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ECONOMICS

Carbon Markets or Climate Finance?

Low carbon and adaptation investment
choices for the developing world

Edited by
Axel Michaelowa

ROUTLEDGE

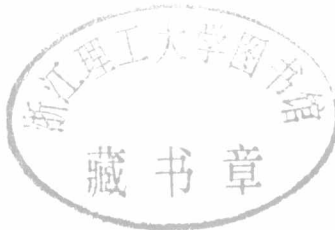

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 **Routledge**
Taylor & Francis Group
LONDON AND NEW YORK



First published 2012
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

Simultaneously published in the USA and Canada
by Routledge
711 Third Avenue, New York, NY 10017

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

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British Library Cataloguing in Publication Data

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

Library of Congress Cataloging in Publication Data

Carbon markets or climate finance : low carbon and adaptation investment choices for the developing world / edited by Axel Michaelowa.

p. cm.

Includes bibliographical references.

1. Emissions trading—Developing countries. 2. Environmental impact charges—Developing countries. 3. Carbon dioxide mitigation—Developing countries. 4. Greenhouse effect, Atmospheric—International cooperation. I. Michaelowa, Axel.

HC79.P55C347 2012

363.738*746091724—dc23

2011033246

ISBN: 978-1-84971-474-7 (hbk)

ISBN: 978-0-203-12887-9 (ebk)

Typeset in Times New Roman
by Wearset Ltd, Boldon, Tyne and Wear

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Preface

Climate finance at the crossroads between market mechanisms and public funding vehicles

What is climate finance? Climate finance is the term given to the financial resources mobilized to mitigate climate change and allow developing countries to adapt to climate change impacts (Schalatek and Bird 2010). The Copenhagen conference in 2009 tried to conceal its failure to agree on a new climate policy regime by promises of large flows of funds from industrialized to developing countries. By 2012, US\$30 billion were to be mobilized as 'fast track finance' for mitigation and adaptation activities in the South. So far, it is unclear what criteria are used for allocation of these funds, and what the efficiency of their use is. Finance has become a goal in itself, instead of the real goals of mitigation or adaptation. Allocation decisions are opaque and there is no transparency regarding funding volumes available and their use. This makes it likely that scandals taint climate finance as funds could be diverted from their planned use.

In the longer term, given the massive financial volumes required for mitigation to achieve the target of limiting global warming to 2°C, compared to pre-industrial levels, as well as adapting to the inevitable climate change impacts (UN 2010), innovative mechanisms for scaling up climate finance need to be developed and assessed. In this context a crucial question is whether market mechanisms or public subsidies are the better way to finance greenhouse gas reductions and adaptation to climate change in developing countries. Negotiators, consultants and the public interested in development and climate policy are eager to get an integrated perspective on how climate finance could be effective, and how it can avoid repeating the mistakes of development finance.

There is now 15 years of experience with market mechanisms and public funds under the Kyoto Protocol and UN Framework Convention on Climate Change (UNFCCC). Thus it is time to take stock, discuss the challenges of climate finance in the context of the post-2012 negotiations and assess how climate finance for developing countries could develop in the long term.

Despite the crucial role of climate finance in the development of the post-2012 climate policy regime, there is no other book bringing together researchers' and practitioners' perspectives on climate finance in developing countries. The only formal publication by Kingsbury *et al.* (2009) is a series of 36 short essays on climate finance. Parker *et al.* (2009) describe the finance proposals in the

post-2012 negotiations without an in-depth analysis of their merits. Beyond these two publications, there is only a vast array of grey literature.

This book brings together a number of experts from research and business, who have worked on international climate policy for many years. It benefits from the close contacts of the international climate policy consultancy, Perspectives, with the international research world, particularly the University of Zurich. This guarantees a 'hands on' approach while safeguarding academic quality. Three sections address lessons learned, immediate challenges and long-term concepts.

The section on lessons learned provides case studies on four climate finance vehicles: market mechanisms, development assistance, unilateral financing by developing country governments and public funds.

The Clean Development Mechanism (CDM), the largest market mechanism under the Kyoto Protocol, is the topic of Chapter 1, by Axel Michaelowa and Jorund Buen. Against all expectations, the CDM, which allows emissions mitigation projects in developing countries to generate emissions credits, has been a resounding numerical success. Within five years, over 5,000 projects have been mobilized in almost 80 countries. Michaelowa and Buen discuss the reasons for this gold rush, and which technologies and countries benefited the most. The CDM gold rush was, *inter alia*, due to the fact that emissions credits are granted by an international institution without interference of the host-country government (Michaelowa *et al.* 2008). Companies in developing countries, especially the advanced ones, discovered that Certified Emission Reductions (CERs) are a valuable export commodity, leading to a race to unilaterally develop CDM projects. This had not been foreseen by anyone and is the key of CDM success. While the CDM project cycle is cumbersome, it has led to full fungibility of credits and their general acceptance as compliance tools. Nevertheless, in some fields the CDM underperformed and needs reform to enable upscaling.

In Chapter 2, Katharina and Axel Michaelowa assess whether aid flows for adaptation have been influenced by the development of international climate policy. In contrast to mitigation flows, where no relevant link between key milestones of the climate policy regime and mitigation aid flows could be found, adaptation aid has been increasing significantly over time in line with the development of international climate policy. Political-economic variables of donor countries that play a significant role in the context of mitigation are scarcely relevant in the adaptation context.

Chapter 3, by Jorund Buen and Paula Castro, discusses two important cases of unilateral financing of renewable-energy programmes by developing countries – the Brazilian ethanol programme and the Chinese wind energy expansion. Both programmes required multi-billion dollar subsidies and had a strategic component to build-up local industry. Buen and Castro stress that both supply and demand had to be supported over a long period, and a multi-layered approach involving R&D, strategic niche market introduction and diffusion into a domestic and international mass market was required. Both programmes had lengthy periods of near failure that could only be overcome through government persistence. Also, protectionism of the nascent industry was crucial in the initial

phases. Buen and Castro found it surprisingly difficult to quantify the exact financial subsidy volume of each programme, which indicates that the rules for monitoring and verification for Nationally Appropriate Mitigation Action (NAMA) finance need to be very clear.

Izabela Ratajczak-Juszkó's Chapter 4 assesses the role of the Adaptation Fund as a model for future, upscaled adaptation funding in the post-2012 UNFCCC era. The Fund, which is financed through a levy on CDM transactions, is actually an 'intergovernmental grant system' to finance concrete adaptation projects and programmes in developing countries. It has introduced a number of new concepts for international finance, such as a 'direct access modality' empowering governments of developing countries to implement proposals identified by them as national priorities. However, this direct access option is only utilized to a limited extent as countries fear to lose out in the race for project approval.

The section on immediate challenges addresses fast-track financing, new market mechanisms proposed for mitigation under the post-2012 regime and how developing countries can combine different sources of finance for national mitigation policies.

Martin Stadelmann, Jessica Brown and Lena Hörnlein assess experiences made with fast-start finance in Chapter 5. They assess whether the collective US\$30 billion pledge for the period 2010–2012 is really being met and whether there is a balance between funds for mitigation and adaptation. Moreover, they analyse which funding goes through which international channels – bilateral and multilateral. While the total sum pledged seems to reach the promised level, the situation gets much more unclear when one moves down the chain to actual disbursements. On average, adaptation receives a lower share than mitigation. Data are often not comparable and lags of spending are considerable. Transparency of flows has improved over the last 18 months, but could be further increased, while effectiveness of spending remains virtually unknown.

Chapter 6 discusses the proposals for new market mechanisms for mitigation going beyond the project level, focusing on the incentives that are provided to those who actually can engage in mitigation. Sonja Butzengeiger, Björn Dransfeld, Martin Cames, Axel Michaelowa and Sean Healy scrutinize whether the shift in responsibility from emitters or investors to host-country government would limit or even eliminate emitters' incentives to seek cost-effective mitigation options and, if so, by which means such an outcome could be avoided or limited. Given the challenges that may be caused by the different responsibility structure under a new mechanism based on a 'no-lose target', strong governance skills of the host-country government in implementing climate policy are required. However, a number of potential policy instruments exists that could reduce free riding and would provide the necessary mitigation incentives with different degrees of direct or indirect linking with the global carbon market. Emissions above the target level could be penalized by a mandatory regulation or an emissions tax, or subsidies such as feed-in tariffs could be used. Pilot schemes would help to establish confidence in the new mechanisms and encourage their broader application.

Chapter 7 by Daisuke Hayashi and Stefan Wehner describes the concept of NAMAs in developing countries and proposes different ways of financing them. NAMAs receiving emissions credits would concentrate on mitigation with moderate costs and direct, short-term greenhouse gas (GHG) impacts. NAMAs supported by subsidies from industrialized countries could either cover activities with low or very high costs and relatively direct GHG impacts. Unilateral NAMAs financed solely by the host country work best for negative- to very low-cost mitigation actions and do not have to address the causality and timeframe of the reductions. A concept of combination of these NAMA types is applied to a programme of green mortgages in the Mexican housing sector, where the continuation of the current penetration level would serve as a baseline for a unilateral NAMA. Increased penetration and expansion of the energy-efficiency and renewable-energy technologies covered could be a supported NAMA, building on a revolving fund structure. A strengthening beyond that level could generate credits. CDM rules would have to be changed from the current exclusion of mitigation policies in the baseline to prevent disadvantages for the NAMA compared to CDM projects.

The third section covers climate finance issues that are just emerging – a market mechanism for adaptation, innovative loans for NAMAs and a levy on a backstop technology replacing fossil fuels in the electricity sector. Chapter 8, by Axel Michaelowa, Michel Köhler and Sonja Butzengeiger, discusses whether market mechanisms could become an instrument for adaptation financing. Compared to the current first-come, first-serve distribution of adaptation funding, market mechanisms could increase efficiency. There is a wide range of adaptation technologies with hugely differing costs. A credible adaptation market mechanism, however, requires specification of universally accepted trading units. Such units could relate to ‘saved wealth’ and ‘saved health’. Demand for such adaptation units should be created by adaptation targets on the (industrialized) country level that then could be allocated to entities, that could then either finance adaptation projects themselves or buy credits from adaptation service companies. Alternatively, tender rounds for adaptation funding could be implemented. A pilot phase for adaptation market mechanisms should test the different concepts.

A new financial instrument to harness private finance for large-scale mitigation investment linked to NAMAs is outlined by Katie Sullivan in Chapter 9. The concept of ‘Green NAMA bonds’ would allow developing countries to issue loans for financing of NAMAs. These loans would have a low interest rate but would be entitled to carbon credits from the NAMA. If the NAMA does not reach its target and thus does not generate credits, an addition to the interest would be paid to the loan providers. General default on loans would be covered by guarantees from international financial institutions. To prevent countries getting into a debt spiral, they could only borrow up to a level depending on the country’s emission performance.

Chapter 10, by Sonja Butzengeiger and Axel Michaelowa, discusses the potential to levy finance from a super transformational technology (STT) that could produce electricity at much lower cost than fossil fuel power plants. As the introduction of such a technology could have severe impacts on industrial

competitiveness, a power transformation levy could skim off the cost differential between the incumbent power technology and the STT. The revenues from that levy should be used to set-up power plants in developing countries with suppressed electricity demand. Moreover, a large-scale Desert Greening Programme could be used for diversification of economies that have so far benefited from fossil fuel exports.

Chapter 11, by Axel Michaelowa, provides an overview of the question of whether public funds or market mechanisms are a better way towards large-scale climate finance. The multi-decadal experience with development finance has shown that it is challenging to reach ambitious targets for public funding, especially if performance of the activities funded is lacklustre. Public funds also usually require a long time for project implementation. Market mechanisms will lead to higher performance and transparency, but are dependent on the political willingness to set ambitious mitigation and adaptation targets. If this is not forthcoming, prices and thus incentives for emission reduction or adaptation will be low. This chapter also discusses whether the current ‘valley of tears’ of international climate policy could eventually lead to a crash programme of solar radiation management. To avoid this risky gamble, Michaelowa proposes a strong role for market mechanisms while public finance supports non-quantifiable ‘soft’ activities and capacity building. A levy on the market mechanisms could provide this public funding. But this path requires a willingness to seriously engage in climate policy through ambitious targets, which is currently lacking.

I hope that having read this book, the reader will have a clear view of the different options for climate finance in developing countries and understand the challenges in incentivizing high performance for mitigation and adaptation investments in the global South. Hopefully, we have contributed to an increase of transparency in this very opaque policy field.

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Acknowledgements

I would like to thank Lena Hörnlein for meticulous support in coordinating the contributions of the different authors of this volume. Moreover, I thank the following clients of Perspectives for giving assignments that allowed us to reflect upon innovative ways of climate finance: Point Carbon (Chapter 1), the German Federal Environmental Agency (Chapter 6), the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Chapter 7) and the Swiss Development Cooperation (Chapter 8).

Acronyms and abbreviations

ACM	approved consolidated methodology
AEAE	Asociación de Empresas para el Ahorro de Energía en la Edificación, México
AFB	Adaptation Fund Board
AHM	Asociación Hipotecaria Mexicana
AHPPER	Asociación Hondureña de Pequeños Productores de Energía Renovable
ANII	Agencia Nacional de Investigación e Innovación
AOSIS	Alliance of Small Island States
BAU	business-as-usual
BIDD	Bond Issuance Design Document
CCS	carbon capture and storage
CDM EB	CDM Executive Board
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFL	compact fluorescent lamp
CIF	climate investment fund
CO ₂ -e	CO ₂ equivalent
CO ₂	carbon dioxide
CONAVI	Comisión Nacional De Vivienda, México (Mexican National Housing Commission)
COP	Conference of the Parties (to the UNFCCC)
CPA	CDM Programme Activity
CSE	Centre de Suivi Ecologique
CSP	concentrated solar power
DAC	Development Assistance Committee of the OECD
DALY	disability-adjusted life years saved
DFID	Department for International Development (UK)
DGP	Desert Greening Programme
DNA	Designated National Authority
DOE	Designated Operational Entity
DSM	demand-side management
EC	European Commission

EDP	Energy Development Programme
EFC	Ethics and Finance Committee
EGAT	Thai national electric power utility
EIT	economies in transition
ERPA	emission reduction purchase agreements
ERU	Emission Reduction Unit
ETF	Efficiency Target Factor
EU	European Union
EU ETS	EU emissions trading scheme
FSF	fast-start finance
GCCU	Guaranteed Carbon Collateral Unit
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GIZ	Gesellschaft für Internationale Zusammenarbeit
GNB	Green NAMA Bond
GNI	gross national income
GW	gigawatt
HCFC-22	hydrochlorofluorocarbon 22/chlorodifluoromethane
HFC	hydrofluorocarbon
HFC-23	fluoroform
ICA	international consultations and analysis
IEA	International Energy Agency
IET	International Emissions Trading
IETA	International Emissions Trading Association
IFI	international finance institution
IMF	International Monetary Fund
INFONAVIT	Instituto del Fondo Nacional de la Vivienda para los Trabajadores, México (National Workers' Housing Fund)
IPCC AR4	Fourth Assessment Report of the IPCC
IPCC	Intergovernmental Panel on Climate Change
IPRs	intellectual property rights
ISB	International Supervisory Body
ITER	International Thermonuclear Experimental Reactor
JI	Joint Implementation
kW	kilowatt
LDC	least developed country
LDCF	Least Developed Countries Fund
LEC	levelized electricity costs
LoA	Letter of Approval
M&V	measurement and verification
MAC	marginal abatement cost
MDB	multilateral development bank
MEA	multilateral environmental agreement

METI	Japanese Ministry of Economy, Trade and Industry
MIE	multilateral implementing entity
MRV	monitoring, reporting and verification
MSG	Melanesian Spearhead Group
Mtce	million tonnes coal equivalent
Mtoe	million tonnes oil equivalent
MW	megawatt
N ₂ O	nitrous oxide
NAMA	nationally appropriate mitigation action
NEDO	New Energy and Industrial Technology Development Organization
NGO	non-governmental organization
NIE	national implementing entity
NPV	net present value
NSS	National CDM/JI Strategy Program
ODA	official development assistance
OECD	Organization for Economic Co-operation and Development
OOF	other official flows
PCF	Prototype Carbon Fund
PDD	Project Design Document
PECC	Programa Especial de Cambio Climático, México
PIJ	Planning Institute of Jamaica
PIN	Project Identification Note/Project Idea Note
PoA	Programme of Activity
PPA	Power Purchase Agreement
PPCR	Pilot Programme for Climate Resilience
PPRC	Project and Programme Review Committee
PTL	power transformation levy
PV	photovoltaics
R&D	research and development
REDD	Reduced Emissions from Deforestation and Forest Degradation
SCCF	Special Climate Change Fund
SDC	Swiss Agency for Development and Cooperation
SDM	Sustainable Development Mechanism
SEMARNAT	Secretaría de Medio Ambiente y Recursos Naturales, México (Mexican Environment Ministry)
SH	saved health
SHF	Sociedad Hipotecaria Federal, México
SIDS	small island developing states
SOE	state-owned enterprise
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Environmental Programme
SRES	IPCC Special Report on Emissions Scenarios
SSC-PoA	small-scale PoA
STT	super transformational technology

SW	saved wealth
SWH	solar water heater
tCO ₂ -e	tonnes CO ₂ equivalent
tWh	terawatthour (1 billion kWh)
UCF	Umbrella Carbon Facility
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VAT	value added tax
WHO	World Health Organization
WTO	World Trade Organization

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