

Routledge Explorations in Development Studies

VALUING DEVELOPMENT, ENVIRONMENT AND CONSERVATION

CREATING VALUES THAT MATTER

Edited by

Sarah Bracking, Aurora Fredriksen, Sian Sullivan
and Philip Woodhouse



Valuing Development, Environment and Conservation

Policy-makers are increasingly trying to assign economic values to areas such as ecologies, the atmosphere, even human lives. These new values, assigned to areas previously considered outside of economic systems, often act to qualify, alter or replace former non-pecuniary values. *Valuing Development, Environment and Conservation* looks to explore the complex interdependencies, contradictions and trade-offs that can take place between economic values and the social, environmental, political and ethical systems that inform non-monetary valuation processes.

Using rich empirical material, the book explores the processes of valuation, their components, calculative technologies, and outcomes in different social, ecological and conservation domains. The book gives reasons for why economic calculation tends to dominate in practice, but also presents new insights on how the disobedient materiality of things and the ingenuity of human and non-human agencies can combine and frustrate the dominant economic models within calculative processes.

This book highlights the tension between, on the one hand, a dominant model that emphasises technical and 'universalising' criteria, and on the other hand, valuation practice in specific local contexts which is more likely to negotiate criteria that are plural, incommensurable and political. This book is perfect for researchers and students within development studies, environment, geography, politics, sociology and anthropology who are looking for new insights into how processes of valuation take place in the 21st century, and with what consequential outcomes.

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**Sarah Bracking, Aurora Fredriksen,
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Contents

<i>List of figures and tables</i>	vii
<i>List of contributors</i>	viii
<i>Acknowledgements</i>	x
1 Introducing values that matter	1
SARAH BRACKING, AURORA FREDRIKSEN, SIAN SULLIVAN AND PHILIP WOODHOUSE	
2 Value(s) and valuation in development, conservation and environment	18
SARAH BRACKING, AURORA FREDRIKSEN, SIAN SULLIVAN AND PHILIP WOODHOUSE	
PART 1	
Development	43
3 Assembling value for money in the UK Department for International Development	45
AURORA FREDRIKSEN	
4 The <i>value</i> of human life in health systems and social spaces: the HIV/AIDS context in Zimbabwe	59
FORTUNATE MACHINGURA	
5 Valuing infrastructure: competing financial and social valuations in the South Durban port expansion	79
SARAH BRACKING AND AURORA FREDRIKSEN	

PART 2

Conservation

99

- 6 Bonding nature(s)? Funds, financiers and values at the impact investing edge in environmental conservation** 101

SIAN SULLIVAN

- 7 Creating conservation values under DEFRA's biodiversity offsetting pilot and the pragmatics of using a calculative device** 122

LOUISE EMILY CARVER AND SIAN SULLIVAN

PART 3

Environment

145

- 8 A crash in value: explaining the decline of the Clean Development Mechanism** 147

ROBERT WATT

- 9 Climate changing civil society: the role of value and knowledge in designing the Green Climate Fund** 162

JONAS AMTOFT BRUUN

- 10 Water values and the negotiation of water use** 184

PHILIP WOODHOUSE AND MIKE MULLER

- 11 'Some are more equal than others': narratives of scarcity and the outcome of South Africa's water reform** 202

REBECCA PETERS AND PHILIP WOODHOUSE

- 12 Conclusion: the limits of economic valuation** 225

SARAH BRACKING, AURORA FREDRIKSEN, SIAN SULLIVAN AND PHILIP WOODHOUSE

Index

233

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1 Introducing values that matter

*Sarah Bracking, Aurora Fredriksen, Sian Sullivan
and Philip Woodhouse*

Introduction

In 2010 the UK government mandated that all government spending demonstrate 'value for money', a valuation practice that took on particular salience in the Department for International Development (DfID) and has since been taken up by other big donors as a means for valuing international development aid. In 2015 a contract for a biodiversity offset package in England was priced at £120,000 for 25.52 biodiversity units, including 6.36 units of biodiversity value contributed by football pitches and their margins. In the same year, in South Africa, the Minister of Tourism was keen to promote rhinoceros conservation in terms of these animals 'paying to stay'. Simultaneously, multiple new coal mines in Somkhele used the iMfolozi watershed for the washing of millions of tonnes of coal, despite perennial water shortages in neighbouring Mpukunyoni communities and the needs of wildlife – including rhinoceroses – in the adjacent Hluhluwe-iMfolozi national heritage park. The ensuing damage to the watershed was to be 'offset' by a Black Economic Empowerment (BEE) holding assigned to the local political elite. In the following year the exchange value of carbon credits – Certified Emission Reduction (CER) units tradable through the Clean Development Mechanism (CDM) with the aim of encouraging reduced carbon emissions globally – had fallen from a high of €16.8/tCO₂e in 2008 to almost nothing. Nonetheless, by mid-2017, the newly created flagship Green Climate Fund (GCF) calculated that 128 million persons globally were 'anticipated' to have 'increased resilience' because it was generating 978 million tonnes of avoided CO₂ emissions from its USD10 billion in planned and on-going investments (GCF 2017).

As the above examples suggest, new markets and commodities are being created in a number of key policy arenas that are monetising, and thereby imputing a particular type of value to, a number of previously unpriced, but not necessarily unvalued, things. Carbon, 'ecosystem services', commonly held land, and human lives are being (re)valued in economic terms. Assigning prices to units of beyond-human nature so as to make these 'count' – either as 'ecosystem services' or in other market or market-like schemes for valuing living entities and ecological processes – has been a particularly

visible arena for the rise of economic valuations (e.g. Lohmann 2009; Adler 2013; Helm 2015; ten Kate and Crowe 2014). But this is not the only place where newly economic values are on the rise. New markets for land in the global South evidence the spread of existing market valuation practices to different geographic areas, while the rise of water markets across the globe look with varying degrees of success (Bakker 2003) for ways of framing and making water as a privatised commodity. Even in international development and public health, areas where economic value has long been an essential measure of worth, we are seeing new uses of economic valuation as a tool for demonstrating the worth of what would have previously been left to the (non-economic) judgements of experts, namely: programming, spending decisions and human lives.

Simultaneously, however, an intensification of pricing practices to indicate values that will incentivise particular decisions is mirrored by proliferating critique on ethical grounds. Popularised recently through texts such as philosopher Michael Sandel's (2013) *What Money Can't Buy: The Moral Limits of Markets*, a diversity of views consider that multiple social and ecological choices should not be left to market valuation alone, that intrinsic values cannot be revealed through price mechanisms, and that modern market preferences frequently are unable to recognise prior value practices that confer care (see, for example, Foster 1997; O'Neill 2007; Martin et al. 2013). These perspectives echo Oscar Wilde's (2005[1892]) pithy observation of the late 1800s that a cynic 'knows the price of everything and the value of nothing'. Marketisation processes can also suggest an interchangeability of assets or notional offsets, assuming, for example, that losses of specific emplaced populations or habitats can be easily restored or provided for elsewhere. This assumption obscures the uniqueness of each location and ignores the reality that scope for restitutions of a like kind is shrinking. With only two estuarine river sandbanks left in the Republic of South Africa for spawning frogs and fish, for example, the company behind a proposed port expansion in Durban argued that it could destroy one of these remaining sites because lost populations and habitats could be compensated for with an offset site somewhere else. That the particularly affected species would have to travel around the Cape to get to the proposed offset site was ignored. Nevertheless, it seems that the fetishised power of value as capital – usually a synonym for money – even has many self-avowed radicals convinced that ecological justice can arise as a consequence of the clarifications of 'wealth' afforded by such calculations (e.g. Bond 2013).

Ethically and cross-culturally grounded critiques of the increasing hegemony of economic valuations in decision-making provide a much-needed counter to narratives positing that 'there is no alternative' to the progressive economisation of societal interactions. At the same time, such critiques tend to accept economic value on its own terms: as a type of value that can be rationally assessed and assigned, however detrimentally or unethically. In short, economic valuation is seen to confer meaning to the distribution,

protection and disposal of things and people without reflective or normative thinking being in much evidence. This is either around the ethics of the assignment and its consequences or, more foundationally, about the ability of economic valuation to be rational, accurate or relevant in the first place. The situation reflects the power of economics, statistics and numeric judgements more generally to confer an appearance of robustness, fixity and certainty (e.g. Poovey 1998; Power 1997, 2003; Porter 1995). That the public is so accepting of economic forms of valuation demonstrates the domineering power of the field of economics vis-à-vis other knowledge paradigms in modern culture (Kjellberg et al. 2013). Indeed, money and finance hold an almost mythic status as measures of value (Guyer 2004), despite the many complexities they remove from view.

The works collected in this volume instead challenge the dominance of the economic as the measure of all value. They do this by examining how economic valuation technologies are designed and enacted in varied policy domains *in practice*, so as to consider how economic value is produced and circulated in *specific empirical settings*. The chapters that follow explore the production of markets and prices, as well as more general economic framings of value, in domains where value(s) were previously framed in non-economic terms. In exploring the emergence of newly economic values in a variety of case studies, the authors thereby also attend to the calculation and quantification of value, legitimacy and care, as well as to the implications of this quantification of value on human and beyond-human worlds. In conclusion, we consider some of the limits, hazards and consequences of the intensifications of economisation processes illustrated in our case research.

Context

This book builds on research conducted through a project designed in response to a call from the UK's Leverhulme Trust for research focusing on 'value'. It brings together a range of case studies carried out by PhD students, post-doctoral researchers and senior academics through the Leverhulme Centre for the Study of Value (www.thestudyofvalue.org). It also combines shared conceptual work that was carried out to simultaneously build a research protocol for case research, and to create alignment (where possible) in understanding the overlaps and differences exhibited by the Centre's diverse empirical research.

Our starting point is that at the heart of human life and social change is a profound uncertainty around the frontiers of current economic valuation practices. Neoclassical economics tends to pose as a complete and unified system of thought and pragmatics, but this posturing is, we feel, inaccurate and ultimately unhelpful in approaching the multiple socio-ecological challenges of the contemporary moment.

One often-observed problem is that there are frontiers to this utilitarian valuation system beyond which, in classical economic terms, lie 'externalities'

rendered effectively *valueless*. The composition of the 'valueless' changes historically according to moral, social and economic forces, but there is little explicit research on how social change and social struggles affect valuation frontiers, and vice versa (although on 'value struggles' see De Angelis 2007). Humanitarian and development efforts, for example, have reduced (but not eliminated) allowable deaths from famine, poverty, climate change, disease and war. Despite the human rights discourse however, a value of life for all has not yet been reached. We see this daily in struggles over the value of life of/for immigrants, refugees and other categories of people effectively treated as 'extras' on the stage of global capital and geopolitical contestation (cf. Mbembe 2003; Banerjee 2008; Sassen 2010; Gržinic and Tatlić 2014). More recently, loss of life in Syria, Yemen and Afghanistan is normalising a state of war and restoring the 'other' as terrorist, a condition exacerbated by Donald Trump's accession to the US presidency and his push for government endorsed xenophobia. Indeed, intolerance appears to be on the rise in many parts of the globe, rebuilding the number of abjected persons who are not deemed to be valuable. Development practice has instead generated various proxies such as 'quality-adjusted life years' and 'value for money' expenditure, which assume from the start that not every potential beneficiary of aid is equal (as liberal theory would suggest) or saveable.

Simultaneously, the efforts of social movements concerned with environmental and climate justice have brought more of the beyond-human world into economic calculations of value. An idea that has increasingly gained traction is that 'externalities' that become degraded because they are priced at zero by current economic structures will only be valued if incorporated with higher values through pricing mechanisms. As consumption of planetary resources is argued to approach finite limits (cf. Rockström et al. 2009; UNEP 2011), attempts to insist morally on intrinsic values of nature and other species have become set against work that quantitatively calculates, economises, marketises and sometimes financialises these natures (Robertson 2006; Pawliczek and Sullivan 2011; Sullivan 2013). This is the case, for example, in market arrangements for carbon offsetting and other 'environmental services', for marketised units of some species through species banking in the US, and for some habitats via REDD+¹ and through biodiversity offsetting instruments. Paradoxically, however, and against the avowed intent of those designing and implementing new calculative valuation practices, the quantitatively valued entities which emerge often appear to lose their earlier intrinsic value, emerging as more substitutable – and therefore more disposable – than ever.

Indeed, 'externalities' conventionally accorded zero-value in relation to market prices can offer new potential for capture and accumulation as they become calculated economically and priced. As such, newly calculated economic values for previously unpriced externalities can appear to become part of what anthropologist Anna Tsing (2015) describes as the relentless capture that continually engulfs the edges of formalised exchange relations, such

that evermore entities and relations become co-opted to capitalism's ethos of monetary and profit-oriented value-making (see discussion in Sullivan 2018). This concern with how values are transformed so as to serve the interests of a particular political economic system echoes a Marxian sense of 'primitive accumulation' (Marx 1974[1867], 668) as the ontological, as opposed to historical, condition of capitalist production and value-making (De Angelis 2001; also Luxemburg 2003[1913]); Harvey 2010). A concern is that such value transformations work against possibilities for refraction of the mode of valuation that only sees 'that which is capital and that which might become capital' (Williams 2011, 30).

Such paradoxes of value and valuation are our focus in this book. The chapters in this volume explore a number of separate experiments in the articulation and calculation of value in the interconnected fields of policy and governance regarding development, environment and conservation. Most of the chapters engage with the development and application of specific 'calculative devices' (Callon 2007), i.e. new techniques and tools of quantification either working alongside traditional balance-sheet cost accounting at the firm level, or being used to influence social outcomes by public and private actors. Following Callon and colleagues (e.g. Çalışkan and Callon 2009, 2010; Callon and Muniesa 2005; Callon 2006), we argue that calculative devices are best understood in the context of the *assemblage* through which they are enacted, including the institutional setting and overall discursive framing and ideological representation of those involved. Calculative devices, institutional assemblages and discursive framing together form the three nodes of our research process for each empirical setting, as described in more detail in Chapter 2. Each of the ensuing chapters thus engages to varying degrees with these different nodes in the making of values that have come to matter in our cases. In working through empirical and textual detail in each of our cases our focus is to understand how a valuation process proceeds, and how, as a consequence of this process, a newly calculated and valued entity may be made and begin to act in the world.

In our emphasis on how valuation processes are enacted and their outcomes, we draw on the performative economics tradition with its focus on understanding how 'the economic' is made or 'performed', rather than simply describing a pre-existing economic reality (Çalışkan and Callon 2009, 2010; Callon 2007; MacKenzie 2006). In contrast with classical economic theory, which depicts 'the economy' as if it is a realm autonomous from human agency through the workings of an 'invisible hand' (e.g. Smith 2010[1759]; for critique see Polanyi 2001[1944]), performative economics theorises and explores the actions, knowledges, institutions and calculative technologies through which markets and marketed entities are created and maintained. As we unpack in the next chapter, Callon's concept of the 'socio-technical *agencement*' or arrangement (STA) as a configuration of people, institutions and technologies that makes and performs markets, can assist with identifying how economic value is made in practice (Callon 2007;

Çalışkan and Callon 2010). The calculative devices within an STA effectively price and value entities for exchange, as demonstrated in studies on, for example, sulphur, greenhouse gas emissions, and fish (see Ellerman et al. 2000; MacKenzie 2009; Holm and Neilsen 2007), but the ways in which they do this are often infused with uncertainty, indeterminacy and contingency. This performative approach encourages observation of how economic performances take shape in practice, and thereby sheds light on the calculative and other machinations underscoring the exchange values that become visible in variously marketised structures of action and decision-making.

Our emphasis on how economic value is made thus assists with making visible some of the practices of assemblage that bring together multiple actors, materials, organisations, institutions, calculative devices, etc., that otherwise are mystified in the appearance and exchange of the commodity as an economically valued entity. The Marxian labour theory of value (LToV) similarly unmasks the fetish of value residing in the objectified commodity, by drawing attention to the labour and life captured or alienated in the making of commodities for generalised exchange (discussed further in Chapter 2). At the same time, Marxist value theory can take us only so far with regard to understanding how exactly new economised values are made in today's policy domains of development, environment and conservation. Analytical approaches are needed that both recognise the immeasurable contribution of Marx's critique of political economy and extend this contribution so as to connect with the technological and organisational specificities of the contemporary moment. We thereby read and apply performative economics approaches as disassembling and thereby clarifying the LToV by exploring the ways that multiple calculative devices, institutional practices, structuring value discourses and actions combine in practice to make new economic values from previously valueless domains. Our perspective, however, is that these performative elements exist within, and tend to shore up, the capital-labour relation so potently illuminated by the LToV.

On this basis the empirical cases that follow are more or less inspired by Callon's work on STAs, whilst also attending fully to the specificities or 'lumpiness' of the socio-ecological contexts they express in terms of power, race, inequality and social norms (cf. Collier and Ong 2008). All of the chapters use qualitative methods to capture the contextual detail and complexity at key sites and nodes of interaction, where policy-makers, institutions and calculative devices and technologies come together in valuation processes. These are fast-paced policy arenas and involve contemporary and ongoing framings of value within new markets and social spaces, demanding methodologies that draw in varying combinations on ethnographic closeness, expert interviews, actor network analysis, discourse analysis, institutional analysis, participant observation, semi-structured interviews, surveying, quantitative analysis and modelling. In many of the chapters, semi-structured interviews feature as a means to investigate the institutional settings, the actors and the discourses that are making the creation of new valued entities possible. In

the remainder of this introductory chapter we briefly outline the key domains and case studies that form the basis of the chapters that follow.

Domains of value

The chapters in this book move through a series of interconnected, loosely boundaried 'domains of value' in contemporary policy arenas: development, environment and conservation. A domain, for the purposes of this book, is broadly conceived as a self-referencing space or conceptual terrain where participants have some collective convergence in the purposes, behaviours and activities that they are sharing. For example, the development domain encompasses a global set of institutions sharing a mission to 'do development' loosely conceived as a set of established practices and policies cohered in soft law internationally. People are employed in the domain, fiscal resources and finance are dedicated to it, and participants therein are expected or supposed to benefit from socio-economic and wellbeing gains. Similarly, in the environmental domain, there are also a set of institutions, persons and participants sharing a mission and purpose to improve the health of the beyond-human realm. The context of the first domain is society and the human, and of the second, other animals and the living biosphere. Conservation is closely related, but more specifically dedicated to ideas of preservation, restoration and ecological restitution and stewardship, often historically imbued with ideas of preserving wilderness. Moving through these interconnected domains of value, we proceed by summarising the different case studies making up the remainder of the volume.

The development domain

Historically there have been people who are not valued enough to be formally counted even when they die, as in the immeasurable loss of life in the colonial Congo, in the Chinese famine of 1961, or in the complexities of international intervention in the ongoing war in Syria. Lost lives have a particular political economy context, as the death of one person can improve economic opportunities for others, but the contemporary context of expendable people is not well understood. In development practice value calculations outside the price system are often used, since public actors must make decisions about how resources are to be distributed. But the process of quantification fails to respond to some of the biggest challenges of government: namely the morality that must underlie the principles and embedded assumptions that determine worth and value. Thus when desk officers at donor organisations decide that programming directed at helping orphaned and vulnerable children is better 'value for money' – and therefore a priority for expenditure – over programming directed at assisting people with disabilities or the elderly, they are using a complex calculation which may attach value to both the expected economic productivity of each group and a moral

judgement over who is most deserving. The basis of such decisions is rarely made publicly explicit, but they result in inequalities and inequities in care alongside some of the improvements in performance that the planners had intended. Despite many studies that take a cost–benefit approach to assessing the value of development programming, there is little research that directly addresses the problem of how value is produced, and upon what basis.

Development effect, however, is increasingly quantified so as to service demands for ‘evidence based policy’, ‘payment by results’ and ‘value for money’. To achieve these outcomes donors widely employ impact measurement technologies which perform quantified representations of how much of the ‘good’ thing desired by a public expenditure is actually being produced by a particular intervention. Impact measurement, however, often relies on classification and coding systems which invest numeric rankings with meaning in complex situations that resist the commensurability suggested by such numeric values. The role of impact measurement is often to convince others of the value of a policy intervention, rather than to prove impact in a scientifically robust way, such that the performance of value in development programming often suggests calculative worth beyond the actual capabilities of the measurement technology in question (Bracking 2012).

We begin this part with Chapter 3, in which Aurora Fredriksen explores the top-down work of valuation in the international development sector. In recent decades, international development agencies have become increasingly focused on demonstrating the effectiveness and impact of their work through practices of (e)valuation and assessment at the level of individual projects or programmes. Fredriksen examines one iteration of such ‘aid effectiveness’ accounting, namely ‘value for money’ (VFM), which must now be demonstrated for each project or programme funded by the UK government’s DfID. Drawing on insights from assemblage theory and the performative economics literature, this chapter traces how VFM is variously calculated in practice and explores two related framings that circumscribe the possibilities of these VFM calculations. The first framing equates robust evidence with quantitative evidence. The second figures a linear relationship between development inputs and results. The chapter shows how the calculations of VFM within these framings performatively express the value of international development as a quantified, economic relationship between development inputs and results. The analysis is situated within the particular socio-political context in which this performance of VFM by DfID has been mobilised to defend development aid spending from its critics and considers the wider relevance of this dynamic.

Moving from a top-down to a bottom-up view of value in development, in Chapter 4 Fortunate Machingura focuses on ill-being and vulnerability, drawing on insights from the growing literature on surplus population, necropolitics, biopolitics and the expendability of human life (Foucault 1977, 2007; Mbembe 2003; Banerjee 2008; Murray Li 2007; Redfield 2012; Neves

and du Toit 2013). In this chapter, Machingura explores the question of how societies implicitly and explicitly perceive and set the value(s) of different human lives through the discourses and calculative tools of public health policy and practice. In particular, the chapter identifies local and vernacular epistemologies and problematisations of value in relation to people living with HIV/AIDS (PLWHA) in Zimbabwe. The chapter identifies the calculative tools and rationalities used by government officials and public health experts in the valuation of human life and shows how the lives of people from certain social, cultural and economic backgrounds are thusly devalued. The chapter argues against the systematically 'allowable deaths' of these devalued populations, and for more transparent, just and equitable valuations of human lives in public health policy and provision. The chapter further demonstrates how PLWHA in Zimbabwe are not passive receptors of the (lack of) value bestowed upon them by these health systems, but instead resist this devaluation with a counter-narrative of their value in which they emerge not as expendable victims but as victors in an indefatigable population.

In Chapter 5, the final chapter on development value, Sarah Bracking and Aurora Fredriksen trace the competing financial and social valuations at play in the developmental worth of large-scale infrastructure projects, as well as the competing discourses used to justify them. This chapter starts with a case study of the 'Back of Port' expansion in South Durban and the competing logics of value articulated both in support of, and opposition to, a major port expansion and development project. The financial and economic logic of creating a fixed built asset to generate derivative income streams for investors, cheaper costs for shipping companies and expanded wharfs for the oil and natural resource export industries, is here juxtaposed to community views of the worth of the homes, social assets and heritage sites which would be displaced to make way for the port expansion. The case study is an example of competing orders of worth (Boltanski and Thévenot 2006): one abstract and derived from formal calculations of economic growth and multiplier effects; the other social and developmental and, in this case, largely absent from official debate. This chapter problematises any simple relationship between large-scale infrastructure and developmental benefit, arguing that the benefits to investors are the only guaranteed return in this project design. The valuation of the proposed port expansion is shown to prioritise profits at the international, rather than the national, scale, thereby shifting the benefits of infrastructure in favour of the (further) privatisation of profits offshore, while socialising the costs onshore. The chapter further argues that conventional development economics has difficulty grasping the value of such large-scale infrastructure projects in social terms, primarily because it occludes the issue of scale. Assuming a national frame of 'much-needed' Foreign Direct Investment (FDI) leads to a failure to account for the future financial, social and ecological costs of infrastructure builds.

The conservation domain

Environmental management for conservation is currently animated by attempts to make legible the value of beyond-human nature in cost–benefit decisions regarding economic development. Policy effort and funding are being directed towards creating calculative frameworks for ‘valuing nature’ that are global in reach, such that environmental externalities under conventional accounting practices can be clarified in terms of equivalent and apparently commensurable monetary representations (see, for example, the influential United Nations Environment Programme ‘UNEP’ initiative on The Economics of Ecosystems and Biodiversity or ‘TEEB’). These efforts are permitting natures-beyond-the-human (cf. Kohn 2013) to be both conceptualised as, and aligned with, financial measurement, at the same time as facilitating the emergence of new marketised exchanges in these representations (Sullivan 2013, 2014, 2017a, 2017b). The offsetting and payments model for species conservation is rapidly accelerating as a core market-based method for valuing and conserving biodiversity involving varying combinations of public and private sources of finance. Although halting and beset by various sources of friction, these marketised and market-like approaches have significant implications in terms of both the conceptual disaggregation of species from the ecosystemic fabric in which they are embedded, and for the foreclosure of non-marketised motivations for valuing non-human nature. In this part two cognate case studies are included wherein natures-beyond-the-human are at the frontiers of monetary valuation practices. Through these practices natures are being configured as calculated and variously marketised units that can be incorporated into conventional neoliberal value orderings by means of formal property arrangements and particular efficiency and rationality assumptions.

In Chapter 6, Sian Sullivan highlights the value assumptions underscoring the recent and contested emergence of debt-based financing for the conservation of ‘standing natures’ *in situ*. In the aftermath of the United Nations Framework Convention on Climate Change (UNFCCC) Paris climate agreement of late 2015, there has been a noticeable proliferation of policy publications and reports espousing the benefits of leveraging debt-based finance and impact investing for the conservation of so-called natural capitals. The chapter examines how new measures of the health and improvement of natures *in situ* are becoming a focus for financial concerns in ‘impact investing’. It introduces the concept and practice of impact investing and traces developments in the field of impact investing for the conservation, restoration and rehabilitation of terrestrial ecosystems. The chapter explores the innovations we are seeing today that seek to create conserved natures *in situ* as an asset class for impact investing, and sets them within a broader turn towards impact investing in social and development contexts. In doing so the chapter identifies the value-making mechanisms proposed and in place for translating projected natural capital quantities into financially leverageable forms of value.

Moving from the global to the local, in Chapter 7, Louise Emily Carver and Sian Sullivan analyse the applied practices that are creating numerical equivalences between ecological impact and associated offset sites so as to standardise measurable conservation outcomes, or 'yield', in the new conservation technology of biodiversity offsetting (BDO). The relative youth of biodiversity offsetting in application means that little is known either about how biodiversity valuations and offset contracts between impact and receptor sites are agreed in practice through application of biodiversity offsetting metrics, or the long-term implications for conservation outcomes. The chapter responds to the first of these gaps in particular, by demonstrating how biodiversity yields were calculated and negotiated for a specific offset contract, set within a broader government-led pilot study into biodiversity offsets in England. Empirical observations for how calculations of biodiversity value were enacted and applied in the development of a specific offset arrangement were made through repeat site visits, participant observations and semi-structured interviews with key actors participating over the 24 months of a biodiversity offsetting pilot study initiated by the UK government's Department for Environment, Food and Rural Affairs (DEFRA). In addition to 46 transcribed interviews subjected to textual analysis using a qualitative data analysis software program, biodiversity offsetting planning documents formed the basis for detailed analysis of this process in England. The case study presented here demonstrates how the DEFRA metric was applied in practice so as to create biodiversity value at both development and receptor sites and offers three central observations. First, that the standardising assessment techniques and metrics central to the biodiversity valuation process are being amended in creative ways as users adapt inputs to metric calculations to balance and negotiate conflicting requirements. Second, that the case history provides empirical material to illustrate the working in practice of commensuration processes that arise as different habitats are made equivalent through the application of BDO metrics. Finally that BDO is becoming further aligned with commercial agricultural productivity agendas that emphasise efficiencies and scale of production through concepts of 'yield'.

The environmental domain

International governance agreements under the auspices of the United Nations have, since the 1970s, drawn increasing attention to the environmental effects of economic development. In this part we consider two key dimensions of environmental governance: climate change mitigation and water management. Climate change futures is a rapidly growing area of research, but one in which natural and social scientists have encountered some difficulty in connecting their positivist and normative fields. Our research here considers both mature carbon markets and the morality of carbon trading through a case study of the UNFCCC, CDM and private sector carbon

traders, alongside a specific exploration of discourses guiding and contesting the new GCF. Chapters in this part map the institutional arrangements and lay normativity within the carbon trading industry globally (Chapter 9), and in relation to the CDM (Chapter 8), in order to account for the apparent disjoint between claims that carbon trading is significant in reducing emissions, and global data suggesting that empirically this is not the case. Similarly, the question of water valuation has split the water sector for more than a decade. In particular, arguments about the role of water pricing and water markets have confronted quite different criteria rooted in the 'rights, knowledge and experience of local people and communities' (Chapters 10, 11). Increasingly, there is widespread recognition that 'price' does not, or should not, be equated with 'value'.

In Chapter 8, Robert Watt offers an explanation for why carbon markets have declined in terms of a number of interconnected meanings of value. The once-booming trade in CDM carbon credits has crashed, with offset credits now commanding only very low exchange values. A primary driver for the decline in offset markets is the growing perception that offsets have limited use value, especially in recognition of the failure of many offsets to produce the intended environmental use value, namely overall reductions in CO₂ emissions. The failure is related to the complexity of the valuation processes involved in creating an offset commodity. These include challenges in relation to measuring emissions reductions through the postulation of hypothetical 'baselines' and problems of attribution of emissions reductions to the offset mechanism. Both involve navigating the complex concept of 'additionality'. The commercial interests and power of the actors involved in the valuation process – mainly project developers and auditors, but also regulators – encourages the registration of significant amounts of offsets which lack environmental integrity. Policy-makers regulating the use of offsets in the European Union's (EU) carbon market have belatedly come to realise the lack of use value represented by offsetting, and have taken steps to restrict the trade. However, other users of offsets, including policy-makers governing other domains, might nonetheless evaluate carbon offsetting as a normatively commendable practice, or cynically recognise the problems of offsets and seek to exploit them. Offsets can be framed discursively as valuable, even when they are not, giving rise to an economy of false appearances (Tsing 2005; Cavanagh and Benjaminsen 2014). The chapter concludes that an inability to imbue meaningful use value to the carbon offset commodity through the CDM valuation process has led to a crash in the exchange value of these commodities.

In Chapter 9 Jonas Amtoft Bruun explores value in the GCF. At the international climate meeting (COP15) in Copenhagen in 2009, the UN GCF was conceived with the ambition that it would channel the majority of future financial resources to assist developing countries in adapting to the impacts of climate change. The GCF was further mandated to catalyse finance for mitigation projects under various existing UNFCCC programmes and to

attract investments from the private sector via a 'private sector facility'. A total of 130 Civil Society Organisations (CSOs) participated in the four-year design process that took place from 2011 to 2015, as representatives for civil society and those most affected by climate change. This chapter explores the processes by which the activities of the CSOs influenced the design and development of the GCF. It argues that two meta-discourses prevalent within the UNFCCC process, green governmentality and ecological modernisation, worked in conjunction to enforce an economic calculus in the GCF design, which undermined values presented by the CSOs on human rights and pro-poor climate finance captured in a third meta-discourse on civic environmentalism. The chapter contributes to the study of value by critically assessing how valuation technologies in global climate governance are designed and the way in which value calculations render some knowledge and services provided by CSOs relevant, while others are deemed discountable.

In Chapter 10, Philip Woodhouse and Mike Muller review the question of value as it applies to water and explore how a diversity of water values can be reconciled within decision-making processes. They identify two separate issues to be addressed. The first is to characterise water as a complex resource with a diversity of uses, broadly defined, and to consider the values that may be associated with water in its different uses. The second is to consider how societies can and do make decisions about water resources where different values systems intersect and overlap. In particular they consider how conflicts over water resources can be mediated and whether there are generic principles that can guide the development and application of appropriate approaches. They critically review approaches that rely on reducing all water uses to commensurability consistent with a single basis of value, either economic or ecological. They then outline an analytical values-based approach that seeks to identify and recognise more explicitly a plurality of values in water resources and their use. They argue that resolving competition between different water users is more a matter of explicitly political processes than one of application of technical economic or hydrological rules.

In Chapter 11 Rebecca Peters and Philip Woodhouse explore the case of South Africa's 1998 National Water Act (NWA), which sought to address allocation disparities through the adoption of decentralisation, participation and economic pricing strategies for water governance and management. They argue that economic value as articulated through a 'scarcity' discourse emphasising efficiency, productivity and pricing for water has taken precedence over social equity values underpinning redistributive principles of water allocation reform (cf. Turton 2000). Drawing on empirical research in the Inkomati Usuthu Water Management Area in Mpumalanga province, they consider how the values of water expressed in the 1998 NWA overlap and differ across institutions, users and intended beneficiaries in practice. The chapter argues that the economic aspects of water value emphasised by dominant water users in this catchment, primarily commercial irrigated agriculture, have subverted the transformative potential of water reallocation

following values based in notions of equitable allocation and citizens' rights to water. This has had the effect of entrenching historic patterns of inequitable access to water.

Conclusion

In this introductory chapter we have briefly framed the structure and rationale for this book. We hope our volume will inspire further comparative empirical research regarding the making of new economic value in varied contexts, as well as contribute to the theorisation of value and valuation processes in both the academy and beyond. Given that the work is both theoretical and empirical, the next chapter is reserved for a more detailed account of our conceptual map for the research, and the concepts which we decided to use in a common research protocol.

Note

- 1 REDD+ refers to Reducing Emissions from Deforestation and Forest Degradation, a mechanism developed by the UNFCCC to create a financial value for the carbon stored in forests in developing countries.

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