alone consumer items, and, because of public health and climate considerations, are only now moving from the fully private to the partially public sphere. It is clear that public-private-civil alliances are needed for sustainable development, but what could these alliances look like along a gender-equitable pathway? And on whose terrain are these alliances taking place?

The post-1980s spate of PPPs in the centralized or semi-centralized utilities for developing countries has had mixed results for both water and electricity (Bakker, 2010; Bazilian et al, 2011). The literature in support of PPPs has argued that these partnerships are the only way forward as the state sector has neither cash nor capacity to expand provision beyond those already covered. However, a recent comprehensive study of water and sanitation financing in 17 countries, conducted by UN Water and WHO, shows that 80 per cent of the (non-household) funds for this sector continues to come from central, regional and local governments (GLAAS, 2012). The literature against PPPs argues that privatization is reducing the state to a mere upholder of private property and guarantor of private contracts (e.g. Mirafteb, 2004), but this perspective sometimes glosses over the failure, and the implications of that failure, of many states to provide for their poor citizens (discussed in Linder, 1999; Osborne, 2006).

Though state-run programmes have been on the defensive in recent years, and though states are often very poorly governed, the evidence to date suggests that they remain pivotal to social investments at scale. A well known example is China's rural clean cookstove project (NISP, mentioned earlier); this programme transformed over 100 million households through improved stoves, with a coordinated effort by multiple national ministries, multiple county and village level officials, rural energy companies and local energy service enterprises (Smith et al, 1993; Sinton et al, 2004). An example of nationally led rural electricity access is the post-1994 National Electrification Program (NEP) of South Africa. This far-reaching programme was successful in that access to basic electricity, enough for three or four lights, a radio and a TV, increased for 2.7 million households between 1994 and 1999 (Pereira et al, 2011), with selected private sector concessionaires working, as it were, towards a largely public sector goal. The fee-for-service photovoltaic-based component, however, was apparently less successful than the on-grid aspects (Lemaire, 2011; Pereira et al, 2011). An older example of a drinking water PPP comes from India, implemented well before the term was coined; the government placed a guaranteed demand for handpumps to be installed all over rural India, national and international companies bid for the contracts for the pumps and pipes and drilling equipment, and NGOs educated communities about the importance of safe water and pump maintenance (Talbot, 1997).

Such at-scale examples are rare unless the state plays a central role, though not necessarily the role of direct service provider. Private enterprise, demand-driven services and finances, bottom-up NGO pressure, and the 'show-me' effects of pilot projects are all critical. But the literature on the importance and innovation of private actors in essential services seems to conclude that the state needs to set and enforce an enabling policy framework, provide direct assistance to the poorest, and direct the flow and targeting of collective goods – if water and energy services are to be universally provided. Several studies, even when promoting private sector participation, suggest that one reason for promising interventions failing to scale up is that the state did not provide subsidies, or killed the sustainability of the effort with too many subsidies, or did not enforce its own regulations, or did not otherwise promote sustainable interventions (e.g. Zhang and Smith, 2007; Bailis et al, 2009; Harris et al, 2011; Pereira et al, 2011; Sovacool, 2012). It is old news, after all, that private actors cannot capture spillover benefits, or provide services to an extremely poor user base, or guarantee environmental integrity. This is not their mandate.

At the same time, the nature of the private sector players in water, sanitation and energy has been rapidly changing, especially for providers working with the lowest quintiles. In addition to registered corporate entities, there are numerous small-scale and semi-formal entities, sometimes purely commercial, at other times social as well as commercial, who are agile and entrepreneurial. It is critical that the public sector engages with these private sector(s) in sustainable development efforts, and to regulate them while taking advantage of their service-creation and market-creation potential. Yet regulation and oversight is a capacity that smaller states may

lack (Cairncross, 2003). Monitoring and oversight of the private and public sectors, therefore, are also the business of civil society and social movement representatives. These interest groups, heterogeneous though they may be, are often effective pressure groups and/or watchdogs on behalf of unserved communities. In a shifting institutional environment, transformative investments can only go to scale with transformative alliances amongst all the players in the development arena.

Contemporary efforts we can point to are not (yet) at the transformative scale, but they show that innovative alliances are indeed possible in the water, sanitation and energy space. Grameen Shakti is a private (but non-profit) sector actor in off-grid electricity in Bangladesh, and has installed over 1 million home solar systems. It uses financing provided by the International Finance Corporation and the Government of Bangladesh to extend micro-credit to its buyers (Martinot et al, 2001). The extensive networks of rainwater harvesting systems in India, pioneered by groups such as Tarun Bharat Sangh and Gravis, are now going to scale with government support – and in some cases government mandates – after thousands of successful demonstrations. Community-led total sanitation, a subsidy-free participatory approach to latrine building and use, seems to be expanding rapidly in sub-Saharan Africa with the support of international agencies and national governments (Musyoki, 2010; Rukuni, 2010). Cookstove projects with women's groups, social enterprises and for-profit stove makers are working with millions of customers in Africa, Central America, and South and Southeast Asia. These examples are proof that transformative alliances can and do exist, and that new forms of state-capital-society ties (see Evans, 2008) can enable gender-equal sustainable development.

Of course, financing pro-poor gender-equalizing investment in sustainable water, sanitation and energy services is a formidable proposition for countries with a low per capita GDP. Transformative investments through transformative institutional alliances are both critically needed and possible. But the difficulty of financing such investments to scale must be acknowledged, and budgetary competition with other sectors – health, defence, education, agriculture – must also be faced. Financing mundane but transformative investments for the lowest quintiles needs a refocusing of fiscal and political decision-making in developed and developing countries alike. Both traditional as well as non-traditional sources of financing water, sanitation and energy services could potentially be harnessed and re-directed towards sustainability and gender equality. These include direct (central or local) government financing, debt-forgiveness for highly indebted countries, raising development assistance to the long-standing goal of 0.7 per cent of the GNP of every country, and redirecting military budgets, possibly in concert with neighbouring countries, amongst other options (Schalatek, 2012). But financing or loan repayments that inadvertently increase the unpaid workload of low-income women would be capability-reducing, and thus not on a sustainable pathway.

In short, for all the failures of state-run efforts, and there are too many of these – and for all the states that govern badly or even brutally, and there are too many

of these – the historical evidence points to the need for a state that is in a contract with its citizens, and a contract which it, at least in part, honours. This is an old model of the state, one with Aristotelian antecedents, and one that has been in and out of analytical fashion in recent decades. The modern version is akin to what Evans (1995) has called the ‘developmental state’, in which the state, in concert with other social actors, is ultimately accountable to the citizens. It is compatible with the call for all countries to progressively realize their commitments to human rights (UN, 1948) – which include gender equality, and the mundane means of life and dignity discussed here. This chapter certainly does not call for renewed dirigisme, but it does conclude that sustainable and capability-expanding development needs the contractual state.

Concluding thoughts

This chapter argues that sustainable development is a multi-dimensional, multi-pathway concept whose components may or may not all be simultaneously and equally achievable. Accepting that there are many sustainable pathways leads to greater transparency in the trade-offs that societies may have to make between one goal (e.g. lower carbon emissions) and another (e.g. poverty alleviation), both of which are desirable and defensible components of sustainable development. Sustainable development is, therefore, a negotiated concept in implementation.

Along with the other authors in this book, I have argued that, for sustainable development to be compatible with internationally accepted human rights norms, gender equality is a central component of any chosen pathway(s). Thus investments towards socially transformative development should consider women’s capability enhancement, especially at the lowest quintile, as a non-negotiable goal. This means that sustainable development efforts, globally or regionally, must be directed towards key sectors from which poor women can disproportionately benefit.

The four sectors for socially transformative development proposed here are access to water, access to safe sanitation, access to clean cookstoves, and access to electricity. Each of these sectors could be transformative for women’s health, dignity and work, and for poor women in particular. Effective investments at scale are certainly difficult and uncertain, and depend on gender-sensitive and context-sensitive design and financing. We have seen that transformative investments call for transformative alliances between policy-makers, donors and the state, as well as the private and civil sectors. However, investments at scale need the reach and organizing power of the state; and the state needs the mobilizing power and vigilance of social movements to push it to honour its social contracts.

I have argued that gender equality should be assessed through the outcome of Sen’s enhanced ‘capabilities’, thus privileging freedoms and agency over traditional wellbeing measures such as income. Drawing on the ‘rights and risks’ framework (WCD, 2000), I suggest that any investment (local or national) should ensure that those who bear the risks of the intervention also hold the right to shape it. I draw on the vast literatures on operationalizing the concept of ‘capability’, and on

feminist economics, that have shown unpaid care work to be a pillar of the paid economy everywhere, and a major constraint on women's capability enhancement. Investments in the four selected domains are, in effect, investments in the determinants of health and opportunity for all. Therefore they should be assessed, *ex ante* and *ex post*, through metrics of health and opportunity. I have suggested that under-five female mortality, gender parity in secondary education, and the reduction of unpaid care work for women and girls are illustrative metrics of assessment for these investments. In keeping with the spirit of the quintile axiom, investments should be prioritized for the lowest quintiles in communities where they are made.

This argument does not preclude the dominant focus on reducing carbon emissions or increasing pro-poor income as critical outcomes of sustainable development. But it does preclude a globalizing carbon-centric approach to sustainable water, sanitation and energy for the poor. Climate mitigation and women's wellbeing are fully compatible with one another. But the easy language of 'climate-gender nexus' places short-lived and hugely uncertain warming reductions in the same league as long-term and enormous wellbeing gains for women and for the poor. Its eventual discursive effect may be to require investments in reducing female mortality to be partially justified by evidence of reduced emissions – the development world has seen many times that discourse, once entrenched, has material effect. This chapter has made the case for *everyday sustainability for everyday equality* between men and women, and between boys and girls.

I end this chapter with some thoughts on the human body, human capabilities, and how these influence the way in which we should understand sustainable development going forward. Feminist political ecology has shown that the environment is first and foremost experienced in the body, and the body is therefore the first scale of environmental analysis (Rocheleau et al, 1996; Elmhirst, 2011). At least two of the priority sectors for transformative investment, water and stoves, are traditionally 'female' sectors. In no way do I intend to essentialize women's needs and values through these choices; we certainly cannot valorize socially constructed ideas of women as the natural drawers of water and preparers of meals. But I do want to argue that, to truly transform women's capabilities, we must recognize women's distinctive and embodied situations in their everyday lives. We must begin with the 'irreducible specificity of women's bodies' (Grosz, 1994).

For every target or 'beneficiary' of sustainable development, there is a body. That body is defined both by its biological characteristics and the social expectations of it. Without crossing into reductionist naturalizations, and without falling into the pernicious trap of one's-body-is-one's-destiny, we must explicitly recognize that the human body is the entity that houses human rights. What does this recognition mean for sustainable development? I argue that every development objective has, embedded within it, an assumption about the human body. We can call this assumption the 'prototype' body – it is always implicitly there. Sustainable development targets post-2015 cannot be finely tailored to the full range of

different bodily needs and their associated social norms. They must therefore become explicit about the prototype body that they are (primarily) written for.

To illustrate this point, let us ask what explicitness means for two of our four priority sectors. What would the water and sanitation targets be for a body that must carry water where a pipe does not, must always sit or squat to use the toilet, will manage small children in the toilet, must wash her hands after defecation, must be safe from assault on her way to the facilities or the water source, and will bleed for four days a month for 40 years, except if she is pregnant or dies young? Gender equality in water and sanitation means designing sustainability targets for *that* body. Only then will sustainable development sustain human rights for all, along with the environmental resource base on which both development and rights depend.

Notes

- 1 <http://hdr.undp.org/en/statistics/hdi>
- 2 <http://unstats.un.org/unsd/gender/default.html>
- 3 www.wssinfo.org
- 4 www.wssinfo.org
- 5 e.g. <http://saner.gy/about-us#>
- 6 see <http://carbonfinanceforcookstoves.org>
- 7 www.se4all.org