

ROUTLEDGE STUDIES IN LOW CARBON
DEVELOPMENT

The Social Challenges and Opportunities of Low-Carbon Development

Johan Nordensvärd



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This book explores the social implications and challenges of low-carbon development. The argument of the book is that a broad understanding of low-carbon development is essential for mitigating climate change and enabling development in a carbon-constrained world, but there are risks that low-carbon development might come at a price that is both social and economic. These risks need to be carefully assessed and reduced. The main aim of the book is to explore, critically analyse and propose different ways of understanding low-carbon development from a social perspective in both developed and developing countries. The author uses concepts such as low-carbon development, social policy, sustainable development and environmental justice to understand the social implications of low-carbon development projects.

The book first elaborates the need to understand the social issues and challenges of low-carbon development in both developed and developing countries. It then discusses five contemporary challenges of low-carbon development:

- 1 the social consequences of Chinese hydropower dams in the Mekong region;
- 2 the cost of the transition to renewable energies such as wind energy in Germany;
- 3 the challenges of carbon offsetting in Brazil;
- 4 the nexus of fuel-inefficient housing and fuel poverty in England;
- 5 solar power for refugees in Africa.

The book fills a crucial gap for researchers, postgraduates, practitioners and policy-makers in the fields of climate change, development and social policy.

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Introduction

Johan Nordensvård

The idea for this book started from a famous quote from Max Weber's seminal book *The Protestant Ethic and the Spirit of Capitalism*. One hundred and ten years later, the quote is just relevant today as it was 1905. He brought forward a central doubt that market capitalism can regulate itself and use less natural resources than needed. He wrote that the capitalist economic world order will proceed until "the last ton of fossilized coal is burnt" (Weber, 1953: 181). Scholars such as Walden Bello (2008) and Gus Speth (2008) argue that we are heading towards either a collapse of the present capitalist system or a collapse of our global climate. Nevertheless, the pessimism that Weber had towards Western modernism and capitalism has often been overshadowed by the number of people who share an optimistic view of the future, according to which things get better and better every year.

This optimism has been inherent in the way that modernism and the Enlightenment have understood development and progress. The meta-narrative of modernity had argued for the power of reason over ignorance, the power of order over disorder and the power of science over superstition. The old ruling classes with their archaically ordered society could be replaced with capitalism as a new mode of production and a transformation of the social order. This was the foundation upon which, it was argued, humanity would be able to achieve progress. It is a quest for the application for reason and for emancipation from ignorance, insecurity and violence. The main mechanism of this meta-narrative is that there is a larger movement towards human emancipation, despite setbacks and anomalies like wars, disasters and injustices; society is always moving forwards (Miller and Real, 2000: 19).

Climate change is a challenge to this optimistic view of development and capitalism. In the light of climate change, the discourse around development has started to shift focus away from pure growth towards a transformation. Despite the bleak outlook of climate change, and the loss of biodiversity and intact ecosystems, there is a new optimism that reason and progress can transform capitalism and thereby prevent that "last ton of fossilized coal" from being burnt.

Nevertheless, the concept of growth and consumption is ingrained in the way that we perceive our world: “Someone once said that it is easier to imagine the end of the world than to imagine the end of capitalism” (Jameson, 2003: 76). Capitalism and its commodification process have had not only environmental implications but also severe social implications for large numbers of the population. One of the more destructive aspects of capitalism was seen in the nineteenth century when some sectors of the population in the Western world became dependent upon the market for the survival. Karl Polanyi therefore discussed labour as a “fictitious commodity” since it is not produced for sale and it cannot be detached from the rest of a human’s life (Polanyi, 1944: 72). Decommodification has often been linked to being a citizen in a welfare state and thereby linked to both duties and rights towards the state. The first conception of decommodification, as discussed by Polanyi, “protected citizens from major social risks and insulated their living standards from dependence on wage payments” and “the counter-movement that pressed for social reforms led to the creation of a welfare state dependent on public services paid for by taxes and social contributions” (Gough, 2010: 62). The welfare state moderated and mitigated the negative social implications of capitalism in the Western world.

Nevertheless, Polanyi did point out the importance of adding environment to the analysis. He argued that land is also a fictitious commodity. Land is considered by Polanyi as “another name for nature, which is not produced by man” (1944: 72). He argued that the commodification of land, natural resources, the oceans, and so forth will generate collective ‘bads’. This will need a collective response from society. Polanyi argued for a more active role for the state in regulating the land and protecting natural resources from market forces: “[T]he commodity fiction disregarded the fact that leaving the fate of soil and people to the market would be tantamount to annihilating them” (Polanyi, 1944: 73). If labour and land are fictitious commodities, then how can we prevent them from being excessively exploited on a global scale? In many countries there is neither a strong welfare state to mitigate the exploitation of human labour nor an effective regime to protect the environment.

The question now is whether capitalism can prevent climate change and engage in poverty reduction at the same time. We should be under no illusion that human wealth has been created on the back of people and the environment so there are of course many question marks over how the exploitation of people and land can be prevented while still promoting growth. According to a narrow understanding of low-carbon development, there is a belief that both poverty reduction and climate change mitigation can be brought about with green capitalism and green economic growth. Progress will green everything eventually.

A narrow understanding of low-carbon development (or, perhaps more accurately, low-carbon growth) does imply at first sight a rather harmonious marriage between climate-friendly activities and international development.

One might of course think that a low-carbon economy and development are not mutually exclusive but that they could be combined in both bold and progressive ways. Low-carbon development is often seen as a possible answer to the question of how humanity is going to tackle its excessive carbon dioxide (CO₂) emissions without sacrificing either economic and social development, giving the best of both worlds. In general, low-carbon development is a development model that is based on climate-friendly low-carbon energy and follows principles of sustainable development, makes a contribution to the avoidance of dangerous climate change and adopts patterns of low-carbon consumption and production (Skea and Nishioka, 2008; Urban, 2010; Urban *et al.*, 2011).

The UK Department for International Development (DFID) has been seen as one of the original adopters of the concept of low-carbon development. The 2009 DFID White Paper *Eliminating World Poverty: Building Our Common Future* defines low-carbon development as “using less carbon for growth” by improving energy efficiency, using low-carbon energy sources, protecting natural resources that store carbon (such as forests and land), promoting low-carbon technologies and business models, and introducing policies and incentives that discourage carbon-intensive practices and behaviours (DFID, 2009: 58). But assuming we can decarbonise the economy, will this have a negative social impact? What are the social implications of low-carbon development projects? Is there a risk that equal access to environmental goods and equal exposure to environmental bads takes a back seat? This monograph will be a first attempt to look at these negative consequences from a conceptual perspective.

The argument of the book is that a broad understanding of low-carbon development is essential for mitigating climate change and enabling development in a carbon-constrained world, but that there are risks that low-carbon development might come at a price that is both social and economic. These risks need to be carefully assessed and reduced. The main aim of the book is to explore, critically analyse and propose different ways of understanding low-carbon development from a social perspective in both developed and developing countries. In low-income and lower-middle-income countries, issues of social justice and poverty reduction are the key to low-carbon development, while for higher-middle-income and high-income countries, low-carbon innovation and emission reductions are at the heart of implementing low-carbon development. Low-carbon development can bring opportunities and benefits for both developed and developing countries; nevertheless, low-carbon development must be understood through a social lens so that the poorest in every society will not suffer the costs of making our current world both sustainable and low carbon. The book will present both social implications and challenges.

There is currently no book that focuses completely on the social issues and challenges of low-carbon development. This book therefore aims to fill this gap by making a contribution to both teaching and research in terms of

presenting the latest conceptual and empirical evidence on the social implications and issues of low-carbon development. The book will serve as a comprehensive introduction both to the social and economic aspects of development and to how these can be combined with low-carbon efforts. It aims to highlight the different challenges in both developed and developing countries. The book's approach is interdisciplinary and uses concepts such as low-carbon development, social policy, sustainable development and environmental justice to understand the social implications of low-carbon development projects. The book provides the reader with five relevant contemporary case studies that illustrate not just the issues and challenges but also the opportunities presented by low-carbon development.

The book first elaborates the need to understand the social issues and challenges of low-carbon development in both developed and developing countries. The book then discusses five contemporary challenges of low-carbon development: the social consequences of Chinese hydropower dams in the Mekong region; the cost of the transition to renewable energies such as wind energy in Germany; the challenges of carbon offsetting in Brazil; the nexus of fuel-inefficient housing and fuel poverty in England; and solar power for refugees in Africa.

References

- Bello, W. (2008), "Will capitalism survive climate change?", *ZNet*, available at: <http://focusweb.org/node/1197> (accessed 10 March 2016).
- DFID (Department for International Development) (2009), *Eliminating World Poverty: Building our Common Future*, DFID White Paper, London: DFID.
- Gough, I. (2010), "Economic crisis, climate change and the future of welfare states", *21st Century Society*, 5(1), 51–64.
- Jameson, F. (2003), "Future city", *New Left Review*, 21 (May–June), 65–79.
- Miller, G. and Real, M. (1998), "Postmodernity and popular culture: understanding our national pastime", in A. A. Berger (ed.), *The Postmodern Presence: Readings on Postmodernism in American Culture and Society*, Walnut Creek: AltaMira Press, pp. 17–34.
- Polanyi, K. (1944), *The Great Transformation*, Boston: Beacon Press.
- Skea, J. and Nishioka, S. (2008), "Policies and practices for a low-carbon society", *Climate Policy: Supplement – Modelling Long-Term Scenarios for Low-Carbon Societies*, 8(1), 5–16.
- Speth, J. G. (2008), *The Bridge at the Edge of the World: Capitalism, the Environment and Crossing from Crisis to Sustainability*, New Haven, CT and London: Yale University Press.
- Urban, F. (2010), "Pro-poor low carbon development and the role of growth", *International Journal of Green Economics*, 4(1), 82–93.
- Urban, F., Mitchell, T. and Silva Villanueva, P. (2011), "Issues at the interface of disaster risk management and low-carbon development", *Climate and Development*, 3(3), 259–79.
- Weber, M. (1953), *The Protestant Ethic and the Spirit of Capitalism*, New York: Scribner.

1 Low-carbon development

Its social implications and challenges

Johan Nordensvärd

Background

Today it is becoming more and more evident that the world is facing enormous challenges in terms of global environmental degradation and climate change. These two challenges are at the heart of concerns about international development. The recent interest in low-carbon development can be understood in the light of climate change and the ongoing global debate on how to mitigate the human impact on the climate on a global scale. Global climate change is not a distant vision of a troubled future, but very much a reality of today that requires urgent action. Former UN Secretary-General and President of the Global Humanitarian Forum Kofi Annan mentioned a few years ago that “Today, millions of people are already suffering because of climate change” (Annan, 2009: i).

The current UN Secretary-General Ban Ki-moon confirmed on a recent trip to the small Pacific nation of Kiribati that “climate change is not about tomorrow. It is lapping at our feet – quite literally in Kiribati and elsewhere” (Ban, 2011: 1). Ban continued: “I have watched the high tide impacting those villages. The high tide shows it is high time to act” (Ban, 2001: 1). He also addressed the current development model and suggested that something is “seriously wrong with our current model of economic development” (Ban, 2011: 1). The climate change discourse has been driven on the one hand by the scientific assessment reports of the Intergovernmental Panel on Climate Change (IPCC) and on the other hand by the climate policy process of the United Nations Framework Convention on Climate Change (UNFCCC).

While the scientific community has been working on researching and spreading knowledge around climate change for decades and the First Assessment Report of the IPCC dates back to 1990 (IPCC, 1990), the first highly influential report on climate change mitigation was not published until 2001 by the IPCC (IPCC, 2001). The publication, the IPCC’s Third Assessment Report, included the so-called ‘hockey stick diagram’ by Michael Mann and colleagues (1999), which showed how both carbon emissions and average temperatures had increased significantly throughout

the twentieth century, with the 1990s being the warmest decade of the millennium (IPCC, 2001). The diagram resembles the form of a hockey stick, hence its name. In the US, a controversy developed about the statistical methods underlying the research, fuelling debates between climate sceptics and non-climate sceptics. This was followed by more than a dozen scientific papers that confirmed the conclusions drawn by Mann and colleagues and the IPCC that the warmest decade in a millennium had most likely been at the end of the twentieth century. The urgent need to mitigate the emissions that lead to climate change was then acknowledged at a global level by the public.

The conclusions of IPCC research have been that climate change poses risks to humans, the environment and the economy (IPCC, 2013). The effects of climate change are reported to include rising temperatures, melting glaciers, sea-level rise, changes in precipitation, increases in extreme weather events like floods, droughts and cyclones, and acidification of the oceans (IPCC, 2007, 2013; Urban and Nordensvärd, 2013). Nevertheless, the impacts of climate change vary across different regions, intensities and scales. A degree of uncertainty is associated with climate change; however, there is consensus among the overwhelming majority of scientists about the anthropogenic (human-induced) causes of climate change, the main climatic impacts and their severity. It is well documented that so-called greenhouse gas emissions contribute to anthropogenic climate change (IPCC, 2007). There is a direct correlation between the increase of emissions of greenhouse gases, mainly CO₂, that lead to climate change and the rise of industrialisation, increasing affluence and consumption in developed countries (Urban and Nordensvärd, 2013; IPCC, 2013).

Greenhouse gases include CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) (UNFCCC, 1997). The most important greenhouse gas is CO₂, which is often only referred to as 'carbon', such as in relation to 'carbon emissions' and 'low-carbon development'. These greenhouse gases are emitted from the combustion of fossil fuels, from land-use changes and deforestation, from industrial activity and from transport (IPCC, 2007).

Scientists agree that the possibility of staying below the 2°C threshold between 'acceptable' and 'dangerous' climate change until the year 2100 is becoming less likely the longer that no serious global action on climate change is taken (Tyndall Centre, 2009; Richardson *et al.*, 2009; Urban, 2009; Urban *et al.*, 2011). A rise above 2°C before 2100 is likely to lead to abrupt and irreversible changes (IPCC, 2007). These changes could cause severe societal, economic and environmental disruptions which could severely threaten international development throughout the twenty-first century and beyond (Richardson *et al.*, 2009; Urban, 2010; Urban *et al.*, 2011; Urban and Nordensvärd, 2013). The IPCC's Fifth Assessment Report, published in 2014, confirmed that climate change is outpacing many earlier predictions (IPCC, 2014).

Just as important as the scientific discussion around climate change is the political discussion around climate change policy.

Climate change policy

The UNFCCC has become the global driver for climate change policy since its inception in the early 1990s. The UNFCCC developed as an international climate treaty at the Earth Summit in Rio de Janeiro in 1992 and thereby acknowledged the role of humans in contributing to climate change. The treaty aimed to prevent dangerous climate change, but made no commitment to emission reductions yet (UNFCCC, 1992).

This was followed by the Kyoto Protocol in 1997, which aimed to reduce greenhouse gas emissions to avoid dangerous climate change and had binding emission reduction commitments for developed countries for the first and second commitment periods of the Kyoto Protocol, 2008–12 and 2013–20 (UNFCCC, 1997). Due to Article 10 of the Protocol and the recognition of “common but differentiated responsibilities” of developed and developing countries for climate change, no emission reduction commitments were imposed on developing countries (UNFCCC, 1997: 9).

Climate change mitigation also had a prominent role in the Bali Action Plan and the Bali Roadmap of 2007. Mitigation was considered one of the five pillars of the Bali Action Plan (UNFCCC, 2007). In subsequent years, climate change mitigation has taken a prominent position in UN climate change negotiations and targets to mitigate emissions are one of the key elements over which major differences exist between developed and developing countries, but also within the group of developed and developing countries.¹

This was apparent for the Copenhagen Accord in 2009, when no binding agreement could be reached on emission reduction and only the “strong political will to combat climate change” was mentioned (UNFCCC, 2009: 5). It was also apparent in the Cancun Agreements in 2010, when major advances were made in areas such as climate finance, technology transfer and REDD+ but only a pledge to “reduc[e] global greenhouse gas emissions so as to hold the increase in global average temperature below 2°C above preindustrial levels” could be agreed (UNFCCC, 2010: 3). The climate change conference in Durban in late 2011 delivered further evidence of just how hard it is to establish binding emission reduction targets for mitigating global climate change, as it was agreed to postpone any legally binding *global* agreement – beyond those obliged by the Kyoto Protocol – until at least 2015, with implementation by 2020 (UNFCCC, 2011). At Rio+20 in 2012, 20 years after the first Rio Earth Summit, climate change was still a hot but unresolved global issue. The 2015 Paris Agreement from COP21 showed that the global community is committed to tackling climate change. However, limiting global warming to 1.5–2°C will need serious international efforts.

There is an underlying conflict between developed countries which have historically been responsible for the large majority of carbon emissions, rising middle-income countries such as China, India, South Africa and Brazil with rising emissions, and low- and middle-income countries with low-carbon emissions both in the past and the present.

It is no secret that the consumption of wealthy developed countries is posing an environmental problem. At the Rio Summit in 1992, consumption patterns in the wealthy developed world were identified as a problem in the move towards a more sustainable society (Michaelis, 2000). A few years later, the World Wildlife Fund for Nature (WWF) argued that people “put pressure on forest, freshwater and marine ecosystems through the production and consumption of resources such as grain, fish, wood, and freshwater, and the emission of pollutants such as carbon dioxide” (WWF, 1998: 1). The Rio+20 Summit in 2012 highlighted the need to mitigate climate change and reduce the consumption of natural resources. Today, the main problem is the excessive consumption of energy and production of carbon emissions, particularly in developed countries, but also in emerging economies such as China, India, South Africa, Mexico and Brazil (Urban and Nordensvärd, 2013).

Low carbon and development

The main challenge is that there are wealthy countries that consume far too many resources, while the rest of the world dreams of modernising, which means consuming as much as developed countries. “In First World countries, industry’s promise of unlimited consumerism has led to disproportionate levels of energy and water use, emission of greenhouse gases and the conversion of natural habitats” (Ho, 2006: 4). If the rest of the world were to aspire to Western levels of development and well-being, it would lead to drastic environmental consequences. There are doubts that global economic growth and social development can be sustained by the limited resources with which this planet can realistically supply us. Tim Jackson, for instance, suggests that “[t]here is no credible, socially just, ecologically sustainable scenario of continually growing incomes for a world of nine billion people” (Jackson, 2009: 57). Benjamin Barber expresses the ambivalence of developed industrial countries towards the demands of the developing countries to grow and develop: “this ecological consciousness has meant not only greater awareness but also greater inequality, as modernized nations try to slam the door behind them, saying to developing nations, ‘The world cannot afford your modernization; ours has wrung it dry’” (Barber, 1992).

This situation becomes even more acute when we take into consideration the rise of climate change in the environmental discourse. Industrial development, as we know from developed countries, has often been both unsustainable and based around high carbon energy systems. “Development implies