The Politics of Green Transformations

Book · January 2015

3 authors, including:

Ian Scoones
Institute of Development Studies
239 PUBLICATIONS   **23,331** CITATIONS

Peter Newell
University of Sussex
152 PUBLICATIONS   **8,043** CITATIONS

Some of the authors of this publication are also working on these related projects:

Earth System Governance Project View project

Land Deal Politics Initiative (LDPI) View project

Chapter 1

The Politics of Green Transformations

Ian Scoones, Peter Newell and Melissa Leach

The green transformation imperative – and its politics

Talk of transformation is back in vogue. This time the call is for a green transformation.[1] But what would one look like and who will bring it into being? While such a discussion implies a key role for technology and markets, it is also deeply political. But what makes it political and which and whose politics will shape the sorts of transformations that are desirable and possible?

A confluence of financial and ecological crises, in particular, have once again raised issues about the ecological, social and economic sustainability of the global economy and the extent to which we have the sorts of political institutions able to contain crises and steer positive and progressive change. This has prompted calls for a new green industrial revolution, transitions to a low carbon economy or for more radical restructuring for de-growth or the pursuit of prosperity without growth (cf. OECD, 2011; Jackson, 2011).

While calls for radical transformations are often made but mostly ignored, this one has captured attention at the highest levels, whether through the launching of the Sustainable Development Goals, heightened mobilization around a 'make-or-break' climate agreement for Paris 2015, or renewed calls for a World Environment Organisation at the time of the Rio+20 summit in 2012. Emphasis is often placed on the need for massive public and private investment in new technological revolutions (Stern and Rydge, 2012) or on greening capitalism through pricing nature (Costanza et al, 2014). What is often missing, however, is attention to the politics that are inevitably implied by disruptive change of this nature: questions of institutional change and policy, as well as more profound shifts in political power. This is the starting point for this book.

Why politics? What is it that makes green transformations political? The chapters in this book provide a number of answers. Questions surrounding what counts as green, what is to be transformed, who is to do the transforming, and whether transformation, as opposed to more incremental change, is required are all deeply political. For many, the green transformation is like no other we have witnessed so far. While history has witnessed numerous waves of disruptive economic and social change, brought about by technology, war and shifts of cultural values – from the industrial revolution, to the end of slavery to the rise of feminism – none has been primarily driven by the goal of rendering the economy and existing model of development more sustainable. That is not to say that key shifts have not had positive environmental consequences. Think of the effect of the 1970s oil crisis on rising investments in renewable energy and energy efficiency, or the argument that the ecological unsustainability of previous civilizations have been key factors in their demise (Ponting, 2007). But in most cases the principal drivers and goals were not the pursuit of a 'green' transformation.

The political nature of the green transformation is heightened because speed of change is seen as essential.

There is a sense of urgency that pervades current debates about sustainability amid talk of tipping points, thresholds and planetary boundaries (Rockström et al, 2009; Lenton, 2013). Furthermore, the threats of the Anthropocene era have prompted calls for truly global responses (Crutzen and Steffen, 2003; Steffen et al, 2007) that must take place in today's thoroughly multi-polar world. The governance challenges of redirecting so many types of human activity across so many levels are staggering and quite possibly unprecedented, prompting calls to strengthen 'earth system governance' (Biermann, 2007; Biermann et al, 2012a) and the social science of transformation (Leggewie and Messner, 2012a; Brown et al, 2013).

The aim of the book, then, is to engage with these debates, from a variety of different perspectives and settings, and lay out some of the core challenges, trade-offs and directions for a new politics of green transformation. Intellectually, getting a handle on these challenges requires a fusion of insights from disciplines such as anthropology, development studies, ecology, economics, geography, history, international relations, political science, science and technology studies and sociology, among others. We cover a range sectors and issues from energy, food, natural resources, transport, urban infrastructure and finance in a diversity of settings from Denmark to China.

This interdisciplinary and multi-sited approach allows us to conceive of more multidimensional understandings of politics. These include political economy and political

ecology (with an accent on material and structural forms of power and their implications for questions of access and justice), to institutional politics (focusing on national and global organizational forms) to discursive expressions of power (through knowledge and values). The aim, collectively, is to offer a deeper and more rounded understanding of and engagement with the politics of green transformations, beyond a more narrow focus on institutions and policy, or the perspectives of mainstream political science.

Our emphasis on transformations also moves beyond, while engaging with, the substantial body of literature on socio-technical transitions that cover some aspects of these debates. Indeed, our focus on politics and broader questions of structural change suggests 'transformation' rather than 'transition', as the key term (Stirling, this book; see also Brand, 2012b). Within the 'transitions' literature there has been a recent move to address questions of power and politics more explicitly (e.g. Geels, 2014), suggesting a move from a narrow socio-technical understanding of transitions to one more aligned with a wider debate about transformative change. Yet the conceptualizations of power and politics, and their relationship with questions of knowledge and social justice, require further elaboration. Our focus on transformations assists this. Transformations are inevitably multiple and contested, as pathways interconnect and compete (Leach et al, 2010). Politics and power are important to how pathways are shaped, which pathways win out and why, and who benefits from them.

By prefacing the transformations with the word 'green' our intention is to focus on the environmental dimensions of change, but these almost inevitably raise questions of social as well as environmental justice. The constitution of 'green' transformations varies depending on the setting in which they are occurring. In many, perhaps especially developing country contexts, there is unlikely to be any green transformations if questions of social justice are not

part of the debate. This is captured in calls for a 'just transition' (Swilling and Annecke, 2012; Newell and Mulvaney, 2013), which requires attention to both distribution and direction as part of any assessment (STEPS, 2010).

Respecting differences of context and perspective, the book does not follow a single definition of 'green transformations'. Instead there is a variety of approaches, ranging from those focusing on environment (e.g. Schmitz, this book, for whom 'green transformation is the process of structural change which brings the economy within the planetary boundaries') to those focusing also on social justice and distribution, either as intrinsic to the definition (e.g. Stirling, this book) or in talking of 'green and just transformations' (e.g. Leach, this book). In contrast with definitions focusing on the need to respect environmental limits, others link 'greening' intimately with the multiple dimensions of sustainability – social and economic as well as environmental. A common normative view unites the chapters: all authors share a concern both for environment, and for people's inclusion and well-being. Yet differences lie in conceptualization and analytical implications, with implications too for which dimensions of politics are highlighted.

We understand 'greening' therefore as a process rather than a measurable end-state. Just as it is impossible to conceive of the end-point of the unfolding low carbon transition, so previous transformations did not start out with clear blueprints and plans that were then rolled out. They were rather the product of competition and interaction between a number of pathways, supported by diverse social actors with highly uneven political power.

In this book, the notion of 'green' is therefore not just reduced to 'green' technology or business, but to more radical shifts to sustainable practices. There are of course various

shades of green implied by weaker and stronger versions of sustainability (Spratt, this book), and throughout the book, we are interested in how different versions of green are represented in politics. In other words, asking 'what does green mean?' and 'whose green counts?' (Leach, this book). Politics are often about reconciling tensions between different versions of 'green', and here links with social justice and equity concerns are vital.

Contests over pathways are thus not just about end-points, or the role of technology, markets or the state, but also about the knowledge underpinning them. In this sense, the science that is invoked to legitimate calls for green transformations is also a site of political contestation. It does not provide neutral value-free guidance as to what is to be done and by whom (Millstone, this book), even though it may be represented as doing just that. Dig a little deeper, and we find the assumptions embodied in understandings of complex processes of (global) environmental change to be subject to scrutiny and dissent. There is a politics around knowledge production in debates about green transformations, turning both on what we think we know (consensus and uncertainties) and on who knows it (whose knowledge counts). We must ask which scientists or other stakeholders, which forms of expertise, from the official to the informal, which disciplines and which regions have most voice in the construction of knowledge about the predicaments that underpin calls for green transformations. Put another way, a 'reflexive turn' is needed that treats the governance of expertise about global environmental and green issues as a matter of political contestation (Beck et al, 2014). Who sets the terms of debate about green transformations is crucial because organized knowledge, explicitly or implicitly, demarcates ways forward. Such knowledge in turn suggests who can use which resources in order to live within environmental limits and planetary boundaries, and gives an indication of which causal processes should be addressed. These are decisions whose impacts affect everyone, but perhaps most those whose livelihoods are tied up with

day-to-day interactions with ecologies and natural resources: the majority of the world's poor.

We are therefore concerned in this book with a very material politics, but also a politics of knowledge. These are deeply intertwined. Whilst drawing attention to the sometimes problematic ways in which knowledge gets produced might play into the hands of sceptics, and distract from the hard politics that must address the political-economic structures that are leading us towards planetary disaster, there are dangers too associated with an uncritical embrace of dominant knowledge production for green transformations. Instead, we argue that so-called soft and hard politics are deeply connected. Knowledge politics matter because they are so closely entwined with material political economy (Leach, this book), and making them explicit can lead to more open, robust and grounded knowledge for green transformations (Stirling, this book).

At the same time, discourses of catastrophe and imminent ecological collapse raise unsettling questions about the ability of democratic institutions to deliver fast and effective solutions, or whether the scale and urgency of ecological crises warrants some suspension of normal democratic procedures. There are undoubtedly trade-offs around efficiency of decision-making and inclusion, and around negotiation versus coercion, but this book cautions against deriving political action from 'ecological imperatives' without attention to principles of democracy (Stirling, this book). Similarly, others have highlighted the dangers of 'post-political' discourses (Swyngedouw, 2010) around environmental threats such as climate change that restrict the contours of legitimate political debate precisely on grounds of the need to suspend social conflict. Instead, clear urgencies and imperatives may call for a 'slow

race' – making haste slowly – in a way that is respectful of inclusion, deliberation, democracy and justice (Leach and Scoones, 2006).

What is to be transformed in what ways?

There is widespread acknowledgement of the multiple environmental stresses the world faces – from climate change, air and water pollution, and biodiversity loss to land use change, for example. There is growing consensus that these will prove deeply damaging to human well-being and futures unless they are addressed. There is a robust debate, but a lesser consensus, about the drivers that exacerbate them – including overconsumption, urban expansion, population pressures, unequal economic relations and globalization. But how these are to be tackled remains much disputed, and a clear vision of what green transformations are required, for what and for whom remains elusive.

This is of course due to political contention. There is intense competition around framings of how to read and react to the observed trends: what diagnoses they allegedly provide of the origins of the crisis and the sources of the remedies. There is much at stake in the construction of what drives unsustainability (who is to blame for what) and of what forces can be aligned to rebalance socio-natures. Whether wholesale transformations, as opposed to more discrete socio-technical transitions, are required, and what it is that is to be transformed, has major implications for actors and interests – which are supported, and which challenged. Whether transformations should be technology-led, marketized, state-led or citizen-led has huge implications for the processes, institutions and instruments deployed. Should the entry point be individual behaviour change, pricing of environmental externalities and ecosystem services, state restructuring and support for 'green' industrial sectors, or green technological

innovation? All have different implications for who should be involved on what terms and who wins and who loses. Such choices about 'green' directions therefore inevitably have implications for social justice and social inequality.

In recent years, debates about economic growth have taken centre stage; both its desirability as an end in itself (Jackson, 2011; Dale, 2012), and the extent to which it improves broad well-being in highly unequal, richer societies (Wilkinson and Pickett, 2010). Measures of growth, and appropriate metrics and accounting systems, have also been widely debated, with calls for 'green accounting', 'ecological footprint' assessments and 'circular economy' measures (Vincent, 2000; Mathews and Tan, 2011; Wackernagel and Rees, 2013). Debates about growth have also prompted deeper reflections about the scope for the greening of capitalism, or whether the idea of green(er) capitalism constitutes an oxymoron (O'Connor, 1994; Foster, 2002; Newell and Paterson, 2010; Newell, 2012). All of these debates identify fundamental conflicts and trade-offs, centring again on questions about what is to be sustained and what we mean by green.

Glib policy statements of win-win green economies often obscure the many hard trade-offs implied by attempts to square environmental aims with social justice, or to pursue a just transition (Agyeman et al, 2003; Swilling and Annecke, 2012; Newell and Mulvaney, 2013). While some focus only on green limits and planetary boundaries, others argue that attending to distributional issues first is essential – creating a 'safe and just operating space for humanity', with a basic floor of welfare, human rights and dignity (Raworth, 2012; Leach et al, 2012, 2013). These perspectives are reflected in attempts to protect 'development rights in a carbon constrained world' (Baer et al, 2008) or to specify 'contraction' on the part of richer

countries and 'convergence' on the part of poorer ones towards agreed per capita entitlements to what remains of available carbon budgets (GCI, 2014).

Rather than divide up the existing cake (albeit an ever smaller one) in more equitable ways, one alternative invokes what some term 'green sufficiency'. Thus the claim that continuous exponential economic growth can ever be compatible with long-run environmental sustainability is contested (Trainer, 1996). Prosperity, not growth, is seen as the appropriate goal for green economies and societies, to be built through emphases on well-being, social sustainability, services and care (Jackson, 2011). Such perspectives are promoted by Green political parties in some countries, with a focus on public provision of sustainable energy and water and support for community-based economies (Douthwaite, 1996; Levidow, 2014).

A related set of alternatives emphasize green well-being and justice. Some argue that mainstream versions of the 'green economy' and 'green growth' function primarily as a means to maintain existing patterns of capitalist development and the inequalities associated with them, just now under a green veneer (Lyon and Maxwell, 2011). While some reject the concept of the green economy entirely (Wanner, 2014), others seek to elaborate it to incorporate questions of justice, promoting ideas of a 'green and fair economy' (Green Economy Coalition, 2014).

Understanding the politics of green transformations

All transformations are replete with governance challenges, and this book asks: whose rules rule; which institutions define visions of change and the terms of change, and which relations of power shape different pathways?

Given the variety of perspectives on green transformations, it is not surprising to find a diversity of literatures that offer interpretations and frameworks for understanding them. One important area is the growing literature on socio-technical transitions. This has generated many important insights into how, when and why socio-technical change is possible: how niche technologies emerge and displace incumbent regimes and how a series of landscape factors can frustrate or enable this change (Geels, 2005a; Smith and Scarse, 2009; Geels and Schot, 2007; Loorbach, 2007; Grin et al, 2010).

One area where this literature has fallen short is in its understanding of power and political economy (Smith et al, 2005, 2010; Meadowcroft, 2011; Baker et al, 2014). An understanding of politics is important in explaining which pathways get supported and legitimized and which are ignored and so fail to gain traction. This is starting to be recognized in recent contributions around the 'multi-level perspective' of the socio-technical transition literature (e.g. Geels, 2014). A deeper understanding of processes of knowledge politics, political conflict and accommodation, bargaining and disciplining, as niche experiments challenge existing regimes is clearly highly pertinent (Smith and Raven, 2012).

The politics of green transformations implicate multiple levels of governance and decision-making, and the challenges of co-ordinating these to pull in the same directions. A plethora of approaches labelled multilevel, polycentric, global and earth systems governance has been suggested (Galaz et al, 2012). But each raise the key questions of who steers and which actors and institutions govern transformations, through which institutional mechanisms. This in turn raises questions about how far transformations can in fact be managed and directed, as often assumed in earth systems governance and transition management debates, as opposed to

emerging from below in unanticipated ways that are difficult to anticipate and direct.

Questions are also raised about roles and actors. Should transformations be overseen by nation states or global institutions, and in what relation? Given the track-record of national environmental policies and global governance of the environment, what can realistically be expected? Assumptions about capacity, commitment and willingness are built into many green economy policy proclamations, but will the key players be prepared to intervene, and if so what type of green transformation will be backed? (Allen, 2012; Fouquet and Pearson, 2012).

The politics of green transformations are also about the politics of accountability and participation – whether at global, national or local levels. These become especially pertinent as global institutions and governments seek to extend their reach in efforts to create – or under the guise of building – a green economy. Will these interventions be inclusive or exclusive, top-down or bottom-up, and who gets the rent from 'managing' such transformations? As Lockwood (this book) describes, depending on the political-economic setting, the incentives for policy elites to back a green transformation and for states to intervene will vary dramatically. The role of elite politics, and alliances of states, businesses and finance, becomes important, as different groups seek to capture the benefits of any transformative shift. Power and political authority in alliance-building, influence by particular political economic context, is central to any understanding of what is likely to happen, and what is not (Schmitz, this book).

The political dimensions of long-term change are also important. History offers highly relevant lessons about the circumstances in which 'technological revolutions' come about – whether the move to coal under the industrial revolution or the shift to mass mobility under

Fordism – are also relevant. Perez (2002, 2013), building on Schumpeter, highlights the critical role of finance capital in unleashing 'waves of creative destruction' that unsettle incumbent regimes; a theme picked up by Mazzucato, Spratt and Newell in this book.

Histories often involve the co-evolution of policies, institutions, infrastructures and even whole political systems with technologies and material resources. As Mitchell (2011) argues in relation to coal and then oil, for example, forms of democracy are deeply entwined with particular material energy resources. In this sense, politics is co-constructed with socio-technical systems and particular resources, whether coal or oil, water or land. Some types of transformation are thus affected by the biophysical, material qualities of those resources, with water, for example, being described as the 'un-cooperative commodity' – its fluidity making it difficult to govern (Bakker, 2010). The materiality of resources can also provoke an unravelling of political systems, technologies and infrastructures built around them, as is claimed for peak oil and its ability to destabilize incumbent power (Leggett, 2014). Unravelling such co-constructed complexes of technology, infrastructure, institutions and politics and creating alternative pathways is therefore a central challenge of the politics of green transformation. Opportunities may emerge during periods of crisis (or interregnum) in which a new politics of transformation becomes possible.

The politics of transformation also involve the politics of knowledge and culture. Building more sustainable pathways involves transformations in behaviour at personal and collective levels, underpinned by convictions that change is necessary and desirable. Green transformation thus requires transformative knowledge (Hackmann and St Clair, 2012). Yet as longstanding experiences and literatures from the sociology and anthropology of science and policy tell us, such knowledge cannot just be imposed from above by expert science; to

have traction, it must make sense to people in diverse settings (Jamison, 2001; Jasanoff and Martello, 2004). There is a politics to the ways that different people and groups, with different cultural backgrounds, invoke particular forms of knowledge to define and contest the nature of environmental problems, why they matter and to whom, and what should be done about them. The intensity of these knowledge politics is picked up in different ways in the chapters by Leach, Millstone, Stirling, and Smith and Ely. They underscore the potential of grassroots and citizen-based knowledge to contribute to green transformations, and the need for transformations in the ways different knowledge producers and holders interact in order to enable this.

Underpinning these different conceptualizations of transformation, and how and when they occur, different emphasis is placed on the desirability and possibility of incremental institutional change and transitions within capitalism as against the need for more radical transformations of capitalist structures and relations (Kovel, 2002). This raises a series of entrenched and contentious questions about strategy: how much change is 'good enough'; whether reform or more radical revolution is the appropriate strategy, and whether the urgency of delivering green transformations necessarily prioritizes immediate incrementalism over longer-term more radical restructuring. It underscores the very different visions of sustainability which run through all debates about green transformations, reflected in the diversity of perspectives of contributors to this book. Much depends on the framing of competing visions of sustainability, a theme to which we now turn.

Framing green transformations

At the broadest level, therefore, many agree that the world is on an unsustainable path and that business-as-usual is not an option. 'Hard' disagreements exist, for sure, with those fundamentally opposed to change in sustainable directions – such as institutions and businesses whose profits and power are fundamentally interlocked with the status quo. Yet even amongst those sharing a broad 'green' consensus lie a range of hotly contested visions of sustainability that define the framing of and approach to green transformations. These 'soft' disagreements are also important, and they too implicate material questions of economy, interest and resource allocation. Visions of what is to be done reflect starkly conflicting diagnoses of what the problem is and who is best placed to act on it.

Such visions partly reflect longstanding debates about how to reconcile environment and development or growth and sustainability. Current discussions about green transformations bear the legacy of debates about sustainable development in particular. 'Sustainable development' of course has been a rallying call for those concerned with the relationships between environment and development over several decades (Adams, 2003). Brundtland's original formulation was 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland, 1987). This inspired the Rio Earth Summit discussions in 1992, and the plans that emerged around Agenda 21, and many conferences, summits, conventions and policy statements since.

Mobilized by this idea, the early 1990s saw strong momentum in the form of environmental legislation, policy, business and community action, locally, nationally and internationally. But this had slowed by the early 2000s (Vogler and Jordan, 2003; Redclift, 2005), and attempts to resuscitate the sustainable development vision at the Rio+20 conference in 2012 largely failed (Bulkeley et al, 2013). Progress on the major 1992 targets was disappointing,

and many national sustainability action plans became forms of managerialism that failed to challenge the economic and institutional interests and practices that supported unsustainability (Berkhout et al, 2003; Scoones, 2007; Jordan and Adger, 2009). Sustainability and sustainable development could easily be used as empty rhetoric, masking a variety of decidedly environmentally-unfriendly actions through 'greenwash' (Rowell, 1996).

One response to this disappointing history would be to recommit to the idea of sustainable development with renewed vigour, recasting this as a concept to drive a new round of political and policy change. Indeed, the Rio+20 outcomes document, *The Future We Want* (UN, 2012), is framed in these terms and commits countries to defining and implementing a set of Sustainable Development Goals (SDGs). Yet, as the SDG process unfolds, many are questioning whether, again, this will prove to be an ineffective discourse that drives only more rhetoric, bureaucracy and managerialism. Meanwhile, though, others have picked up and run with alternative 'green' framings – especially around the green economy, and ideas of green limits or 'planetary boundaries', seeing these as more potent in galvanizing politicians, businesses, policy-makers and publics for real change.

For example, Jacobs (2012a) elaborates on the politics surrounding the rise of the green economy concept. These have included the perceived need to replace, for Rio+20, the managerial, statist concept of sustainable development. Many also recognized that discourses focused on costs and green limits – including the two degree safety barrier in climate change and planetary boundaries, as well as climate discourses focused on the costs of mitigation – would struggle to gain political support in a post-financial crisis world where economic growth and employment remained the core priority of voters, businesses and governments. In

this context, ideas of 'green growth' offer a positive spin, claiming 'that protecting the environment can actually yield *better* growth' (Jacobs, 2013, p6).

But 'sustainable development' and 'green economy', while the most visible and mainstream, are not the only ways of framing green transformations. Our focus on politics reveals others, and differences and contrasts within these. In the sections below we identify four broad narratives of green transformation, each reflecting different framings of problem and solution, and different versions of sustainability. Others have proposed similar typologies of environmental world views on the question of 'pathways to a green world' (Clapp and Dauvergne, 2011; see also Szerszynski, 1997; Dobson, 1998, 2000; Jamison, 2001; Hopwood et al, 2005) that correspond in some ways to those we outline here. Each narrative embodies a different perspective on what it is (if anything) that needs to be transformed; and each reflects different understandings, prejudices and theories of change, informing how, when and why transformation is possible. In other words, each narrative suggests a pathway (or set of pathways) to green transformations, and so a particular politics of transformation.

The chapters that follow take different positions with respect to these narratives, often advocating a combination of pathways, and so a diversity of political strategies, demonstrating that there is no one-size-fits-all approach to green transformations and their politics.

Technocentric transformations

First, we identify a 'technocentric' view of sustainability and transformation. Here the challenge essentially lies in finding the right combination of technologies to meet rising

demands in greener ways. For example, lower carbon energy, fewer agricultural inputs but higher yields, less water intensive systems and so on. The aim is to reduce ecological footprints through technological innovation without altering systems fundamentally. Reorganizing economies or institutions and unsettling prevailing power relations is less of a priority. The emphasis is much more on creating incentives and enabling the 'right' kinds of technologies to compete with incumbent ones: through picking winners, appropriately designed R&D and intellectual property policies, supportive industrial and tax policy and heroic entrepreneurs – what Elkington (2012) calls the 'zeronauts'. This is a reformist perspective on green transformations which offers a relatively limited account of politics. Politics is essentially understood as policy; providing policy fixes in support for sustainable technologies. Such proposals are in many ways radical in terms of the ambition, and are of course deeply political, as in calls for de-coupling and some arguments for a 'green industrial revolution' noted above. Likewise, for some, an advocacy of geo-engineering, as a technical solution to climate mitigation, is informed by an assessment that other options are unlikely any time soon due to the power of vested interests (Lomborg, 2013).

In some versions of a 'green economy' position, a dominant emphasis is on technological innovation and investment – mostly by the private sector – in low carbon and other environmental technologies. In this narrative, ideas of green and of new technology are firmly interlocked, and often coupled with assumptions of business-led growth. For some, green technoscience is on the brink of creating a 'new industrial revolution' (Stern and Rydge, 2012) set to transform economies. Such techno-optimistic visions are echoed in applications to developing countries, where groups such as the Sustainable Development Solutions Network (SDSN, 2014), as well as a host of private companies, suggest that a combination of bio-, info-, nano- and engineering technologies, and markets to enable their

spread, will transform economies in green directions. Both the Organisation for Economic Co-operation and Development (OECD) and the United Nations Environment Programme (UNEP) also emphasize technoscientific innovation, highlighting the need for international cooperation in facilitating trade and technology transfer, to allow for 'leapfrogging', if developing countries are to go green (Levidow, 2014).

In such discourses, 'greenness' is often presented as if it were an attribute of a technology itself, and as if the technology had agency in economic transformation. Yet this is, of course, to ignore the vast array of political-economic and social arrangements associated with both technological innovation and application in particular settings that shape whether and how technologies work, how and towards what ends (Bryne et al 2011). While there are exceptions, such as the more recent emphases of the SDSN, the focus on technological solutions generally downplays the governance contexts of technologies, and the ways they become part of diverse pathways. Arguments about imminent technological revolutions similarly downplay the embedded political and institutional regimes that have shaped such 'long waves' of technology-related growth in the past (Perez, 2013).

Technocentric narratives often imply that innovation originates in the hi-tech laboratories of firms and technology start-ups, largely in the global North – or in the emerging economies of China, India or Brazil. Notions of green technology transfer, leap-frogging and catch-up reinforce this view. Yet such versions of green technology marginalize or devalue technoscientific innovation that emerges from the global South (Ely et al, 2013), while also concealing the North-South inequalities of access and capacity that shape innovation capabilities (Levidow, 2014). Likewise, the focus on hi-tech innovation obscures and marginalizes innovation from the grassroots (Smith and Ely, this book) and through wider

mobilizations of citizens (Leach and Scoones, this book). Such local innovation processes are frequently motivated by a mesh of socio-cultural and livelihood concerns, and understandings of ecology and sustainability – that diverge from the narrow notions of 'green' and 'economic benefit' encompassed in most technocentric green economy discourses.

Marketized transformations

A second narrative centres on calls for marketized transformations to sustainability. Here, the market is the agent of transformation which through pricing, creating markets and property rights regimes, unleashes new rounds of 'green accumulation'. Hence the diagnosis of the problem is market failure, lack of green entrepreneurialism and failure to allocate and sufficiently protect private property rights. For example, the World Bank's 2003 World Development Report on 'Sustainable Development in a Dynamic Economy' advances the idea that the spectacular failure to tackle poverty and environmental degradation over the last decades is due to a failure of governance, 'poor implementation and not poor vision' (World Bank 2003. The report notes, 'Those [poverty and environmental problems] that can be coordinated through markets have typically done well; those that have not fared well include many for which the market could be made to work as a coordinator'. The challenge for governments is therefore to be more welcoming of private actors through, among other things, 'a smooth evolution of property rights from communal to private' (World Bank, 2003, p133). Markets are thus emphasized as the key drivers of sustainable development – while recognizing that markets can only work in this way once states have intervened in particular ways.

The emergence of ideas about the marketization of nature and the green economy has been dramatic. As Jacobs (2012a) documents, rarely heard before 2008, market-oriented green economy concepts are now prominent in policy discourses across governments and international economic and development institutions alike. Thus, the World Bank and other multilateral development banks have ostensibly embraced green growth as a core goal, while the OECD has committed itself to a green growth strategy (OECD, 2011). Similarly, the UNEP has strongly promoted a green economy agenda (UNEP, 2011). These international institutions have jointly established a 'Green Growth Knowledge Platform' to build knowledge about the field. Green growth and/or a green economy have been adopted as explicit policy objectives in a number of countries, including some of the world's largest economies, and many NGOs and alliances have also bought into the concept.

Those now promoting green growth and the green economy claim that it is not a substitute for sustainable development, but a way of achieving it. However, this elision overlooks the extent to which the framing of green economy represents a distinctly different set of meanings, politics and imperatives. As Jacobs (2012a) argues, the emphasis is on a level of environmental protection that is not being met by current or 'business as usual' patterns of growth. This gives the concept both its political traction, and its discursive power to justify transformations. Proponents of a marketized green economy perspective argue that this could be a driver of higher output and rising living standards, and in the relatively short-term. This positive framing has united diverse public and private organizations, whether in energy, transport or natural resources. It has also co-developed with the number and power of environmentally-oriented businesses, for whom 'green' and 'commercial success' are deeply intertwined.

These perspectives emphasize the need to recognize, and value economically, the natural capital on which growth depends. 'Putting a price on nature' as a way to overcome so-called market failures has a long history in green economic thought and policy, with environmental economists during the 1980s and 90s putting much effort into the development of methods, measures and metrics (Pearce and Warford, 1993). Today, discourses centring on valuing natural capital are extending ever more widely into previously un-priced and non-marketized dimensions of nature and ecosystems. This is associated with new forms of financialization and commoditization, deeply embedded in and thus furthering capitalist networks of control and appropriation (McAfee, 2012; Sullivan, 2013).

A number of governments have embraced these concepts and are translating them into policy. For instance, the UK has established a Natural Capital Committee (DEFRA, 2014), has positioned itself at the centre of the 'new carbon economy' (Newell et al, 2012) and embraced controversial practices of biodiversity off-setting. Internationally, UNEP (2011) has been amongst the key proponents of this marketized version of green economy discourse, and its application to developing country contexts. The UNEP-hosted Economics of Ecosystems and Biodiversity (TEEB) initiative advocates strongly for the concept of natural capital in 'making nature's values visible' (TEEB, 2014). An array of schemes is now unfolding to value and trade aspects of ecosystems now (re)-defined as financialized commodities. They include schemes for trading carbon credits and offsetting emissions, such as those associated with clean energy, forests and agriculture under the Clean Development Mechanism (CDM), the United Nations collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (UN-REDD), and a host of voluntary schemes. They include emerging markets for 'offsetting' species and biodiversity loss. And they include an array of 'payments for ecosystem services' (PES) schemes. They are in turn linked with new

forms of venture capital and speculation, as derivatives circulate as fictitious and liquid capital (Büscher et al, 2012). Yet whether the claimed benefits are realized in practice, amidst imperatives for project developers to realize profits in often uncertain markets, and in the context histories of weak local resource tenure and control, is highly variable (Newell and Bumpus, 2012; Leach and Scoones, forthcoming). Interventions promoted in the name of green marketized approaches can easily become forms of 'green grabbing' that dispossess local resource users of rights and livelihoods (Fairhead et al, 2012). Meanwhile, narrow forms of financial valuation of ecosystems and landscapes overlook alternative social and cultural values, including those that have emerged from the long co-existence of people and ecologies in diverse settings (Martin et al, 2013).

Markets always depend to some extent on state action; on the ways that states enable the emergence of particular markets, and through providing incentives and regulation, shape how they operate. Pathways of green transformation therefore often involve combinations of market and state action – even while narratives of marketized transformations portray markets as if they acted alone. In contrast, other narratives focus in on the role of the state.

State-led transformations

A third narrative focuses on state-led transformations to sustainability. The starting point is often the need to re-embed markets in stronger frameworks of social control, combined with a recognition of states' historically central role in previous waves of innovation and financing of technology and growth. Arguments for a 'green entrepreneurial state' (Mazzucato, 2013b, this book); or green industrial policy (Schmitz, this book); or earlier work on the 'green state' (Eckersley, 2004), all emphasize the central role of state action.

Unsurprisingly, the state also features highly in accounts of transition management and its critical stabilizing, backstopping and stimulus roles has been underscored by recent crises. Jacobs (2013) documents how the recent case for greening economies emerged in the wake of the 2008 financial crisis. Amidst neo-Keynesian policies to rebuild economies by replacing lost private sector demand with public expenditure, and thus create multiplier effects, public initiatives aimed at protecting the environment were highlighted. Thus, areas such as energy efficiency, renewable energy, water quality improvement, agricultural and landscape management, public transport and pollution control were seen to offer ways to get people into work and to increase demand for goods and services. Many of the countries that introduced fiscal stimulus packages in 2008-09 included 'green' programmes of these kinds. In 2009, UNEP proposed a Global Green New Deal, including an agenda to expand public services, regulate private sector activities and promote less resource-intensive patterns.

What has attracted particular interest in recent years is the role for developmental entrepreneurial states with the growth of 'rising powers' such as China, Brazil and India, willing and able to use proactive industrial policy to spur marketized and technological transformations. In a new multi-polar global context, it is these countries that are often leading in green transformations, and they are countries where the state is playing an active role. Investments in renewable energy – wind and solar – provide key examples. These efforts are often financed by powerful and well-resourced development banks able to support ambitious investment strategies, as Spratt (this book) shows for Brazil, and Mazzucato (this book) describes for Chinese investment in solar power. States are thus not just providing countercyclical lending, but are even 'directing' that lending towards key, innovative parts of the 'green' economy.

Emphasis on the role of the state in steering green investment can also be seen as a response to a sense of crisis in states' more conventional environmental governance roles. Failures of institutional arrangements and architectures nationally and globally to tackle climate change, biodiversity loss and key areas of pollution successfully have led some to revise expectations that such agreements are possible, in the face of overwhelming national and interest-group political-economic interests. Other views, such as perspectives in the Earth system governance literature, are more optimistic, stressing the scope to accelerate green transformations by strengthening global architectures and institutions, and if necessary creating new ones – such as the World Environment Organisation much discussed around Rio 2012.

Citizen-led transformations

A fourth narrative suggests that transformations will have to come from below. This represents a more populist version of sustainability, centred on taking control over resources from state-capital elites who have shown little serious interest in more profound green transformations and whose ability to deliver them is highly compromised by their commitments to growth at any cost. There is a strong emphasis on de-growth and bottom-up transitions to alternative solidarity-based economies (Dobson, 2009; Utting, forthcoming), including examples of transition towns and alternative agri-food movements (Leach and Scoones, this book). Civil society groups have also proposed alternative ways of 'living well'. Amongst the most celebrated are plans for *Buen Vivir*, now endorsed by government ministries in Ecuador, that combine environmental justice, common goods, agro-ecology and food sovereignty. Buen Vivir (the quechua term is Sumak Kawsay) also emphasizes

indigenous, non-Western concepts, such as *miriachina* – the idea that people and groups contribute to the realization of goods collaboratively and with nature, rather than producing things as individuals (Martínez Novo, 2012).

These proposals imply quite different routes to achieving green transformations that involve challenging the social and political-economic structures that sustain individualist, capitalist development paths.

Mobilizations for alternative pathways in which rights to food, water or energy often have a central role are combined with resistance to existing forms of extractivism and business-as-usual developmentalism (Bond, 2012; Gottlieb and Joshi, 2010). As well as 'weapons of the weak' (Scott, 2008) and transnational mobilizations (Tarrow, 2005), as Leach and Scoones (this book) illustrate, they combine with initiatives around 'citizen science' and grassroots innovation (Smith and Ely, this book). From projecting alternatives to current unsustainabilities, to demonstrations and experiments within 'niches', the emphasis is often on diversifying and democratizing knowledge for transformations, and so 'culturing' sustainability (cf. Stirling, this book), through an emphasis on everyday and lifestyle politics.

Table 1.1 offers a schematic summary of the diagnoses and associated solutions proposed under these four narratives of green transformations. As the chapters that follow show, these are not mutually exclusive categories, and many instances exist where narratives are strategically combined to suit particular circumstances. As we go on to argue, the important point is that each suggests different frames, different politics, different alliances between actors, and so different routes to achieving green transformations.

<TABLE 1.1 HERE>

One thing that is notable from these narratives is the neglect, explicitly at least, of questions of justice. Across each of these narratives, justice is implicitly assumed to be delivered. In the technocentric version, this occurs through supposedly benign elites stewarding global public goods. In the marketized version, just transformations will only be effective, efficient and tenable if consumers support them through their purchasing power, and the market will deliver the best technologies and goods at the best price. For those emphasizing state-led transformations, only the state has the authority and legitimacy to protect rights, oversee redistribution and ensure that the interests of the majority are served by particular green transformations. By contrast, in narratives that place the accent on citizen-led action, neither states nor markets nor technocratic elites have proven their ability to defend their citizens from the impacts of previous transformations and there are few grounds for thinking they will do so in relation to green transformations. Conceptions of justice thus must derive from popular understandings about what is fair and socially-acceptable.

This is not to suggest there are not hard trade-offs between justice and sustainability (Dobson, 1998; Mason, 1999; Agyeman et al, 2003; Leach et al, 2010; Martin, 2013; Sikor, 2013; Sikor and Newell, 2014). Indeed, work on political ecology has long drawn attention to the intimate connection between social relations of race, class and gender for example and the likelihood that social groups will either benefit from or be further excluded from access to natural resources and projects aimed at their protection (Martínez-Alier, 2002; Newell, 2005; Robbins and Watts, 2011; Wichterich, 2012). In relation to green transformation debates, North-South NGO networks have attacked the dominant agenda of the 'green economy'. Tensions between agendas have pervaded official texts and debates, with arguments for

human well-being and social equity existing cheek-by-jowl with contradictory statements that promote dependence on an unregulated private sector. These tensions often remain hidden in narratives about green transformations – yet making them explicit is crucial if justice concerns are to be given due consideration. Again, this requires focusing attention on the politics of green transformations.

The politics of green transformations

Each narrative thus employs, explicitly or implicitly, very different theories of power, politics and governance, and so implications for justice and distribution. They also embody distinct understandings of 'the market', of 'states', and 'citizens', in terms of their transformative potential, whose interests they serve and the forms of power they exercise and are subject to.

In some renditions we can see traces of 'technocratic global control', either through centralization of authority globally or polycentric or multi-level governance or through faith in technological magic bullets that bypass the need for political change and compromise. A fallacy of control is often demonstrated, and such calls for planetary management have provoked powerful critiques (Sachs, 1993), particularly in relation to the growing role of corporations in framing and financing global responses to environmental threats (Hildyard, 1993). By enrolling ever more areas of the global commons in circuits of global economic and political power and subject to global institutional oversight, such a technocratic turn can undermine democratic responses.

In the case of technocratic governance, power lies with benign elites who seek to globalize the benefits of technologies, act upon the insights of planetary science, marshal a 'global

consensus' and then allocate resources for the protection of global public goods. The Green Climate Fund of the World Bank is perhaps a good example. This perspective draws on an essentially liberal view of power where trust in (global) institutions, and states/policy elites derives from their assumed autonomy from particular interests and classes and their respect for the rule of law. They are able to align the comparative advantages of public and private (and philanthropic) interests though a variety of public private partnerships (Bäckstrand, 2006). Citizens, in this view, benefit from protection by such elites acting on their behalf, without much requirement for their direct input. Rather, public participation comes through interest group representation in national democratic processes.

Likewise, accounts of marketized transformations present themselves as apolitical, devolving power to the market to seek out optimally efficient outcomes by setting the right prices and creating new markets with minimal institutional oversight. Market-based mechanisms such as emissions trading, tradable fishing quotas and carbon offset projects are all examples. States oversee exchanges in the market and provide appropriate regulation and, most importantly, allocate and enforce property rights. Citizens are relevant as passive consumers of products and services produced through the market, but not as shapers of markets or the rules by which they are governed. Such accounts also overlook the deeply politicized nature of market creation, the scope for capture by capital and the lack of attention to social justice issues in such projects (Brand, 2012a). In their favour, such approaches reflect the new global distribution of power – including the rise of political-economic power in countries like China, India and Brazil – and a realpolitik of who owns the technology, production, finance that, for many, will be critical to the prospects of most green transformations. In this reading, green transformations will inevitably be market led, and markets, corporations and finance capital need to be enlisted, including from other parts of the world.

For those that place more faith in state-led transformations, as Mazzucato argues (this book), many things that get attributed to entrepreneurs and markets, are in fact shaped and financed by states. Markets have to be made and brought into being (Çalışkan and Callon, 2009); nowhere are there markets independent of the societies which create and shape them; they are always socially embedded (de Alcántara, 1993). Rather than wishing away the state or denying its relevance, these accounts point to the potential of state-led Keynesian, or developmental states (Chang, 2002; Fine et al, 2013) as an important corrective to some of the naivety, as well as ideological tone, apparent in some market-based versions of green transformations. In more paternalist versions, states are assumed to have the interests of citizens at heart and a sincere commitment to the advancement of development. Yet such models need to be nuanced with an appreciation of the uneven capacity and resources that most states have, especially those in the majority of the world. Only some states have the policy autonomy and developmental space (Evans, 1995) to pursue ambitious and autonomous strategies for green developmental transformation.

Contexts matter, and as the chapters in this book show there are a whole variety of states, with different financial, bureaucratic and technological capacities, and different possibilities of state-led or guided transformations follow from this. Other critiques coming from marketized narratives would take issue with the idea that the state knows best, and equally those emphasizing social justice issues would question whether states are willing and able to act in benign ways rather than serve as vehicles for the expression of the particular interests that capture them. State-led perspectives thus still require an explanation of who sets the direction of change and how the overall goals of green transformations are set. They also

require reflection on how issues of distribution, accountability and chronic power imbalances will be addressed.

Those advocating more citizen-led transformations take as their point of departure that neither state nor market can deliver. Either captured by or with interests aligned with capital, state or marketized transformations inevitably serve the interests of the minority not the majority. Issues of ownership and control over the process and the tools of change (production, technology, finance and institutions) are key. In this narrative, greater faith is placed in the role of mobilized citizens to democratize technology, production and the institutions which oversee them. This assumes a much more active and inclusive view of citizenship (Leach and Scoones, this book). In this rendition, citizens are creative, knowledgeable actors exercising active agency, individually and through networks across scales. The cumulative and diverse unruly politics of movements offer diverse possibilities for transformations, and perhaps reflect more accurately where the momentum for change has come from historically (Stirling, this book). This requires thinking about transformations in terms of cultures, practices and mobilizations that create the pressure for change, acting both to disrupt incumbent pathways, but also construct alternatives (Smith and Ely, this book), connecting across scales and between movements.

Yet, given the nature of the contemporary political landscape and prevailing distributions of power, as well as the scale of change required, there are doubts as to whether citizen-led action alone is up to the challenge. This is either because of the urgency of the situation or because of the inevitable need to enrol powerful actors in transformative projects, given their control over many of the very things that need to be transformed: production, technology and finance. There is also a danger of romanticizing and exaggerating the potential for citizen

action in terms of peoples' time and capacity to engage in constant mobilization, or because of the high personal and political risks of doing so in many parts of the world where mobilizing citizens quickly run up against elite control over resources.

These four narratives, while conflicting in many respects, contain elements of critique and propose solutions that cut across one another. For example, some might share the view that a more whole-scale re-ordering of society-nature relationships is ultimately required, but would see a role for pricing mechanisms, technological innovation and institutional reforms in the meantime. It is partly a question of timeframes of change, partly an assessment of how the world is now and the practicalities of meaningful shifts, and partly a function of ideal futures and ideological leanings. Ultimately, it is about the messy politics of day-to-day negotiations and alliance-building amid shifting circumstances, opportunity structures and prevalent uncertainties, and the pragmatic politics of tactics and strategy that any green transformation requires (Schmitz, this book).

Overall, then, some types of transformation politics are more likely around some issues in some parts of the world than others. This depends, amongst other things, on the degree of democratic space that exists, available technological capacity, the development and functioning of markets, the power and commitment of the state, and the influence of citizen mobilization and action. Some environmental challenges are perhaps more amenable to technological fixes, while others are more characterized by murky political economy and more challenging struggles – though none we would suggest is devoid of politics, despite implicit assumptions to the contrary. Unsurprisingly, therefore, there are no standard solutions, and no singular roadmap or blueprint, for realizing green transformations.

Multiple transformations: Strategies for change

What then do the chapters say about theories of change, the building of alliances and the practical politics of green transformations?

Clearly, contributors to this book come at these issues from different angles, conceptually, politically and practically, drawing on different theories of power and change, reflected in different visions of sustainability and narratives of green transformations outlined above. Some emphasize the politics of knowledge (Leach, Stirling, Millstone); others state policy (Mazzucato, Spratt); others mobilizing change through networks (Smith and Ely, Leach and Scoones), others the incentives required to form interest-based coalitions (Schmitz, Lockwood) and others the historical role of broader social forces (Newell). And indeed many chapters combine perspectives, as power and politics take many forms and these are inevitably co-constituted and context-specific.

Likewise, and emerging from these perspectives on power and politics, each of the chapters suggests different pathways of change. Each provides different accounts of what alliances could be constructed, what accommodations might be reached, what practical tactics and strategies could be deployed, and how these combine different narratives, and respond to different imperatives of green transformation. What this all suggests is that, rather than there being one big green transformation, it is more likely that there will be multiple transformations that will intersect, overlap and conflict in unpredictable ways. Many indeed may already be underway, competing with one another for the political attention, support and financial resources of states, businesses and publics. There will be failures, setbacks and unintended consequences, as with any project of reorganizing society.

Change will therefore come about in a multitude of different arenas and sites and through diverse alliances and movements. We are therefore likely to see a series of competing – at times divergent, other times convergent – green transformations. How might these come about? Drawing from the chapters, four broad, and overlapping, strategies for change are seen.

Shaping and resisting structures

As already alluded to, one key fissure in debates about green transformations is around the scope for change within capitalism. Most chapters here emphasize the diversity and unevenness of capitalist development in relation to varieties of capitalism (Lockwood, this book) and fractions of capital (Newell, this book) as a way of getting a more differentiated handle on the possibilities of transformations within capitalism(s). Newell (this book) shows how activists have sought to mobilize the power of finance capital given its heightened power to drive decarbonization, while Spratt (this book) shows, in turn, how important it is to disaggregate different types of finance in order to appreciate what transformative potential (if any) they might have.

Due to prevailing structures of capital and finance, some strategies of green transformation might gain traction in the neoliberal heartlands of the US and Europe, but are far less likely to work elsewhere. In neoliberal settings, the power of transnational corporations reshapes democratic possibilities, due to their market power, lobbying influence and control of states and claims to be in the vanguard of social and environmental responsibility (Crane et al, 2008; Crouch, 2011). This suggests new challenges for the 'post-democratic' era, where

organized civil society becomes crucial to challenge the power of the corporation (Crouch, 2004; Crouch and Streeck, 2006).

As well as appreciating the macro context, what this points to is the need for more nuanced, and regionally and nationally-specific theories of change (Lockwood, this book), given that common structures of power express themselves in distinct forms around the world. This requires the building of national strategies, and locating transformations within understandings of national political dynamics.

Reframing knowledge

Structures of power are not just economic, of course. Many contributors place emphasis on discursive structures that limit how we see and imagine problems and solutions and how we come to define, know and frame futures. Closing down debates and the capture of terms and styles of discussion are common features. We must ask whose knowledge counts in the development and articulation of authoritative and legitimate knowledge about transformations. Many of the book's contributions argue for the need to 'open up' discussions, allowing for discursive reframing, and deliberation and dialogue as part of a process of knowledge production for and within transformations. These structures of knowledge production have concrete, material and distributional implications, as the contributions from Leach, Stirling and Millstone make clear. This raises important challenges about the robustness of institutions to deal with the plurality and diversity of knowledge, as Millstone suggests. Previous experience of global assessments (Scoones, 2009) or attempts to manage public engagement though global institutions charged with governing technology (Newell, 2010) offer important lessons (Beck et al, 2014).

Realigning institutions and incentives

Several chapters point to the potentially key role of strong (entrepreneurial or developmental) states in pushing (rather than just nudging) change (Mazzucato, this book), and the importance of different institutional configurations to the prospects of green transformations (Lockwood, this book). They also raise questions about the capacity of states to fulfil what is imagined or expected of them. The potential for state capture is also highlighted when so much is at stake and powerful actors feel threatened by the direction of change and seek to control the pace and direction of it.

This is not just about differences between states in the global North and South, since while resources are critical, corporate capture of states is a worldwide phenomenon. This is just one aspect of the changing global context, including the rise of the BRICS, which is rendering old North-South distinctions obsolete and highlighting both global commonalities, and new axes of political-economic power and privilege. There are issues everywhere then of whether states can or should 'pick winners', and their willingness and ability to challenge incumbent power: to discontinue sunk investments and avoid technological and infrastructural lock-in, for example. The nimbleness of the state to reflect, challenge and change direction is often questionable (Lockwood, this book), although there are also positive examples (Mazzucato, Schmitz, this book).

Mobilizing and networking

Civic action to disrupt, discontinue and challenge incumbent power has always been a central part of historical transformations and will continue to be part of future ones. Smith and Ely (this book) emphasize the potential of bottom-up innovation and grassroots practice. Movements play a key role in challenging the legitimacy of dominant framings, resource distributions, technological priorities and distributional consequences (Leach and Scoones, this book). This occasionally takes the form of proactive efforts to claim control over processes, priorities and resources, as in the case of the movements for food, water and energy justice/sovereignty. These illustrate the potential of place-based struggles to resonate and 'globalize' through transnational advocacy networks (Leach and Scoones, 2007; Sikor and Newell, 2014), while also inviting questions about the scalability and replicability of experiments and successful campaigns, given the contingent and context-specific nature of transformation politics.

Across these four strategies for transformation, there is a diverse, always messy (and often murky) politics at play. This highlights a profound mismatch between how transformations are currently and historically practised – always complex, overlapping and contested – and how they are talked about and imagined in policy – often as a plan, specified in terms of goals and targets, implying hubristic illusions of control through management (Stirling, this book). Although with hindsight the temptation is to ascribe unidirectionality, linearity and clearly-defined purpose to transformations in previous historical periods, when living through such periods of change, they appear open-ended, where goals and pathways to change are often unclear and contested (Newell, this book). Moreover, despite the best intentions and aspirations of planners and entrepreneurs, muddling through, constant adaptation and coping are the norm, and act to subvert and resist any plans that seek to predict and manage change (Folke et al, 2002). Added to the importance of political-economic contexts, this should strike

a note of caution about 'blueprints', 'models' and 'transfers' from 'success' stories such as Germany or China (see Schmitz, Lockwood, this book).

Across the book, the different contributions incline towards a stance of politically-informed, yet pragmatic realism, drawing on combinations of the different strategies outlined above to map out ways forward. A scepticism towards simplistic win-win technocratic or market solutions comes across clearly. But there is also an acknowledgement that the likelihood of radical change in the short-term is small, while maintaining a commitment to longer-term more radical shifts, and to ensuring that decisions now do not constrain the possibility of such longer-term changes. Collectively, there is a shared appreciation that current economic and political structures around markets, technology, finance and existing allocations of power are not delivering green transformations that are either just or sustainable. So a searching analysis of wider political economy and the structures of power is necessary. Yet the sense in which a radical and revolutionary overhaul is unlikely soon, even if ultimately desirable, suggests the inevitability of the messy politics of deal-brokering, compromise and alliance-building for green transformations.

Conclusion

So what does this all mean for the politics of green transformation?

Firstly, the chapters strike a note of caution about the idea that there will be one great, guided (normally assumed from above or through the market) green transformation. Neither a global Green New Deal, a World Environment Organisation or global pricing of 'natural capital' will do away with the need to engage with multiple, contested changes that may (or may not)

add up to a broader politics of green transformations. Given the diversity of accumulation strategies being pursued by states and corporations in different parts of the world and the ways in which they enrol and collide with so many other social actors, we can expect a diversity of pathways. The contribution of a more political analysis of green transformations that this book offers helps clarify some of the trade-offs, highlighting the distributional implications and therefore enabling engagement and support for transformations that seem to be more 'just', 'equitable', 'inclusive' and 'democratic' – and consequently sustainable.

Secondly, recognizing, celebrating and encouraging diversity in transformative pathways is not the same as saying 'let all flowers bloom'. Power relations do need to change and transformations that are narrowly based – whether around technology or markets or bottom-up politics, for example – are unlikely to gain much traction, despite the illusions of order and clarity that they may afford. Likewise, scepticism about knowledge claims does not amount to critiques of the value of science, but highlight the politics of knowledge around such claims. As many of the chapters argue, there is therefore a need for more inclusive knowledge (co-)production in order to increase the robustness and credibility of knowledge for transformation.

Thirdly, the emphasis on questions of equity and justice that run through many of the chapters underscore the imperative of ensuring transformations are 'just': that they pay due attention to those whose livelihoods are dependent upon the existing way of doing things and who stand to lose out under many proposals for green transformations, and that benefits and risks from change are fairly distributed. Democratic politics are vital to this, despite some calls that they are a luxury we cannot afford given the urgency of change. Political analysis is

again required to understand how modes of governing, deliberating and participating can be adapted to help address the challenges thrown up by green transformations.

The chapters in this book therefore offer different perspectives on the politics of green transformations; there is no standard answer, and much depends on context, sector, political economy, timing and so on. These politics will continue to play out on a terrain of competing discourses, institutions and material interests in diverse contexts. The challenge for all of us is to engage on that terrain in defining and realizing pathways that are both green and just. A political analysis, as outlined in the chapters in this book in different ways and from diverse perspectives, is central to this very practical and urgent aim.

---

[1] See, for example, *'The Great Transformation'* (Heinrich Böll Foundation, 2013), echoing the title of the earlier classic work by Polanyi (1980[1944]).