Africa is marginal to the carbon market, and the carbon market has been irrelevant to the continent's efforts to tackle climate change – Oscar Reyes, Carbon Trade Watch

This monograph presents a critical review of carbon trading in Africa. It comprises a compendium of essays by an expert group of authors, each analysing key issues from a corruption and governance perspective. The chapters include a discussion on the context of and trends in the carbon market in Africa, offset projects in Uganda, Ethiopia and South Africa, carbon finance and regulation. The authors explore issues around transparency and accountability, and examine the integrity of systems and processes aimed at achieving professed goals of climate change mitigation and sustainable development. While deficits in transparency and accountability do not necessarily constitute corruption, they are nevertheless seen as cause for concern as they provide opportunities for corrupt activities to take place. In general, corruption is approached in a nuanced way because carbon trading provides new and different ways of profiting illegitimately at the expense of a deteriorating climate. For this reason, the study adopts a broad definition of corruption, sometimes using it to indicate a particular or singular abuse, and sometimes to refer to systemic challenges.

L'Afrique reste en marge du marché du carbone, et le marché du carbone reste sans effet dans les efforts faits par le continent pour s'attaquer au changement climatique – Oscar Reyes, Carbon Trade Watch

Cette monographie présente une revue critique du commerce du carbone en Afrique. Elle comprend un ensemble d'essais rédigés par un groupe expert d'auteurs, où chacun analyse des questions clés du point de vue de la corruption et de la gouvernance. Ces chapitres incluent une discussion sur le contexte et les tendances du marché du carbone en Afrique, les projets de compensation en Ouganda, Ethiopie, et Afrique du Sud, le financement du carbone et sa réglementation. Les auteurs explorent les problèmes liés à la transparence et à la responsabilité, et examinent l'intégrité des systèmes et des processus visant à réaliser les objectifs mis en avant d'atténuation du changement climatique et de développement durable. Même si les écarts quant à la transparence et à la responsabilité ne signifient pas forcément qu'il y ait corruption, ils donnent, néanmoins de bonnes raisons de s'inquiéter, car ils ouvrent la porte à des activités de corruption. La corruption est généralement traitée de façon nuancée, car le commerce du carbone fournit de nouvelles manières, différentes, de réaliser des profits illégitimes aux dépens du climat qui continue à se détériorer. C'est pour cette raison qu'une définition large de la corruption a été adoptée dans cette étude, pouvant parfois faire référence à un abus particulier et unique, et parfois à des défis propres au système.

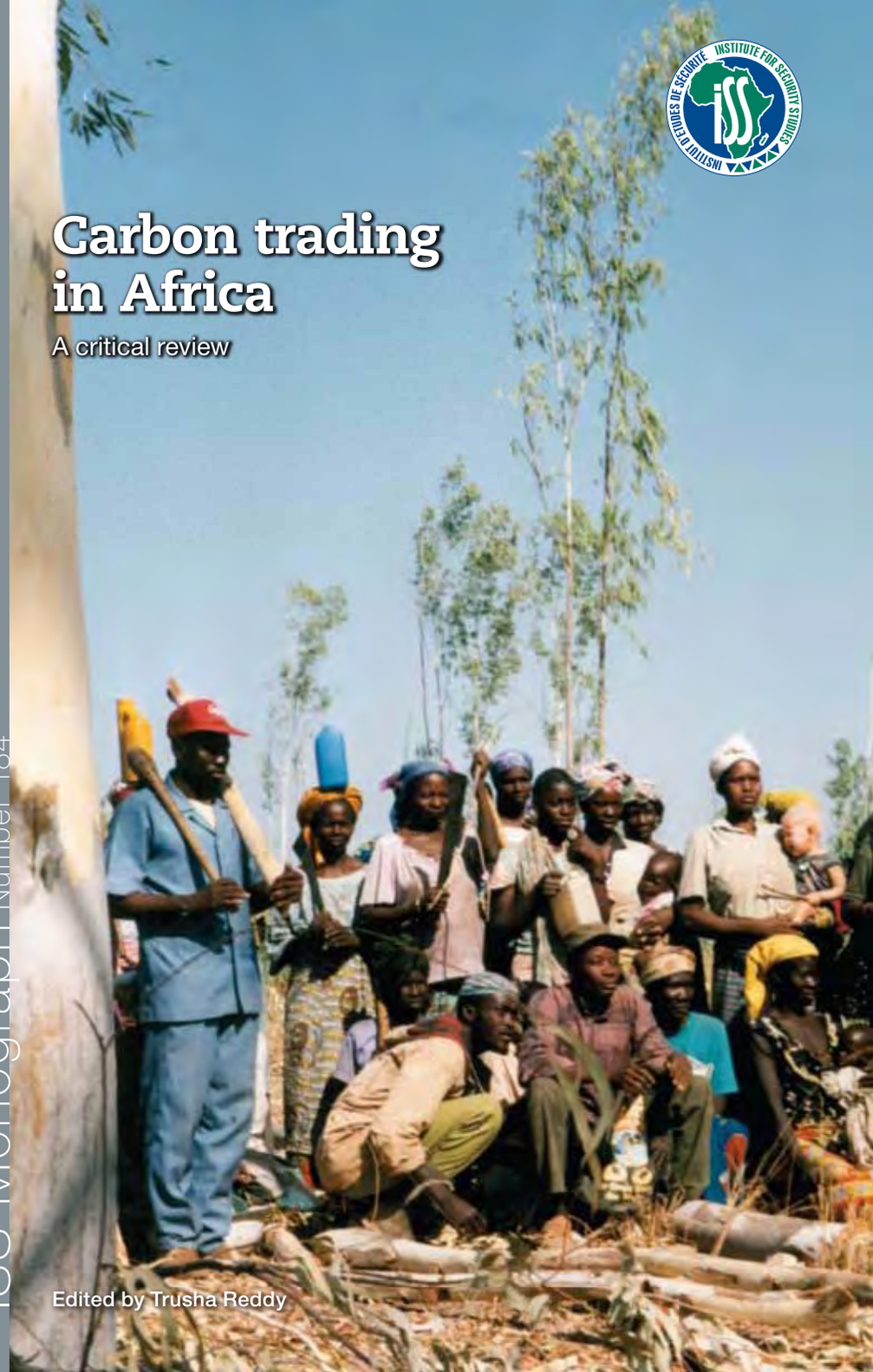
This publication was made possible by general Institute funding provided by the governments of Denmark, the Netherlands, Norway and Sweden.

CARBON TRADING IN AFRICA

ISS Monograph Number 184

Carbon trading in Africa

A critical review



Edited by Trusha Reddy

As a leading African human security research institution, the Institute for Security Studies (ISS) works towards a stable and peaceful Africa characterised by sustainable development, human rights, the rule of law, democracy, collaborative security and gender mainstreaming. The ISS realises this vision by:

- Undertaking applied research, training and capacity building
- Working collaboratively with others
- Facilitating and supporting policy formulation
- Monitoring trends and policy implementation
- Collecting, interpreting and disseminating information
- Networking on national, regional and international levels

ISBN 978-1-920422-62-2

First published by the Institute for Security Studies,
P O Box 1787, Brooklyn Square 0075
Pretoria, South Africa

www.issafrica.org

Cover photograph © 2011 Margaret Skutsch, Courtesy of Photoshare. A women's forest management group meets with volunteers in Burkina Faso. Photo contributed by Energia. Note: This photo does not depict any of the projects investigated in this book but more generally portrays forest projects that occur under the Clean Development Mechanism in Africa.

Cover design compress.dsl +27 21 886 9387

Content design Marketing Support Services +27 12 346-2168

Editorial and layout Page Arts cc +27 21 686-0171

ISS Head Office
Block D, Brooklyn Court, 361 Veale Street
New Muckleneuk, Pretoria, South Africa
Tel: +27 12 346 9500 Fax: +27 12 346 9570
E-mail: iss@issafrica.org

ISS Addis Ababa Office
5th Floor, Get House Building,
Africa Avenue, Addis Ababa, Ethiopia
Tel: +251 11 515 6320/24/67/98 Fax: +251 11 515 6449
E-mail: addisababa@issafrica.org

ISS Cape Town Office
2nd Floor, The Armoury Building, Buchanan Square
160 Sir Lowry Road, Woodstock, South Africa
Tel: +27 21 461 7211 Fax: +27 21 461 7213
E-mail: capetown@issafrica.org

ISS Dakar Office
Stèle Mermoz, 100x Elhadji,
Ibrahima Niasse MZ83, Senegal
Tel: +221 33 824 0918/21 Fax: +221 33 824 2246
E-mail: dakar@issafrica.org

ISS Nairobi Office
Braeside Gardens,
Off Muthangari Road, Lavington, Nairobi, Kenya
Tel: +254 20 386 1625 Fax: +254 20 386 1639
E-mail: nairobi@issafrica.org

ISS Pretoria Office
Block C, Brooklyn Court, 361 Veale Street
New Muckleneuk, Pretoria
Tel: +27 12 346 9500 Fax: +27 12 460 0998
E-mail: pretoria@issafrica.org

www.issafrica.org

Carbon trading in Africa

A critical review

ISS Monograph Number 184

Edited by Trusha Reddy

Contents

Bibliographies

Preface

The development of this monograph has synergised with the evolution of carbon trading in a few key ways. As such, it has also gone through several stages, over a period that may seem long but is quite short in relative terms. Carbon trading in its current guise began with the Kyoto Protocol in 2005, and work on this monograph started just a few years later. Both the Protocol and this monograph have faced various difficulties, but both have endured, sometimes in the face of reason, and through sheer persistence. The carbon price has collapsed a few times, both carbon trading schemes initiated by the European Union's Emission Trading Scheme have failed, and the carbon market is widely regarded as being in crisis. In line with this, the monograph went into hiatus several times, and I wasn't always sure whether it would be completed.

Different pieces of the carbon trading puzzle were found and placed as the project progressed. The initial thinking behind the study was that it was necessary to interrogate a number of projects under the Clean Development Mechanism (CDM) in order to understand how carbon trading worked, both in general and in Africa in particular. The carbon market also worked on the initial premise that it would be sustained by the projects themselves. We then found that carbon finance works in a peculiar way, according to different project types or within different mitigation sectors. This led us to the World Bank's forest funds, and our examination, in turn, of this institution and its pilot projects under the fund in Africa. As signals of trouble, expressed as a lack of environmental and social integrity, began to emerge, attempts were made to improve the regulation of carbon trading. However, given some of the problems we identified, we started to question whether improved regulation could really resolve all the problems surrounding the carbon market, or whether there were systemic problems that would resist being resolved by regulation. Having understood early on that carbon trading was playing a minor role in Africa, we ended up revisiting this issue in

order to track new trends in the carbon market, and to start assessing whether these changes would be beneficial in any way.

This gradual and seemingly inefficient progression is validated by the fact that carbon trading, and the market-based response to climate change it espouses, continue to dominate mainstream thinking. The intention of the study was to capture some of the key themes and issues in carbon trading, and analyse them through a critical corruption and governance lens. While some of the information can be updated, the analysis remains fresh and relevant.

I would like to thank all the authors for their valuable contributions and for persevering through this lengthy process. The blind peer review by David Hallowes, an astute researcher and climate justice-seeker, was invaluable. Thanks to Ferrial Adam for doing some of the updates.

Thank you to Hennie van Vuuren and Natashia Emmett of the ISS Cape Town office as well as Fiona Adams, our publishing consultant, who were indispensable to the publication process.

This publication was made possible by general Institute funding provided by the governments of Denmark, the Netherlands, Norway and Sweden.

Finally, I would like to thank our readers for their interest in our publication. I hope it will improve understanding of the complex topic of carbon trading and its role in Africa, and that it will help us all to find and build effective and just solutions to the problem of climate change.

Trusha Reddy

Editor

About the contributors

- **Negusu Aklilu** is the director of Forum for Environment, an environmental communication and advocacy group based in Ethiopia.
- **Larry Lohmann** works for The Corner House, an eco-social think-tank based in the United Kingdom.
- **Anthony Milner** works at the Centre for the Environment of the University of Oxford in the United Kingdom.
- **Dr Yacob Mulugetta** is a senior lecturer at the Centre for Environmental Strategy of the University of Surrey in the United Kingdom.
- **Edward Mupada** is an independent consultant based in Uganda.
- **Trusha Reddy** is a senior researcher for the Corruption and Governance Programme of the Institute for Security Studies, based in Cape Town, South Africa.
- **Janet Redman** is co-director of the Sustainable Energy and Economy Network of the Institute for Policy Studies, based in Washington, DC.
- **Oscar Reyes** works for Carbon Trade Watch, a research-based organisation based in Spain.
- **Tristen Taylor** is project co-ordinator for Earthlife Africa Johannesburg, based in Johannesburg, South Africa.
- **Matthew Wilhelm-Solomon** is a D Phil candidate in development studies at the University of Oxford.
- **Astrid Westerlind Wigström** is an independent researcher based in Cape Town.

Acronyms

AHG-KP	Ad Hoc Working Group on Further Commitments under the Kyoto Protocol
AHG-LGA	Ad Hoc Working Group on Long Term Cooperative Action
BAU	business as usual
bpd	barrels per day
CCS	carbon capture and storage
CDM	Clean Development Mechanism
CDM-SSC-AR-PDD	Clean Development Mechanism small-scale afforestation and reforestation project design document
CEFORD	Community Empowerment for Rural Development (Uganda)
CER	Certified Emission Reduction
CERA	Carbon Emission Reduction Association (Uganda)
CFD	Carbon Finance Document
CFM	collaborative forest management
CFU	Carbon Finance Unit (World Bank)
CO2	carbon dioxide
CoI	conflict(s) of interest
CPT	Carbon Positive Trading
CSO	civil society organisation
CTL	coal to liquids (refining)
DEFRA	Department of Environment, Food and Rural Affairs (United Kingdom)
DOE	Designated Operational Entity
DNA	Designated National Authority
EC	European Commission

EF	emissions factor
EIA	environmental impact assessment
ENCOFOR	Environment and Community Based Framework for Designing Afforestation, Reforestation and Revegetation Projects in the CDM
EPA	Environmental Protection Authority (Ethiopia)
EPRA	Emission Reductions Purchase Agreement
ER	emission reduction
ERT	Energy for Rural Transformation (Uganda)
ETS	Emissions Trading Scheme
EU ETS	European Union Emissions Trading System
EU	European Union
EUA	European Union Allowances
FAO	Food and Agriculture Organization (United Nations)
FCPF	Forest Carbon Partnership Facility (World Bank)
FPIC	free, prior and informed consent
GDP	gross domestic product
GGFR	Global Gas Flaring Reduction Partnership
GHG	greenhouse gas
GTL	gas to liquids (refining)
HFO	heavy fuel oil
IBRD	International Bank for Reconstruction and Development
IDC	Industrial Development Corporation (South Africa)
IET	International Emissions Trading
IMF	International Monetary Fund
JI	joint implementation
KP	Kyoto Protocol
kW	kiloWatt
lCER	Long-term Certified Emission Reduction
LNG	liquefied natural gas
LULUCF	Land Use, Land Use Change and Forestry
M&E	monitoring and evaluation
MDG(s)	Millennium Development Goal(s)
MGP	Megen Power (Ethiopia)
Mt	megatonne
MW	megaWatt

MWE	Ministry of Water and Environment (Uganda)
NAPA	National Adaptation Programmes of Action
NEF	New Economic Foundation
NFA	National Forest Authority (Uganda)
NGO	non-governmental organisation
NMSA	National Meteorological Services Agency (Ethiopia)
OECD	Organisation for Economic Co-operation and Development
PCF	Prototype Carbon Fund
PDD	Project Design Document
PEAP	Poverty Eradication Action Plan (Uganda)
PIN	Project Identification Note
PoA	Programme of Activities
RECPA	Rwoho Environmental Conservation and Protection Association (Uganda)
REDD	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
R-PIN	Readiness Project Idea Note
R-Plan	Readiness Plan
R-PP	Readiness Preparation Proposal
SI	Statutory Instrument (Uganda)
SPGS	Sawlog Production Grant Scheme (Uganda)
tCER	temporary Certified Emission Reduction
UIA	Uganda Investment Authority
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNEP	United National Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
VER	voluntary emission reduction
WENRECO	West Nile Rural Electrification Company
WNEP	West Nile Electrification Project

Part 1 Introduction

1 Climate change, carbon trading and the purpose of this study

Trusha Reddy

Climate change is fast becoming the defining global issue of our time. As global greenhouse gas (GHG) emissions increase, and global temperatures rise, life as we know it is under threat. Despite only contributing about 3 per cent to global GHG emissions, Africa will bear the brunt of a rapidly deteriorating climate.[1] Human security will be threatened by more frequent and severe natural disasters such as flooding and droughts, rising sea levels, reduced water supplies, new and more serious vector-borne diseases, diminishing agricultural land, and accelerated desertification.

By 2020, rain-fed agriculture in the region could be reduced by up to 50 per cent, and 75–250 million people across the continent could face severe water shortages.[2] By 2030, climate change could cost up to 2,7 per cent of annual Gross Domestic Product (GDP), significantly higher than in other regions, rising further over time.[3] Poverty, poor governance, political instability, and HIV/AIDS will reduce Africa's ability to cope with climate change. Moreover, climate change is likely to make it far more difficult to achieve the Millennium Development Goals (MDGs), rather leading to greater food insecurity, famine, disease, and poverty.

Given this gloomy prospect, the key global challenge is to curb climate change, and limit its impacts on the most vulnerable people living in regions such as

Africa. In order to limit global warming, and keep temperatures at levels where human life remains possible, global GHG emissions must be reduced by 40 per cent by 2020 and 95 per cent by 2050, with 1990 emission levels as a baseline. These demanding targets can only be met by urgently and drastically changing the way we live, and by moving towards low carbon development pathways. This will require turning away from the use of fossil fuels and the excessive consumption by elites in the Global North and South, which is largely responsible for climate change. Just and effective international and national policies and democratic governance are crucial to facilitate this transition.

THE KYOTO PROTOCOL AND THE ADVENT OF CARBON TRADING

In 1992, 192 countries worldwide signed the United Nations Framework Convention on Climate Change (UNFCCC),[4] the first ever treaty aimed at stabilising GHG emissions and avoiding runaway climate change. It included a set of foundational principles, including 'polluter pays' and 'common but differentiated responsibility', which recognised issues of historical responsibility and fairness in addressing climate change. Flowing from the treaty, the Kyoto Protocol – an international and legally binding agreement to reduce GHG emissions worldwide – was adopted in 1997 and brought into force in 2005.

The protocol had two main goals: to set legally binding emission targets for industrialised countries, historically the biggest emitters of GHG; and to create a mechanism for achieving those targets. The target for the first commitment period, namely 2005–12, was that the 38 countries that had acceded to Kyoto would reduce their GHG emissions by 5,2 per cent below 1990 levels. This was a very modest goal, given that scientists believed, at the time, that this target should be 50–70 per cent below 1990 levels.[5] However, this was seen as the only way in which industrialised countries – which were reluctant to alter their existing carbon-intensive growth paths – could be persuaded to accept the agreement. The world's biggest polluter, the US, famously pushed for Kyoto's flexibility mechanism, namely carbon trading, but eventually did not ratify the agreement on the grounds that it would impact negatively on its domestic economy.

The cornerstone of Kyoto is carbon trading, a market-based mechanism for trading pollution credits among countries. It includes a range of policy instruments aimed at assisting industrialised (Annex 1) countries to achieve their

emissions targets by allowing reductions to take place where they cost the least. It comprises International Emissions Trading (IET), the Clean Development Mechanism (CDM), and Joint Implementation (JI).[6] The IET system involves a scheme called 'cap and trade' in which governments or intergovernmental bodies such as the European Commission (EC) hand out licences to pollute (or 'carbon permits') to major polluting industries within their boundaries. Industries can then trade these permits with one another in order to meet their emissions reduction targets. As Tamra Gilbertson and Oscar Reyes explain:

> The theory is that the availability of carbon permits will gradually be reduced ensuring scarcity so that the market retains its value while at the same time forcing a reduction in the overall level of pollution. The 'cap' part is supposed to do the work, environmentally speaking, setting a legal limit on levels of permissible pollution within a given time period. Each cap reduction is, in effect, a new regulatory measure introduced by governments and/or international bodies to reduce pollution further. The 'trading' part (or 'market-based') component of such a scheme does not actually reduce any emissions. It simply gives companies greater room to manoeuvre in addressing the emissions problem, for which carbon trading proposals are sometimes also referred to as 'flexible mechanisms'. Installations exceeding their reduction commitments can sell their surpluses to those who have failed to clean up their act adequately. Companies that want to keep on polluting save money, while in theory companies that are able to reduce beyond legal requirements will seize the chance to make money from selling their spare credits.[7]

'Offsetting' is a second type of carbon trading which allows industrialised countries with a GHG reduction commitment (Annex 1 countries) as well as companies, financial institutions, and individuals to reduce emissions via emissions-reducing projects outside the 'capped' area. Usually, these projects are seen as offering an alternative to more expensive emission reductions in their own countries. The largest offset scheme is the CDM, which allows projects to be implemented in developing or non-Annex 1 countries which do not have emissions reduction targets under Kyoto.

The CDM is managed by the UNFCCC, and thousands of CDM projects are at various stages of development. Carbon savings are measured by calculating the

extent to which the project in question will reduce GHG emissions. The credits produced by approved schemes could generate more than US$55 billion by 2012.[8]

Because of the CDM's high transaction costs and complicated processes, opportunities for expanding the carbon market in Africa in terms of this mechanism are limited. Therefore, attention has also shifted to the voluntary carbon market. The voluntary market is not subject to the guidelines and rules of the CDM, which means it is easier and cheaper to implement projects. However, this also means that it lacks accountability, and is therefore prone to greater abuse.

JI is also an offsetting mechanism in that it allows an Annex 1 country to invest in projects in other Annex 1 countries regarded as newly industrialised, such as those in Eastern Europe, with the host country claiming the carbon credits for such actions.

IS CARBON TRADING FAILING?: PROPONENTS AND CRITICS

When the Kyoto Protocol was adopted, it was perhaps unclear exactly how the carbon trading system would unfold, and what its impact on climate change would be. Since then, however, the apparent ineffectiveness of this policy regime has come under sharp focus. Carbon trading has been increasingly criticised. The two phases of the biggest cap and trade scheme, the European Union Emission Trading Scheme (EUETS), have failed. The offsetting regime is also beset with a lack of environmental integrity and claims of social abuse. The carbon price has crashed a few times, and the carbon market is in crisis. Yda Schreuder argues that it is becoming obvious that there is a problem with the way in which the world order is dealing with global environmental problems. Inter alia, she notes that: 'Much debated now, but not considered at the time the Kyoto Protocol was signed, is the recognition that national emission reduction commitments have little effect in a global economy that is driven by intense competition and organised around transnational corporations and international production networks.'[9] The paradox also endures that a market mechanism was chosen to reduce GHG emissions and limit climate change when it was in fact the market, a system of capitalist accumulation through the excessive consumption of fossil fuels, that caused the problems in the first place.

Despite the shortcomings of the carbon market, it continues to expand, and is becoming increasingly entrenched as a way of reducing GHG emissions – or at

least for Annex 1 countries to meet their commitments under Kyoto. The system is widely lauded, and, despite the fluctuating and often falling carbon price, companies supporting the trade of carbon credits are proliferating. The proponents of the CDM argue that it provides a flexible and profitable mechanism for combating climate change, and helps developing countries reach their sustainable development goals while reducing the financial burdens on their public sectors.

Carbon trading is therefore seen as an opportunity for developing countries in need of funds to spur their development. The corporate actors involved in carbon trading and some mainstream non-governmental organisations (NGOs) also regard it as being less about achieving structural change, and more about building partnerships between business and government with a view to achieving pragmatic and incremental change.

Market proponents generally attribute the success of the system to the creation of a commodity which puts a price on pollution, thereby incentivising a reduction in emissions and the development of new carbon-friendly technologies. However, many others criticise it on environmental and social justice grounds. In practice, carbon trading has failed to incentivise emissions reductions. Carbon trading attracts 'low-hanging fruit', or projects that are easy to implement and allow the easy calculation of emission reductions, which usually means that they do not support the longer-term goal of moving to low-carbon development. In fact, a 2007 analysis of a sample of CDM projects found that only 1,6 percent of credits went to projects that benefited sustainable development. Current calculations also show that only 11 per cent of carbon credits are derived from clean and renewable energy sources such as wind and solar schemes[10] (these issues are discussed in greater detail in Part 3).

Carbon trading also attracts large-scale mitigation projects in high-income developing countries, while tending to exclude poorer countries such as those in Africa (less than two percent of projects are hosted in Africa, as shown in Part 1, Chapter 2). Less than 30 per cent of revenue from carbon trades goes to developing countries. The rest goes to brokers, bankers, investors, and consultants in rich countries, as well as fees and taxes.[11] Developed countries also buy carbon credits to meet their own mitigation commitments, thus avoiding domestic action themselves.

The carbon market is criticised for creating unjustified property rights by commodifying air, a common resource. It is further criticised for creating and perpetuating power differentials between the Global North and South because

of its market-oriented nature, as it provides disproportionate benefits to wealthy, high-polluting industries. Carbon trading does not address issues of climate justice, which sees the profligate consumption in the North as a direct cause of climate change. On the contrary, it places a disproportionate burden of responsibility on developing countries, which are expected to host carbon trading projects. By individualising climate action to companies and individuals, carbon trading reduces opportunities for collective political action to bring about wider structural change.

The strongest critique against offsetting is that it is actually leading to an increase in emissions, because the offsetting mechanism allows corporations and countries to simply transfer responsibility for their emissions reductions to the developing world. Even if offsetting projects are proven to reduce emissions, which is invariably quite difficult because carbon accounting is an unreliable science, the net reduction will be zero, because you are only moving the reduction of your own emissions to another part of the world, and thus no environmental benefits can be claimed (as discussed in Part 2 and Part 5). Voluntary offset projects, in particular, have thus often been accused of functioning as 'greenwash', or providing false claims in order to bolster the image of polluting companies. Furthermore, they are seen more as a salve for the consciences of individuals in that they provide them with an opportunity to offset emissions from their own environmentally damaging activities, such as air travel. Instead, this practice may be seen as delaying the real structural changes needed to effectively address climate change.

ABOUT THIS STUDY

This volume presents a critical review of carbon trading in Africa. It comprises a compendium of essays by expert authors who analyse a range of key issues including: the context for and trends in the carbon market in Africa; offset projects in Uganda, Ethiopia and South Africa; carbon finance; and regulation, from a corruption and governance perspective. The study explores transparency and accountability issues, and examines the integrity of systems and processes aimed at achieving professed goals of climate change mitigation and sustainable development. While deficits in transparency and accountability do not necessarily constitute corruption, they are nevertheless seen as cause for concern as they provide opportunities for corrupt activities. In general,

corruption is approached in a nuanced way because carbon trading provides new and different ways of profiting illegitimately at the expense of a deteriorating climate. For this reason, a broad definition of corruption is used. Corruption usually refers to the abuse of power for private, illegitimate gain. In this study, corruption is sometimes used to indicate a particular or singular abuse, and sometimes refers to systemic challenges. Terms used include:

- *Fraud:* This involves the deliberate misrepresentation of facts and/or significant information to obtain undue or illegal advantage. A hypothetical example is where emission reductions are overestimated so that a company can profit from the sale of credits.
- *Conflicts of Interest (CoI):* This occurs when an individual or organisation is involved in work/an interest that could illegitimately interfere with their motivation and acting in another work/interest. While unethical, a CoI is not illegal or corrupt in strict terms, especially if it is declared. A hypothetical example would be a person sitting on the CDM Executive Board who designs the rules for projects but also has a carbon trading company that stands to benefit from those rules.
- *Revolving door:* Refers to political corruption or undue influence, and is related to CoI. It also describes unethical behaviour whereby people leave positions of influence to take up others where they can make use of information gathered or connections gained to benefit themselves. A hypothetical example would be a CDM Executive Board member who quits and becomes a carbon broker.
- *Perverse incentive:* This is where an incentive has an unintended and adverse consequence due to the actions required to receive the incentive. A hypothetical example would be the implementation of a carbon trading project which is meant to result in the reduction of pollution, but rather encourages polluters to emit more.
- *Confidence trickery:* This is an attempt to defraud an individual or group by gaining their confidence. A hypothetical example would be a savvy carbon trading consultant who knows how to profit from the system by technically meeting the guidelines drawn up by the CDM board, but knows in reality that the project in question is not viable and does not actually reduce emissions.
- *Erosion of rule of law:* The rule of law denotes the general rules that apply to everyone in a society. When powerful elites start to operate with impunity outside of those rules, the rule of law then takes on less significance in that

society. A hypothetical example is when a law to control pollution is put in place but a company that previously failed to comply with it now develops a project to control pollution so that it can gain from carbon credits.

While there is a growing body of knowledge on climate change and carbon trading, it often lacks an African perspective. This volume seeks to redress this imbalance. More specifically, it seeks to start the process of involving African governments, intergovernmental organisations, civil society, researchers, and the wider public in the debates and issues from evidence and research-based understandings. In doing so, it contributes to investigating, reporting on, monitoring, and evaluating carbon trading on the continent. It is hoped that a continental awareness and response will start to emerge that will guide African policy-making and thinking on carbon trading and on a broader approach to combating climate change.

Part 1, Chapter 1 sets out the climate change crisis, the carbon trading solution, the purpose of this study, and the structure of this volume. Chapter 2 provides a historical and political context for climate change and the place of Africa in carbon trading, as well as offering insight into future trends in carbon trading.

Part 2, Chapters 3, 4, 5 and 6 provide an in-depth review of offset projects in Africa. A general introduction to offset projects is provided in Chapter 3.

Part 3, Chapter 7 deals with carbon finance. It focuses on the World Bank, one of the leading financial players in the carbon market, and considers the Bank's financing of forest projects in Africa under the Reduced Emissions from Deforestation and Degradation (REDD) programme meant to be implemented under the post-2012 international climate policy regime.

Part 4, Chapter 8 assesses the regulatory aspects of carbon trading through the lens of actual and potential corruption. It thus identifies some of the key failings of carbon trading with regard to regulation. It is the most provocative chapter because it challenges the entire carbon system and the premise on which it was built. However, it is an essential critique because it argues that the problems of carbon markets go much deeper than is ordinarily understood, and thus demand a political analysis of power and democracy.

Part 5, Chapter 9 summarises the key findings, and presents recommendations based on them to key actors, including policy-makers, civil society organisations (CSOs) and researchers.

NOTES

1 International Energy Statistics, World Co_2 emissions from consumption of energy, http://tonto.eia.doe.gov/cfapps/ipdbproject (accessed on 15 September 2011).

2 Intergovernmental Panel on Climate Change, *Fourth assessment report* (AR4), 2007.

3 Youba Sokona, Adapting to climate change in the region: Turning the Commission's Report findings into reality, presentation to event on Climate Change & Development, Institute for Security Studies/Swedish Embassy, Cape Town, 11 September 2009. The United Nations Environment Programme (UNEP) and the Stockholm Environment Institute have arrived at a similar figure of 1,5–3 per cent of annual GDP by 2030. UNEP and Stockholm Environment Institute, Synthesis briefing note: Estimates of the costs of adaptation in Africa, http://new.unep.org/climatechange/LinkClick.aspx?fileticket=-K3E-Ya4pQA%3D&tabid=241&language=en-US.

4 The UNFCCC is an international treaty concluded in 1992 with the objective of stabilising GHG concentrations in the atmosphere at a level that would prevent dangerous climate change. It also includes key universal principles such as 'polluter pays' and 'common but differentiated responsibility' on which the global climate change regime is based. A total of 194 countries are currently party to the treaty.

5 Intergovernmental Panel on Climate Change, *IPCC second assessment: climate change 1995*, Geneva, 1995.

6 Joint Implementation (JI) enables countries with specific emission reduction targets under the Kyoto Protocol to obtain credits for implementing GHG reduction projects in other industrialised countries.

7 T Gilbertson and O Reyes, *Carbon trading: How it works and why it fails*, Dag Hammarskjöld Foundation, Uppsala, 2009, 10.

8 Ibid, 11.

9 Y Schreuder, *The corporate greenhouse: Climate change policy in a globalising world*, Zed Books: New York, 2009, 3.

10 A 2007 analysis of a sample of CDM projects found that only 1,6 percent of credits went to projects that benefited sustainable development. See C Sutter and J C Parreno, Climate change: Does the current clean development mechanism (CDM) deliver its sustainable development claim? An analysis of officially registered CDM projects, July 2007, http://www.cleanairnet.org/caiasia/1412/articles72508_resource_1.pdf.

11 Sarah-Jayne Clifton, A dangerous obsession – the evidence against carbon trading and for real solutions to avoid a climate crunch, Friends of the Earth, 2009, http://www.foe.co.uk/resource/reports/dangerous_obsession.pdf.

2 Climate change and carbon trading in Africa

Yacob Mulugetta

INTRODUCTION

Africa has gained few benefits from economic globalisation, and the continent's economies continue to depend on a handful of primary goods whose prices are determined externally. This unjust allocation of resources, access, and development extends to climate policies in that Africa's interests have remained peripheral to their implementation. The introduction of carbon trading schemes has arguably not transferred finance or technology to Africa. Just two per cent of projects under the Clean Development Mechanism (CDM), the main carbon market resulting from the Kyoto Protocol, are in Africa, and if South Africa is excluded, a mere 0,6 per cent of these are in sub-Saharan Africa. With carbon markets driven primarily by commercial interests, most CDM credits are awarded for simple changes to reduce industrial gases other than CO_2. The manufacturing facilities that generate these gases are not found in Africa. While hydro power, the other major source of CDM credits to date, is the most common form of electricity generation in sub-Saharan Africa, this results in an assumption that the energy mix is already clean. Simply put, sub-Saharan African countries are not

deemed to be dirty enough, or to consume enough, to compete successfully for CDM projects.

Partly in response to these failures, CDM reform is being discussed at UN climate negotiations. However, the approaches favoured in these talks could exacerbate rather than ameliorate the problems associated with carbon trading. One of the main proposals is to replace a project-based approach with one that encompasses entire economic sectors. However, this does not solve the basic problem of carbon 'offsetting', namely its lack of environmental and social integrity. Nor would a sectoral approach address the geographic imbalance in favour of middle-income countries. A second scheme that is heavily linked to carbon markets is Reducing Emissions from Degradation and Deforestation (REDD). However, this could introduce a series of additional problems, including the displacement of forest-based communities, and a financial incentive to replace complex forest ecosystems with monoculture plantations. Serious doubts also remain about the ability to account for emissions 'savings' from REDD. Thus far, the evidence shows that carbon trading is an ineffective way of addressing climate change, largely helping powerful governments and business executives to meet the demands for action on climate change while preserving the commercial and geopolitical status quo.

This chapter probes these issues by placing climate change in its historical and political context. This may help us to understand why and how carbon trading falls short of addressing carbon mitigation efforts, and limiting the effect of climate change on livelihoods in Africa. It then discusses the marginalisation of Africa in the carbon market. Finally, it explores some future trends in the African carbon market.

THE HISTORICAL AND POLITICAL CONTEXT OF CLIMATE CHANGE

The historical legacy of unequal access to resources and unequal development demands an open debate about the causes of anthropogenic greenhouse gas (GHG) emissions, how past and future emissions are likely to be allocated, and what interventions are required to engage in a meaningful way with CO_2 stabilisation efforts. Placing the climate discussion in its historical (and political) context has two important functions. Firstly, it helps us to appreciate the origins of the problem and the possible effects of global warming on present and future

generations, thus situating local impacts firmly in global politics and economics, and helping us to discuss inequality in a concrete way. Secondly, it helps us to explain the evolution of social and environmental systems while explicitly considering relations of power, thus providing a platform for challenging dominant accounts of environmental change.[1] The argument here is that environmental change and ecological conditions are fundamentally linked to broader economic, social and political processes in which the 'triple inequality'[2] of vulnerability, responsibility, and mitigation are embedded.

It is worth focusing on 'responsibility', given that an agreement in this area would constitute a first step towards arriving at 'fair' solutions. The advocates of industrial progress saw nature as a source of unlimited resources to sustain development, with an infinite reservoir for waste. This extraction–dumping paradigm involves a highly unequal sharing of the benefits of material and energy flows on one hand, and the social and environmental costs incurred at all stages of the commodity chain on the other. The negative impacts are often absorbed by upstream communities, mainly involved in resource extraction, which are almost always rural, poor, and powerless. Byrne et al[3] argue that the industrialised world consumes a disproportionate part of global resources via supply systems that extract energy from various parts of the world. The US alone consumes a quarter of the world's energy, while its share of global Gross Domestic Product (GDP) is 22 per cent, and its share of the world population only 5 per cent. At the opposite end of the spectrum, less than one-fifth of global resources are dedicated to the needs of the South, home to two-thirds of the human community.

Of course, consumption at the individual level cannot be divorced from the wider project of economic growth and accumulation that governments have pursued so relentlessly, particularly over the past three decades of neoliberal ascendancy.[4] Moreover, in the course of pursuing economic growth, some progress has been made in the efficient use of resources for each unit of economic activity.[5] For example, energy intensity in both the UK and US is about 40 per cent lower than in 1980,[6] as are material intensities more generally. A possible motive is that the 'redesign' of goods and services can help an economy to grow without depleting resources and surpassing ecological limits.

However, this harbours a paradox. Despite declining energy and carbon intensities, carbon dioxide emissions are almost 40 per cent higher than they were in 1990, which the Kyoto Protocol treats as the baseline for calculating changes in GHG emissions. The simple explanation for this lies in the sheer size of the global

economy, which has grown more than five times since the mid-20th century, and could be 15 times larger than it is today by 2050.[7] These figures also reflect high levels of consumption in industrialised countries, with an expanding range of consumer goods and services[8] also becoming increasingly accessible to populations in emerging economies. This phenomenon is threatening to wreck the very ecosystems that sustain the global economy and the livelihoods of billions of people.

Given the strong relationship between economic growth and consumption, it is difficult to see a way out of this impasse in the absence of a hegemonic project that can challenge and reverse neoliberal policies.

What we have seen over the past 30 years is a remarkable shift in power from producer to consumer at almost every point along the commodity chain. The global integration of production and consumption has resulted in a major shift in the ecological load from North to South over the past 20 years. Thus the Netherlands Environmental Assessment Agency reports that China has overtaken the US as the biggest CO_2 emitter, although its per capita emissions are still a quarter of those in the US, and half of those in the UK.[9]

On closer examination, the picture is even more complex.[10] A study by the New Economic Foundation (NEF)[11] shows that large proportions of China's rising emissions are due to the dependence of the rest of the world on exports from that country. Thus growing demand for cheap consumer products is turning China into the environmental or 'carbon' laundry for the Western world. The NEF report also points to the relocation of significant numbers of heavy (energy-intensive) industries to China as a visible outcome of policies of market deregulation and free trade. Since China's energy mix is more fossil-fuel-intensive than those of Europe, Japan or the US, outsourcing to China from 'apparently cleaner, richer nations' creates more 'greenhouse gas emissions for each product made'.[12]

The intention here is not to defend China in respect of climate change. The evidence shows quite clearly that China's industries and power stations are playing a major role in rising GHG emissions. Instead, this discussion is aimed at placing the ecological implications of global trade underpinned by neoliberalism in perspective, and challenging the myth that the self-regulating market is the best possible mechanism for addressing the world's problems, including climate change and poverty. The concerted effort to subordinate society to the logic of the market in such a way that 'social relations are embedded in the economic system' has created unexpected contradictions.[13] The very act of subordinating

natural and social systems to the market has unleashed new problems, some of which will have profound consequences for human society and the biological world as a whole.

The altered chemistry of the planet's atmosphere presents industrial society with a major contradiction, demanding a radical break from 'business as usual' in the ways in which goods (and services) are produced, distributed, and consumed. China's growing ecological footprint is a symptom of the predatory nature of neoliberalism and the gap it has created between human-made and natural systems. Some 50 years back, Karl Polanyi warned that the self-regulating market 'could not exist for any length of time without annihilating the human and natural substance of society; it would have physically destroyed man, and transformed his surroundings into a wilderness'.[14] It is not obvious whether the human community is heading towards a total breakdown, but there are signs that the current economic model is taking us to the brink, undermining wellbeing and causing 'social recession'. Yet we have also witnessed how durable liberal market capitalism really is. After causing a major economic crisis, neoliberalism remains effectively unchallenged, and the only model of economic organisation on offer. The irony in this is that while this economic model has lost all credibility, there appear to be no politically durable alternatives.

As noted earlier, Africa has not benefited from neoliberalism. On the whole, neoliberal policies contributing to economic globalisation have reinforced the marginalisation of African economies, which continue to depend on a few primary goods whose prices, and market appeal, are externally determined. Despite African governments having obediently pursued World Bank and International Monetary Fund (IMF) structural adjustment programmes for nearly three decades, foreign investment in African economies has remained negligible, and is unlikely to be stepped up significantly in the near future. This further hampers the participation of African countries in the global economy as producers of goods and services. The marginalisation of Africans as producers and consumers of goods also means that their per capita resource use is relatively low, which translates into low ecological and carbon footprints. It also indicates that Africa is still relatively unspoilt, at least when compared to other parts of the world, where industrial footprints are much larger.

However, it also demonstrates that Africans have not benefited from modernisation; more than 75 per cent of sub-Saharan Africans do not have access to electricity, and the performance of the health, education and water sectors is just

as poor. Some argue that Africa's energy solution lies in opening itself to carbon trading initiatives, but even in this respect African countries will struggle to attract investors due to a number of practical impediments that prevent real participation in these markets. Furthermore, serious questions remain as to whether carbon trading is an appropriate response to the task of climate stabilisation and the alleviation of energy poverty more generally. The following sections will explore these issues in greater detail.

THE PLACE OF AFRICA IN CARBON TRADING

The carbon market has become a multi-billion-dollar industry, worth $144 billion in 2009 according to the World Bank's carbon finance unit.[15] It remains dominated by the sale and re-sale of EU Allowances (EUA) under the EU's Emissions Trading Scheme (ETS), which covers about half of its carbon dioxide emissions. Project-based activities under the CDM also reached the $6,5 billion mark in 2008, although this shrank to $2,7 billion in 2009. This tailing off is attributed to deteriorating economic conditions, coupled with the uncertainties about post-2010 arrangements when the Kyoto Protocol expires. According to the World Bank, China has dominated the CDM market since its inception, accounting for about 66 per cent of all contracted CDM supply between 2002 and 2008, and 72 per cent of the market in 2009.[16] India and Brazil rank second and third on the list of sellers in terms of volumes transacted.

Africa's share has remained at about two per cent of CDM projects officially registered with the UN's climate change secretariat.[17] If South Africa and countries in North Africa are taken out of the aggregate, all the other African countries currently account for just 0,6 per cent of registered CDM projects.[18] This tiny market share has a great deal to do with the major industrial opportunities and low transaction costs as a result of economies of scale that regions such as China and India are able to offer buyers of carbon credits.[19] Projects of this type include emissions-saving technologies that may involve refitting factories to capture or destroy industrial gases, such as HFC-23 (a byproduct of refrigerant manufacturing, and a far more dangerous gas than CO_2), or investment in large hydroelectricity projects that 'replace' electricity generated by fossil fuels. Given that most sub-Saharan African economies are largely agrarian, CDM-type investment opportunities in large industrial gas destruction projects are simply not available.[20]

Another reason why the African carbon market is less attractive relates to how electricity is generated. Access to electricity is a major challenge across much of Africa, with less than 25 per cent – and, in some countries, as little as 5 per cent – of the population enjoying access to grid electricity.[21] Thus the World Bank[22] has calculated that the 47 countries in sub-Saharan Africa, with a combined population of 800 million people, generate as much power as Spain, with a population of 45 million. The potential for CDM-type projects in the power sector therefore seems significant. However, this is complicated by the fact that hydro power is the largest source of electricity across sub-Saharan Africa by far.[23]

This is problematic from the perspective of carbon accounting, given that new investment in low-carbon, grid-connected electricity has to demonstrate that it displaces 'carbon-intensive' electricity.

The fact that large proportions of electricity are derived from hydro sources across many countries makes it harder to rely on 'investment' through CDM, since carbon credits would not be awarded for proposed clean energy sources. This obstacle was observed in the case of a recent $30 million proposal for a 120mW wind energy scheme in northern Ethiopia. Although the project was deemed suitable to be registered as a CDM project, the high proportion of hydro power resources in the country's electricity mix meant that the emissions factor (EF)[24] was relatively low. A low emissions factor means modest corresponding Certified Emissions Reductions (CERs),[25] and therefore less money. Given the choice, an investor seeking high returns is likely to pick less risky but dirtier pastures elsewhere in the South, where higher and quicker returns are guaranteed.

This 'unintended consequence', to use the World Bank's euphemism for Africa's marginalisation,[26] seems to suggest that countries in sub-Saharan Africa are not dirty enough, or do not consume enough, to compete successfully for carbon-offsetting opportunities. In other words, Africa has to get dirty to be admitted as a serious player in the CDM-type carbon business. For the time being, the World Bank suggests that 'African countries may do well to look even further beyond CDM at the fast-growing carbon market in the voluntary and retail segments',[27] which may offer the flexibility that the compliance-driven carbon market does not.

The lack of carbon-reduction investment opportunities in the power sector and the limited number of carbon-intensive industries outside Northern Africa and South Africa implies that the rest of Africa is not well positioned to influence

the direction of the debate around carbon trading. Ultimately, carbon trading is about maximising profits by offsetting emissions in the cheapest way possible, which automatically favours middle-income countries that have experienced sharp increases in energy-intensive (and carbon-intensive) industries over the past 20 years. It also means that the market is driven by large private sector players, with profit-seeking investors drawn to 'low-hanging' carbon abatement opportunities. Such opportunities are hard to come by in Africa.

The types of projects that could deliver livelihood benefits to Africans, such as renewable and other small-scale energy projects, are not 'cheap' options of carbon abatement, and are therefore less likely to attract the big investors. According to CDM Watch, as long as the CDM continues to function as a market 'in which least-cost considerations dominate, then it will continue to be technology-neutral, and if there are cheaper options than renewables projects, they will be preferred.'[28] In other words, the market will continue to favour those projects likely to deliver the cheapest credits, and not necessarily those with the best environmental outcomes.

This runs counter to the CDM agreement, which requires CDM-type projects to help host countries achieve 'sustainable development' besides helping Annex I countries to reduce their emissions. However, because countries are allowed to define sustainable development in their own terms, and strike their own balance between economic fundamentals on one hand, and equity and environmental integrity on the other, this has been difficult to achieve. In the absence of a universal definition that would make project overseers more accountable for their efficacy, host country governments are unlikely to lay down challenging sustainable development requirements for fear of chasing away potential investors. Hence, concerns about social and economic inequality, which are central to the sustainable development debate, are often treated as consequential to the single objective of gaining carbon credits. More specific to Africa, projects that could contribute to meeting the Millennium Development Goals (MDGs) in respect of incomes, education, health services, and the protection of ecosystems are not competitive enough in terms of the CDM cost-effectiveness criteria.

Given the limited opportunities for expanding the carbon market in Africa through the CDM, attention has shifted to projects that can be delivered through the voluntary market. These include improved stoves and tree planting projects, which have been controversial for a variety of reasons, including the difficulties they pose to verify the offsets. The permanence of the carbon storage claimed

by such projects cannot be guaranteed, since the potential clearing or burning of forests would return the stored carbon to the atmosphere. There are also concerns that the fast-growing trees favoured by project developers could threaten biodiversity, disrupt water tables, and encourage the use of pesticides, to the detriment of small farmers living nearby.[29] Moreover, protecting forests against loggers could displace agricultural or logging activity to other forests – a phenomenon known as 'activity shifting' or leakage.[30] While there are many good reasons to champion forestry programmes, notably for supporting local livelihoods as well as the obvious contribution they make as carbon sinks,[31] current tree planting practices as part of carbon offsetting efforts conflict with the interests of local communities. A project in the Bukaleba Forestry Reserve in Uganda, intended to offset the GHG emissions of a coal-fired power plant to be built in Norway, clearly illustrates the conflict of interests of the offset company, host countries, and the needs of local communities. The Ugandan government received a meagre once-off fee of US$410 and an annual rent of about US$4,10 for each hectare of plantation, which is an absurdly low lease price compared to the huge carbon credits the Norwegian company (Tree Farms) was aiming to sell. The project was also responsible for evicting 8 000 people living on the land, depriving them of their livelihoods, and probably driving them to clear land elsewhere. Eraker quotes the managing director of the project as saying: 'Everyone living and farming inside our area are illegal intruders … we have told the forest authorities that this is their responsibility.'[32] What is embedded in this statement is that tree planting under carbon trading tends to push aside local interests, local needs and traditional land rights in favour of external commercial interests.

Box 1: Future trends in the African carbon market

Oscar Reyes

As suggested above, Africa is currently marginal to the carbon market, and the carbon market has been irrelevant to the continent's efforts to address climate change. Could this be about to change?

To start with, it is worth underscoring how little has happened to date within the framework of the CDM. Only 6 million of the 424 million CERs (CDM credits) issued by August 2010 have gone to African projects, and 80 per cent of these have gone to a single industrial gas plant in Egypt.[33]

Looking ahead, however, 95 new projects are seeking approval to join the CDM (compared to the 43 already registered). After South Africa, most of these are located in Kenya and Uganda, with 'reforestation' projects the largest single type requesting registration in both countries.[34] A closer look shows that these are all small-scale, World Bank-funded schemes, though it should be noted that the Bank has a track record of developing such prototypes within the CDM which are then replicated on a larger scale by the private sector, as discussed in Chapter 4.

Large-scale reforestation projects

A better indication of the shape of things to come, however, may be a 'reforestation' project currently seeking approval in Ghana, which would replace existing grasslands with large-scale biodiesel monoculture plantations. The project has been initiated by Natural African Diesel, a South African company, which expects to receive more than 40 million CERs by 2030, and hopes it will continue to receive credits for its plantations of jatropha and maringa at rates of two to three million a year until 2058. However, the biodiesel industry in Ghana has been widely criticised for engaging in land grabs which displace local populations, undermine food security, and fail to assess the threat that jatropha poses to water supplies.[35]

Large-scale projects such as the Ghana plantations are likely to dominate the issuance of credits – in other words, the cash flows within the CDM.

Gas utilisation and capture projects

To date, a handful of large industrial gas projects (like the Egyptian factory) destroying the potent greenhouse gases HFC-23 and N_2O account for almost three quarters of all credits issued globally.[36] Few such gases are produced in Africa, but large-scale subsidies can be derived from the CDM in other ways. Most notably, a series of new 'gas utilisation' projects are under way in the Niger Delta. The first of these, at Kwale, a site run by the Nigerian Agip Oil Company (a joint venture between the Italian state oil company Eni and its Nigerian counterpart), expects to receive about 15 million credits by end-2016. The Pan Ocean Gas Utilisation Project, the second such scheme to be registered, is the largest registered CDM project

in Africa, and expects to receive more than 26 million CERs by 2020. Shell and Chevron are developing similar projects.

There can be few clearer examples of the perverse incentives created by the CDM. The Niger Delta projects claim to stop gas flaring, yet this activity has already been judged illegal by the Nigerian High Court, as also discussed in Chapter 5. As such, companies will be rewarded for their failure to abide by the law. Furthermore, while the projects claim to address gas flaring, an analysis of the gases they will process suggests that the figures are being manipulated, and that the registered projects will process large quantities of liquefied natural gas (LNG) and other gases that were not associated with crude oil production in the first place.[37] In other words, these projects may be more accurately characterised as subsidising the expansion of fossil fuel exploitation in the Niger Delta. This, in turn, fits into a circular structure. In the case of Kwale, Eni's Nigerian subsidiary is locking in fossil fuel dependence, gains credits for this activity, and sells these to Eni in Italy. These credits will then be surrendered within the EU ETS, enabling Eni to avoid reducing emissions from its oil refineries in Italy. The Pan Ocean project forms part of a similar fossil fuel cycle, with many of the anticipated credits already purchased by Vattenfall, one of the largest operators of coal-fired power plants in Europe.

Such circularity is not restricted to the oil and gas sector. Most notably, the South African state-owned power utility Eskom is conducting a feasibility study to determine whether to seek CDM credits for Medupi, the fourth largest coal-fired power station in the world.[38] 'Supercritical' coal plants like Medupi have been eligible for CDM subsidies since 2007.

Biomass power sector

Other large-scale opportunities are likely to exist in the biomass power sector (which is growing rapidly within the CDM) and hydro power sector. Such projects could fall foul of the fact that sub-Saharan Africa is already largely powered by hydroelectric dams, which are considered to be zero emitting.[39] However, as the example of the recently (re)submitted Bujugali Dam in Uganda makes clear, the comparisons used for calculating CDM baselines relate not to existing practice but to projections of future use. Project developers routinely maximise the projections in order to

maximise the number of available credits. In the case of Bujugali, this is reflected in an assumption that Uganda will be afflicted by load shedding, stimulating an increase in the use of diesel generators and the burning of automotive oil.[40]

This scenario is projected to continue indefinitely, since the project assumes a steady issuance of credits at a rate of 900 000 a year until 2019 (with the option of claiming project credits for a total of 21 years).[41] Needless to say, this is highly unlikely. The financial 'additionality' of the project is equally suspect, given that engineering for the controversial new dam was 91 per cent complete and procurement 99 per cent complete by the time of its application.[42]

There is nothing in the CDM reform proposals currently under discussion within UN climate talks that would put a stop to such fanciful scenarios in claiming additionality. Nor are these, strictly speaking, 'abuses' of the system. Such claims about 'what would otherwise have happened' are the very basis upon which the CDM works.

Sectoral carbon markets

Although UN climate negotiators sometimes talk the language of environmental integrity and greater equity in offsetting, the proposals currently on the table belie this view. The basic premise underlying most of the proposed reforms to the CDM, as well as potential new 'sectoral' carbon markets, is to increase the volume of credits generated by offsetting. This, in turn, would help industrialised countries to meet their emissions reduction obligations without having to make structural changes to domestic energy production, industry, or agriculture. In other words, offsetting remains an avoided responsibility mechanism.

There are two tracks to the UN Framework Convention on Climate Change (UNFCCC) negotiations. The first of these is the Ad Hoc Working Group on Further Commitments under the Kyoto Protocol (AHG-KP), which has the remit to discuss CDM reform. A number of proposals relate to new sectors and industrial gases. The range of new GHG, if approved for inclusion, would probably continue where HFC and N_2O projects left off, with the concentration of projects in middle-income countries.

The key proposals relate to the inclusion of nuclear power as well as carbon capture and storage (CCS) in the CDM, and a far greater scope for agriculture and forestry projects. A majority of developing countries continue to oppose the proposal on nuclear power, as they feel they would have little to gain from it. The picture is more complex with regard to CCS which, if included, could see projects in South Africa, where Eskom is exploring carbon capture in coal-fired power plants; North Africa, with Algeria (which already has its first CCS demonstration project on gas fields run by BP and Statoil) affirming its intention of encouraging CCS projects in CDM;[43] and the gas fields of the Niger Delta. However, serious concerns have been raised about CCS, with UN negotiating texts including options to exclude the technology from the CDM on the grounds of negative environmental impacts, non-permanence of carbon storage, potential for unforeseen leakage, measurement difficulties, liability, safety and 'the potential for the creation of perverse incentives for increased dependency on fossil fuels'.[44] The powerful opposition of Brazil may yet block the inclusion of CCS in the CDM, however. In essence, any sectoral emission reduced below a pre-set baseline would be credited to governments.

Agriculture, forests, and Reducing Emissions from Deforestation and Degradation (REDD)

In the case of agriculture and forests, the scope of new measures under the CDM is vague but potentially significant, with advocates for increasing the use of CDM in sub-Saharan Africa identifying these sectors as potentially the most lucrative.[45]

To date, afforestation/reforestation accounts for just 56 of more than 5 300 projects being considered for inclusion in the CDM, and no credits have yet been issued for these projects. The slow pace in developing such projects is partly accounted for by the availability of cheaper options, and partly by the restrictions placed upon the use of such credits. Such projects are currently only entitled to issue tCERs (the 't' stands for temporary) or lCERs ('l' for long-term), but these have proven unpopular with carbon traders, and the prices remain low. The UNFCCC currently caps the use of Land Use, Land Use Change and Forestry (LULUCF) credits at one per cent

of base year emissions, meaning that industrialised countries face a limit on how many they can buy. The EU ETS, which drives most of the demand for offsets, currently excludes LULUCF credits altogether. And, finally, such projects can only be developed on land that was not forested before 1990.

While several options remain on the table, some restrictions look set to remain – including the one per cent threshold on such projects. However, this still provides scope for expanding them considerably. There is significant pressure to drop the tCER and lCER distinction, despite the fact that the measurement difficulties that led to their creation in the first place remain largely unresolved. The EU has maintained the exclusion of LULUCF credits for the third phase of its ETS (to 2020), but this provision is potentially undermined by its intention to link its scheme with other OECD carbon markets as those emerge. More significantly, a series of new activities dubbed 'forest management' could be included beyond the one per cent limit. Under current definitions, these could include monoculture plantations and commercial logging.[46]

Beyond this, a range of agricultural activities could be included in the CDM under the rubric of 'soil management'. While this could theoretically support small-scale, agro-ecological farming – which has been shown to increase organic matter in the soil, thereby increasing its capacity to act as a 'sink'[47] – the transaction costs and monitoring difficulties of linking such activities to an offset scheme would prove prohibitive. The real 'winners' from such proposals, therefore, are likely to be in large-scale industrial agriculture – with agribusinesses already looking to the possibility of CDM funding for 'no-till' genetically modified (GM) monocultures, and tree plantations to produce biochar (a controversial technique for creating charcoal and then burying it to 'store' carbon). In addition, the rules on LULUCF may change to scrap the 1990 threshold, making a far wider land area available for such projects.

In the longer term, schemes for REDD, which will begin with public funding, are being established to kick-start a forest carbon market capable of issuing offset credits. It is sometimes argued that REDD, alongside the inclusion of afforestation/reforestation of CDM, would significantly benefit Africa on the grounds that these sectors account for 'over 60 per cent of Africa's mitigation potential'.[48] Yet the existence of considerable forested

areas – including the world's second largest forest in the Congo Basin – does not in itself guarantee a significant flow of REDD money. Historical deforestation rates have been far higher in Brazil, Indonesia or Malaysia, which may be (perversely) rewarded by REDD for having deforested more rapidly than their African counterparts unless a 'correction factor' is built into the scheme.[49] Alternatively, the 'baselines' for REDD could be set so high that payments will be triggered for increases in deforestation, as is the case with a recent agreement between Norway and Guyana.[50]

There are serious concerns, too, about who will benefit from REDD, and at what environmental cost. With many forest-based and indigenous communities having few formal titles to their land, REDD is likely to fuel property speculation and dispossess local populations.[51] These risks are exacerbated by the inclusion of plantations in the current UNFCCC definition of what constitutes a forest.[52] Furthermore, in common with CDM, the complex accounting procedures involved in commodifying forests tend to divert resources from forestry initiatives to carbon counting. While direct estimates for REDD are not yet available, it is reasonable to assume that this would be comparable with the CDM, where only 30 per cent of financing goes towards the project itself, with the rest absorbed by consultancy fees and taxes.[53] Finally, the combination of significant uncertainties in forest carbon accounting and weak governance structures – such as those in the Congo Basin – signals a capacity for large-scale fraud and the siphoning off of funds by elite interests.[54]

Whether through REDD or the CDM, there is pressure to increase the penetration of carbon markets in least developed countries (LDCs)and in Africa in general. This is the case both within and outside UN negotiations. At present, the EU ETS is by far the single largest driver of demand for CDM credits. In the absence of an international agreement to supersede or complement the Kyoto Protocol, whose first commitment period ends in 2012, EU policy allows for the continued use of CDM credits on a highly selective basis. In the absence of an international agreement, the rules for the third phase of the EU ETS would restrict the intake of CDM credits to projects in LDCs and Africa, and countries that make bilateral agreements with the EU.

Increasing projects in least developed countries and Africa

In parallel, the UN negotiating texts include a proposal to develop criteria that would increase projects in LDCs and Africa, potentially requiring that 10 per cent of all CERs surrendered come from these areas. While this is presented as a progressive measure to ensure a more 'equitable' mechanism, the nature of such projects could be characterised as a means to share the pain of such measures more widely: as we have seen, such projects have the potential to stimulate land grabs, undermine food security, and promote a model of development that keeps sub-Saharan Africa dependent on a handful primary and extractive industries, while most of the finance associated with the projects flows out of the continent.

Ultimately, the political rationale for such measures lies in a desire (advanced most forthrightly by the EC) to advance new forms of sectoral carbon markets, targeted at the middle-income countries currently dominating the CDM market (including China, India, Brazil, South Korea, Mexico and South Africa). These proposals are being developed within the Ad Hoc Working Group on Long Term Cooperative Action (AHG-LCA), the second track of UN climate negotiations.[55] The EC is keen to encourage these countries to develop sector-wide carbon markets as a step on the road to 'cap and trade' emissions trading schemes which have binding targets on emissions. Such schemes are not proposed as a reform or replacement to the CDM, but are envisaged as running alongside a CDM that would be more targeted towards LDCs and sub-Saharan Africa.

CONCLUSION

This discussion points to some of the practical limitations on the benefits of carbon markets to Africa. It also alludes to the ethical and fairness issues that are often ignored, as though climate change can be separated from the social and economic conditions that gave rise to it in the first place, or the proposed solutions may in fact cause. We need to return to the fundamental issue. The richest countries are largely responsible for the climate problem through their profligate burning of fossil fuels, while the effects of climate change are disproportionately shouldered by the poor. However, CDM and voluntary offset schemes do not challenge the underlying consumption ethics, which continue to drive the fossil fuel

economy. If anything, offset schemes allow industrialised countries to maintain their affluent lifestyles by exporting the burden of reducing GHG emissions to countries in the South, often by stressing poor people even further. The argument that carbon trading offers real benefits to the poor in Africa is simply not credible. What is puzzling is the persistence of the proponents of carbon markets, who continue to cling to these ideas in the face of mounting evidence that carbon trading does not deliver results commensurate to the effort invested in it. They seem ready to 'innovate' endlessly to get a market mechanism working because they are ideologically chained to the 'competitiveness' agenda rather than environmental concerns. In support of this point, Nick Davies, writing in *The Guardian*, argues that carbon offsetting is

> an idea which flows not from environmentalists and climate scientists trying to design a way to reverse global warming, but from politicians and business executives trying to meet the demands for action while preserving the commercial status quo.[56]

Fundamental inequality is behind the climate problem, and the search for solutions must involve industrialised societies making fundamental structural changes to their lifestyles, energy practices, and their production and consumption systems.

NOTES

1 P Robbins, *Political ecology*, London: Blackwell, 2004, 12.

2 J T Roberts, and and B C Parks, *A climate of injustice: Global inequality, North–South politics, and climate policy*, Cambridge: MIT Press, 2006.

3 J L Byrne, L Glover, G Alleng, V Inniss, Y M Mun and Y-D Wang, The postmodern greenhouse: creating virtual carbon reductions from business-as-usual energy politics, *Bulletin of Science, Technology and Society* 21(6) (2001), 443–455, carbonpositive.net/viewarticle.aspx?articleID=840.

4 T Jackson, *Prosperity without growth*, London: Earthscan, 2010.

5 These trends are not unidirectional, however, with some researchers finding increases in carbon intensity since 2000. M Raupach, G Marland, P Ciais, C Le Quéré, J Canadell, G Klepper and C Field, Global and regional drivers of accelerating CO_2 emissions, Proceedings of the National Academy of Sciences, 2007, www.pnas.org.

6 International Energy Agency (IEA), *World energy outlook 2008*, Paris, 2008. These figures should be treated with some caution, however, as they do not fully account for 'embedded' emissions related to the outsourcing of manufacturing from the US and UK, particular to South East Asia.

7 T Jackson, *Prosperity without growth*, London: Earthscan, 2010.

8 J Clapp, Distancing of waste: overconsumption in a global economy, in T Princen, M Maniates and K Conca (eds.), *Confronting consumption*, Cambridge: MIT Press, 2002.

9 J Vidal and D Adam, China overtakes US as world's biggest CO_2 emitter, *The Guardian*, 19 June 2007.

10 D Guan, Glen Peters, C L Weber, and K Hubacek, Journey to world top emitter – an analysis of the driving forces of China's recent CO_2 emissions surge, *Geophysical Research Letters*, 36, 2009.

11 New Economic Foundation, *Chinadependence: the first UK interdependence report*, London, 2007.

12 Ibid, 10.

13 K Polanyi, *The great transformation: the political and economic origins of our time*, Boston: Beacon Press, 2001, 3.

14 Ibid.

15 World Bank, *State and trends of the carbon market 2010*, Washington DC, 2010.

16 Ibid, 39; World Bank, *State and trends of the carbon market 2009*, Washington DC, 2009, 34.

17 World Bank, *State and trends of the carbon market 2010*, Washington DC, 2010, 40.

18 UNEP Risoe CDM/JI Pipeline analysis and database, 1 August 2010, www.cdmpipeline.org.

19 The buyer purchases emission credits from a project which can demonstrate that it reduces GHG emissions compared with what would have happened otherwise.

20 As of June 2010, almost three quarters of the CDM offset credits issued were manufactured by large firms making minor technical adjustments to eliminate the refrigerant gas HFC-23 and nitrous oxide (N2O, which is mainly produced as a by-product of synthetic fibre production). See www.cdmpipeline.org.

21 IEA database.

22 World Bank, *State and trends of the carbon market*, 37.

23 Ibid.

24 An emission factor is the average emission rate of a given pollutant for a given source, relative to units of activity such as CO_2 per kWh as in the case of electricity. The emission factor of electricity in a given country, for example, depends on the fuel mix whereby the higher the proportion of hydrocarbons in the mix, the greater the emissions factor of electricity.

25 A CER is given by the CDM Executive Board to projects in countries in the South to certify they have reduced GHG emissions by one tonne of carbon dioxide per year. Northern countries (Annex I) purchase CERs from countries in the South under the CDM to help them achieve their Kyoto targets.

26 World Bank, *State and trends of the carbon market 2007*, Washington DC, 2009, 25.

27 Ibid, 26.

28 CDM Watch, Market failure: why the Clean Development Mechanism won't promote clean development, 2004, www.sinkswatch.org/pubs/Market%20failure.pdf (accessed on 25 January 2008), 8.

29 L Lohmann, Carbon trading: a critical conversation on climate change, privatisation and power, *Development Dialog* no 48, Uppsala: Dag Hammarskjöld Foundation, September 2006.

30 Leakage is defined as GHG emissions outside the project boundaries which are directly attributable to the mitigation project. For forestry activities, leakage can be defined as the unexpected loss of estimated net carbon sequestered or a rise in emissions elsewhere due to the relocation of deforestation practices.

31 Carbon sinks are the ecosystems, principally forests and oceans, which remove carbon dioxide from the atmosphere by absorbing and storing it, thereby offsetting carbon dioxide emissions.

32 H Eraker, *CO_2lonialism – Norwegian tree plantations, carbon credits and land conflicts in Uganda*, Norway: Norwatch, 2000, 14.

33 Institute for Global Environmental Strategies (IGES) CDM Project Database, 2 August 2010, http://www.iges.or.jp/en/cdm/report_cdm.html (accessed 25 August 2010). For details of the N_2O project in Egypt, see Catalytic N_2O destruction project in the tail gas of the Nitric Acid Plant of Abu Qir Fertilizer Co., http://cdm.unfccc.int/Projects/DB/TUEV-SUED1151930566.53 (accessed 26 August 2010). Most credits have been purchased by the Austrian government and RWE, the German-based utility, although credits from the project have also been surrendered within the EU ETS by an Austrian paper manufacturer, a quicklime producer in Italy, and an electricity generator in Poland.

34 According to the CDM pipeline, Kenya has 14 new projects (eight reforestation) and Uganda 12 new projects (five reforestation). The Kenya projects are backed by the International Bank of Reconstruction and Development, the private investment arm of the World Bank, while the Ugandan projects fall under the World Bank's BioCarbon Fund.

35 Daniel Nonor, Ghana: Massive Jatropha farming threatens food security, 18 March 2010, http://allafrica.com/stories/201003180794.html (accessed on 26 August 2010).

36 UNEP Risoe CDM/JI Pipeline Analysis and Database, 1 August 2010, www.cdmpipeline.org.

37 Isaac 'Asume' Osuoka, Paying the polluter? The relegation of local community concerns in 'carbon credit' proposals of oil corporations in Nigeria, in Steffen Bohm and Siddhartha

Dabhi (eds), *Upsetting the offset: the political economy of carbon markets*, London: Mayfly Books, 92.

38 Jocelyn Newmarch, Eskom seeks Medupi carbon credits, *Business Day*, 28 April 2010, http://www.businessday.co.za/articles/Content.aspx?id=107265 (accessed on 26 August 2010).

39 This claim is questionable, given the methane emissions associated with new dams. See, for example, Duncan Graham-Rowe, Hydroelectric power's dirty secret revealed, *New Scientist*, 24 February 2005, http://www.newscientist.com/article/dn7046-hydroelectric-powers-dirty-secret-revealed.html (accessed on 26 August 2010).

40 Bujugali Energy, Project design document: Bujagali Hydropower Project, 16 July 2010, http://cdm.unfccc.int/UserManagement/FileStorage/FUYJ930RA8DIXQNVSM7LBP4ZO6GK2W (accessed on 26 August 2010), 22–23.

41 Ibid, 9.

42 Patrick McCully, Comments on the Bujagali Hydropower Project's second application (Uganda), 19 August 2010, http://www.internationalrivers.org/en/africa/nile-basin/bujagali-dam-uganda/comments-bujagali-hydropower-projects-second-application-ugand (accessed on 26 August 2010).

43 Salim Dali, Algeria: ambitions to become a leader in carbon capturing, 28 June 2010, http://www.lesafriques.com/en/international/algeria-ambitions-to-become-a-leader-in-carbon-capturing.html?Itemid=35?articleid=0291&sectionid=&releasecatid=&countrytitle= (accessed on 26 August 2010).

44 United Nations Framework Convention on Climate Change, Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol: Consideration of further commitments for Annex I Parties under the Kyoto Protocol – draft proposal by the chair, FCCC/KP/AWG/2010/CRP.2, 6 August 2010, http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/kpawgcrp2.pdf (accessed on 26 August 2010), 40.

45 Elizabeth Bryan, Wisdom Akpalu, Mahmud Yesuf, and Claudia Ringler, Global carbon markets: are there opportunities for sub-Saharan Africa?, *IFPRI Research Brief*, 15–13, 2008.

46 United Nations Framework Convention on Climate Change, Ad Hoc Working Group on Further Comitments for Annex 1 Parties under the Kyoto Protocol, Documentation to facilitate negotiations among parties, note by the chair: Land use, land use change and forestry, FCCC/KP/AWG/2010/6/Add.2, 29 April 2010, http://unfccc.int/resource/docs/2010/awg12/eng/06a02.pdf (accessed on 26 August 2010).

47 GRAIN, Earth matters – tackling the climate crisis from the ground up, *The Seedling*, October 2009, http://www.grain.org/seedling/?id=643 (accessed on 26 August 2010).

48 Grantham Research Institute, Possibilities for Africa in global action on climate change: the case for a strong global agreement on climate change – the African perspective, London: London School of Economics, 2009, www.oecd.org/dataoecd/45/30/43573901.pdf (accessed on 4 September 2010), 11.

49 Kate Dooley, Why Congo Basin countries stand to lose out from a market-based REDD, Avoiding Deforestation and Degradation Briefing 7, Moreton-in-Marsh: FERN, 2009, 2

50 Chris Lang, Guyana could be paid for increasing deforestation: Jagdeo, REDD Monitor, 24 November 2009, http://www.redd-monitor.org/2009/11/24/guyana-could-be-paid-for-increasing-deforestation-jagdeo/Lang (accessed on 4 September 2010).

51 Korinna Horta, Global climate politics in the Congo Basin: unprecedented opportunity or high-risk gamble? Berlin: Heinrich Böll Foundation, 2009, http://www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf Horta (accessed on 4 September 2010), 3.

52 UNFCC, Ad Hoc Working Group on Long-term Cooperative Action under the Convention negotiating text – note by the secretariat, FCCC/AWGLCA/2010/14, 13 August 2010, http://unfccc.int/resource/docs/2010/awglca12/eng/14.pdf (accessed on 26 August 2010).

53 Carbon Retirement, *The efficiency of carbon offsetting through the Clean Development Mechanism*, London, 2009, 4.

54 Sunanda Creagh, Forest-CO_2 scheme will draw organised crime: Interpol, Reuters Alertnet, 29 May 2009, http://www.alertnet.org/thenews/newsdesk/JAK500718.htmCreagh (accessed on 4 September 2010); Korinna Horta, Global climate politics in the Congo Basin: unprecedented opportunity or high-risk gamble? Berlin: Heinrich Böll Foundation, 2009, http://www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf Horta (accessed on 4 September 2010), 7.

55 The majority of Annex 1 countries want to 'collapse' the negotiations back down to a single track, scrapping the Kyoto Protocol in the process. However, the intention of this move is not to do away with the CDM, which woul be incorporated (alongside the reform and expansion proposals) in the new, single negotiating track.

56 N Davies, The inconvenient truth about the carbon offset industry, *The Guardian,* 16 June 2007.

Part 2 Offset projects

3 African offset projects

Trusha Reddy

INTRODUCTION

Africa accounts for a fraction of the total number of global carbon offset projects.[1] However, given that plans are being made to bolster its share of the global market, it is important to evaluate key governance issues that have emerged from African projects thus far. This will help role players to determine whether these projects are meeting their environmental and developmental objectives. This chapter assesses various governance dimensions, including the integrity of actors and institutions, the verification of emission reductions, the monitoring and implementation of projects, and issues surrounding community and public participation. It also addresses specific concerns about oversight, transparency, accountability deficits and corruption (or opportunities for corruption).

This is done by evaluating projects in three African countries, namely South Africa, Uganda and Ethiopia. The projects examined vary widely. South Africa hosts the largest number of carbon offset projects in Africa, and the projects chosen deal with the involvement of one of its largest corporations, Sasol, in the carbon offset market. It is an energy efficiency project aimed at improving the op-

erations of the corporation. Energy efficiency projects are common in the Clean Development Mechanism (CDM) inventory.

Two projects were chosen in Uganda. The first is a small hydro project in the West Nile region, which illustrates some of the dynamics surrounding renewable energy projects. The second is a reforestation project, which shows up some of the issues surrounding forest sequestration projects.

Finally, one project was chosen in Ethiopia: a voluntary offset project for promoting the use of 'clean' cookstoves, which falls outside the ambit of the CDM. This project was selected to illuminate the functioning of the rapidly expanding voluntary offset market. The initial research for these projects was conducted in late 2008, but was updated in 2009 and again in late 2010. The findings also help to improve our understanding of the challenges and concerns around carbon trading projects.

The broader country context for these projects is considered. This is also aimed at assessing whether these projects meet broader country goals, such as meeting development objectives, moving to low-carbon pathways and securing human rights.

This chapter starts with a brief description of carbon offset projects, including a description of the CDM, the criteria for and types of CDM projects, the prescribed processes for these projects, and trends in promoting CDM in Africa. It also briefly describes voluntary offset projects, and offers an introductory critique of key issues which the case studies discuss in greater depth.

WHAT ARE CDM PROJECTS?

The CDM allows industrialised countries with greenhouse gas (GHG) reduction commitments under the Kyoto Protocol – so-called Annex 1 countries – to invest in emission-reducing projects in developing countries and claim credits for the reductions achieved. In theory, this will help to reduce their compliance costs while providing more funding and new technology to developing countries and economies in transition. Power generation, industrial processes, and commercial and residential energy use are substantially less efficient in developing countries. Their labour and regulatory regimes are also regarded as less stringent, and thus more attractive to foreign investors. Given this line of reasoning, the CDM has been touted as a win–win situation. Thus Shreuder argues that:

> CDM is often presented as an effective and efficient way of transferring technology, capital and resources from developed to developing countries in order to improve energy efficiency and the use of renewable energy resources. Clearly while principles of sustainable development and GHG reduction are the objective, business interests and carbon credits are very much the driving force behind emissions trading under the Kyoto Protocol and EU ETS.[2]

CRITERIA FOR CDM PROJECTS

Sustainable development

One of the most important criteria for a CDM project under the Kyoto Protocol is that it should contribute to sustainable development in a developing country. However, countries are allowed to formulate their own definitions of sustainable development, balancing economic fundamentals against equity and environmental integrity. In the absence of a universal definition of sustainable development that would ensure greater accountability from project overseers, host country governments are unlikely to set challenging requirements for fear of chasing away potential investors. Therefore, the objective of reducing social and economic inequality, which is central to the sustainability debate, is often treated as peripheral to the primary objective of gaining carbon credits. In fact, as noted in Chapter 2, projects that could contribute to meeting the Millennium Development Goals (MDGs) with respect to income generation, improved education and health services, and the protection of ecosystems, are usually not sufficiently competitive based on the CDM's cost-effectiveness criteria and are thus likely to be disregarded.

Additionality

The most important criterion a carbon project has to meet is that of additionality. This means that it needs to achieve certain desirable outcomes which will not occur if the project is not implemented. In order to prove that this will be the case, project designers need to construct the most plausible alternative scenario to implementing the project in question – in other words, they must show what is most likely to occur if the project is not implemented. This could be a business-

as-usual (BAU) scenario, or another involving gradual changes at different levels. However, additionality is a vague concept. To begin with, alternative scenarios may be regarded as a form of sanctioned story-telling because one does not actually know what will happen in the future, and can therefore 'make it up' in order to earn emission reduction credits. Moreover, there are three different kinds of additionality in CDM parlance,[3] namely:

- *Environmental additionality,* which means that the project would result in reductions in GHG emissions which would not have occurred otherwise
- *Project additionality,* which means that the project would not be implemented without the CDM
- *Financial additionality* or investment additionality, which means that a particular investment would not be made without CDM carbon credits or carbon finance

The CDM Executive Board eventually dropped these specific definitions of additionality in favour of a more general one because two of them were rejected by business groups in Annex 1 countries.[4] However, this more general definition is even less clear and more open-ended, which makes it possible for many projects that would not make a significant change to BAU to be considered for CDM registration.

Box 1: Offsets: a perverse incentive

To prevent industrialised countries from making unlimited use of the CDM, Article 6.1(d) of the Kyoto Protocol states that the mechanism should be 'supplemental' to domestic steps to reduce carbon emissions. However, this has been interpreted in several different ways.[5] The danger remains that Annex 1 countries will use carbon offsets as a primary mechanism for meeting their emission reduction commitments, instead of reducing their domestic emissions. During the Bangkok round of negotiations in 2009, developed countries argued that they first needed to know the extent to which they would be allowed to offset emissions via the carbon markets before they would make emission reduction commitments. The idea was that, the greater the

offsets, the greater their commitments would be. However, as offsetting transfers the responsibility of reducing emissions to developing countries, they would have no real effect on domestic emissions. Thus offsetting creates a perverse incentive for industrialised countries to delay their transitions to low-carbon economies, which is needed to avert potentially catastrophic climate change.

TYPES OF CDM PROJECTS

There are three main types of CDM projects, namely carbon sinks, or the use and planting of trees to absorb carbon dioxide from the atmosphere; energy efficiency projects, aimed at reducing the emissions of existing energy-intensive operations; and renewable energy projects.[6] As a market-based mechanism, CDM usually tends to favour 'low-hanging fruit', or those projects that can quickly show emission reductions which can easily be calculated. As a result, energy efficiency projects are the most popular, compared with renewable energy projects involving the use of wind, solar, or geothermal energy, which are more expensive and take a longer time to show big reductions. The obvious problem with this trend is that energy projects should involve a move away from fossil fuels and towards renewable energy. There are numerous other problems related to energy efficiency projects because of their links with often highly polluting, profitable companies, which at least one of the case studies will examine. Carbon sinks have also been criticised because they tend to involve monoculture plantations with respect to which emissions reductions may be quickly claimed on paper, but scientifically difficult to verify.

Project process

Project developers are required to follow a specific process involving many rules in order to have their proposed CDM projects registered and the credits sold. The process and rules are complex, onerous and lengthy, as described below.

Project design

The Project Identification Note (PIN) is a concept note drafted by the developer of a project (or a consultant to the developer) which outlines the project's purpose. This document is submitted to a Designated National Authority (DNA),

a nationally responsible entity located in the host country. The DNA needs to ensure that projects meet the basic criterion of sustainable development before approving them. The DNA also needs to make all information publicly available, and to receive and review public comments. If the PIN is approved, the project developer is requested to submit a Project Design Document (PDD) to the DNA, which is similar to a project proposal and provides a detailed motivation for the project concerned.

The project developer also has to send the PDD to a Designated Operational Entity (DOE), registered by the CDM Executive Board, which needs to assess or validate the claimed emission reductions. There is a 30-day public comment period. Most of these validators are private companies, which routinely sidetrack comments from members of the public or leave them unanswered. As Reyes and Gilbertson have noted: 'This is not particularly surprising, since validators are private companies which compete for business of project developers – opening up the possibility of significant conflicts of interest.'[7]

Following the DNA and DOE processes, projects are finally approved by the CDM Executive Board. Before granting final approval, the Board needs to ensure that all the relevant criteria have been met. The website of the UN Framework Convention on Climate Change (UNFCCC), which is freely accessible, lists all the CDM projects in various stages of development. DNAs and DOEs are also meant to keep lists of all projects as well as project information and to make this available for public scrutiny. However, DNAs and DOEs, especially in Africa, are often poorly resourced, which often results in poor transparency and shoddy project assessment processes.

Implementation, and monitoring and evaluation

Once a project has been registered, the developer must submit monitoring reports to the Secretariat, which are reviewed by the UNFCCC's CDM registration and issuance team. The subsequent report is sent to the CDM Board for approval. In practice, the CDM Board re-delegates the verification of emission reductions to the DOEs, which are meant to do more on-site monitoring and evaluation. In theory, once this process has been completed, certified emission reductions or CERs are issued. In reality, many CERs would already have been traded in advance on the futures market.[8]

Box 2: CDM financing[9]

The financial arrangements between the contracting parties (i.e. governments, private companies, and market intermediaries) to CDM projects can take a number of forms.

Investments in CDM projects are often equity investments via joint ventures or wholly owned subsidiaries. Indirect investments are made via the purchase of securities that provide co-financing to projects which generate CER credits. Here investors receive the return/profit on investment and CERs.

Another way to finance CDM projects is through developers which offer purchase agreements or call options for purchasing CERs to be generated by a CDM project (called 'forward contracts'). This is the most common form of transaction.[10]

The third option is to purchase CERs on secondary markets in the form of spot or options transactions in existing CERs generated by equity investors or developers, or by host country sources through unilateral CDM projects.

THE ACTORS

The actors involved in CDM projects are numerous and varied. The most significant ones are:

- The financiers of the project (the host country, the country receiving emission reductions credits, carbon funds, and companies).
- The developer of the project (this can be a company or the government of an Annex 1 country).
- DNAs in host countries, which provide the country approval of projects.
- DOEs, which are externally based validators and verifiers of emission reductions and are approved by the CDM Executive Board.
- The CDM Executive Board, which supervises the CDM under the guidance of the parties to the Kyoto Protocol. It is the main contact point for project developers, registers projects and issues certified emission reductions.
- Consultants to the project, who draft the various documents including the PIN and PDD.

- Host countries of projects.
- Other foreign and domestic consultants, including validators.
- Communities affected by, and at the site of, the project.

Box 3: The Nairobi Framework for catalysing CDM in Africa

It is recognised that there are significant impediments to the CDM in Africa. These include high infrastructural and implementation costs associated with carbon offset projects, the complicated CDM rules, and the bias of big corporations towards large projects that can generate a large number of emission credits. Therefore, major market players believe that, if African countries are to take advantage of the market, the rules must be simplified, the operations of structures in host countries must be professionalised, and consistency through learning from successful projects must be sought.[11] These criteria also relate to fund-raising for development assistance.

The United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), World Bank Group, African Development Bank, and the Secretariat of the UNFCCC thus initiated the Nairobi Framework with the specific aim of helping developing countries, especially those in sub-Saharan Africa, to improve their level of participation in the CDM. The Framework comprises five objectives, agreed to by the initiating agencies, and regarded as key if the CDM is to move forward, namely to:

- Enhance the capacity of DNAs
- Build capacity for developing CDM projects
- Promote investment opportunities in projects
- Improve information sharing/outreach/exchange of views on activities/education and training
- Inter-agency co-ordination

The impact of the Nairobi Framework on CDM in Africa is unclear. However, what is known is that the CDM has still not taken off in Africa except for the possibility of new forest projects under the REDD process.

VOLUNTARY OFFSET PROJECTS

Given the high transaction costs and complicated processes, the opportunities for expanding the carbon market in Africa via the CDM, seem limited. As a result, attention has shifted to projects that can be delivered through the voluntary market. Voluntary projects are not subject to the rules and guidelines of the CDM, which means they are easier and cheaper to implement. However, they are also prone to greater abuse. Thus voluntary offset projects have often been accused of 'greenwash', or providing false claims in order to bolster the image of polluting companies. Moreover, they are seen as a salve for individual consciences in that people can buy credits to offset emissions from their own environmentally damaging activities, such as air travel. But this practice may be seen as delaying the real structural changes needed to effectively address climate change.

NOTES

1 Chapter 2 contains more information on Africa's involvement in carbon trading.

2 Y Shreuder, *The corporate greenhouse: climate change policy in a globalising world,* Zed Books: London, 2009, 66.

3 Ibid, 170.

4 Ibid.

5 Ibid, 167.

6 Ibid, 166.

7 Oscar Reyes & Tamara Gilbertson, *Carbon trading: how it work & why it fails*, Dag Hammarskjöld Foundation, Norway, 2009, 65.

8 Ibid.

9 Adapted from Shreuder, *The corporate greenhouse*, 166.

10 Ibid.

11 B Kinkead, Undertaking CDM projects in Africa – challenges, trends and opportunities, Ecosecurities presentation at DNA Forum, Addis Ababa, October 2007. However, other institutions, including the African Development Bank, the World Bank, GTZ, IETA, and the Nairobi Framework (included in this discussion) also espouse these ideas.

4 South Africa

COUNTRY CONTEXT[1]

South Africa is a medium-sized country with a population of about 49 million.[2] It has abundant natural resources, which have boosted its agriculture, mining, energy, and manufacturing sectors (among others). As is the case in many other developing countries, high levels of poverty persist despite relatively high levels of economic growth. The country has an unemployment rate of 25,3 per cent.[3] Many people are homeless, and millions lack access to basic services such as water, sanitation, and electricity.

South Africa is the most industrialised and electrified country in Africa.[4] It is also one of the 20 worst carbon emitters in the world. Its energy-intensive economy is made possible by the use of an abundant supply of coal, the biggest single contributor to global warming. South Africa's industrial sector consumes 57 per cent of its primary energy, and the energy sector as a whole is responsible for 65 per cent of South Africa's total carbon emissions from fossil fuels.[5]

The mitigation potential is highest in the industrial sector, and the mining and energy sectors are very vulnerable to the impacts of and activities around climate change. South Africa is a signatory to the Kyoto Protocol; however, as

a non-Annex 1 (developing) country, it is not required to meet greenhouse gas (GHG) emission reduction targets.

The South African government has adopted various policies for encouraging low-carbon, sustainable development. However, given that it regards accelerated economic growth as an important way of reducing poverty, it also favours increased industrialisation, and is investing in more coal-fired power. Adaptation to climate change will also probably be a serious problem. Given the slow expansion of services and their poor delivery in post-apartheid South Africa, the poor, including women and children, are increasingly marginalised, and particularly vulnerable to the effects of climate change. Growing industrialisation and the favouring of corporate over community interests makes their situation even more precarious. However, the government appears to be paying more attention to mitigation than to adaptation and disaster management.

South Africa has adopted the Clean Development Mechanism (CDM) as one of a basket of options for mitigating climate change and achieving sustainable development. The government appears to be encouraging the CDM because it believes this could be a source of foreign investment in the form of carbon finance, which refers to the gamut of finance, technical assistance, and brokering that comes with carbon trading deals. The National Climate Change Response Strategy for South Africa of 2004 states that, while emissions are expected to increase as the economy develops, it would be beneficial to adopt 'a future strategy that is designed to move the economy towards a cleaner development path'.[6] Achieving this, the document continues, 'will require continued attention to the process that is currently being developed to access investment through the Clean Development Mechanism of the Kyoto Protocol, technology transfer and donor funding opportunities'.[7] South Africa acceded to the Kyoto Protocol in 2002, and may therefore trade in carbon credits by hosting CDM projects.

The Designated National Authority (DNA) for South Africa is responsible for issuing formal host country approval of CDM projects. It was established in December 2004 (under regulations gazetted in July 2005), and is the responsibility of the director-general of the Department of Energy. The DNA is currently staffed by seven people: a director with a personal assistant; two deputy directors, one for project monitoring and evaluation and the other for capacity-building and promotion; two energy officers, each supporting one of the deputy directors; and a project administrator.[8]

As of August 2010 a total of 156 CDM projects had been submitted to the DNA. Of these, 123 were Project Idea Notes (PINs), and 33 Project Design Documents (PDDs). Of the 33 PDDs, 17 had been registered by the CDM Executive Board. Four had been issued with Certified Emission Reduction (CER) credits. Sixteen were at different stages of the project cycle, namely DNA approval, validation, and/or a request for review. Twenty-eight projects had 19,5 megatonnes of CERs delivered in 2010. This comprised 23,3 per cent of the total number of CERs in Africa, the second highest share. Only Nigeria had a higher share, namely 32,9 per cent.[9] Africa's share of global CDM projects was less than 2 per cent.

Projects submitted to the DNA for initial review and approval involve biofuels, energy efficiency, waste management, co-generation, fuel switching, and hydro power, and cover sectors such as manufacturing, mining, agriculture, energy, waste management, housing, transport, and residential. Projects that do not fundamentally change the nature of energy production (including energy efficiency, co-generation and fuel switch, methane recovery, and nitrous oxide) represent the biggest share. The projects are being developed by key industrial players and top polluters like the petrochemicals giant Sasol, the South African case study in this volume. Sasol has made four applications for CDM credits thus far. It has spent just US$700,000 on the catalyst to reduce its N_2O emissions, but has already gained an estimated USD$10 million in carbon credits as a result.[10] Sasol's big profits therefore also tests CDM's theory of economic efficiency. It is for these reasons that Sasol was chosen as a case study in this volume.

CASE STUDY: SYNTHETIC PETROLEUM

Sasol's carbon expansion within the CDM system

Tristen Taylor

If there is a fundamental environmental aim behind carbon trading, it is to reduce the global emissions of greenhouse gases (GHG). Reducing emissions and preventing the worst effects of global warming through carbon trading was at the heart of the Kyoto Protocol, and will probably feature prominently in any post-2012 global emissions reduction agreement. Moreover, Ban Ki-moon, UN Secretary General, has stated that a new deal must also unlock private investment in GHG emission reduction schemes.[11]

As a recipient of CDM funds, Sasol provides concrete proof that carbon trading has not only become disassociated from this aim, but is actually promoting its perverse opposite, namely increased GHG emissions. In the process, it demonstrates how private investment in carbon markets can be used to capitalise the expansion of carbon-intensive industrial processes.

Sasol, a multinational petrochemical giant, applied in 2009 for CDM funding to use natural gas to co-generate electricity at its Secunda plant in South Africa. The application is still pending. It is the third attempt by the company to secure CDM funding – one previous application succeeded, while the other was rejected. This chapter examines these applications for carbon credits, the problems surrounding them, Sasol's history, and its current expansion plans.

Even before examining these applications, or the context in which Sasol works, there is a first-order problem with the CDM system and Sasol. Given that the CDM is aimed at reducing overall GHG emissions, is it not logically incoherent for the CDM system to grant credits to a company set to vastly increase its carbon emissions? In effect, Sasol is earning – and selling – carbon credits that will enable some other enterprise to continue emitting GHGs while expanding its highly polluting core business, namely coal-to-liquids (CTL) refining, at the same time.

Sasol is involved in the development of new CTL plants in India and China (plans to build another CTL plant in Indonesia were shelved in January 2011). Therefore, any cuts in emissions from the proposed co-generation project would be quickly surpassed by increases in emissions at these new plants. Sasol's business and environmental strategies appear to contradict one another. For example, Sasol claims (but does not prove) that the project will save 640 000 tonnes of CO_2 a year; however, its proposed new CTL plant in South Africa will produce somewhere between 23 to 37 million tonnes of CO_2 a year.

Before considering the technical merits or otherwise of Sasol's latest application for CDM funding, it would be wise to understand who Sasol is and why its difficult CTL technology is in growing demand.

Who is Sasol?

The apartheid government established Sasol in 1951 as a way of reducing its dependence on imported oil and increasing its energy security. By 1956, the Industrial Development Corporation (IDC) had ploughed £40 million into Sasol.[12]

As the apartheid regime's isolation intensified, Sasol's importance in maintaining the economic viability of Afrikaner nationalism and white supremacy in South Africa increased. Without Sasol's technology, the country would have been and would remain entirely dependent upon imported petroleum, as it has no natural petroleum resources.

Sasol's mandate was to develop the Fischer-Tropsch CTL process in South Africa. This difficult and demanding process basically turns coal (which is abundant in South Africa) into liquid petroleum. A variant of this process – gas-to-liquids (GTL) – uses natural gas instead of coal as a feedstock for the conversion process.

Sasol was privatised in 1979, and received government subsidies in various forms until 2000. From 1989 to 2000, according to one calculation, Sasol received R8 billion in public funds.[13]

Since the turn of this century, Sasol has become increasingly multinational; some 40 per cent of its shares are held by foreign investors, most of them investors in North America. Sasol listed on the New York Stock Exchange in 2003 at US$10,90 a share; by 2008 the share price had climbed to US$52,20.[14]

Until recently, only two countries in the world had utilised CTL to produce petroleum. The first was the original developers of CTL, Nazi Germany (CTL accounted for 50 per cent of its total petroleum supply in 1943), and the second was apartheid South Africa. This hints at the pressure the South African government must have been under at the time. Not only does this process require greater technical and energy inputs than conventional oil drilling and refining; it is also far more expensive. A plant producing 80 000bpd costs about US$6 billion, which is significantly more expensive than a conventional oil refinery with the same capacity.

As stated earlier, China and India have now embarked on the CTL route, and joint ventures with Sasol in both countries are far advanced. In China, Sasol and the Shenhua Group expect to open an 80 000bpd plant in 2013. While the exact break point is a commercial secret, this has been estimated at US$35–40 a barrel. If the oil price drops below this level, Sasol would lose money, and if it rises above it, Sasol would make a profit.

Finally, CTL produces 1,8 to 2,5 times more carbon emissions than conventional oil refining, with some analysts considering these figures to be conservative.[15] Another way of looking at this is that CTL technology produces carbon dioxide as its primary product, with petroleum as a by-product. GTL fares

slightly better, producing only 1,5 times more carbon emissions than conventional oil refining. Put in perspective, Sasol produces 72,6mt of GHG a year, while the entire South African economy produces 446mt of GHG a year. This is a considerable chunk of the national emissions scenario, and dictates that South Africa will not be able to reduce its carbon emissions unless it addresses Sasol's high emissions levels.

In South Africa, Sasol has converted its CTL plant at Sasolburg to GTL, and partially concerted its Secunda plant as well. It produces some 36 per cent of South Africa's liquid fuel supply, and wants to expand its market share. Along with the IDC, it is planning to build an 80 000bpd CTL plant in the province of Limpopo. The Environmental Impact Assessment (EIA) was expected in the fourth quarter of 2009, but has yet to be released. If the plant is built, it will produce between 23mt and 37mt CO_2 a year, increasing Sasol's carbon footprint even further.

Peak oil and Sasol's expansion plans

In 2007, then Senator Barack Obama sponsored a Coal-To-Liquid Fuel Promotion Act in the United States Congress. At the time, he declared:

> The people I meet in town hall meetings back home would rather fill their cars with fuel made from coal reserves in Southern Illinois than with fuel made from crude reserves in Saudi Arabia. We already have the technology to do this in a way that's both clean and efficient. What we've been lacking is the political will. This common sense, bipartisan legislation will greatly increase investment in coal-to-liquid fuel technology, which will create jobs and lessen our dependence on foreign oil. Illinois Basin Coal has more untapped energy potential than the oil reserves of Saudi Arabia and Kuwait combined. Instead of enriching the Saudis, we can use these reserves to bring a renaissance for Illinois coal.[16]

The bill provoked a storm of protests from American environmentalists, and Obama began to realise that his presidential bid would not be possible without the support of this wing of the Democratic Party. While Obama ended up voting against his own bill, and went on to the presidency, his initial remarks point to the political support enjoyed by CTL and GTL.

There is highly convincing data to suggest that world oil production peaked in July 2008. In December 2008, the conservative International Energy Agency (IEA) made a startling about-face and declared that global oil production would peak in 2020. So, oil production has either peaked already, or will do so soon. This means we have used up half the world's oil supply and are on the second half, a period in which petroleum production will dwindle to nothing, matched with increasing oil prices.

This presents an immense challenge to modern economies, which depend very heavily on petroleum. Unlike previous energy crunches – such as firewood in the European Middle Ages, or coal during the Industrial Revolution – no alternative sources of energy are readily available. This had led to interest in alternative petroleum supplies, such as biofuels, tar sands, and CTL/GTL. As countries face the problems of security of petroleum supply, rising petroleum prices, and balance of payments difficulties, CTL seems to be an increasingly attractive proposition.

Sasol is well aware of Peak Oil and its consequence. In its annual report for 2008, its CEO, Pat Davies, stated that Peak Oil was a reality and that Sasol would benefit from it:

> The EIA, the independent analytical agency within the US Department of Energy, predicts that this will be driven largely by developing countries, given their robust economic growth rates and expanding populations. In addition, it predicts that the share of conventional oil in the overall liquid fuels supply mix is set to decline, and the strong increase in coal use of recent times is likely to continue. This research report, along with other highly regarded energy research, highlights the global opportunity for Sasol as the need to secure alternative energy supplies becomes more pressing. Without sacrificing environmental stewardship, the world needs affordable, sustainable and reliable energy.[17]

Sasol has expanded its operations to Qatar (GTL), China (CTL), India (CTL), Uzbekistan (GTL) and Nigeria (GTL, with Chevron), and has indicated that it may expand to the US and Brazil as well. It has offices around the world, and while 79 per cent of its operating profits still come from South Africa, this will change as its CTL and GTL plants in other countries begin to come on stream.

Sasol's latest CDM project

In August 2009, Sasol made its third and latest attempt at securing CDM funding, this time for an electricity co-generation project. It wants to increase its electricity generation capacity at its Secunda plant by installing gas turbines. It argues that this project would reduce carbon dioxide emissions as Sasol would need to buy less coal-fired electricity from Eskom. Its application has been submitted to the Designated National Authority (DNA) in the South African Department of Energy.[18] The main problems in respect of this application revolve around emission reductions (ER), additionality (natural gas and finances), and sustainable development.

Emission reductions

Sasol argues that using natural gas to co-generate electricity will reduce the company's substantial GHG emissions. Without this project, Sasol claims it will be compelled to continue purchasing coal-fired electricity from the national electricity utility Eskom, which will significantly increase its emissions. Sasol states in its application to the DNA:

> Through the project activity the amount of fossil fuels currently consumed in Eskom coal-fired generation will be reduced, resulting in an estimated saving of 640 thousand tonnes of CO_2e/year. The use of gas as a fuel source for the co-generation plant, as opposed to coal in existing Eskom power stations, will result in a substantial reduction of criteria pollutants that include oxides of sulphur, nitrogen as well as particulate matter (SOx, NOx and PMs). The project will also contribute to the reduction in the amount of solid waste associated with electricity supply to the Secunda plant: ash production due to coal usage will be eliminated for the portion of electricity supplied using gas generation. Emissions related to transportation of coal via rail to coal fired power stations and the transportation of ash for disposal will also be reduced.[19]

Almost no figures are given, and the application does not attempt to prove any of these assertions. Moreover, it is based on the major and improbable assumption that Eskom would cease to produce the electricity that Sasol would otherwise have purchased. However, Eskom cannot produce enough electricity to meet

current demand, and is building new coal-fired power stations. Therefore, it is reasonable to assume that electricity that would have gone to Sasol would be sold elsewhere.

Additionality: the use of natural gas

Sasol has been converting its Secunda plant from coal to natural gas, partly due to its own preference for natural gas as feedstock for the Fischer-Tropsch process, but also due to a lack of coal. In fact, the conversion from coal to natural gas has formed part of Sasol's business plan since at least 1999. Using natural gas as a feedstock for its own power plant would therefore be in keeping with this plan, regardless of CDM funding. Given this, it is unclear why Sasol has used coal in its baseline scenario (in other words, claiming that it would continue to use coal-fired electricity if this project does not go ahead).

Furthermore, Sasol has not provided the life span, costs, or any other information about its current use of coal for self-generation. It could therefore be argued that it intended to switch to gas-fired generation in any case in order to reduce the costs of its electricity consumption. Sasol's own documents confirm that increasing co-generation has not only been part of its pre-existing business plans for some time, but that it is an economically attractive proposition when compared to purchasing electricity from Eskom. Thus Davies stated in 2009:

> The increase in cash fixed costs, excluding the effects of once-off costs and growth initiatives, at 16 per cent is well above inflationary levels. This increase resulted mainly due to the negative impact of a weaker exchange rate on our costs and the abnormal increase in electricity costs at our South African operations. Whilst we are able to generate nearly a third of our electricity requirements, the South African state-owned electricity provider, Eskom, increased average annual electricity tariffs by 27,5 per cent in June 2008.[20]

Furthermore, in January 2009, Sasol's chief financial officer, Christine Ramon, stated in a newsletter to Sasol investors:

> Sasol Synfuels' progressive expansion project, the Secunda Growth Programme, will be phased in over a longer period than originally planned. Phase one, based on natural gas and previously targeted for completion in the 2010 calendar year, is now expected to start commissioning in 2010 with

> ramp-up through to the 2012 calendar year. Phase one now involves a 3 per cent production increase (previously 4 per cent). The reason for the scope change is that some of the additional natural gas supply will be re-routed to increase electricity production through the installation of new gas-based co-generation technology. This will improve energy efficiency and reduce Secunda's reliance on external energy supply from Eskom. Phase two of the Synfuels Growth Programme remains in pre-feasibility stage.[21]

And, in November 2009, *Business Day* reported as follows:[22]

> Sasol CEO Pat Davies said yesterday the company planned to generate half of its electricity requirements by 2012. 'This is a sensible thing to do, given the electricity price increases,' he said. Sasol generates nearly a third of its electricity needs now, and will use natural gas to produce the electricity, Davies said. The gas is supplied from Mozambique through an 865km pipeline that links the Temane gas field in Mozambique to the company's Secunda, Mpumalanga, plant. He said the group produced about 500MW, and planned to increase output by an additional 280MW. Speaking at the release of the group's results for the year to June, chief financial officer Christine Ramon cited 'abnormal' electricity increases among the factors that had put pressure on the company's cash fixed costs.

Additionality: financial considerations

Sasol has not indicated that it requires CDM funding for this project to go ahead. In fact, as argued above it makes business sense for Sasol to engage in co-generation based solely on the market value of electricity, and the project seems to be part of its normal operating plans.

The application also fails to set out Sasol's current and developing co-generation policy. Given the fact that co-generation is an ongoing process, it is unclear why it is seeking to locate this project under the CDM. It has also not explained why, given its profitability, it requires external funding.

These arguments show that the project violates the principles of additionality, and should be rejected as a result.

Sustainable development

Whether the project would contribute to sustainable development is also questionable. Sasol's application states it would create a mere 35 jobs, and does not say whether these would be skilled or unskilled.[23]

Box 1: Sasol and the CDM

Registered: Nitrous Oxide Abatement Project

Sasol already receives CDM funding for a nitrous oxide abatement project at its Secunda and Sasolburg plants. While this project will reduce Sasol's emissions by one million tons of CO_2-eq a year, its new plant in South Africa will emit about 30 times that amount a year. Viewed holistically, it could be argued that Sasol is being paid to pollute.

South African NGOs did not expose the shortcomings of the project or submit objections to the CDM methodology panel before it was approved. In retrospect, this amounted to a failure by civil society to adequately monitor CDM projects. However, it also points to a serious issues of integrity and coherence in respect of the CDM scheme; if the CDM process is unable to judge the merits of projects independent of monitoring by CSOs (which are generally underresourced and overextended), it will be faced with a proliferation of bad projects which will undermine the system's integrity.

Rejected: gas conversion from Mozambique pipeline

Sasol made a second attempt to secure CDM funding in December 2008 – this time for a 645-kilometre natural gas pipeline from Mozambique to its Secunda plant, along with the requisite gas conversion and processing facilities and the development of natural gas fields in Mozambique.

Sasol claimed that it needed to find a new source of fuel as the coal mine feeding its Secunda plant was reaching the end of its lifespan. It could either open a new coal mine, or build a natural gas pipeline from Mozambique. The company preferred the natural gas option. Sasol argued that using natural gas instead of coal would reduce GHG emissions, thus qualifying the project for registration under the CDM. The value of the carbon credits would have been considerable.

The *Financial Mail* reported:

> These aim to save 6,4 Mt of GHG a year, and have the potential to earn Sasol carbon credits revenue of R1,1bn/year over 10 years. These include using gas from Sasol's Mozambique–Gauteng pipeline to replace coal as the feedstock at two Sasol plants, and electricity generation from methane gas at its Secunda plant.[24]

In March 2009, after receiving objections from Earthlife Africa Johannesburg and the South Durban Environmental Community Alliance, the CDM methodology panel recommended that the application be rejected, on the grounds that it had not complied with additionality requirements and that Sasol had neglected to include emissions from natural gas leakage in its calculations. Following this, the CDM executive board rejected the application.

In 2005, a researcher for the Centre for Civil Society, Graham Erion, attended a public meeting where Sasol's natural gas supply manager, Peter Geef, stated:

> Yes, we are indeed trying to get some carbon finance for this pipeline … (But) we have this problem of additionality; we think there's a case to be made for that, we're in discussion with the South African government now and we're trying to make the case for it … The biggest issue is additionality; we would have done this project anyway.[25]

Geef added that Sasol was applying for carbon credits, 'mainly for financial reasons; you get a lot of pay-back in terms of dollars per tonne'.[26]

However, the question endures: was it planning to implement the pipeline and the Secunda and Sasolburg conversions in the absence of CDM and, most crucially, planning this before the cut-off date of 1 January 2000? Surprisingly, the answer seems to appear in Sasol's annual report for 1999, before CDM's advent:

> Sasol's pursuit of alternative hydrocarbon sources advanced appreciably in Mozambique where Sasol Petroleum International (SPI) and its joint venture

> partners, Arco of the USA, Zarara of the United Arab Emirates and EMH of Mozambique, continued their exploration for natural gas in the Temane field. They have, to date, discovered a reserve of world-class size, presently under certification, of an exceptionally high quality. Sasol believes that the possibility of Mozambique being able to benefit economically from its extensive natural gas reserves and of Sasol and other South African companies becoming beneficial users of this gas is nearing realization. …
>
> Sasol has a viable market for Mozambican gas, as a supplementary feedstock for its petrochemical plants at Sasolburg and Secunda, which currently rely exclusively on coal for their hydrocarbon feedstock. Being rich in methane, natural gas is a viable alternative feedstock for Sasol's Fischer-Tropsch process. Sasol has also been supplying synthetic gas to downstream markets since 1964, through its distribution pipelines, which now form a 1 500-kilometre network in Gauteng, Mpumalanga and Kwa-Zulu Natal. Sasol plans to build a 925-kilometre pipeline to link the Temane fields to its South African operations. The pipeline is by far the most expensive part of the project at an estimated US$600 million. The remaining production facilities and support infrastructure are likely to entail a further investment of about US$400 million.[27]

Therefore, not only did Sasol state that it had found high-quality natural gas in Mozambique (a process that would have begun well before 1999), that it had a use for such gas at its Sasolburg and Secunda plants, that the gas from Mozambique was a 'viable alternative' to locally mined coal, and that it had an external market for the gas, but also that it was planning to build the pipeline. In fact, Sasol had already costed the operation, and did not find it prohibitively expensive.

In other words, Sasol's plans to build the natural gas pipeline and use this to feed its liquid petroleum plants predates the adoption of the amendments to the Kyoto Protocol in Bonn in 2001, and misses the cut-off date of 1 January 2000. In addition, Sasol itself states that natural gas produces a better synthetic diesel than coal; i.e., that natural gas as a feedstock produces a higher quality product, which is to the company's obvious benefit.[28]

Given this, it seems clear that Sasol has violated the additionality criteria for CDM funding.

Conclusion

Sasol has boasted about its plans for global expansion, which seem feasible in light of the reality of declining global oil supplies. If more CTL and GTL plants are built in South Africa and elsewhere, GHG emissions will increase substantially. Despite being a source of global warming, Sasol has won some carbon credits and wants even more.

Does it matter to Sasol that its applications for CDM approval are flawed? If successful, they represent an easy source of capital and investors will be pleased. If not, Sasol's future still remains as bright as a refinery's gas flare.

Update

In late 2010 Sasol announced it was slowing down development of its proposed South African CTL plant (Project Mafutha) pending clarity on the provision of a 'commercially viable carbon capture and storage (CCS) solution'.[29] By early 2011 Sasol's application for registering its gas turbine co-generation project under the CDM was still pending.

NOTES

1 Written by Rehana Dada; amplified by Trusha Reddy.

2 According to Statistics SA, the mid-year estimate in 2010 was 49,99 million. Statistics SA, Statistical release PS302: Mid year population estimates, 2010, 20 July 2010, 3, http://www.statssa.gov.za/PublicationsHTML/P03022010/html/P03022010.html.

3 http://www.statssa.gov.za/keyindicators/keyindicators.asp.

4 Kolawole O Odeku, Edson L Meyer, and Agboola A Teru, Climate change: strengthening mitigation and adaptation in South Africa, n.d., docs.google.com/viewer?a=v&q=cache:SnI98VdGPSsJ:gin.confex.com/gin/2009/webprogram/Manuscript/Paper2622/

5 P Bond, R Dada and G Erion (eds), *Climate change, carbon trading and civil society: negative returns on South African investments*, University of KwaZulu Natal Press: South Africa, 2007, 9.

6 Department of Environmental Affairs and Tourism, A national climate change response strategy for South Africa, September 2004, 7.

7 ibid.

8 Interview with Lindiwe Chauke, director of the DNA, 23 August 2010.

9 S Giamporcaro and E Alberola, The implementation of carbon funds in Africa: the Morocco carbon fund experience – lessons to be shared, no date.

10 Sasol, Sasol Nitrous Oxide Abatement Project: Project Design Document, 2007, 72, http://cdm.unfccc.int/Projects/DB/DNV-CUK1171877538.97.

11 Ban Ki-moon, All nations must fan the change in the air, *The Star*, 21 September 2009, 11.

12 D Hallows and V Munik, *Poisoned spaces*, Pietermaritzburg: GroundWork, 2006, 79.

13 Ibid, 151.

14 Sasol, Sasol celebrates 5 years on NYSE, 2008, http://www.ainewswire.com/?p=66 (accessed in September 2009). Latest share price as at 10 November 2011 was $45,67. See http://www.sasol.com/sasol_internet/frontend/navigation.jsp?navid=3&rootid=3&shareprice=jse (accessed on 10 November 2011).

15 D Hallows and V Munik, *Peak poison*, Pietermaritzburg: GroundWork, 2007, 171.

16 Coal-to-Liquid Fuel Caucus, Bunning, Obama re-introduce blueprint for energy independence, 2007, http://www.investorvillage.com/smbd.aspmb=4496&mn=158&pt=msg&mid=1143111 (accessed in September 2009).

17 Sasol, *Positive energy 2008*, Johannesburg: Sasol, 2008, 22.

18 The civil society group Earthlife Africa Johannesburg, of which the author is a staff member, has made a submission to the DNA in response to a request for comments on the project. The submission is supported by other civil society groups in the country. This case study is based on and quotes the contents of that submission.

19 Annexure to notice sent out by SouthSouthNorth, Re: Sasol synfuels: Proposed Clean Development Mechanism activity. Call for comment, 26 August 2009.

20 Sasol, Financial reporting 2009, 2009, http://www.sasol.com/sasol_internet/frontend/navigation.jsp?navid=16600001&rootid=3&cmpAd=1 (accessed in September 2009).

21 Sasol, CFO newsletter to investors, 2009, http://www.sasol.com/sasol_internet/downloads/CFO_newsletter_to_investors_29January2009_final_1233237538178.pdf (accessed in September 2009).

22 S Njobeni, Sasol plans power play to rely less on Eskom, *Business Day*, 14 September 2009.

23 Annexure to notice sent out by SouthSouthNorth, Re: Sasol synfuels: Proposed Clean Development Mechanism activity. Call for comment, 26 August 2009.

24 M Schneider, Making savings at Sasol, *Financial Mail*, 17 October 2008, http://free.financialmail.co.za/report08/green08/jgreen.htm (accessed in February 2009).

25 G Erion, *Low-hanging fruit always rots first*, Durban: Centre for Civil Society, 2005.

26 Ibid.

27 Sasol, *Annual report 1999*, Johannesburg, 1999.

26 Ibid.

27 Terence Creamer, Sasol decelerates Project Mafutha pending carbon capture, refinery clarity, 13 September 2010, *Engineering News* (online), http://www.engineeringnews.co.za/article/sasol-decelerates-project-mafutha-pending-carbon-capture-refinery-clarity-2010-09-13.

5 Uganda

COUNTRY CONTEXT

Edward Mupada

Uganda is situated in East Africa. Although the country is blessed with substantial natural resources, including fertile soils, regular rainfall, and sizeable mineral deposits of copper and cobalt,[1] it is regarded as one of the poorest countries in the world, with a poverty level of about 31 per cent of the population.[2] Of its 27 million people, 90 per cent live in rural areas, and only 6 per cent have access to electricity. The lack of electricity constrains economic growth and limits the country's development. For this reason, the government has established targets for increasing access to electricity.

Agriculture is the most important sector of the economy, and 85 per cent of Ugandans depend on agriculture for their livelihoods.[3,4] Within this sector, the Ugandan government has identified forestry as one of the sectors capable of reducing poverty.[5] Uganda's forests have been under great pressure over the past 100 years, mainly from the demand for charcoal and wood fuel, overgrazing, uncontrolled timber harvesting, change in land use, and policy failures. As a result,

forest cover has shrunk from 45 per cent of total land area in 1890 to 20,3 per cent today.[6] The annual cost of deforestation in Uganda has been conservatively estimated at US$3,8–5,7 million a year.[7]

Under these kinds of circumstances, climate changes have a direct bearing on people's livelihoods. Poverty is also directly linked to environmental degradation, which results in reduced soil fertility, soil loss, and increased time spent (especially by women and children) on looking for firewood. Climate change has resulted in rising temperatures, erratic rains, floods, increased droughts, and reduced water bodies. Unfortunately, due to a poor appreciation of the significance of climate change, not much is being done to avert its impacts. Therefore, policies and laws do not reflect the urgent need for action.

Uganda's policies and laws derive their legitimacy from the 1995 Constitution, which commits the country to sustainable management of the environment and to the reduction of poverty. The Poverty Eradication Action Plan (PEAP), Uganda's national economic policy framework, provides the overall strategic plan for guiding public action to reduce poverty. However, it is silent on issues of climate change.

There are a number of policies and laws with a direct impact on climate change. Policy statements include the Forestry Policy (2001), the Plan for the Modernisation of Agriculture (2003), Decentralisation Policy (1994), National Energy Policy (2002), National Wetlands Policy (1995), Disaster Preparedness and Management Policy (1997), and National Gender Policy (1997). Laws include the National Environment Act (Cap 153), National Forestry and Tree Planting Act (8/2003), Local Government Act (1997), Land Act (Cap 227), National Water Act (Cap 152), and NAADS Act (2001).

Uganda ratified the Kyoto Protocol in 2002. However, while the relevant policies, laws, and institutions are in place and address environmental issues in general terms, they do not specifically refer to the UN Framework Convention on Climate Change (UNFCCC) or the Kyoto Protocol, and as such there is no national mitigation plan to address climate issues. At the time of writing, there were moves to issue a Statutory Instrument (SI) under the National Environment Act. The objective was to domesticate the UNFCCC and the Kyoto Protocol in order to give them the force of law in Uganda. The SI will establish a National Climate Change Board and a National Climate Change Secretariat to co-ordinate climate change activities in the country. The country has also drafted a National Adaptation Plan of Action, but this has also been criticised for not being put into action.[8]

Importantly, in Uganda a SI is a subsidiary law and will therefore not have the same impact as a full Act of Parliament. Very few people outside the ministry responsible for climate change took part in the development of the SI, as would have been the case with an Act of Parliament. This shows that the government does not yet fully appreciate the importance of climate change. As a result, it may not receive the right priority rating in respect of the allocation of resources from the national treasury.

The Ministry of Water and Environment (MWE) is the lead institution on issues of climate change. It has not yet prepared a national strategy to address climate issues. The opportunities available for mitigating and adapting to climate change using CDM mechanisms will benefit the rich more than the poor. For example, conservation, reforestation and afforestation require large projects in order to generate the volume of certified emission reductions (CERs) required by Northern buyers. To establish such large plantations requires a major up-front investment by the developer, which most tree growers in Uganda cannot afford. In addition, the requirement that the areas earmarked for these projects should not have been forested since 1990 cannot be easily met, since the technologies needed to verify this are expensive and out of the reach of most Ugandans. Therefore, investment in carbon forests is not an attractive option for most Ugandans.

However, the business sector is positioning itself to take advantage of carbon trading. The UNFCCC focal point, the media, and the Uganda Investment Authority (UIA) have raised awareness of carbon trade in the business community. Among other things, the UIA has facilitated the formation of the Carbon Emission Reduction Association (CERA). However, awareness is still inadequate. As a result, people and companies are rushing opportunistically to exploit carbon trade opportunities mentioned by the media or proposed by carbon business brokers. This will lead to two kinds of problems. First, people will spend their money on initiating projects that will not qualify for carbon trade because of the stringent conditions surrounding the CDM process. Second, if people's hopes are not fulfilled, they may destroy the trees they have planted, which will lead to further climate change problems.

Uganda acceded to the UNFCCC on 8 September 1993, and the Kyoto Protocol on 25 March 2002. The UNFCCC Focal Office co-ordinates the UNFCCC work and is located in the MWE. The minister of Water and the Environment has put in place an interim Designated National Authority (DNA) to govern all CDM projects in the country. The DNA consists of the minister and the National Climate Change

Steering Committee (comprising representatives of the private sector, public institutions, and civil society). The Department of Meteorology is the secretariat of the Steering Committee. A permanent DNA will be established when the statutory instrument (SI) is put in place. However, the Steering Committee has not functioned well. Some of its members have never attended meetings, which has meant that a quorum could not be formed on some occasions, and this has delayed the review of CDM projects.

The two case studies discussed below provide an insight into two very different types of CDM projects. Importantly, they highlight issues around forest or carbon sink projects, which are widely regarded as offsets for Northern countries given that developing countries in Africa and elsewhere have abundant forests. CDM is meant to support clean energy and technology transfer for this purpose, so the investigation of a renewable energy project is also pertinent here. The complexities and controversial aspects of the CDM system are clearly manifested in these examples.

THE UGANDA NILE BASIN REFORESTATION PROJECT

Edward Mupada

The first CDM reforestation project in Uganda is the Uganda Nile Basin Reforestation Project in the Rwoho Central Forest Reserve. Its main objective is to increase carbon sequestration through a pine plantation mixed with indigenous species planted in grassland areas. It is believed that these sorts of projects will not only benefit the country in terms of CDM funding but will also respond to high levels of deforestation. This is important given the fact that the Ugandan government has identified forestry as one of the sectors capable of reducing poverty.

A national forestry programme has been developed to ensure the conservation and management of the country's forests. These have been under severe pressure mainly due to agricultural conversion, demand for charcoal, overgrazing, uncontrolled timber harvesting, and associated policy failures. It is reported that forest cover has shrunk from 45 per cent of the total land area in 1890 to 20,3 per cent today.[9] The current rate of deforestation is estimated at about one per cent a year,[10] and the annual cost of deforestation at US$3,8–5,7 million a year.[11]

According to the Project Design Document (PDD) submitted to the CDM executive, this project is part of a cluster of five similar projects aimed at overcoming

the current barriers to establishing new timber plantations in Uganda, and allowing communities to benefit from the CDM.

This study provides a brief description of the reforestation project, including government policies influencing the development of such projects. It also assesses the challenges and obstacles that have arisen during the project. Finally, it summarises the outcomes, and makes some recommendations.

The project

Uganda's first CDM project is located in the Rwoho Central Forest Reserve in the southern districts of Isingiro, Mbarara and Ntungamo. The Uganda Nile Basin Reforestation Project comprises five small CDM reforestation projects, covering 2 137 hectares in the Rwoho Central Forest Reserve. The National Forestry Authority has already planted about 1 400 hectares. The main participants in this project are the National Forestry Authority (NFA), the BioCarbon Fund of the World Bank, the DNA, international consultants, and local communities.

The BioCarbon Fund signed an Emission Reduction Purchase Agreement in 2006, in terms of which it is supporting a project to plant trees in the Rwoho Central Forest Reserve. Three-quarters of the trees are to be *Pinus caribaea* (non-indigenous pine trees).

The supervising ministry is the MWE, home of the DNA. The NFA is a statutory body which is run as a business entity, investing where it makes business sense. Its other role and mandate is to ensure the survival and sustainability of the central forest reserves. These roles obviously conflict, which poses a danger to effective forest conservation. Carbon trading is receiving increasing attention in the Ugandan media, and numerous companies are seeking to participate in the trade of carbon credits and tap into what they believe will become a lucrative business. Bidwai has observed that this makes for arbitrary and skewed bargains in which consultants 'play god'.[12] In line with this, the project has been motivated by the investment opportunities offered by carbon trade. In addition, because the NFA is the lead agency in the forestry sector, it was thought to provide a good vehicle for demonstrating the investment possibilities in the sector.

The NFA conceived the project in 2004 following an awareness meeting with the Environment and Community Based Framework for Designing Afforestation, Reforestation and Revegetation projects in the CDM (ENCOFOR), a Europe-AID project aimed at building the capacity of third-world countries to develop CDM

projects. The project is now being implemented by the NFA, as ENCOFOR has since closed. but the NFA still employs the international company originally retained by ENCOFOR to raise awareness of the project.

The BioCarbon Fund is buying the contract emissions reductions (ERs) from the NFA whether they are certified or not. However, the parties to the agreement agreed to register the project so that it generates certified emissions reductions (CERs). The agreement allows the NFA to contract local communities to plant up to 20 per cent of the project area. However, the NFA is responsible for project implementation and the delivery of CERs. The NFA and the local community, the beneficiary of the CERs, are expected to get a share of the money received from the sale of the emission reductions in accordance with the areas planted.

The communities in the project area are the main partners in growing the plantations. They are expected to establish at least 20 per cent of the area (or about 400 hectares) at various locations. The communities have expressed serious concerns about its ability to plant the 60 hectares allocated to them thus far, citing large capital outlays. Thus far, only 70 (28 per cent) of the 250 members of the Rwoho Environmental Conservation and Protection Association (RECPA) have joined the project. Those who do so contribute money on the understanding that they will share the financial returns in direct proportion to their input. However, even what they have contributed so far is not enough for their investment needs. The project will not benefit the communities in the short term, as they have been made to believe. Community involvement in this project has to be re-evaluated; they have participated in it without a clear understanding of the dynamics of the trade.[13]

The BioCarbon Fund Clean Development Mechanism Verified Emissions Reductions Purchase Agreement (EPRA) was signed after negotiations between the NFA and the International Bank for Reconstruction and Development (IBRD) – the latter as trustee of the BioCarbon Fund.

The process of developing the CFD and PDD began in 2004. Three years later, the project had not been approved by the DNA and the CDM Executive Board. This may only show that the project design process is long and complex. However, the parties to the CDM-VER Purchase Agreement (the NFA and the BioCarbon Fund) committed themselves to working together to start implementation of the project, have it registered and get the CERs issued.

The executive director of the NFA has expressed his reservations about the process and the ability of the institution to mobilise enough resources to keep

the project afloat. As yet, the PDD is still in the process of being registered by the CDM. The PDD is currently being revised, following a visit to Uganda by the validation team in March 2007, but has not yet been submitted to the DNA for verification and approval. The PDD has been revised three times.

Governance and accountability

The Carbon Finance Document (CFD) was submitted to the DNA, which gave a 'no objection' to the project development process. This is not required by the CDM process, but seems to have been motivated by the widespread interest in having a CDM project in Uganda. People interviewed during this study[14] indicated that this was the first carbon project in the country, and everyone wanted to make sure that it succeeded.

The CFD highlights the main actors in the project, but does not depict local communities as integral to it, and downplays the economic benefits meant to accrue to them. Thus the document states: '… however, the NFA will not guarantee that the communities maintain their carbon but since these credits are truly additional to the NFA project, this will not result in any project risk…' The social implications of working with local communities was understood, because the document recognises that 50 per cent of the area was being used for grazing. Although it is a forest reserve, the grazers have always used the unplanted grassland areas for grazing. Now that the grasslands are being used for trees, the grazers have had to leave.

By its own admission, the NFA's efforts to police the plantations have not worked. In fact, they have given rise to conflicts with communities which have protested against their 'denial of access to forest resources by local communities, insensitive management styles before NFA, failure to deal with vermin and problem animals, and a lack of opportunity for communities to voice their concerns'.[15] Thus the NFA decided to enter into collaborative forest management (CFM) agreements with community groups to quell dissent and to protect the plantations developed by private investors.

The CFD was based on calculations of average forest plantation establishment costs used by the Sawlog Production Grant Scheme (SPGS), which is funded by the European Development Fund. In terms of marshalling investment funds, the NFA realised early on that it would be financially constrained. It was hoped that the BioCarbon Fund would provide start-up capital up front. If not, the NFA would

need to reduce its spending in other areas, or apply for a commercial loan secured by a Government of Uganda guarantee.

In terms of returns from carbon absorption, the value stated in the document is US$4,15 per ton absorbed. This is further reduced by a risk factor of 25 per cent, making it unattractive to grow forest plantations for carbon as a business. As noted earlier, the CFD led to a Purchase Agreement which has improved the price from US$3,50 to US$4,15. This time the BioCarbon Fund has committed itself to buying 261 221 CERs. This belies a more serious general concern about offsetting, namely that the North is using forests in Africa and other parts of the South as a cheap way of making emission cuts instead of making them domestically.[16]

The CFD is not a public document. Information about the project, the contracts, design, credits, financial flows, prices, carbon calculations, and benefits to brokers are not readily available for public scrutiny. Local communities have also complained that they cannot comprehend the CER calculations. Therefore, it can be argued that communities are making uninformed choices when they agree to participate in the project.

Credits sold to buyers

Based on the CFD, the NFA and the IBRD signed the BioCarbon Fund CDM Verified Emissions Reductions Purchase Agreement. The IBRD, through the BioCarbon Fund, has committed itself to buying CERs at a price of US$4,15 per tCO_2e. Some 79 per cent of the proceeds from the sales of CERs will be shared between the NFA and the communities. The rest will go to the BioCarbon Fund to meet project preparation and management costs. The agreement includes harsh punitive measures should the NFA fail to deliver its part of the bargain, and yet the actual income from the deal is not proportionate to the risk it is taking.

Community participation was part and parcel of the project preparation process, but community participation in the agreement between the NFA and IBRD is optional. Even the CFM agreement does not specify communities' share of the proceeds of carbon sales. Maintaining community benefits has a direct impact on Uganda's sustainable development goal for CDM projects.

Verification of Certified Emissions Reductions

The ERPA stipulates that registration, verification, and the re-issuing of CERs will be done by the parties to the agreement. The reporting period will also be discretionary, and may range from one to five years. Verification after the commitment period for the purposes of re-issuing CERs will be done at the cost of the purchasing party. The validators will be paid from the carbon credits, giving them an interest in ensuring that the project succeeds. According to the purchase agreement, the community is expected to receive money equivalent to the amount of carbon it will sequester. But, as noted earlier, communities are anxious about the benefits from the CERs that will accrue to them.

Community consultations

Before the project began there had been hostility between NFA and local communities over de facto[17] and de jure[18] rights of access to grazing and cultivation and the collection of forest products. Community members were cutting down trees for timber, and depended on the forest for grazing, cultivation, gathering firewood, medicine, and building poles. The NFA declared these activities illegal, and people were arrested when they tried to obtain products for their livelihoods. This resulted in frequent physical confrontations between communities and NFA staff. It was against this background that the NFA negotiated a Collaborative Forest Management (CFM) Agreement with RECPA, an indigenous community-based organisation (CBO) with a membership of 250 people, 30 of whom were women.

When the project started, several community consultations were conducted through community meetings, culminating in a CFM Agreement with RECPA. However, not all communities were consulted, and at the time of writing steps were being taken to consult other affected communities as well.

The content and depth of the consultations is unknown, although the CFM agreement may not have been clearly explained, as communities are only now experiencing the impacts. A number of people have sold their cattle for lack of grazing land, and the forest is no longer accessible for cultivation. Local people can still collect some forest products for household use, but not for sale.

There are reports that the community is benefiting from employment by the project. It has been reported that about 80 per cent of members of the local

community adjacent to the project provide contractual labour to the project. However, the contractors employing community members receive about 60 per cent of the payments, and the community has reported that some of the contractors have deserted the project without paying the labourers.

There have been complaints of corruption, and conflicts of interest in the way in which the local contracts for plantation work are awarded to outsiders (although these claim were not verified by the research). The complaint is that contracting 'outside people' is contrary to what is stated in the Project Document where the local community is expected to get the employment benefits. The NFA staff claimed that the local community was not able to take on all the contracts due to limited capital, as they are required to have cash for paying workers and recovering refunds from the NFA.

At the time of conducting this research, community members were still concerned about the fact that there was no formal agreement between the community and the NFA about the amount of money they would receive from the carbon credits generated from their community planting.

As a result of their engagement with the NFA, other groups have come in to work with RECPA, and include Environmental Alert, IUCN, District Forestry Services, Local Administration, Africa 200 Network, Amsterdam Free University, and Nile Basin Initiative. Given this sudden influx of organisations, there is also the potential of crowding in on local communities, which would further impede their ability to retain control over their environment and livelihoods.

Environmental Impact Assessment

The Environment Impact Assessment (EIA) was undertaken in 2006 by a local company, and followed the EIA guidelines issued by the National Environment Management Authority, the national agency for monitoring and regulating the environment in Uganda. The assessment was done through desk reviews (literature), field surveys, and consultations with focus groups and individuals. The report describes the area and includes information on climate, soils, watersheds, ecosystems, and the presence of rare or endangered species. However, it does not quantify the environmental impacts. For example, it does not say how many grazers will be affected, or how the project will benefit local communities, and does not provide baseline data on the ecological impacts on water, soil, and vegetation. This seems to be an incomplete assessment, as the report should

contain more information about the impact of planting large quantities of non-indigenous plants that will be cut down for commercial purposes. An assessment is needed of impacts at each stage of the project, including the use of water for non-indigenous plants (which is much higher than for indigenous plants), the use of fertilizers and their impact on the surrounding ecology, and the impact of cutting down plantations. The EIA should also assess risks such as susceptibility to fires, floods and droughts.

The EIA acknowledges the dependence of local communities on the forest reserve, and indicates that the success of the project will depend on their understanding and involvement. It recommends regular consultations with local communities.

Sustainable development

The main aim of the Poverty Eradication Action Plan (PEAP) is to guide public action on reducing poverty in the country; therefore, Uganda's economic policy is implemented through the PEAP. The pillars of the PEAP are economic management; enhancing production, competitiveness and incomes; strengthening security; conflict resolution; disaster management; governance; and human development.[19] This project contributes directly to enhancing production, competitiveness and incomes, and to a lesser extent, governance and conflict resolution, especially in respect of the use of forest resources.

One of the major strategies employed in the quest for sustainable development has been to look for market solutions to climate change challenges in the country. Carbon sequestration from tree plantations is regarded as such a solution. While trees grow, they absorb carbon. But, compared with the amount of fossil fuel below the ground and the amount of carbon dioxide already in the atmosphere, trees cannot absorb carbon fast enough or long enough. Fossil fuels, which have been stored below the earth's surface for millions of years, only emit carbon when they are dug up and burned. Once the carbon is above the ground, it circulates among vegetation, water, soils and air. Trees store carbon for a relatively short period. The carbon stored in trees is released after a few years to the atmosphere as trees die and decay. They are affected by attacks by pests and fires, cut down and used as fuel, or made into furniture, buildings or paper, none of which is a long-term carbon store.[20] Thus the argument that trees are a reliable store of carbon is shallow. Furthermore, the basis for such CDM projects is

tenuous as carbon emitted from industrial processes in the North is not commensurable with carbon absorbed by forest sinks, because sinks are unreliable as carbon stores (as noted above), and it is impossible to calculate if and how the environment works to equate the reduction.

The sustainable development objective of CDM projects in Uganda is to contribute to the wellbeing of the present generation while safeguarding the interests of future generations. In this regard, the NFA has committed itself to monitoring activities such as capacity-building, access to markets, access to financial resources, and potential social risks in the course of the reforestation project.

The project region has almost no opportunities for income generation. As such the reforestation project is viewed as an opportunity to create jobs in the forestry sector. Local communities may further benefit from the provision of fuelwood. The PDD suggests that almost 500 jobs could be created during the establishment phase of the project. Women may find new employment opportunities in nursery work and weeding. There were mixed reactions from the community about the social benefits of the project. One community member expressed his concern over the low wages (US$17 a month) received from the project, and wondered whether that would be enough to improve their lives.

The NFA has a unit responsible for legal community interests which are negotiated mutually. This is an important structure that should play an important role in involving local leaders in general forest activities.

It is difficult to assess the project positively on meeting sustainable development criteria even if the criteria focuses on basic environmental standards; promotes community participation, especially of women; provides employment; and employs environmentally friendly technologies. These issues may only be considered as superficial compared to the other criteria which it blatantly violates. As the project significantly deprives communities of their grazing land for inappropriate plantations, has non-transparent processes and false promises, and involves CDM investor rights taking precedence over local rights and shaping national policy, it is considered more of a threat to sustainable development than an aid to it.

Additionality

The project touches on two aspects of additionality. The first relates to the fact that the activity would not have gone ahead in the absence of the CDM, and the second is that the project would not increase deforestation elsewhere.

The PDD shows that the project activity would not have occurred without the CDM component because of investment and institutional barriers, prevailing practice, and local ecological and social conditions. It is interesting that the PDD for this project as well as for the PDD for the West Nile Electrification Project suggest that, given the financial, social and environmental barriers, the projects would not go ahead.

A close examination of the NFA plans for plantation establishment showed that the NFA was planting trees in the area, but on a much smaller acreage. The NFA was using its own revenues and Official Development Assistance funds to establish plantations in the project area and in other parts of the country. As noted earlier, the forestry sector was identified as a key sector for economic development and growth. As such, investment and activities in the forestry sector (such as forest regeneration, establishing non-forest plantations, etc.) had begun before the onset of CDM projects in Uganda. It is clear that the NFA has the technical capacity to plant larger areas, providing financing is available. So it begs the question as to whether this project could have gone ahead in the absence of the CDM. Consequently, it is argued here that the additionality principle is not very clear in this project.

Furthermore, the demonstration of additionality follows the CDM small-scale afforestation and reforestation (CDM-SSC-AR) methodology,[21] which, according to Lohmann,[22] has been widely disputed. Various experts have come up with estimates that differ by large orders of magnitude. Bidwai argues that there are inherent difficulties and uncertainties in quantifying and measuring global emissions, carbon offsets, and carbon credits.[23]

Implementation

The NFA and the communities involved are experiencing financial constraints in implementing the project. The estimated investment for the first three years is Ugandan Shs1.2 million (about US$697) per hectare. This is a substantial expenditure that will constrain the NFA's resources, which the community cannot afford in the medium and long term. On the ground, there were signs of cash flow problems as some contractors[24] had not been paid for several months. Thus the NFA and community may only receive the first payment for carbon credits after about five years of project implementation. Importantly, these funds are meant to be ploughed back into the project. It is evident that the community has been

given an illusion of benefits from the project. The project developers may have made these false promised in order to secure community buy-in, which raises issues of corruption.

The NFA's Forest Management Plan (2006) contains guidelines aimed at simplifying the monitoring of community-based planting activities. This project is being managed on-site by the NFA's range manager, Southern Plantations. The carbon monitoring is conducted by the NFA's Technical Service Department with biomass monitoring and GIS inventory capacity. However, to date, there is no evidence that the monitoring guidelines in the management plan are being used to monitor progress in implementation.

There are also problems in respect of implementing the project, especially arising from poor cash flow, resulting in delayed payments to contractors, and a backlog of 300 hectares in the planting programme (985 hectares should have been planted in 2007). From the interviews with the NFA[25] officials it was evident that cash flow problems have been caused by inadequate revenue inflows and poor internal governance. If this scenario continues, the project will not be able to meet its targets.

Conclusion

Uganda, like the rest of Africa, is not yet a popular destination for investments in afforestation-reforestation for carbon sequestration because of the risks associated with governance. International investors require certainty and agreements to ensure that forest reserves will not be converted into other land uses. As such, Uganda has initiated processes aimed at developing a favourable policy and legislative environment for implementing the UNFCCC and Kyoto Protocol. However, there is a concern that climate change is only considered in terms of the Kyoto Protocol and the implementation of CDM projects, and not as a holistic country issue.

The Nile Basin Reforestation CDM project should be viewed in this context. Should the project have been initiated at a country level, sustainable development may perhaps have been easier to prove and authenticate. However, since the CDM is shaping Uganda's climate policy, sustainable development criteria are also being crafted to provide investor certainty. The potential to create jobs, influence economic growth, and protect the environment is circumscribed by what it

can offer the CDM/Northern country investor rather than how it can benefit local communities and enhance and protect their livelihoods.

This discussion has shown that the CDM process is a complex and non-transparent procedure – from project design through the EIAs and the calculation of CERs to consultation with communities. For example, the lack of information about the capital investment required from communities as well as the uncertainty around the cost of the carbon credits does not bode well for the fostering of trust and accountability between stakeholders.

Overall, this study has shown that carbon trade is a complicated business that may not substantially benefit local communities and local investors. Furthermore, it is the communities that are taking the major risks, while investors appear to be making the decisions and gaining the biggest rewards. Addressing global climate change problems should not be looked at simplistically. Indeed, Bidwai has a point when he asserts that 'carbon trading represents a serious diversion from the urgent task of reducing fossil fuel consumption by cutting subsidies, establishing systems of regulation, providing public services, and promoting renewable energy the world over'.[26]

A summary of the problems outlined above include:

- The issue of additionality was not clear, especially as ERT was provided with funds to carry out the same activities.
- Uganda's response to climate change is linked to CDM funding for the country that is driven by Northern countries and interest groups.
- There was a lack of transparency in the costing of CERs.
- Community involvement has been superficial – although there have been meetings with communities, they are still unsure of the project, their role and the potential benefits or threats.

CARBON FINANCE AND RURAL ELECTRIFICATION: AN ANALYSIS OF THE WEST NILE ELECTRIFICATION PROJECT

Matthew Wilhelm-Solomon and Anthony Millner

The West Nile region of Uganda borders on eastern Congo and South Sudan. Its population of about two million has suffered a history of conflict, displacement, and developmental and political marginalisation, from which it is still emerging. Its economy is mainly agrarian, with an estimated 96 per cent of the population relying on subsistence agriculture. Tobacco is the major cash crop, followed by coffee and cotton.[27]

The region is well suited to trade and agro-processing, as well as small workshops.[28] However, until recently only a few sporadic hours of grid electricity a day were available to residents through the national grid. Analysts believe – correctly, in our view – that the unreliable electricity supply is constraining the region's economic development.[29]

Only 5 per cent of Uganda's population have access to electricity.[30] As a result, the issue of electricity supply has become increasingly politicised, with even President Yoweri Museveni raising it in his election campaign in 2006.[31] Plans for a hydroelectric power station as part of the West Nile electrification project were also publicly unveiled in the run-up to the 2006 election; many in the region felt the timing served political ends, though public pressure and hopes for electrification are significant.[32]

The project

The West Nile Electrification Project (WNEP) is the first small hydroelectric Clean Development Mechanism (CDM) project approved in Uganda. Small-scale hydropower – i.e., projects with a capacity of less than 10 MW[33] – is potentially positive from a developmental perspective as it provides decentralised electricity with minimal social and environmental costs.

The WNEP comprises two phases: the first is a 1,5 MW heavy fuel oil (HFO) generator that has been operating since 2005. The second is a 3,5 MW hydroelectric power station, including a new dam, on the Nyagak River. After significant

delays due to financing problems, the hydroelectric power station was due for completion in August 2010.[34]

The WNEP was registered under the CDM on 10 February 2007, with a back-dated crediting period running from 1 January 2005 to 31 December 2011.[35] The total certified emissions reductions (CERs) from the WNEP are expected be about 760 000 tonnes of CO_2 over 21 years, though the project requires renewal in 2011.

The project is part of the World Bank's Energy for Rural Transformation Project which aims to contribute to poverty alleviation and rural development by promoting local business and agro-processing industries as well as a cleaner living environment.[36] It is being implemented by the West Nile Rural Electrification Company (WENRECO), a private company, with financial support from both the government of Uganda and the Prototype Carbon Fund (PCF). The latter is a US$180 million investment fund, partnering companies and governments, managed by the World Bank. The project validator – or Designated Operational Entity (DOE) in CDM jargon – is SGS, a London-based firm.

The project is significant to policy-makers elsewhere in Africa who wish to understand the potential contribution of carbon finance to rural development, but also the problems and paradoxes created by the international carbon trading system when it is used to finance rural electrification.

Additionality

Additionality is a fundamental tenet of the CDM, which requires that projects should be additional to a 'business as usual' scenario. CERs are measured against this hypothetical scenario. Broadly, one can outline a few primary conceptions of 'additionality' that apply to the CDM. The first is environmental additionality. This ensures the environmental integrity of projects, i.e., that they produce genuine emission reductions that would not otherwise have taken place.[37] Two other forms of additionality are project and investment additionality. These are meant to ensure that project investment and the project itself would not have occurred without CDM finance. There are significant ambiguities about these concepts, which will be discussed below with regard to the WNEP.

Emissions reductions

Box 1: Transparency in CER calculations

The CDM methodology prescribes the mathematical formula for calculating the carbon credits expected from a proposed project. However, the challenge is to ensure that all the parameters which could influence the outcome are included in the calculation, and that the numbers cannot be skewed to produce excess CERs. Missing parameters could give a misleading impression of environmental additionality.

In this case, the following issues in particular provide cause for concern:

- Construction emissions from the dam and hydroelectric power station are not counted against CERs.
- The assumption that the hydroelectric scheme will replace diesel generators in the region fails to take account of the fact that real-world changes will include significant switches away from kerosene and locally harvested biofuels as well.
- Overproduction of electricity by the hydroelectric power station could produce additional CERs at no extra cost.

Prior to the implementation of the WNEP, power in the region was predominantly provided by privately owned diesel and petrol generators, and the burning of gas, kerosene, and locally harvested biofuels. The viability of the project as part of the CDM is predicated on filling part of this demand with a fuel source which is less carbon-intensive per unit of usage than the current fuel mixture.

CERs – or 'carbon credits' – are generated on the assumption that diesel generators will be superseded first by the more energy-efficient HFO generator, and then by the renewable energy supplied by the hydropower station. A preliminary survey found that 182 generators were operating in the West Nile.[38]

The project has been awarded emissions reduction credits based on approved CDM baseline methodologies for small-scale projects.[39] The calculation of these reductions is simple in principle, and involves two steps outlined in the project design document (PDD). First, measure the amount of energy generated by the

project. Second, calculate an emissions reduction coefficient by subtracting the amount of carbon released per unit of energy generated by the WNEP from the amount that would have been released had the same unit been produced by the existing fuel mix. The CERs are calculated as energy produced multiplied by CO_2 saving per unit of energy. This method is applied to both the HFO generator and the hydroelectric station, though the hydroelectric is considered to emit zero carbon emissions. Carbon emissions from the building of the project are not deducted from the baseline scenario, a problem discussed below. The PDD estimates a cumulative emissions reduction of about 760 000 tons of CO_2 over a projected 21-year life span starting in 2005.[40]

The project design and CER methodology assumes a direct substitution between diesel/petrol generator sets and the grid electricity from the WNEP. In other words, it only considers changing patterns of use from electricity-producing sources – the generators – to the grid. Conversions from non-electricity producing sources of energy such as kerosene, gas, or biomass (mainly wood) are not accounted for even though these are the dominant fuels in the West Nile area. This assumption makes it more difficult to apply the baseline scenario to changes in the real world.

There is evidence that actual energy changes are not simply conversions directly from diesel or petrol generators. For instance, in 2006 consumption of grid electricity was about 70 per cent domestic and 30 per cent commercial.[41] Given the large numbers of domestic users, it is likely that there will be a significant switch from gas, kerosene and wood-fuel to grid usage, which has been acknowledged by WENRECO but is not accounted for in the PDD.[42] Given the cost of diesel generators, most domestic clients could not afford these.[43]

This divergence is significant for analysing project aims: if, for instance, there is significant conversion from wood-fuel to the grid, or there will be in the future, a new baseline survey would need to be conducted and an alternative methodology devised, to ensure that biomass conversions are from a non-renewable source. It is difficult to state whether this would underestimate or overestimate emission reductions, as this would depend on the source of locally harvested biofuels and whether they are renewable or non-renewable. Kerosene also has a slightly lower emissions factor than diesel.[44]

This analysis illustrates that the simplified nature of the CDM baseline methodologies may be inadequate for capturing real-life complexities. Actual energy should thus be monitored and baselines adjusted if they are substantially

inaccurate. Another key problem is that carbon emissions in the course of construction are not counted against allocated CERs. This could lead to a misleading impression of the actual environmental and emission-reducing benefits of the project.

Box 2: Carbon emissions reduction calculations

Carbon emissions reductions (CER) for the project are calculated according to the following simple formula:

$CER = Energy\ produced \times (EF_{old} - EF_{new})$

EF_{old} is an emissions factor associated with the burning of the old fuel (in our case diesel burned in small generators), and EF_{new} an emission factor associated with the new energy source. Emissions factors are determined by the properties of the fuel and its combustion process. They are usually expressed as tonnes of CO_2 emitted per unit of energy generated.

As an example, consider the hydropower station installed as part of the WNEP. We can estimate the CERs during one year of its existence (assuming it is operating at capacity all of the time) as follows:

1) The energy produced by the 3,5 MW hydropower plant in a year (8 760 hours) is:
   $Energy\ produced = 3{,}5\ MW \times (8\ 760h) = 30\ 660\ MWh$
2) The emissions factor associated with diesel generators is:
   $EF_{old} = 1.843\ tCO_2/MWh$
3) The emissions factor associated with the hydropower station is:
   $EF^{new} = 0\ tCO_2/MWh$, i.e. it is assumed to be zero carbon

Therefore, the total CER is:

$CER = 30\ 660\ MWh \times 1{,}843\ tCO_2/MWh$

Investment and project additionality

Investment and project additionality relies on an investment analysis and a barrier analysis.[45] Investment analysis must show that the proposed CDM activity is 'unlikely to be financially attractive' without the added incentive of carbon

finance. It also must show that there are barriers to the investment occurring in a 'business as usual' scenario.

We believe the investment additionality of the WNEP is not as strong as stated in the project design and affirmed by the validators. In this case, the PDD argues that the continuation of the current trend – 'demand increase would be met by an increase in privately owned gen-sets' – does not face the same barriers as investment in the hydroelectric station.[46] Therefore, the PDD argues that investment in WNEP is additional.

The PDD also argues that political, financial and social barriers have been obstacles to the project and would probably continue to be; these include a lack of financing, credit markets and consumer power, and the high political risks in the area.[47] In particular, the PDD argues that 'the utility company's inability to provide the required financing, the consumers' low ability to pay, and high up-front investment would preclude the WNEP from coming to fruition'.[48] However, there is evidence that this is not the case. According to the WNEP project co-ordinator, the project's financial viability is based on the availability of enough demand to generate the necessary sales. Money from emission reductions is additional revenue.[49] It seems the investment would therefore be at least financially feasible – though not necessarily attractive – without emission reduction revenue.

There is some dispute around what constitutes investment additionality. Low rates of return on a project may be considered a disincentive to investment even if a project is financially feasible. However, projected rates of return can easily be manipulated.[50] In the case of the West Nile Electrification Project the commercial or financial incentives involved are not clear from public documents. This is made even more difficult to assess given that the project is a public–private partnership with stated developmental aims: it is therefore unclear to what extent investment additionality should apply.

Uganda has an Energy for Rural Transformation (ERT) programme, funded in part by the World Bank, which includes the West Nile Project. As International Rivers point out, there is a concern that if the ERT funds small-scale rural renewable energy projects throughout Uganda, the West Nile Project may not be viable on the basis of carbon finance alone.[51] In addition, WENRECO is owned by Industrial Promotion Services, owned in turn by the Aga Khan Fund for Economic Development (Aga Khan Development Network 2003), a transnational global financer with significant economic clout and a stated interest in promoting

development. Given the development focus and financial backing of both these sources, it is questionable whether carbon finance was necessary for the feasibility of the project.

The issue of initial barriers remains in question: would the investment prove too risky without PCF investment? An important factor in this respect is that the final Emissions Reduction Purchase Agreement (ERPA) was only signed on 13 June 2007[52] – in other words, two years after the HFO station had begun to operate and after construction of the hydroelectric power station had already begun. The expectation of CERs was accounted for in the project design from the beginning.[53] However, an earlier ERPA signed in 2003 fell through due to a change in the design.[54] This indicates that while WENRECO was operating in expectation of receiving CERs, it was prepared to take the risk of starting construction without an agreement in place, which indicates in turn that risk barriers were not insurmountable for investment.

Despite the ensuing financial setbacks, we believe the investment additionality dimension of the project should have been more rigorously interrogated by the validators – SGS – with a close analysis of project financing, which is beyond the scope of this study, as well as a re-evaluation of the political landscape of the region. As is, they simply reproduced the assumptions of the project design, arguing it was 'accepted that private investment in a small-scale electricity generation project involving hydropower is not business as usual in Uganda'.[55] This assumption is far from clear. Instead, there is a need for a more transparent evaluation of why there were subsequent investment shortfalls, and how CDM money was actually used. This calls for a critical assessment not only of the production of CERs but how CDM financing is used and monitored in project development.

However, despite donor and government support for the project, and initial projections of feasibility, construction stalled in mid-2008 due to problems with financing. The government of Uganda requested an audit by Deloitte & Touche as it was unhappy with the way in which the Energy for Rural Electrification Project subsidy of $8,2 million was spent by WENRECO.[56] This resulted in the government of Uganda providing additional financing of $1,5 million for the completion of the hydroelectric dam, due for completion in August 2010.[57] It may be questioned why, despite initial projections showing financial feasibility as well as the allocation of CERs, the project still experienced financial difficulties. This raises the issue of whether mismanagement of CDM financing is compromising the project. In the interests of greater transparency, it is important that this audit be made public.

Auditing and monitoring

Risks of corruption and distortions in the monitoring processes require close examination. In our assessment, the monitoring systems for the production of CERs of the project are relatively well-designed, and leave little scope for corruption or major errors as long as there is adequate third-party auditing.

The monitoring of the HFO station requires that energy savings are measured after the implementation of the efficiency measures, by calculating both the energy content of the fuel and output after the inception of the project. The measurements of the CERs should be adjusted if the actual energy efficiency differs from that estimated in the PDD. The third party auditing should therefore ensure the integrity of the metering records through an on-site verification. However, the auditing of retroactive credits over a three-year period seems inadequate to ensure this integrity.

According to WENRECO, a sample of each fuel load has been sent to the SGS office based in Mombasa, which tests its calorific value (its energy density).[58] Given the time lapse it seems that while total output will be easy to meter, efficiency variability will be very difficult to audit relying on a recorded paper trail.

CERs from the hydroelectric station are calculated from on-site production measurements. Auditing of this is simple: check the recorded figures against total production. Only outright manipulation of the machinery could manipulate the calculation of CERs, and this seems unlikely. It does not appear to us that there is significant scope for corruption or errors in credit calculation from this project, other than outright tampering with the metering. We therefore have no reason to believe that WENRECO may be responsible for this, or that this is likely to occur.

However, there is a greater risk of the misuse of CER payments in the course of construction, thus lessening any genuine benefits of CDM for developing countries. The production of the Nyagak hydro power plant was stalled in 2008 due to a financial shortfall, leading to an audit by Deloitte & Touche. The key area in which corruption could occur is not, therefore, in the production of the CERs themselves, but in the use of the money paid for them. It is therefore vital for transparency that the Deloitte audit is made public.

There is also a greater risk of overproduction and wastage for the hydro power station than for the HFO. HFO production responds to immediate demand, and overproduction would be costly to the company and thus unlikely. For the hydroelectric station, given there are no significant input costs after construction,

overproduction is more likely. The PDD may incentivise overproduction of hydro power at times of low demand, as additional CERs could be produced without added cost. As the baseline methodology is calculated solely according to production and not consumption,[59] it seems that errors could occur here. In our estimation, measurement and auditing of CERs should involve the monitoring of both production and consumption figures, so that wasted electricity is not counted towards emissions reductions.

Sustainable development

In terms of environmental effects, the EIA found no significant adverse implications of the hydropower project. The project is likely to have 'low environmental or social impacts' as 'the hydro scheme is small and impacts a limited, sparsely populated area with low aquatic and terrestrial ecological characteristics'.[60] The hydro project also did not require major displacement of residents (only two or three households), but used agricultural land for which residents were compensated.[61] However, given the susceptibility to droughts of many African countries, including Uganda in recent years, hydrological risks in the area as well as the impact of the project on aquatic life require continued evaluation.

A concern about the project is that it could exclude the rural poor outside municipal areas from direct access to grid electricity in trading centres or homes. The Community Empowerment for Rural Development (CEFORD) – a local NGO which conducted the community mediation for the project – believes a number of people are dissatisfied with the reach of the project into rural areas, as well as its perceived high costs.[62]

CEFORD chairperson Anguzu Dickens says: 'For now, the rural poor are not benefiting that much, but if this power is expanding, and the cost lessened, I believe we will be able to reduce poverty for the rural poor in the region.'[63] However, the project design in generating CERs assumes energy conversion from diesel generators, and therefore does not account for the possibility of those using wood fuel having direct access to electrification. Most of these people could also not afford connection fees and user costs. As the main component of the project is still to be completed, it is too early to fully assess its impacts, and many hope it will help create work in the area.[64]

WENRECO has ambitions to expand to deeper rural areas, and is seeking support from the government's Rural Electrification Agency (REA) – which already

provides subsidies for connections and grid extension – as well as NGOs.[65] The stated vision of the REA in Uganda is to seek 'universal access to electricity for national socio-economic development'.[66] However, any sustained attempt to provide electricity to rural households using wood-fuel would worsen the problems with the baseline methodology outlined above.

Some, including the district environmental officer,[67] hope the project could help prevent deforestation by providing electricity to those using wood-fuel. However, the conservation of forests is not mentioned at all in the project design. An estimated 99 per cent of residents of the West Nile use wood-fuel as their primary source of energy.[68] As stated above, using the project to counter deforestation would require a different baseline methodology and survey.

A number of residents of the area may, however, benefit from job creation as a result of increased economic activity, as well as from subsidised electricity provision to schools and hospitals. The project does hold the potential to help local businesses benefit from the growing opportunities for regional trade, and improved road access to Kampala.

WENRECO has had to rely on the support of local politicians to go ahead with the project.[69] A red flag has to be raised at this point – the political interests in expanding projects like these may open doors to the bribery of government politicians and officials in return for the approval of projects. There is no evidence that this has taken place in the case of the West Nile Electrification Project. However, the project does reveal the political importance of certain CDM financed projects and the potential conflicts of interest it may create.

Conclusion

The WNEP project could benefit the West Nile in various ways, including promoting small businesses – millers, grinders, carpentry workshops, internet cafes, hotels, and the like[70] – which will create employment opportunities. Larger operations such as tobacco farms may join the grid with its expansions, and in time coffee processing or cotton ginning may be a reality. The project also has low potential for social and environmental upheaval, though it may cause political resentment if it fails to serve the needs of the rural poor. In many ways the WNEP is admirable from a developmental perspective: it is likely to catalyse local economic development, and will have a positive impact on regional environment.

Policy-makers who wish to seek carbon finance for development projects should view small-scale hydro in this light.

The project is also relatively easy to monitor and audit, and there is little scope for corruption and manipulation in respect of producing credits. However, of greater concern is the use of CDM financing in the continued construction of the project. Questions remain as to why – even with CDM financing – and the projected feasibility of the project, the Ugandan government was required to bail it out financially. This points to the need for more rigorous auditing and transparency of CDM payments and expenditure.

There are also significant problems relating to questions of investment and project additionality, environmental impacts, emissions reductions, and the application of the baseline methodology for the production of CERs. These should be addressed in the planning or validation stages of similar projects elsewhere in Africa.

To summarise, the problems outlined above include:

- The baseline methodology does not account for energy use change from sources other than diesel or petrol generators.
- Financial additionality criteria are not as strong as the project design makes them out to be. The project, or one of a similar type, may have been feasible or even likely without carbon finance.
- However, given the later financial shortfall and subsequent audit of the project, it is vital to evaluate how carbon financing was actually used. In this respect is important that the audit of WENRECO by Deloitte & Touche is made public.
- The emission reduction calculations do not take into account the proposed dam in the next phase of the project.
- The potential environmental risks due to change in hydrological flow as a result of droughts and climate change may be unplanned for.
- The cost-recovery nature of the project, and the project design, risk excluding the rural poor.
- The auditing of retroactive credits over a three-year time lag seems inadequate.
- The project could exclude the rural poor outside the municipal areas from having direct access to grid electricity in trading centres or their homes.

- The influence of local and national politicians in promoting the project opens the door for potential conflicts of interest.

The criticisms above can also be said to be – to a significant extent – a product of the high levels of speculative work required for CDM projects, given that they are measured against hypothetical business-as-usual scenarios. Finally, there is an implicit paradox in linking the production of rural electrification with the CDM. Rural electrification aims to create use in excess of the 'business as usual' scenario, yet emissions reductions are measured against it. Rural electrification also aims to get those not using electricity in any form onto the grid, yet the baseline only assumes that those with diesel-generated electricity will convert. CERs will probably be generated for new users who would never have used diesel in the first place. This paradox is not only project-specific, but seems to be embedded in the conception of CDM itself: the very success of the developmental thrust of CDM may lessen its validity as a climate change mitigating mechanism.

NOTES

1 http://www.economywatch.com/world_economy/uganda/.

2 http://www.newvision.co.ug/D/8/12/675621.

3 C Kanabahita, Forestry Outlook Studies in Africa (FOSA) Country Report: Uganda. Forestry Department, Ministry of Water, Lands & Environment, http://www.fao.org/DOCREP/004/AC427E/AC427E05.htm, 2001.

4 Ibid.

5 http://www.fao.org/DOCREP/004/AC427E/AC427E05.htm.

6 www.fao.org/DOCREP/004/AC427E/AC427E05.htm.

7 Claus-Michael Falkenberg and Steve Sepp, EPP 2000: Economic evaluation of the forestry sector in Uganda, Uganda Forestry Department, 2000.

8 Uganda: Are we ready for climate change, 8 August 2010, http://allafrica.com/stories/201008180234.html.

9 http://www.fao.org/DOCREP/004/AC427E/AC427E05.htm.

10 C Kanabahita, Forestry Outlook Studies in Africa (FOSA) Country Report: Uganda. Forestry Department, Ministry of Water, Lands & Environment, http://www.fao.org/DOCREP/004/AC427E/AC427E05.htm, 2001.

11 Falkenberg and Sepp, Economic evaluation of the forestry sector.

12 P Bidwai, Carbon trading, *Frontline*, 30 December 2006.

13 K Smith, 'Obscenity' of carbon trading, 2006, http://www.tni.org/detail_page.phtml?&page=archives_ksmith_obscenity&menu=11c.

14 See Annex 1 for a list of people interviewed (including dates and places).

15 National Forest Authority (online), http://www.nfa.org.ug/content.php?submenu_id=3.

16 S Kevin, Carbon trading: the limits of free trade-market logic, *China Dialogue*, 20 September 2007.

17 Serving a function without being legally or officially established. See http://www.thefreedictionary.com/de+facto.

18 According to law or by right. See http://www.thefreedictionary.com/de+jure.

19 Poverty Eradication Action Plan (PEAP) 2005, http://www.finance.go.ug/docs/PEAP%202005%20Apr.pdf.

20 http://www.wrm.org.uy/countries/Uganda/Place_Store_Carbon.pdf.

21 Small-scale afforestation and reforestation project.

22 L Lohmann, Carbon trading: A critical conversation on climate change, privatization and power, *Development Dialogue* 48, September 2006.

23 Bidwai, Carbon trading.

24 Information from interviews with respondents as listed in Annex 1.

25 See Annex 1.

26 Bidwai, Carbon trading.

27 West Nile Development Conference (WNDC), Technical concept paper, 2005, 35.

28 Habib Tibrichu, interview, Arua, 18 September 2006.

29 United Nations Framework Convention on Climate Change (UNFCCC), CDM-Executive Board, Simplified project design document for small scale project activities (SSC-CDM-PDD): West Nile Electrification Project (Version 02, 8 July 2005), http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view.html (accessed on 16 October 2007).

30 Aisha Nambalirwa, Solar loans and subsidies now available, Uganda Rural Electrification Agency Newsletter 2.1, May 2009, http://www.rea.or.ug/userfiles/REA%20Newsletter%202009.pdf (accessed on 29 July 2010).

31 Patrick Alioni, journalist for *New Vision*, interview, Arua, 18 August 2006.

32 Ibid; Anguzu Dickens, chairperson of the Community Empowerment for Economic Development (CEFORD), telephone interview, 16 October 2007.

33 Yamtsa Goufo and Steven Male, Hydropower: the small versus large debate and the policy decisions implications in developing countries, 2009, http://www.ibp.org.br/eventos/33iaee/pdfs/33IAEE_770_201004131148goufoyemtsa.pdf (accessed on 29 July 2010).

34 Michael Sseppuya, Nyagak Dam for commissioning in three weeks, *East African Business Week*, 27 July 2010, http://www.busiweek.com/10/page.php?aid=918.

35 http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view.html (accessed on 20 September 2007).

36 UNFCCC, Simplified project design, 3.

37 Greiner et al, Defining investment additionality.

38 UNFCCC, Tool for the demonstration and assessment of additionality (version 5.2), 26 August 2008, 10, http://cdm.unfccc.int/methodologies/PAmethodologies/AdditionalityTools/Additionality_tool.pdf (previous version accessed on 16 October 2007).

39 UNFCCC, Methodologies AMS-I.D version 9; AMS II.B version 7, http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view.html (accessed on 16 October 2007).

40 UNFCC, Simplified project design, 8.

41 Fabian Ahaisibwe, WENRECO WNEP project co-ordinator, email interviews, 4, 13, 15, 16 July 2007.

42 Swalleh Rajab, WENRECO Arua manager, email interview, 6 October 2007.

43 Dick O'Mondy, WENRECO HFO plant engineer, Arua, telephone interview, 6 October 2007.

44 According to the International Panel for Climate Change (IPCC), diesel has an emissions factor of 20.2 t C/TJ. Kerosene has a similar, though slightly lower, factor (19.6 t C/TJ), while natural gas has an emissions factor of 17.2 t C/TJ. Solid biomass has a significantly higher emissions factor (29.9 t C/TJ), though this is a potentially renewable source if harvested sustainably. See IPPC, Guidelines for national greenhouse gas inventories, Workbook 2, 1996, www.ipcc-nqgip.iges.or.jp/public/gl/invs5a.htm (accessed on 7 October 2007).

45 UNFCCC, Additionality tool, 3.

46 UNFCCC Simplified project design, 14.

47 Ibid, 12–15.

48 Ibid, 12.

49 Fabian, interview.

50 Barbara Haya, Failed mechanism: how the CDM is subsidizing hydro developers and harming the Kyoto Protocol, International Rivers, November 2007, www.internationalrivers.org/files/Failed_Mechanism_3.pdf.

51 http://internationalrivers.org/en/global-warming/carbon-trading-cdm/international-rivers-comments-west-nile-electrification-project-ug .

52 Fabian, interview.

53 Ibid.

54 UNFCCC, Additionality tool, 3.

55 SGS, Validation report: West Nile Electrification Project, 15 November 2006, 8, http://cdm.unfccc.int/UserManagement/FileStorage/FPFNDPIPT20U3IMMNISYI7MGIIUKQH (accessed on 16 October 2007).

56 Ibrahim Kasita, Deloitte to audit Wenreco, *New Vision*, 10 May 2009, http://allafrica.com/stories/200905110202.html (accessed on 29 July 2010).

57 Ibrahim Kasita, Nyagak power dam ready mid-2010, New Vision, 1 November 2009, http://www.newvision.co.ug/D/8/220/699780 (accessed on 29 July 2010); Sseppuya, Nyagak Dam for commissionining in three weeks.

58 O'Mondy, interview.

59 UNFCCC AMS–ID ver 9.

60 Norplan Limited and Econ Center for Economic Analysis, Environmental Impact Statement for Nyagak minihydro (revised V 2), 2005, 9, www-wds.worldbank.org.

61 Ibid, 55.

62 Dickens, interview.

62 Ibid

64 Dickens, interview; Alioni, interview.

65 O'Mondy, interview; Rajab, interview.

66 www.rea.or.ug.

67 Edward Odipi, District Environmental Officer, Arua, interview, 18 September 2006.

68 Ibid; WNDC, Technical concept paper.

69 O'Mondy, interview.

70 Rajab, interview; Habib Tibrichu, Private Sector Foundation, interview, 18 September 2007.

Annex 1: People interviewed for Uganda Nile Basin Reforestation Project case study

	Name	Institution/designation	Date of interview
1.	Katereiha	Local Council/Chairperson, Kirungu	29 Sept 2007
2.	Bagorogoza	Vice-Chairman LC 1, Nyakatojo	29 Sept 2007
3.	Birakwate	Kirungu Village	29 Sept 2007
4.	J B Tumwebaze	Catechist	29 Sept 2007
5.	S Hagabayezu	Member of RECPA	29 Sept 2007
6.	S Ntegyerize	Farmer, Kirungu Parish	29 Sept 2007
7.	J Mukwasibwe	Farmer, Kirungu Parish	29 Sept 2007
8.	M Twinomuhangi	Member of RECPA	29 Sept 2007
9.	S Tibyako	Visitor to Kirungu village	29 Sept 2007
10.	B Gumisiriza	Farmer	29 Sept 2007
11.	Turibweneho	RECPA	29 Sept 2007
12.	Theresa Gakibayo	RECPA	29 Sept 2007
13.	Atanazio Gakibayo	RECPA	29 Sept 2007
14.	Amanyire Deo	RECPA	29 Sept 2007
15.	Mugumya Nyindo Xavier	NFA	29 Sept 2007
16.	Jerome Byesigwa	RECPA	29 Sept 2007
17.	Kakuba Benon	Tree farmer, Rwoho	29 Sept 2007
18.	Jeconius Musingwire	District Environment Officer, Mbarara District	29 Sept 2007
19.	David Mununuzi	Range Manager (Rwoho), NFA	30 Sept 2007
20.	Michael Aboneka	Sector Manager (Rwoho), NFA	1 Oct 2007
21.	Paul Isabirye	Principal Meteorologists, Department of Meteorology	2 Oct 2007
22.	Philip Gwage	Assistant Commissioner/Secretary to the national Climate Change Steering Committee	2 Oct 2007
23.	Damian Akankwasa	Executive Director, NFA	2 Oct 2007
24.	Paul Musamali	Acting Director of Corporate Affairs, NFA	2 Oct 2007
25.	Fiona Driciru	Collaborative Forest Management Specialist, NFA	2 Oct 2007
26.	Onesmus Mugyenyi	Deputy Executive Director, ACODE	3 Oct 2007
27.	Gerald Kairu	Programme Officer, carbon projects ECOTRUST	
28.	Israel Kikangi	Coordinator, Planation Development, NFA	7 Oct 2007

Annex 2: People interviewed for West Nile Electrification Project case study

	Name	Institution/Designation	Date of interview
1.	Fabian Ahaisibwe	WENRECO WNEP project co-ordinator	3 July 2007 (telephone); 4, 13, 15, 16 July 2007 (email)
2.	Patrick Alioni	Journalist, New Vision, Arua	18 August 2006
3.	Anguzu Dickens	Chairperson of the Community Empowerment for Economic Development (CEFORD)	16 Oct 2007 (telephone)
4.	Paul Isabirye	Senior meteorologist, Department of the Ugandan Designated National Authority	3 Oct 2007 (email)
5.	Dick O'Mondy	WENRECO HFO plant engineer, Arua	6 Oct 2007 (telephone)
6.	Edward Odipi	District Environmental Officer. Arua	18 Sept2006
7.	Swalleh Rajab	WENRECO Arua Manager	6 Oct 2007 (email)
8.	Habib Tibrichu	Private Sector Foundation, Arua	18 Sept 2007

6 Ethiopia

Negusu Aklilu[1]

COUNTRY CONTEXT

Ethiopia's population of 80 million is the second largest in sub-Saharan Africa.[2] The country faces a range of developmental challenges, including rapid population growth, poor productivity, structural bottlenecks, severe environmental degradation, and an economy that relies heavily on rain-fed agriculture.[3] Some 50 per cent of the population live below the poverty line, amounting to 1,82 per cent of the world's poor.[4] Given that 85 per cent of its population work in and live off agriculture, natural disasters such as droughts and floods have a major social and economic impact. Ethiopians do not easily adapt to changed circumstances, and climate change is having – and is likely to have – a profound effect on their wellbeing, as well as aggravating other stressors.

Recognising this, the Ethiopian government's Plan for Accelerated and Sustained Development to End Poverty (2005)[5] includes numerous interventions for dealing with climate change and deteriorating air quality, including:

- Developing a federal strategy, standards and laws for improving urban air quality

- Developing a national strategy to enhance mechanisms for coping with the adverse impacts of climate change
- Undertaking environmentally sound investments as well as programmes that foster cleaner development, including emissions trading

Ethiopia has ratified the conventions of the United Nations Framework Convention on Climate Change (UNFCCC)[6] and the United Nations Convention to Combat Desertification (UNCCD).[7] It has also adopted other policies on various aspects of the environment, some more than a decade ago. The National Adaptation Plan of Action (NAPA)[8] of 2007 seeks to prioritise climate change projects, and create a plan of action for enhancing human capacities for coping with climate change. A draft document setting out a portfolio of projects for addressing the adverse impacts of climate change has been prepared.

At the time of writing, there was only one carbon project in the voluntary offset pipeline: the introduction of a 'clean' ethanol cook stove promoted by the offset company Carbon Clear.

The Humbo natural regeneration (reforestation) project proposed by World Vision has already been endorsed by Ethiopia's DNA, and was registered under the CDM in December 2006.[9]

Box 1: The Ethiopian DNA's perspective on the carbon market

The Ethiopian Environmental Protection Authority (EPA) is currently serving as the DNA for the CDM as well as the focal point for the Kyoto Protocol and the UNCCD. The National Meteorological Services Agency (NMSA) is the UNFCCC focal point for the country.

According to the EPA lawyer W Sintayehu,[10] general levels of awareness of the carbon market are very poor. In an interview in 2007, he asserted that although Ethiopia was one of the most vulnerable countries in the world, it was not benefiting at all from carbon trading regimes. According to him, the EPA had undertaken a number of training sessions on CDM.

Sintayehu noted that there were some 'potentially marketable' areas for carbon trading in Ethiopia such as landfill, small hydro and animal waste projects. Renewable sources of energy such as solar and wind could also provide some opportunities for carbon trading.[11]

In another interview, W Shanko of the NMSA[12] stated that carbon trading was not a popular business in Africa in general and Ethiopia in particular, because it did not have the same potential as in other world regions. The CDM was complex and bureaucratic, and the awareness of the business sector was limited. The government and NGOs had held awareness-raising workshops during the previous few years.

Table 1: Distribution of households by type of fuel used for cooking in rural and urban areas (%)[13]

Type of cooking fuel and place of residence	Survey year			
	1996	1998	2000	2004
Rural				
Collected firewood	74,1	74,7	76,4	80,7
Purchased firewood	1,4	3,5	2,4	3,7
Charcoal	0,1	0,1	0,0	0,2
Leaves/dung cakes, etc.	19,1	20,1	17,2	12,7
Kerosene/butane gas	0,2	0,3	0,4	0,3
Electricity	0,0	0,0	0,1	0,1
Others	5,2	1,4	3,6	2,3
Urban				
Collected firewood	17,2	13,8	16,6	16,0
Purchased firewood	44,5	49,1	41,3	49,4
Charcoal	4,3	5,0	8,3	7,7
Leaves/dung cakes, etc.	7,6	5,3	6,3	5,3
Kerosene	18,9	17,2	21,5	13,8
Butane gas	1,0	2,5	1,4	2,7
Electricity	2,7	3,8	2,2	2,4
Others	3,8	3,2	2,4	0,8

Table 1 above outlines the diversity and relative magnitude of the consumption of different kinds of fuel in Ethiopia.

Ethiopia's per capita consumption of electricity – 24 kWh in 1998–1999 – is one of the lowest in the world. Many households use other forms of energy, such as

firewood, dung, gas, and charcoal. Deforestation is a major problem, amounting to some 140 000 hectares a year in 1990–2005.[14] This trend is still continuing especially since biomass fuels provide more than 90 per cent of total energy, with 77 per cent being derived from woody biomass, 8,7 per cent from crop residues, and 7,7 per cent from dung. Moreover, the gap between sustainable fuel wood supply and demand is widening, and estimated to have surpassed 58 000 000 cubic metres in 2005.

SEEKING VOLUNTARY OFFSETS THROUGH A PILOT COOK STOVE PROJECT

A pilot project to distribute energy-efficient cook stoves was identified as a voluntary offset project that would reduce GHG emissions, household pollution, and deforestation in the Metekel Zone in the Benishangul-Gumz Regional State in Ethiopia. Voluntary emission reduction (VER) projects present companies, governments and organisations with an opportunity to purchase carbon credits. The developers of this project, Carbon Positive Trading (CPT) and The Learning Paper, believed that energy-efficient stoves were an ideal way of meeting the criteria for a voluntary carbon offset project in Ethiopia.

This case study explores the project claims and outcomes in greater detail. It focuses particularly closely on the criteria of additionality, sustainable development, and community consultation which projects are supposed to meet in order to quality for emission reduction certificates (CERs). While these criteria do not officially apply to the voluntary offset market, they are usually taken as a benchmark against which the various stakeholders (developers, beneficiaries, and recipients of credits) can evaluate projects.

The project

CPT's vision was to manufacture, distribute and install five million clean-burning stoves in developing countries as a voluntary carbon offset project undertaken on behalf of a British charity, The Learning Paper. The initial target countries were Kenya, Uganda, Tanzania, Indonesia and China, and the first installations were planned for the end of 2007. The Learning Paper chose CPT as part-developer and implementer because it specialises in large-scale sustainable development

projects in agro-forestry and bio-energy. According to Ally Charlton, who co-ordinated the pilot project, Ethiopia was selected for the pilot[15] due to 'its strong base of existing work in this field, and also an enormous need and opportunity' for cleaner burning stoves.

CPT undertook the pilot project in 2006, in order to:

- Gain field experience in developing and managing such projects
- Obtain data on fuel savings from more efficient stoves
- Obtain other practical data (costs, logistics) relevant to the project
- Research other stove distribution programmes and build contacts in this field
- Explore the possibilities for obtaining carbon credits for stove distribution programmes
- Develop a business plan for scaling up a carbon-financed stove distribution programme in the longer term

The region chosen was linked to the location of the partner company Sun Biofuels,[16] as this would give CPT access to existing local contacts, and reduce logistical and management costs.

Box 2: CPT's other ventures in biofuels and agroforestry

CPT is helping Sun Biofuels to register its projects under the CDM. Sun Biofuels produces biofuel oil and biodiesel from plant oils. It has established biodiesel production operations in a number of countries in the developing world, including Ethiopia, Tanzania and Mozambique. Sun Biofuels already has a significant presence in Ethiopia through its controlling interest (80 per cent) in the National Bio-Diesel Corporation of Ethiopia, which it bought in 2005.

Sun Biofuels specialises in the agricultural production of oil extracted from the Jatropha plant. Biofuels, or agrofuels – the large-scale use of agricultural land for producing fuel oil for consumption in the global North – has been criticised by environmentalists on many grounds. The use of fertile land to grow these plants is strongly linked to a decline in food security. Claims that Jatropha does not require fertile land have also been questioned. Other criticisms advanced include the illegal appropriation

of land from rural people for growing agrofuels, and a general lack of transparency in the deals for these agrofuel plantations.

CPT's links with Sunshine Technology are also controversial. Sunshine Technology's production systems are supposedly based on agroforestry – an old conservation technique used by indigenous forest-dwellers but now adapted by industrial plantation operations to produce agrofuels for overseas consumption – and have been established in Indonesia, China, and most recently Ghana. Sunshine Technology claims it is 'negotiating land rights'[17] in Ghana. There is reason to be suspicious about these negotiations, given the experience in Indonesia where indigenous people lost their land through a deal where Sunshine Technology/CPT had acquired 101 000 hectares of eucalyptus plantations on the islands of Sumbawa (West Nusa Tenggara province) and West Timor (East Nusa Tenggara province) in 2007, both of which are conspicuously endorsed by the current minister of forestry.

Wally Menne (Timberwatch Coalition/The Global Forest Coalition)[18] argues that 'middle-men' companies such as CPT provide misleading evidence to investors that voluntary offset projects will become CDM projects. Furthermore, they bolster public relations efforts to promote projects in these countries and boost the confidence of buyers of credits in the soundness of the projects. While there is no substantive evidence to suggest any wrongdoing, biofuel and agroforestry projects may promote dishonest business practices and divert attention away from real efforts to conserve forests and reduce poverty in developing countries.

The pilot was funded by the Columba Green Carbon Trading Partnership, a carbon investment vehicle established by Carbon Capital. Carbon Capital is CPT's financing partner, represents the latter in the UK, and manages its British customer and investor relations. Carbon Capital specialises in raising finance for businesses operating in the new carbon economy. CPT's local counterpart is Megen Power (MGP), an Ethiopian company that specialises in the field of renewable energy, with particular emphasis on household energy. In 2006, CPT commissioned MGP to implement the pilot project on its behalf. MGP distributed about 250 Mirt, 250 Gonzie, and three institutional stoves to 500 households, four hotels, and three educational institutions. The stoves were energy-efficient units that could be

used to cook the traditional Ethiopian pancake, *injera*, a staple diet for many Ethiopians, which reportedly accounts for 50 per cent of the country's primary energy consumption. The Mirt stove is made of sand and cement, and the Gonzie of red clay. The institutional stove, on the other hand, is made of metal.

CPT wound up the pilot project in late 2006 and claimed the pilot conducted in the Benishangul-Gumuz region was successful. It also said Ethiopia had demonstrated that stoves could be viably disseminated in developing countries. MGP submitted a final report to CPT in February 2007 which is still a commercial secret, and thus not open to public scrutiny.

Box 3: The need for transparency

Comprehensive, accurate, and easily accessible information is generally regarded as essential for assessing claims made in respect of projects, and engendering trust in beneficiaries and those purchasing credits. In the case of the cook stove project, the confidentiality of MGP's final report made it more difficult to assess the claimed emission reductions, benefits to the community, and other claimed benefits. According to Charlton,[19] CPT intended to produce a 'light' version of the report for public release, but this has not yet been done, supposedly due to changes in priorities and significant resource constraints. Even this version is still not available on CPT's website.

Emission reductions

CPT claims that the all-round benefits of the Mirt and Gonzie stoves distributed to households and institutional kitchens included:

- Dramatically reduced indoor smoke
- Protection for cooks from flames and heat
- Greatly reduced consumption of wood fuel (30–40 per cent)
- Greatly reduced cooking times (up to 40 per cent)
- Significant reductions in cost

As noted earlier, the project was reported as a success, but – given that the final report was not made public – it was not clear whether any calculations were made

to ascertain the reduction in GHG. Given this, the question arises as to how CPT calculated the potential carbon offsets of the project.

During field visits to the project area, and discussions[20] with community members, it became clear that there were some concerns about the stoves. This included the following:

- The large amount of wood needed to heat up the Mirt stove. This results in wasted energy if cooking for a small family and thus there is hardly any energy and financial savings.
- The quality of the stoves, which affects their sustainability. In a fairly short time the stoves have already started crumbling. It is believed that the stoves disseminated by CPT were of poorer quality than those disseminated by the UNHCR.
- The flues are too short, and thus smoke is released inside the house.
- The Gonzie stove was not well received. About 50 per cent of users have already stopped using it and have gone back to their traditional stoves.

Box 4: Checks and balances

> While CDM projects have to be endorsed by the DNA of the country in question, no system exists for verifying the emission reductions of voluntary offsetting projects. Therefore, this pilot project has not been verified by any governmental body or an independent third party. In essence, there are no checks and balances to ensure that voluntary carbon offset projects meet their stated objectives, or independent mechanisms to measure the outcomes.

These findings raise serious concerns about claims of emission reductions by the project.

Additionality

A key aspect of any carbon offset project is additionality. It seems that GTZ and the UNHCR have been involved in distributing these stoves for a number of years. But this project does not seem to meet the additionality criteria for a carbon offset

project. Why did CPT and MGP have to develop another pilot project when there were existing projects in Ethiopia? There is no mention by the project developers of the lessons learnt from previous projects, which could have resulted in a waste of resources for the companies and the communities involved. Asked whether the project could have taken place without carbon financing, Shanko[21] responded that the additional funding would be used to disseminate the stoves on a larger scale, which would not be possible otherwise.

Sustainability of the distribution

At the time of writing, there were no plans for a mass rollout.[22] According to CPT, successful distribution would require 'mechanisms to ensure that large-scale distribution is sustainable in the long term'.[23] The company also expressed a concern about what it saw as an excessive dependence on donor agencies, which detracted from sustainability. It has also explored options for training local manufacturers to make and supply better stoves, thus ensuring sustainability beyond the term of the donor intervention.

These comments raise the question of how CPT could conclude that the pilot was a success. Besides the issues surrounding the technology, it seems that the manufacturers also encountered some challenges. They struggled to sell the stoves, which adversely affected their businesses. Besides this, the improved stoves were distributed free of charge by the UNHCR. The study revealed that 10 out of 15 non-users were not interested in buying a stove if there was a chance that they could get it for free. To its credit, CPT acknowledges that this has been a weakness of the project, and aims to support local manufacturers in the future.

Community consultation

It is not enough to distribute stoves. Project managers need to consult communities to establish what sorts of stoves they really need, and how they are used. For example, the effort made by the UN High Commissioner for Refugees (UNHCR) to disseminate Mirt stoves among Sudanese refugees in 2004–2005 failed because they had completely different customs and cooking practices. Intriguingly, stoves which emit less smoke may also be less sought after for social reasons; according to Tolossa,[24] in some areas in Ethiopia, the more smoke coming out of a house, the wealthier the household is perceived to be, because this signals that there

is always food in the house. Others use the smoke to repel mosquitoes and dry food. Furthermore, people in colder areas need space heating in addition to cooking, which is provided more efficiently by a traditional open fire rather than an improved stove.

Another important factor is that people are reluctant to pay for fuel when they can get free fuel wood from a nearby natural source, and any variation in the quantity of fuel wood used during cooking is not a material economic factor. Moreover, suitability and convenience rather than energy efficiency are the greatest priorities for many rural people. All these factors underline that it is vital to consult communities before similar projects are attempted. Moreover, any such project should include programmes for raising awareness about the technology involved, air pollution, and the impacts of climate change.

CONCLUSION

The major findings of the case study are as follows:

- CPT disseminated three kinds of stoves to households, educational institutions and hotels, in collaboration with MG.
- The Columba Green Carbon Trading Partnership supported the pilot project financially via Carbon Capital.
- CPT/MGP is not the first institution to distribute stoves in this area. About 100 stoves had been were distributed two years earlier, although elements such as training were not included.
- The improved stoves were initially distributed free of charge by the UNHCR as well as CPT, which was justified by MGP on the grounds that it provided the community with an incentive for participating in the project. However, this made people resistant to buying stoves, thus creating a major obstacle to scaling up the project at a later stage, when people would be expected to buy the stoves themselves.
- MGP trained two local manufacturers and gave them start-up capital, although the manufacturers were closing down their operations due to market failures.
- In contrast to the CDM, there are no mechanisms for verifying the results of voluntary offset projects.

- The Mirt stove and the institutional stove are still popular among the local community.
- The Gonzie stove is very unpopular and had already been abandoned by about 50 per cent of the households interviewed.
- The research team encountered a number of crumbling stoves, which indicates that the production and installation of stoves need to be closely monitored and regulated.
- CPT has declined to release its final report on the pilot project, which has made it difficult to interrogate its claims regarding emission reductions and other sustainable development benefits.
- The future of the project beyond the pilot phase is unclear, as CPT now wants to focus on reforestation projects rather than efficient stoves. This is because of technical difficulties in measuring the carbon emissions of stoves within the voluntary offset and CDM schemes.

NOTES

1 This study was updated by Ferrial Adam in September 2009, and by Trusha Reddy in October 2009 and September 2010.

2 International Federation of Red Cross and Red Cross Societies, Plan 2009-2010, at http://docs.google.com/viewer?a=v&q=cache:msmCHWC-1g8J:www.ifrc.org/docs/appeals/annual09/MAAET00209p.pdf+ethiopia+people+living+below+poverty+line+and+other+statistics+2010&hl=en&pid=bl&srcid=ADGEESiw7DvhSqnor6NHqKJPw74_P2ZQ8rBfUMYI94QbTSj_x8B4-GPpSHXLu4UxIVn6QMYqBpS2tA_y75JtzfcQX3x_WbjHYQaizHOAT8uh0kHUSsSPmKvWqARgaBHKm6hvsIkIFJxtd&sig=AHIEtbRVeN77_Mf8QkKRmGvQNnBKx4-OAw (accessed on 11 September 2010).

3 D Kassahun, Global climate change and Ethiopia's vulnerability to environmental hazards, in E Kelbessa (ed), Ethiopia between the sharp scissors of climate change and environmental degradation: Report on the 2006 flood disaster, *Forum for Environment*, 2006, 70.

4 Nationmaster.com, Ethiopian economy statistics, http://www.nationmaster.com/country/et-ethiopia/eco-economy (accessed on 11 September 2010).

5 Ministry of Finance and Economic Development (MoFED), Federal Democratic Republic of Ethiopia, Ethiopia: Building on progress: A Plan for Accelerated and Sustained Development to End Poverty (PASDEP), 2005/06-2009/10, 2005, http://planipolis.iiep.unesco.org/upload/Ethiopia/Ethiopia_PASDEP_2005_2010.pdf (accessed on 11 September 2010).

6 Proclamation No 97/1994.

7 Proclamation No. 80/1997.

8 Climate Change National Adaptation Programme of Action (Napa) of Ethiopia, http://unfccc.int/resource/docs/napa/eth01.pdf (accessed on 11 September 2010).

9 CDM Pipeline Overview, http://cdmpipeline.org (accessed on 11 September 2010).

10 W Sintayehu, personal interview, Addis Ababa, Ethiopia, 30 September 2007.

11 Ibid.

12 W Shanko, personal interview, 19 September 2007, Addis Ababa, Ethiopia.

13 MoFED, Ethiopia: Building on progress.

14 Food and Agriculture Organisation (FAO), Global Forest Resources Assessment 2005, Ethiopia, Country Report, 2005.

15 Ally Charlton, interview by email, 10 October 2007.

16 For information on Sun Biofuels, refer to the box entitled 'CPT's other ventures in biofuels and agroforestry'.

17 Sunshine Technology (online), http://www.sunshinetechnology.com/about/ventures/.

18 Wally Menne, interview, 20 October 2009.

19 Ibid.

20 The field visits were undertaken by the author.

21 Ibid.

22 As at 10 September 2010, the CPT's website did not record any plans for the large-scale rollout of the cook stoves, as initially stated in 2006.

23 See http://www.carbonpositive.net/viewproject.aspx?projectID=2&results=10.

24 S Tolossa, personal interview, Addis Ababa, 18 September 2007.

Part 3 Carbon finance

7 World Bank carbon finance and Africa's forests

Janet Redman and Astrid Westerlind Wigström

INTRODUCTION

Like the broader practice of carbon trading, the purpose of carbon finance is to make it cheaper and easier for industrialised countries to reduce their greenhouse gas (GHG) emissions and move to a low-carbon future while enabling companies in those countries to remain profitable.

Schemes that support carbon trading between developed and developing countries are also meant to minimise the costs of reducing emissions in industrialised countries, but to do so by financing projects in poorer countries that will place them on lower emissions pathways. The future GHG emissions avoided in those countries are then offset against emissions in developed countries.

The World Bank argues that by providing methodological frameworks, capacity, and public money, carbon finance increases the long-term 'bankability' of emissions reduction schemes, and encourages investment in 'good'[1] projects which private investors would not have supported on their own. Moreover, public institutions – and the citizens who fund them – shoulder the risks involved in those schemes on behalf of private investors.

There is no single universally accepted definition of carbon finance. Some institutions, like the World Bank, define it narrowly as the money provided to a project to generate or purchase GHG emission reductions. Others, like the Yale Center for Business and the Environment, use the term to describe a financial approach to addressing climate change that involves the wider field of short- and long-term investment and the management of capital dedicated to mitigation projects, as well as the services and technologies that go into these projects.[2] Generally, carbon finance refers to a package of loans, grants, and other financial instruments, policies, technical advice, and 'capacity-building' or training provided by public institutions to help pave the way for carbon trading deals. Sometimes the brokering of these transactions also forms part of the public carbon finance packages provided by public international financial institutions.

The main players in public carbon finance include the World Bank and, increasingly, regional development banks and UN agencies. Other actors include governments with international obligations to reduce emissions (recorded in Annex 1 of the Kyoto Protocol); heavily polluting companies or industry associations which represent industrial sectors that will be regulated at the national level in countries with commitments; governments that do not have international obligations, but anticipate having them in the future, or are likely to adopt their own carbon trading schemes; NGOs that see carbon finance as a way to reach other goals (like forest conservation); private investment firms; and carbon brokers.

In this chapter, we seek to provide a better understanding of the World Bank's involvement in carbon finance and its portfolio of mitigation efforts, with a particular focus on its involvement in the forest carbon market in Africa. Focusing on the World Bank will also help to illuminate some of the fundamental challenges surrounding carbon finance; after all, the Bank helped pave the way for private carbon markets and the CDM. Now, as the world attempts to negotiate an agreement to rapidly reduce global GHG emissions after the first commitment period of the Kyoto Protocol expires in 2012, the Bank is again positioning itself to take a lead in 'piloting' new carbon finance practices, and managing the hundreds of billions of dollars that will have to flow from developed to developing countries in order to support the transition to low-carbon development.

We also summarise some of the main governance issues that have been raised about the lack of transparency and accountability as well as the potential risks for corruption presented by the World Bank's carbon finance programme. Our working definition of corruption will steer away from unlawful inducements

to do wrong, as in bribery, and will focus instead on perversions of integrity, conflicts of interest, departures from an original meaning or purpose, and impairments of principle. In line with this, we understand as corruption the use of money, institutional power, and influence – often disguised as 'objective' technical expertise – to facilitate activities that claim to combat global warming and deliver sustainable development, but reward activities that threaten climate stability, exacerbate inequality, and undermine local resource control instead.

We unpack the meaning of the World Bank's carbon finance programme for African countries as this region becomes more prominent in the global development discourse. In this context we turn to the Forest Carbon Partnership Facility (FCPF), one of the Bank's newest carbon funds, certainly its best known, and a precedent-setting foray into the creation of a forest carbon market – one that could dwarf all previous carbon markets.

THE ROLE OF THE WORLD BANK IN CARBON FINANCE

At $2,5 billion, the World Bank's carbon finance portfolio only represents a fraction of the global carbon market, estimated to be worth $144 billion in 2009.[3] Yet the Bank has played a central role in creating the rules of the regulated carbon market for more than a decade. The Bank recognised before many other institutions that climate change posed a grave threat to poor countries – its clientele – and should play a growing role in its activities.[4] A leaked document revealed that by 1997 the Bank was already considering how it could use its experience of implementing environment and energy projects, and its access to developing country institutions, to become involved in the burgeoning carbon market.[5]

The Bank's official involvement in carbon finance began in 1999 with the launch of the Prototype Carbon Fund (PCF), aimed at 'pioneering' carbon transactions. The PCF was originally pitched as a short-term measure aimed at jump-starting private investment in the delivery of 'entirely renewable' energy to the Global South through the CDM.[6] More than ten years after the launch of the PCF, the World Bank's carbon portfolio has expanded to 13 funds[7] and facilities which have amassed $2,5 billion in capital investments (of which $1,8 billion have been committed in 133 signed and active Emissions Reductions Purchase Agreements, or ERPAs),[8] and carbon financing has become a 'mainstream' part of its overall lending programme.[9]

The mission of the World Bank's carbon finance programme – housed in its Carbon Finance Unit (CFU) – is to 'catalyse a global carbon market that supports sustainable development, reduces transaction costs, and reaches and benefits the poorest communities of the developing world'.[10] Like all carbon market-based climate solutions, the programme is based on the premise that carbon finance can make it cheaper and easier – and therefore more efficient – to reduce emissions by 'outsourcing' those activities to developing countries in the form of carbon offset projects.

According to the CFU's 2008 annual report, the Bank is 'making every effort' to ensure that developing countries and economies in transition are key players in the growing carbon market. To accomplish this, the Bank acts as a broker, financial trustee, administrator, and technical advisor to carbon trust funds. It collects contributions from Northern governments that have undertaken to lower their GHG emissions under the Kyoto Protocol but cannot or will not do so domestically, as well as private companies and industrial associations in those countries. It pools those resources into one or more trust funds, and uses the money to purchase GHG reductions from projects in developing countries and countries with economies in transition. The Bank then distributes Emissions Reductions (ERs) generated by those projects (many of which have received some form of up-front financing in project development or implementation) on a pro rata basis to the contributing governments and companies.[11]

At the other end of the transaction, the Bank works with project sponsors in developing countries on emissions offset project proposals. Project sponsors include private companies, government agencies and carbon trading companies that bundle smaller projects.[12] The Bank's technical advisors help to create baseline and future emission scenarios for every proposal, design the project to generate the maximum possible number of credits, and calculate the volume of reduced emissions it could be expected to deliver. On the basis of this information, Bank advisors arrive at a price for carbon that is adjusted to what they regard as each proposal's transaction risk.[13] The Bank's carbon finance programme is being used as a model by other international financial institutions, such as regional development banks, for their own carbon finance initiatives.

THE POTENTIAL FOR CORRUPTION

Given that the World Bank's carbon finance programme is setting the stage for regional development banks, developing country governments, and the private sector, we need to register some concerns emanating from its track record in this area. Its carbon finance deals are riddled with unknowns, mostly due to an ongoing lack of transparency. What we do know shows a distinct lack of emphasis on helping developing countries move to new renewable energy. Moreover, the Bank continues to silo its goals and programmes, creating internal incoherence between the CFU's goal of reducing emissions and the Bank's overall vision of development that still relies on making cheap, dirty energy readily available.

Conflicts of interest

In its 2008 *Strategic framework on development and climate change*, the World Bank acknowledged that climate change was a development reality.[14] It made the case for urgent action on global warming, noting that climate change could undo development gains in many countries in recent decades.[15] This professed strategic aim contradicts its growing lending to fossil fuel projects. In Fiscal Year 2010 (FY10) the Bank spent $6,6 billion financing fossil fuel projects, up 116 per cent from the year before.[16] This schizophrenic engagement with climate change by the world's largest development finance institution may be viewed as a potential conflict of interest. Furthermore, the Bank's CFU recoups 13 per cent of the money it spends on carbon trading deals. With a carbon finance portfolio of $2,5 billion, this implies that the World Bank will award itself nearly $325 million to deliver on climate change mitigation goals on one hand, while it continues to support fossil fuel-linked projects on the other.[17]

In a document leaked in 1998, the US Treasury took note of this conflict of interests and advised against the Bank facilitating a carbon fund on the grounds that carbon trading would 'divert needed effort from reforming the Bank's mainstream power sector portfolio, which has a far greater potential impact on greenhouse gas emissions'. It also stated that because the Bank stood to profit from emissions trading, it would have 'very little motivation for decreasing baseline carbon emissions' from its own energy projects.[18]

Although not a conflict of interest in the strictest sense, it is worth noting the Bank's creation of rules to insulate it from financial losses with its brokering

services. If a project fails to generate the promised amount of emissions reductions contracted, the burden falls on the Southern country partner. The Bank can terminate the contract, even in the case of unforeseeable events like a fire destroying a carbon sink plantation, while the project developer remains responsible for any outstanding project preparation costs and advance payments.[19] When the Bank experiments with new methodologies it hopes the CDM Board will adopt, it runs the risk of those projects being rejected by the Board. However, in those cases the carbon fund donors cover whatever financial losses may arise from changes in methodology or the price of emissions reductions.[20]

Transparency

The CFU presents itself as a 'learning facility' dedicated to effective climate and development financing, but a lack of transparency in its emissions trading deals means that neither those who support or oppose carbon trading as a solution to global warming and sustainable development can easily access information. The ability to access clear, accurate, and timely information is vital for local communities whose governments may be considering carbon deals with the World Bank, thus enabling them to benefit from the experiences of other communities.

While the CFU's website – described as 'unreliable' by a senior FCU public relations liaison officer on the grounds that a lack of resources was preventing timely updates of project information[21] – has improved significantly, the public records and CFU project database found there are incomplete. For example, the database omits the cost of transactions, the overall contract value and the price of carbon.

In addition, because the carbon funds are housed in a trust fund and used for commercial transactions, the Bank does not consider these operations to be publicly financed and therefore subject to the disclosure requirements applicable to publicly financed projects. Disclosure reforms in 2010 do permit access to documents like framework and administrative agreements and meeting notes, but do not open emissions-reduction purchase agreements, individual trust fund transactions, and other vital information to public scrutiny.[22]

The World Bank claims it has increased transparency by launching a Carbon Asset Reporting System in 2008 to manage allocations to participants, and forwarding credits to national registries. This system allows fund participants to

check their balances and the status of emissions reductions online, but is not accessible to the general public.[23] In other words, there is still no civil society oversight over the funding side of the equation (in developed countries) or sites of implementation in developing countries.

Beyond knowing what sums of money have changed hands between project partners, constrained public access to purchase contracts means that community and NGO watchdogs cannot see the specific slate of services and activities that will create the emissions credits the Bank intends to pay for, when the funds are released, which parties signed the contract, and what liability local communities hold if projects fail to deliver. This seriously inhibits civil society in holding the World Bank, contributing governments and companies, and implementing agencies in host countries to account for activities that are supposed to reduce GHG emissions.[24] It also means that these actors potentially avoid liability, at least in terms of impact on communities and the environment where a project fails.

Perverse incentives for polluters

As much as $1,45 billion of donors' carbon offset money have been poured into industrial chemical, coal mine, landfill gas, and iron and steel factory projects, while less than $300 million have been dedicated to supporting renewable energy.[25] Polluting industries appear to be the target of carbon finance (for example, projects to capture gas from landfills accounted for 68 per cent of carbon deals brokered by the World Bank in 2009) because they have the potential to provide large quantities of emissions reductions quickly and cheaply. But these easy credits depress the price of carbon, making small renewable projects less competitive and thus less attractive to investors.

Instead of rewarding schemes for using renewable energy to provide electricity to the 1,6 billion people living without it, the Bank's carbon financing programme has created new revenue streams for environmentally destructive industries. Carbon finance not only allows companies to externalise the costs of their pollution, it pays them for it.[26] For example, the Jincheng Anthracite Coal Group in China will sell carbon credits generated from capturing methane released during coal extraction. The methane will create a new free on-site source of power for Jincheng's continued extraction. There are no stipulations attached to the revenue from selling carbon credits that prevent the mining

company from expanding operations and releasing more health-impairing pollutants like mercury and sulfur dioxides into the atmosphere.[27] The logic of this practice incentivises environmental irresponsibility.

THE WORLD BANK'S CARBON PORTFOLIO IN AFRICA

African countries have hosted few carbon finance projects and they have generally been relatively small, generating little revenue for host countries. World Bank-brokered carbon projects in Africa account for about 7 per cent of the total dollar value of all signed carbon finance contracts, or those in the document review stage.[28] While the Bank has identified renewable energy as a priority for the region,[29] only three of the 27 carbon finance projects in African countries fall in the category of new renewable energy.[30] Kenya and Uganda host the most projects, but projects in Tunisia are expected to produce the greatest volume of ERs. Projects are concentrated in the landfill sector (48 per cent of total projected emissions reductions generated by carbon finance projects in African countries), energy efficiency sector (21 per cent), and afforestation/reforestration sector (17 per cent). Appendix 1 details World Bank carbon finance projects up until 2009.

Experts point to the fact that most African economies are based on agriculture and forestry, which have been largely excluded from the UN's CDM portfolio. They see the inclusion of crediting for carbon sequestration from agriculture, forestry and land use activities in the CDM as an important way for Africa to break into lucrative regulated and voluntary markets. The Africa Climate Solution, an initiative of 26 East, Southern and Central African nations formed at the 2008 UN climate talks in Poland, have taken up this call for expanding global carbon markets.[31] Obiageli Ezekwesil, vice-president of the Africa region of the World Bank, argues that Africa can 'maximise its natural resource endowments' by taking advantage of carbon credits. He cites the 'underdevelopment' of Africa's vast hydropower resources as one of the areas that could benefit from carbon finance.[32]

The World Bank's response to calls from African governments for greater access to carbon finance and carbon markets has been, in part, to increase the reach of Carbon Finance Assist (CF-Assist) – the CFU's capacity-building programme. In 2008 Mauritania, Tanzania, Sierra Leone, and Gambia were added to the 56-country partnership. Botswana, Burkina Faso, and Tanzania were identified as priority countries in the Africa region for 2009–2010.[33] CF-Assist has organised a regional carbon forum in Africa, conducted sector-specific regional

capacity-building programmes in the lighting sector in East Africa and the financial sector in West Africa, and helped to create designated national authorities in Sierra Leone and Botswana. Africa-Assist, a programme of CF-Assist, was created by the World Bank and the French Development Agency to build capacity for carbon markets in about a dozen sub-Saharan countries, and support the development of an Africa-focused carbon finance facility.[34] CF-Assist played an active role in setting up the Nairobi Framework, a multi-agency carbon finance capacity-building initiative for sub-Saharan Africa. Through this initiative, the Bank has implemented programmes in collaboration with the UN Environment Programme (UNEP), the UN Development Programme (UNDP), and the Centre d'Etudes Financieres Economiques et Bancaires.[35]

The Bank has also responded to calls from African governments for more carbon finance by launching the Global Gas Flaring Reduction Partnership (GGFR). This public–private partnership is meant to bring stakeholders together to identify the barriers to reducing gas flaring. Unfortunately, the GGFR has brought only representatives of governments of oil-producing countries, state-owned companies and major international oil companies to the table. These actors identified finance, not political will, as the main obstruction to ending flaring, and posed raising the capacity of governments and business to obtain carbon credits for flaring reduction projects as the solution. In Africa, the GGFR was meant to have helped Algeria, Cameroon, Equatorial Guinea and Nigeria meet identified dates for zero flaring, but has achieved little.[36]

Given the serious impacts of gas flaring on human and environmental health, a Nigerian court has ruled the practice to be a 'gross violation' of the constitutionally guaranteed rights to life and dignity in that country, which include the right to a 'clean, poison-free, pollution-free healthy environment'.[37] Providing carbon credits for reducing gas flaring in countries such as Nigeria, which passed the Associated Gas Reinjection Act that made routine gas flaring illegal in 1984, rewards oil companies for halting something that has already been declared harmful and unlawful.[38]

Experiences of initiatives such as the GGFR have led to sharp criticisms of the carbon market by African civil society. When representatives of people's movements, grass roots groups, NGOs and academia met in Nairobi in August 2009 to discuss strategies for addressing global warming, their final statement, entitled 'Confronting the climate crisis: preparing for Copenhagen and beyond', included the following declaration:

> We reject the principle and application of carbon trading, which is a false solution based on inventing a perverse property right to pollute. … We demand that human rights and values be placed at the centre of all global, national and regional solutions to the problem of climate change.[39]

THE WORLD BANK AND AFRICAN DEFORESTATION

The concept of Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD) through carbon trading was first piloted by the World Bank in the BioCarbon Fund under the name 'avoided deforestation'. The idea behind REDD is that if the carbon sequestered by trees can be given a dollar value, trees left standing will be worth more in monetary terms than trees that are cut down (i.e. for timber, pulp, charcoal, etc). The idea was first introduced in the UN climate negotiations in 2005, but was struck from the conversation due to methodological questions about how to measure carbon stored in large tracts of forest, and how to implement a fair and effective financing scheme. REDD reappeared in the UN climate talks in Bali in 2007 as part of the discussion of enhanced (mitigation and adaptation) action.[40]

Since then the concept has been expanded to REDD-plus to include policies and financial incentives for forest carbon stock conservation, sustainable forest management, and the 'enhancement' of forest carbon stocks. It was included as a mitigation activity for developing countries in the Copenhagen Accord, an unofficial and non-binding outcome of global climate negotiations in Copenhagen in 2009.[41] At these talks, Australia, France, Japan, Norway, the UK and the US pledged $3,5 billion to REDD-plus as part of a financial package for 2010–2012, and further pledges pushed the total to $4,6 billion. REDD-plus also appeared in agreements reached at the 16th Conference of the Parties to the UN Framework Convention on Climate Change (UNFCC) in Cancun, Mexico, in December 2010.[42]

The Forest Carbon Partnership Facility

The FCPF is World Bank's forest carbon finance initiative and was launched in 2007 at the UN climate talks in Bali. According to the CFU, the FCPF represents a 'true partnership where developing and developed countries, alongside the World Bank, are working in a transparent and participative way to learn and support each other in the readiness process for REDD'.[43] However, the FCPF has

been dogged by civil society criticisms that the Bank's policies lack the preconditions for sustainable forest protection, such as respect for the rights of indigenous peoples, secure land tenure, transparency, and accountability to forest peoples and communities.[44] In fact, at its launch in Bali, hundreds of protesters demanded that the World Bank withdraw from carbon finance and forestry, claiming the new fund would 'result in more forest destruction, greater displacement of Indigenous Peoples, and higher carbon emissions'.[45]

After sustained public pressure, the Bank retroactively consulted indigenous peoples' organisations on three different continents. Many participants say the concerns they raised have not been included in Bank documents. Consultations since then have continued to display two major flaws. First, documents are often not made public, and when they are it is often too late for groups to prepare, or else they are not made available in native languages. Second, the consultations have emphasised raising awareness of and building capacity to participate in forest carbon markets, with little room for engaging stakeholders in decision-making processes, or using feedback to modify the design of the FCPF or individual programmes.[46] Despite this, the Bank has moved forward with the FCPF, further refining its method of 'building capacity' of governments to engage in an emerging global forest carbon market, and helping to enable future private sector investments.[47]

The governance structure of the FCPF has evolved over time as the World Bank has responded to the call for greater civil society representation. Non-voting observer seats on the governing Participants' Committee of donor and participating developing countries have been added for NGOs, indigenous peoples, and other forest-dependent peoples, as well as private industry and international organisations such as the UNFCCC and UN-REDD. Observers are allowed to speak, but have no decision-making powers.[48] While a seat at the table certainly improves the transparency and accountability of the forest fund, there is no legal mechanism that compels decision-makers to incorporate civil society members' concerns when making decisions about countries' REDD plans.

In the World Bank's model there are three phases of REDD: the readiness phase; the capacity, reforms and investment phase; and the maintenance phase.[49] The FCPF Readiness Fund channels grants to governments to complete the readiness phase in which countries were originally asked to determine reference scenarios and create a REDD strategy through nationally specific Readiness Project Idea Notes (R-PINs), and then elaborate a more detailed strategy for

implementing REDD at the national level through the development of Readiness Plans (R-Plans).[50] The Bank subsequently scrapped R-Plans when participating developing countries voiced the need for a simpler process with fewer criteria for approval, and replaced them with Readiness Preparation Proposals (R-PPs).[51]

The facility is linked – although, to date, somewhat ambiguously – to the Bank's Forest Investment Programme and the UN-REDD Programme, which are aimed at implementing market-based forest management strategies, providing the FCPF with financial support, and making provisional loans to developing countries for the up-front investments in REDD.[52] In theory, the FCPF Carbon Fund then steps in with carbon finance to purchase the emissions reductions that were supposed to have been generated, providing 'maintenance' support to keep forests standing by issuing 'performance-based payments' over time (generally through 20-year contracts). In terms of the project design, carbon payments would only be made to countries that achieve measurable and verifiable emissions reductions. The World Bank plans to launch the Carbon Fund in 2011 as a public–private partnership. To date, five countries, The Nature Conservancy and BP Technology Ventures have pledged a total of about $145 million to the Carbon Fund.[53]

The FCPF's impact on human rights, and particularly the rights of indigenous peoples, has become a central and controversial issue in the REDD debate. On one hand, proponents of market-based REDD argue that in order to sell carbon credits from REDD, countries will need to establish national stocks, thus facilitating the demarcation of land tenure, including local customary use and territorial claims. On the other, carbon market skeptics who have documented the displacement of communities by carbon offsetting projects that expand protected area systems and plantations are concerned that market-based REDD will lead to a similar 'guns and guards' approach, with a strong emphasis on law enforcement and armed patrols to keep local people out of forests.[54] In the fall of 2009, these fears were realised when the Ogiek people were forcibly removed from their homes due to the introduction of a UN-REDD project in the Mau Forest in Kenya.[55]

Also at issue is the Bank's refusal to recognise the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), adopted by the UN General Assembly in 2007. One of the key principles enshrined in UNDRIP is the right to 'free, prior and informed consent' (or FPIC) in implementing a project. The declaration states that countries have to obtain FPIC from representative indigenous institutions before adopting or implementing any measures that may affect indigenous peoples, including any activities that affect their 'lands, territories and resources that

they have traditionally owned or otherwise occupied or used.'[56] Embracing the UNDRIP and FPIC and local communities' right to define their own development path is seen as essential for an effective forest protection scheme.[57]

Box 1: Perverse incentives

Like the World Bank's larger carbon finance portfolio, the FCPF has the potential to create perverse financial incentives that reward large-scale deforesters and penalise communities practising traditional subsistence agro-forestry techniques. One of the causes of this problem is the FCPF's operating definition of forests, borrowed from the Food and Agriculture Organization (FAO), which counts plantations as forests.[58] This means that logged areas could be regarded as forests, just like standing trees. The UNFCCC describes this concept of forests as 'areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention'.[59] The problem with this definition is that it will allow forestry companies – lead drivers of deforestation – to raze native forests, plant monoculture plantations instead, and then earn revenue for storing carbon in these trees. Some governments have already responded to emerging carbon finance revenues by evicting subsistence communities from forests, seizing their lands, and contracting territories and resources out to agro-industry.

Criticisms of the African R-PINs

The potential for corruption presented by the FCPF in Africa must be gleaned from existing documents and the initial process of developing R-PINs, since until now very little has happened on the ground. To date, the Participants Committee of the FCPF has accepted 37 R-PINs from developing countries, including 14 from African countries.[60]

Six of those 14 countries have moved to the next stage of submitting R-PPs.[61] In these proposals, governments are required to outline strategies for measuring carbon stocks, curbing deforestation and engaging forest-dependent communities, among other activities. Even at this early stage, serious concerns have been raised that African R-PINs and the FCPF process itself pose threats to the efficacy and equitability of forest protection strategies linked to carbon finance.

The R-PIN process has been criticised for being little more than a formality. This allegation is based on the fact that some accepted R-PINs were inconsistent with the terms of the FCPF Charter on safeguarding rights and weak on governance, according to the FCPF's own Technical Advisory Panel.[62] It is generally accepted that without strong rights protection and good governance, forest protection projects have little hope of being transparent and accountable, and of directly benefiting indigenous and forest-dependent communities – communities that have kept native forests standing for generations.[63]

The majority of the R-PINs were written and financed by international NGOs headquartered in developed countries or consulting firms with close ties to the timber industry.[64] In many cases, there was little or no consultation with indigenous peoples and members of forest-dependent communities. For example, the main authors of Gabon's R-PIN were drawn from the timber industry consulting firm SYLVAFRICA, which spoke to several NGOs, including the the World Wildlife Fund (WWF), the African Wildlife Foundation and the Wildlife Conservation Society, as well as the French Embassy – but not to a single local civil society organisation (CSO). It therefore comes as no surprise that the proposal focuses very heavily on programmes led by international conservation NGOs.[65]

In the case of the DRC, the French logging company consultant Forest Resources Management did little to mask the lack of country ownership. In evaluating the DRC's R-PIN, external reviewers called '[for the government of the DRC] to take real control of the process and the thinking behind it. This R-PIN submission shares 87 identical paragraphs with that of another central African country reviewed by this reviewer. Another 47 paragraphs are specific to DRC.'[66] Regardless of this finding, both the DRC's and Gabon's R-PINs were approved.

While civil society has compelled the World Bank to open the governance structures of the FCPF to greater public scrutiny, the exclusion of the perspectives and expertise of indigenous peoples and forest-dependent communities remains a significant problem.[67]

With respect to the content of R-PINs, a World Resources Institute analysis shows that countries have not adequately addressed fundamental governance issues.[68] Little emphasis has been placed on the key drivers of deforestation and forest degradation, the inclusion and participation of indigenous peoples and forest-dependent communities, and strengthening the enforcement of existing forest laws. Unclear tenure was identified as a major challenge to reducing deforestation and degradation, but little was communicated about the existing

situation and the implementation of reforms. In general, R-PINs from African countries identified the capacity constraints to effective forest protection, but few mentioned data management, information-sharing and the importance of using independent monitoring and third-party verification to ensure transparency and accountability. With these key considerations lacking, it will be difficult to reduce deforestation and degradation.[69]

Box 2: The shortcomings of some African R-PINs

- *Cameroon*: Fails to propose solutions to conflicts between the state and its human rights abuses against the pygmy communities.
- *Republic of Congo*: States that the country has no governance problem, and fails to include a discussion of law enforcement.
- *DRC*: Fails to analyse illegal logging.
- *Ethiopia*: No discussion of transparency in revenue distribution.
- *Gabon*: Acknowledges that there is little information about the pygmies, and no tenure system for indigenous peoples. Suggests that logging companies might be able to distribute benefits from REDD to Pygmy communities.[70]

The consultation workshop for developing Ghana's R-Plan, organised by the FCPF, has been criticised on the following grounds:

- Rushed process
- Working to a predetermined timetable does not allow for adequate consultation and participation
- Unprepared ad hoc meetings
- Centralised consultancy scheme
- No resources for intra-stakeholder group consultation or feedback
- Absence of definite commitments in terms of benefits
- Issues of land tenure and benefit sharing unresolved

Box 3: Conflicts of interest

NGOs have noted that the World Bank runs the risk of a conflict of interests by assuming responsibility for helping countries to prepare readiness plans and assessing their adequacy on one hand, and acting as trustee of the proposed FCPF on the other. NGO groupings have cited a lack of transparency in the selection and terms of reference for technical advisors, further damaging the FCPF's public accountability.[71]

As noted earlier, the majority of the R-PINs were written and financed by big international NGOs or logging industry consulting firms which stand to gain through contracts for services related to readiness activities, the implementation of REDD strategies and the sale of carbon credits where they own land in developing countries.[72] Their active role in designing the FCPF and preparing REDD plans gives them greater access than communities or local non-profits to the hundreds of millions of dollars that will flow through the FCPF. For example, external reviewers of the DRC's R-PIN noted that the document's annex makes it clear that the firm that wrote it, Forest Resource Management, wishes to be involved in the next steps.[73]

SUMMARY

The FCPF has been criticised from the early stages of its development. While the World Bank has responded to some suggestions by civil society, this has not adequately addressed concerns about timely access to information, community consent to projects and programmes that affect their lives, and a clear understanding of the potential impacts of carbon markets.

Several lessons can be learned by looking at existing problems with the FCPF and applying those to the growing list of REDD initiatives worldwide. With respect to the FCPF's activities in Africa in particular, the World Bank's acceptance of weak R-PINs will probably lead to REDD initiatives that lack transparency and accountability, creating opportunities for corrupt activities, and undermining the rights of indigenous peoples and members of forest-dependent communities. Without secure title to land, these peoples will miss out on the potential benefits of any scheme to protect forests. In addition, the poor governance structure of the FCPF has made it possible for the facility to make decisions and support activities in participating developing countries that undermine good forest governance.

In the World Bank's rush to roll out projects that experiment with the carbon market in order to incentivise forest protection, it seems to forget that the ecosystems used by the FCPF as a laboratory for testing forest carbon trading are more than a carbon stock. With the World Bank pushing forest carbon markets in the UN climate talks, and moving steadily forward with new methodologies for earning carbon offsets through agriculture (particularly in African countries) and soil sequestration at the BioCarbon Fund, communities and watchdog organisations will need to remain vigilant in their critique of the FCPF and the expanding reach of carbon markets.

NOTES

1 Defined loosely as those carbon trading projects that would reduce emissions and achieve the World Bank CFU's other primary aim of sustainable development.

2 Bryan Garcia and Eric Roberts (eds), Carbon finance: environmental market solutions to climate change, Yale School of Forestry & Environmental Studies, Report no 18, Fall 2008.

3 World Bank Group, State and trends of the carbon market report 2010, May 2010, http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:22592488~pagePK:64168445~piPK:64168309~theSitePK:4125853,00.html.

4 World Bank Group, About the Prototype Carbon Fund (PCF), http://carbonfinance.org/Router.cfm?Page=PCF&FID=9707&ItemID=About.

5 Sustainable Energy & Economy Network and International Trade Information Service, The World Bank and the G-7: still changing the earth's climate for business 1997–98, December 1998, http://www.seen.org/page/ifis/wbstill/wbgrafx.shtml.

6 Christopher Carr and Flavia Rosembuj, World Bank experiences in contracting for emissions reductions, *Environmental Liability,* 2007(2), 114–119.

7 The Prototype Carbon Fund, Community Development Carbon Fund, BioCarbon Fund, Netherlands Clean Development Mechanism Facility, Netherlands European Carbon Facility, Italian Carbon Fund, Danish Carbon Fund, Spanish Carbon Fund, Carbon Fund for Europe, Forest Carbon Partnership Facility, Umbrella Carbon Fund, Carbon Partnership Facility, and Global Gas Flaring Reduction Initiative.

8 World Bank Group, Carbon finance for sustainable development 2009, May 2010, http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/11804Final_LR.pdf.

9 World Bank Group, The role of the World Bank in carbon finance: an approach for further engagement, 24 May 2006, http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=27555.

10 World Bank Group, Carbon finance for sustainable development 2008, May 2009, http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=47061.

11 World Bank CFU, About us, www.carbonfinance.org.

12 Janet Redman, World Bank: climate profiteer, Sustainable Energy & Economy Network, April 2008, http://www.ips-dc.org/reports/world_bank_climate_profiteer.

13 World Bank CFU communications staff, personal conversation, 20 November 2007.

14 For a deeper analysis of the World Bank's plans, see Janet Redman, Dirty is the new clean: a critique of the World Bank's Strategic Framework on Development and Climate Change, Sustainable Energy & Economy Network, October 2008, http://www.ips-dc.org/reports/dirty_is_the_new_clean.

15 World Bank Group, Strategic Framework on Development And Climate Change, August 2008, http://beta.worldbank.org/overview/strategic-framework-development-and-climate-change.

16 Notably, the World Bank spent as much on coal between 2008 and 2010 as donor countries committed to its Climate Investment Funds established in 2008. Heike Mainhardt-Gibbs, World Bank Group Energy Sector Financing Update, Bank Information Center, November 2010, http://www.bicusa.org/en/Issue.Resources.48.aspx. See also Heike Mainhardt-Gibbs, Fuelling contradictions: the World Bank's energy lending and climate change, Bank Information Center with Bretton Woods Project, CRBM, and Urgewald, April 2010, http://www.bicusa.org/en/Issue.Resources.48.aspx.

17 Redman, World Bank: climate profiteer.

18 US Department of the Treasury, International financial institutions and climate change, internal memo leaked from the US Department of the Treasury to the Institute for Policy Studies, 17 February 1998, available upon request.

19 World Bank Group, General conditions applicable to certified emissions reductions purchase agreements: clean development mechanism projects, 1 February 2006.

20 Redman, World Bank: climate profiteer.

21 World Bank Carbon Finance Unit communications staff, personal communication, 20 November 2007.

22 Maria Dakolias and Christian Rey, Access to information and trust funds, Presentation to 2010 Donor Forum in Paris, France, 18-19 May 2010, http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/ORGANIZATION/CFPEXT/EXTCFPDONFOR/0,,contentMDK:22552833~menuPK:6136274~pagePK:64168445~piPK:64168309~theSitePK:1168943,00.html.

23 World Bank Group, Carbon finance for sustainable development 2008, May 2009, http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=47061.

24 Redman, World Bank: climate profiteer.

25 These figures are based on the distribution of projects for which ER purchase agreements have been signed, and the overall value of signed agreements. World Bank Group, Carbon finance for sustainable development 2009, May 2010, http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=47061.

26 For specific examples from China and India, see Redman, World Bank: climate profiteer.

27 Redman, World Bank: climate profiteer.

28 World Bank Group, Carbon finance for sustainable development 2009. Note that this figure does not include African countries in the Bank's 'Middle East & North Africa' regional grouping.

29 World Bank Group, Carbon finance for sustainable development 2009.

30 New renewable energy is defined as solar, wind, geothermal and hydroelectric power plants with capacity of less than 10 MW.

31 Resource Africa in support of the UN Environmental Programme, Supporting climate change negotiators in Africa: reducing emissions from deforestation and degradation, 2009.

32 World Bank Group, Carbon finance for sustainable development 2008.

33 World Bank Group, http://go.worldbank.org/HUFGF32N20.

34 World Bank Group, http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:21849484~menuPK:5234198~pagePK:64168445~piPK:64168309~theSitePK:4125853,00.html.

35 World Bank Group, Carbon finance for sustainable development 2008.

36 World Bank Group, Issue Brief: Global Gas Flaring Reduction Partnership, 2006, http://siteresources.worldbank.org/INTGGFR/Resources/GGFR-IssueBrief.pdf.

37 The health impacts of gas flaring include respiratory illnesses, asthma, blood disorders, cancer and chronic bronchitis. It has also been identified as a cause of acid rain. Environmental Rights Action/ Friends of the Earth Nigeria, Fact Sheet: Harmful gas flaring in Nigeria, November 2008, http://www.foe.org/pdf/GasFlaringNigeria_FS.pdf.

38 ERA/FOE Nigeria, 2008.

39 Africa People's Movement on Climate Change, Confronting the climate crisis: preparing for Copenhagen and beyond, 30 August 2009, http://www.carbontradewatch.org/articles/declaration-of-the-africa-peoples-movement-on-climate-c.html. Also see http://www.durbanclimatejustice.org/articles/repaying-africa-for-climate-crisis-'ecological-debt'-as-a-development-finance-alternative-to-emissions-trading.html.

40 UN Framework Convention on Climate Change, Bali Action Plan, 2007, http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3.

41 For the full text of the Copenhagen Accord, see UN Framework Convention on Climate Change (UNFCCC), Copenhagen Accord, 18 December 2009, http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf. For a critique of the accord, see http://www.ifg.org/copenhagenblog.htm.

42 Outcome of the work of the Ad Hoc Working Group on long-term Cooperative Action under the Convention, http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf.

43 World Bank Group Forest Carbon Partnership Facility, The Forest Carbon Partnership Facility, 2009, http//www.forestcarbonpartnership.org/fcpf/.

44 Forest Peoples Programme, NGO statement on the World Bank's proposed Forest Carbon Partnership Facility (FCPF), 12 November 2007, http://www.forestpeoples.org/documents/forest_issues/unfccc_bali_ngo_statement_nov07_eng.shtml.

45 Anup Kumar, Bank announces US$160 million forest partnership amid protest, Climate Change Media Partnership, 12 December 2007.

46 Florence Daviet, Crystal Davis, Lauren Goers et al, Ready or not? A review of the World Bank's FCPF R-Plans and the UN-REDD joint program documents, July 2009, World Resources Institute Working Paper, http://pdf.wri.org/working_papers/ready_world_bank_redd.pdf. In 2008, in response to criticism that the FCPF was not engaging meaningfully enough with Indigenous Peoples who might be affected by REDD projects, the Participants Committee launched an Indigenous Peoples Capacity Building Program on REDD. A fund was established to distribute up to $200 000 a year for five years for the creation of a Capacity Building Program for Forest-Dependent Indigenous Peoples and other Forest Dwellers (IP Program) within the FCPF. The IP Program consists of small grants to mostly indigenous peoples organisations to build knowledge and understanding of REDD at the national and regional levels. By the end of FY09, about $181 444 had been committed to:

   - *COICA (Amazonia)*: Organise regional workshops and produce a reference document on REDD as a contribution towards Copenhagen
   - *COONAPIP (Panama)*: Organise 11 workshops for information exchange, arrive at a common position on REDD and the government's proposal to the FCPF
   - *IPACC (Africa)*: Organise regional and national workshops, and produce a toolkit on REDD to train trainers at country level

   For more information, see http://www.forestcarbonpartnership.org/fcp/node/248.

47 J Rietbergen-McCracken, (ed), Getting ready for REDD: the Forest Carbon Partnership Facility, *Arborvitae – the IUCN/WWF Forest Conservation Newsletter,* No 34, October 2007. Also see World Bank Group, Carbon finance for sustainable development 2008.

48 Bank Information Center, About the Forest Carbon Partnership Facility,http://www.bicusa.org/en/Issue.Background.50.aspx.

49 Forest Carbon Partnership Facility (FCPF), Introduction to the FCPF: global dialogue on developing a readiness preparation proposal, Presentation, 13-14 August 2009, http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PPT/Day%201_1_FCPF_%20Introduction.ppt.

50 Crystal Davis, Florence Daviet, Smita Nakhooda et al, A review of 25 readiness plan idea notes from the World Bank Forest Carbon Partnership Facility, World Resources Institute, February

2009, http://www.wri.org/publication/world-bank-forest-carbon-partnership-facility-idea-note-review.

51 Forest Carbon Partnership Facility, Structure of the R-PP template, Review and assessment criteria for R-PP, Global Dialogue on developing a Readiness Preparation Proposal, 13-14 August 2009, http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Day_1_2_RPP_structure%20.pdf.

52 Davis et al, Review of 25 Readiness Plan Idea Notes.

53 The EC, Germany, Norway, The Nature Conservancy, and the UK have pledged contributions. Forest Carbon Partnership Facility, FY2009 Annual Report, http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/Dec2009/FCPF_FY09_Annual_Report_12-08-09.pdf.

54 Carbon Trade Watch has produced a particularly astute analysis, based on case studies, of how carbon markets and the 'guns and guards' approach to forest conservation impacts on local forest-dependent communities. See www.carbontradewatch.org.

55 UN-REDD is a UNEP, UNDP and FAO collaboration established to complement FCPF. See Chris Lang, Global forest coalition attacks REDD, 6 October 2008, http://www.redd-monitor.org/2008/10/06/global-forest-coalition-attacks-redd/; John Schertow, Thousands of Ogiek people face eviction from their land, 14 August 2009, http://www.groundreport.com/World/Thousands-of-Ogieks-will-be-e/2905771.

56 UN Declaration on the Rights of Indigenous Peoples, General Assembly Resolution 61/295, 13 September 2007, http://www.un.org/esa/socdev/unpfii/en/drip.html.

57 See Indigenous Peoples' Global Summit on Climate Change, The Anchorage Declaration, 24 April 2009, http://www.indigenoussummit.com/servlet/content/declaration.html.

58 FAO forestry, Towards a harmonized definition of non-wood forest products, http://www.fao.org/docrep/x2450e/x2450e0d.htm.

59 Chris Lang, REDD will fail with the current definition of 'forest', 8i September 2009, http://www.redd-monitor.org/2009/09/08/redd-will-fail-with-the-current-definition-of-forest/.

60 African countries which have submitted R-PINs to the FCPF include Cameroon, Central African Republic, Republic of Congo, the Democratic Republic of Congo, Ethiopia, Equatorial Guinea, Gabon, Ghana, Kenya, Liberia, Madagascar, Mozambique, Tanzania and Uganda.

61 African nations which have submitted R-PPs include the DRC (July 2010), Ghana (Jan 2010), Kenya (June 2010), Madagascar (draft January 2010), Republic of Congo (April 2010), and Tanzania (June 2010). See Forest Carbon Partnership Facility, R-PP submissions – most recent, http://www.forestcarbonpartnership.org/fcp/node/257. For an analysis of these R-PPs, see Crystal Davis, Andrew Williams, Lauren Goers et al, Getting ready with forest governance: a review of the World Bank Forest Carbon Partnership Facility readiness preparation proposals, World Resources Institute, July 2010, http://pdf.wri.org/working_papers/getting_ready_2010-07-13.pdf.

62 Global Witness, Honest engagement: transparency and civil society participation in REDD, December 2008, http://www.redd-monitor.org/wordpress/wp-content/uploads/2009/02/redd-transparencyfinal_ed2rev1.pdf.

63 M Angelsen (ed), *Moving ahead with REDD: issues, options and implications*, CIFOR, Bogor Barat, 2008.

64 Global Witness, Honest engagement.

65 REDD-Monitor, The World Bank Forest Carbon Partnership Facility: REDDy or not, here it comes!, 10 November 2008, http://www.redd-monitor.org/2008/11/10/the-world-bank-forest-carbon-partnership-facility-reddy-or-not-here-it-comes/.

66 Ibid.

67 Forest Peoples Programme, The FCPF: Facilitating the weakening of indigenous peoples' rights to lands and resources, Moreton-in-Marsh, February 2008; Global Witness, Honest engagement: transparency and civil society participation in REDD, December 2008, http://www.redd-monitor.org/wordpress/wp-content/uploads/2009/02/redd-transparencyfinal_ed2rev1.pdf.

68 Crystal Davis, Florence Daviet, Smita Nakhooda et al, A review of 25 readiness plan idea notes from the World Bank Forest Carbon Partnership Facility, World Resources Institute, February 2009, http://www.wri.org/publication/world-bank-forest-carbon-partnership-facility-idea-note-review.

69 Governance of Forest Initiative, An introduction to the Indicator Framework, World Resources Initiative, July 2009.

70 Cameroon FCPF R-PIN, July 2008, http://www.forestcarbonpartnership.org/fcp/node/62; Democratic Republic of Congo FCPF R-PIN, March 2008, http://www.forestcarbonpartnership.org/fcp/node/65; Republic of Congo FCPF R-PIN, March 2008, http://forestcarbonpartnership.org/fcp/node/81; Ethiopia FCPF R-PIN, http://www.forestcarbonpartnership.org/fcp/node/66; Gabon FCPF R-PIN, http://www.forestcarbonpartnership.org/fcp/node/67.

71 Forest Peoples Programme, NGO statement.

72 Global Witness, Honest engagement.

73 REDD-Monitor, The World Bank Forest Carbon Partnership Facility.

Appendix 1: World Bank carbon finance projects in African countries

Country	Project	ER tCO2e*	Description	Project type	Carbon fund
DRC	Ibi Bateke Carbon Sink Plantation	210 863	Convert a natural grassy savanna, disturbed by man-initiated fires, into fuel wood supply for charcoal production; carbon sequestration combined with a reduction in GHG emissions, resulting from the disappearance of savanna fires and the energy switch to non-fossil fuel	Aforestation	BioCarbon Fund Tranche 2
Egypt	Alexandria Onyx Landfill Gas Capture and Flaring	1 100 000	Installation of new landfill gas collection systems to collect gas emissions from the Borg el Arab and El Hammam landfill sites in Alexandria; collects residual gas emissions which are currently not treated	Landfill	Spanish Carbon Fund
Egypt	Cairo Southern Zone Composting	100 000	Reduction of methane gas emissions by diverting high organic waste from direct disposal at a landfill to a composting plant; 6% of revenue from sale of emissions reductions will go to social services projects	Landfill	Carbon Fund for Europe
Egypt	Vehicle Scrapping and Recycling Programme	232 274	Not available		Danish Carbon Fund
Ethiopia	Humbo Assisted Regeneration	165 000	Restore 2 428 hectares of natural forest with farmer-managed regeneration technique	Reforestation	BioCarbon Fund

Kenya	Green Belt Movement	375 000	Pay community forest associations to reforest 4 000 hectares of degraded public and private land	Reforestation	BioCarbon Fund
Kenya	Olkaria II Geothermal Expansion	650 000	Expansion of geothermal plant from 70 MW to 105 MW	New renewable	Community Development Carbon Fund
Kenya	Redevelop-ment of Tana Power Station Project	170 160	Expansion of hydropower station by constructing two 4,3 MW and two 5,5 MW run-of-river dams	New renewable	Community Development Carbon Fund
Kenya	Optimisation of Kiambere Power Station Project	162 720	Expansion of hydropower station by upgrading turbines to increase output by 20 MW	Large hydro	Community Development Carbon Fund
Mada-gascar	Ankeniheny–Zahamena –Mantadia Biodiversity Conservation Corridor and Restoration Project	200 000 + 430 000 REDD	Restore forest corridors linking fragmented habitats; establish sustainable fruit gardens and pilot avoided deforestation activities	Reforestation	BioCarbon Fund
Mali	Acacia Senegal Plantation Project	190 000	Develop 6 000 hectares of degraded natural dry forest into acacia plantations, intercropped with cultivated species	Reforestation	BioCarbon Fund
Mali/	OMVS Felou Regional Hydropower Project	280 000	Creation of additional 60 MW of installed hydropower generation capacity at existing weir through construction and operation of a run-of-river hydroelectric installation on the Senegal River	Large hydro	Spanish Carbon Fund

Niger	Acacia Senegal Plantation Project	500 000	Develop up to 22 800 hectares of acacia plantations on degraded land, mostly managed by local communities, intercropping with groundnuts and cowpeas	Reforestation	BioCarbon Fund
Nigeria	Aba Cogeneration Project	1 200 000	Install gas-fired cogeneration system for electricity and heat, system's carbon dioxide sold to breweries	Energy efficiency	Community Development Carbon Fund
Nigeria	SF6 Reduction in High Voltage Transmission Systems	602 000	Reduce emission of sulfur hexafluoride from Nigeria's electricity grid; improve maintenance of breakers and switch gear to reduce SF6 leakage; transfer technology and knowledge	Energy efficiency	Danish Carbon Fund
Nigeria	EarthCare Solid Waste Composting Project	236 646	Use aerobic treatment for Municipal Solid Waste to produce compost, thus avoiding the methane; produce high-quality compost for Nigerian farmers to use in agriculture and horticulture	Landfill	Carbon Fund for Europe
Rwanda	Electrogaz Compact Fluorescent Lamp Distribution Project	156 000	Expand the use of high-efficiency lighting technology in Rwanda's residential sector through the distribution of high-quality Compact Fluorescent Lamps	Energy efficiency	Community Development Carbon Fund
Senegal	Lighting Energy Efficiency in Rural Electrification	120 000	Use low-energy compact fluorescent bulbs instead of incandescent bulbs for domestic lighting	Energy efficiency	Community Development Carbon Fund

South Africa	Durban Municipal Solid Waste	700 000	Collection and generation of electricity at two landfill sites	Landfill	Prototype Carbon Fund
Tunisia	Djebel Chekir Landfill Gas Recovery and Flaring	1 930 000	Installation of gas recovery and flaring systems in Cells 1–5 of Djebel Chekir Landfill	Landfill	Italian Carbon Fund
Tunisia	Gas Recovery and Flaring for Nine Landfills	1 120 000	Installation and gas recovery and flaring systems in Cell 1 of nine landfills distributed throughout Tunisia	Landfill	Italian Carbon Fund
Tunisia	Sidi Daoud Wind Farm Project	130 000	New wind farm with 26 wind turbines of 1 320 kW each, with a total installed capacity of 34,32 MW located near the rural area of Sidi Daoud; will be operated by Tunisia's public power utility, STEG	New renewable	Spanish Carbon Fund
Uganda	Nile Basin Reforestation	261 211	Establish 2 000 hectares of pine and mixed native species plantation	Reforestation	Bio Carbon Fund
Uganda	West Nile Electrification Project	Unavailable at project sponsor's request, but previously reported as 509 947	Two 1,75 MW hydros to replace diesel generators set in the West Nile region; also installing a 1,5MW generator	New renewable	Prototype Carbon Fund
Uganda	Kakira Sugar Works Cogeneration Project	342 000	Expand existing sugar crushing and cogeneration plant to 21 MW, with 12 MW for national grid	Energy efficiency	Community Development Carbon Fund
Uganda	Kampala Landfill Gas Project	74 144	Landfill capture and flaring of methane gas from a landfill used for disposal of residues from human activity, mainly municipal solid waste	Landfill	Community Development Carbon Fund

Uganda	Municipal Waste Compost Project	209 185	Aims to recover the organic matter from municipal solid waste as compost for soil conditioning and plant growth and avoid methane emission while using the organic matter in wastes as humus	Landfill	Community Development Carbon Fund
Total	27 Projects	11 417 203 + 430 000 REDD			

* Emissions reductions reported in tons of carbon dioxide equivalent

Part 4 Regulation

8 Regulation as corruption in carbon offset markets

Larry Lohmann

INTRODUCTION

This chapter argues that it is not possible to regulate the carbon offset market, and that attempts to do so will merely entrench its status as a locus of international corruption and exploitation. As with other markets that resist regulation, official action to correct abuses serves only to sustain – or worsen – underlying problems. Regulatory acts themselves become a danger to society, and governance becomes a part of corruption. All this happens regardless of the good intentions of regulators or anti-corruption fighters.

Because the problems surrounding carbon markets go much deeper than is ordinarily understood, looking beyond technocratic attempts to regulate malpractice and administrative abuse is essential. Meticulous and thoroughgoing attention to structural issues of power, knowledge and democracy is invaluable in finding real solutions to climate change.

Carbon offsets are inherently resistant to regulation because no one is sure how to measure them, or indeed exactly what they are.[1] Instead of reducing climate risk, they increase and conceal it, while reinforcing various environmental

and social abuses at the same time.[2] Partly for these reasons, offset projects have been very difficult to implement, as documented elsewhere in this monograph. Hundreds of projects encompassing millions of credits are accused of being scams for shoring up 'business as usual', or worse. Scandals involving the offset market are regularly featured in the media. As even a few former proponents desert the cause of carbon markets,[3] and a growing number of prominent climate scientists and economists join the chorus of criticism,[4] the larger carbon markets of which carbon offsets are an integral part are threatening to break down.[5]

However, many proponents continue to argue that carbon offset markets could be redeemed through reform, regulation, or certification. With proper reforms and better regulation, they argue, carbon offsets could switch from being a climate danger to being a climate benefit and their generally deleterious social effects could be ameliorated. They claim, for example, that improved methods could allow carbon credits to be calculated accurately; that greater oversight could stop fraud; that gaming could be prohibited; that land grabs could be curbed; that best-practice standards and certificates could transform the trade; and that improving local capacity could safeguard local interests and democratise the process. 'Let's not throw out the baby with the bath water,' has been the constant refrain of beleaguered carbon market proponents; 'instead, let's practice "learning by doing", and eventually the problems will become manageable.'

Creating the illusion that the carbon market can be effectively regulated will allow it to occupy more and more territory at a time when it should be forced to retreat. Carbon offsets are becoming an increasingly important component of the EU Emissions Trading Scheme, at a time when the incipient US carbon market is creating billions of tonnes of additional offset demand. Thus, the idea that offsets can be regulated has become a major threat to effective climate change action as well as a cause of social strife.

The illusion of regulating offsets is being sustained partly because climate policy has been captured on both the national and international levels by an elite alliance. This alliance, or nexus of interests, comprises big business, commodities traders, financial firms, neoclassical economic theorists, multilateral development banks and an influential network of professionalised, middle-class environmentalists who are all committed to seeing offset trading expanded rather than abolished.[6] Invented and developed by derivatives traders as well as economic theorists of the Chicago School and elsewhere, carbon trading has dominated global climate policy ever since being forced into the Kyoto Protocol in 1997 by the

US delegation led by the then vice-president, Al Gore, who himself became a big player in carbon markets.[7] For more than a decade, governments, international agencies, and private corporations alike have invested enormous resources in building up infrastructure for offset markets. The largest buyers of Kyoto Protocol Clean Development Mechanism (CDM) offset credits today are speculators on Wall Street and in the City of London and other financial centres,[8] some of which have poured millions of dollars into lobbying for a US offset market from which they hope to benefit.[9] CDM offset regulators tend to be either offset buyers and sellers, or former or current executives in private sector carbon businesses, all of whom have a vested interest in seeing the trade expand. They also view privileged access to information as useful in navigating and promoting the trade.

Box 1: Offsets and derivatives markets

Offering an illuminating parallel to the carbon offsets market is the trade in complex new financial derivatives that lies at the root of the recent global financial crash.

Like carbon offsets, complex financial derivatives were resistant to regulation. Instead of reducing or spreading risk, they amplified it and hid it.[10] Because the risk measurement models used by both companies and regulators gave the illusion that everything was under control, they made things worse. 'Giving someone the wrong map is worse than giving them no map at all,' the options trader and risk expert Nassim Nicholas Taleb has pointed out.[11] Clinging to the dogma that regulation could handle any surprises thrown up by the explosive financial innovations of the 1990s and 2000s (or that the innovations could regulate themselves), both US and UK officials refused to consider the possibility that certain kinds of product, and certain kinds of market, were simply too dangerous to be allowed to exist. As the market for the opaque new financial products became larger and larger, so did the scope for abuse, cheating, and corruption.[12]

The capture of finance policy by the private sector had a lot to do with the refusal to face up to the new market's resitance to regulation. Former derivatives traders keen to stoke the booming markets, such as Robert Rubin of Citigroup and Hank Paulson of Goldman Sachs, occupied some of the highest positions in the US government. (Only ex-Wall Street

executives, the reasoning went, could understand the extremely complicated world of finance well enough to govern it.) Private companies' own mathematical models were seen as a reasonable basis for regulation at both the national and international levels. Orthodox economists in positions of regulatory responsibility, such as the successive US Federal Reserve chairmen Alan Greenspan and Ben Bernanke, were trained in ways that gave them the same faith in the inherent manageability of the new derivatives markets. Such long-entrenched forms of 'legal corruption'[13] were difficult for ordinary people either to speak against or to counter. There was little space for participating in policy, or for questioning the doctrines that everything could be regulated and that 'learning by doing' would provide the answers to all problems.

CARBON MARKET CORRUPTION: THE CONVENTIONAL UNDERSTANDING

The understanding of corruption and regulation that enables and limits most discussions of carbon offsets is narrow. The stories that most journalists and academics tell about corruption in the carbon markets tend to be traditional ones of con artistry, abuse of public office for private gain, and payment of bribes to government officials. Occasionally there is also a broader narrative featuring more general abuses of power and wealth that undermine democratic governance and the cause of social justice. There are also signs that the customary story of conflicts of interest may be revived as a framework for understanding corruption in carbon trading.

For many journalists and academics, such corruption stories have the great virtue of being familiar and easy to tell and understand, identifying individual culprits as the source of the problem. For many anti-corruption units, these stories are attractive because they imply that there is a familiar job for them to do: catch the culprits, and formulate and enforce rules and reforms that will prevent other prospective offenders from being tempted into abuses. In these narratives, the problems plaguing carbon markets are due to certain outlaw elements or corrupt actors, a lack of technical standards, and incomplete enforcement problems well within the mandates of government bureaucracies.

Box 2: Corruption scandals and the official response

'Beware the carbon offsetting cowboys,' warns the *Financial Times*.[14] 'Irregular carbon credits cause upheaval in the government of Papua New Guinea,' reports *The Economist*.[15] 'Pollution credits let dumps double dip,' reveals the *Wall Street Journal*.[16] 'The great carbon credit con: why are we paying the third world to poison its environment?', asks the *Daily Mail*.[17] 'Secretive UN board awards lucrative credits with few rules barring conflicts,' according to *ClimateWire*.[18] 'UN suspends top CDM project verifier over lax audit allegations,' reports *Business Green*.[19] 'Europol expects more arrests in carbon fraud probe,' notes *Reuters*.[20]

As such headlines attest, uncovering carbon market scandals has become a minor journalistic industry. The prospective supply of further shocking stories, moreover, is limitless. Dirty installations ranging from industrial pig farms in Mexico to polluting sponge-iron works in India are availing themselves of revenues from the trade, with hundreds of enterprises – including most of the 763 Chinese hydroelectric projects applying or planning to apply for carbon credits[21] – eager to take advantage of an opportunity to get some extra money for conducting 'business as usual'. According to Peter Younger of Interpol, 'in future, if you are running a factory and you desperately need credits to offset your emissions, there will be someone who can make that happen for you. Absolutely, organised crime will be involved.'[22]

Countering such scandal stories with reassurances that regulation can solve the problems has also become a profitable industry, providing employment to hundreds of technicians, bureaucrats, academics and political figures. The CDM needs 'not something new, but rather a change of culture and professional working practices,' the legal scholar Ray Purdy has complacently assured his readers:

> [M]ore permanent and temporary staff … clear professional service standards … better knowledge bases and methods of communication. … [t]o allow more transparent oversight and avoid real or perceived conflicts of interest, the [CDM] Executive Board needs to recognize the governance requirements

of accountability, and clearly distinguish between supervisory and executive roles.[23]

Meanwhile, other observers have put forward abstract, standardised recommendations for 'due process safeguards',[24] 'enhanced dispute resolution',[25] 'capacity-building,' an 'internal review mechanism',[26] and improvements in 'domestic CDM structures.'[27] As Gore testified before the US Congress, 'I think there is general agreement that in Copenhagen[28] significant reforms of the CDM, uh, Collective Development Mechanism, uh, Cooperative Development Mechanism, have to be implemented.'[29]

On the surface, there is a great deal to be said for these narratives. Many examples spring to mind which suggest the importance of conventional efforts to tackle graft. However, probe a little deeper, and complexities emerge that suggest a less comforting story. What follows will explore both the usefulness and the limitations of three stories that are often told about corruption and regulation in carbon markets ('corruption is confidence trickery', 'corruption is erosion of the rule of law', and 'corruption is conflict of interest'), assembling materials for a more politically and scientifically informed narrative along the way.

CORRUPTION AS CONFIDENCE TRICKERY?

The carbon offset market is often regarded as a haven for con artists. Businesses and even international financial institutions[30] understand that, as long as they provide documents that comply with the relevant guidelines, carbon offsets can become a source of extra funding for ventures they are engaged in that are inimical to climate change mitigation, even including gas pipelines,[31] fossil fuel-fired generating plants,[32] coal mines[33] and oil wells.[34] An investigation of projects in India by a carbon offset market proponent found that a third were simply 'business as usual'.[35] By the UN's own standards, most hydropower projects in the Kyoto offset pipeline should not be allowed to produce carbon credits at all.[36] According to one prominent carbon banker, project proponents 'tell their financial backers that the projects are going to make lots of money' at the same time they claim to regulators 'that they wouldn't be financially viable' without carbon finance.[37] Carbon consultants often fabricate information required on official

forms,[38] and the more convoluted offset accounting methods become, the more opportunities for fraud emerge. For example, an investigation in 2009 of Nigerian carbon offsets devised by Western oil companies and carbon consultants found that it was nearly impossible to determine whether the gas that the companies claimed would be diverted from flaring to productive use would not in fact come from dedicated gas extraction operations, whose production is not flared.[39] Businessman Marc Stuart of the carbon offset trading firm EcoSecurities has admitted that new schemes for generating carbon credits out of forest conservation involve such a 'brutal potential for gaming' that 'getting it wrong means that scam artists will get unimaginably rich while emissions don't change a bit'.[40]

Is regulation capable of defusing such dangers? Can reform address the relevant problems? Is it possible to 'get offsets right', as Stuart suggests? There are several powerful reasons for answering 'no' to all of these questions. The abuses of power and wealth that constitute carbon market corruption do not derive merely from the misdeeds of individual carbon consultants and profiteers, but are inherent in the market architecture itself. They are an integral technical component of commodity formation. While individual consultants can and do make use of this market architecture for the gain of their clients and themselves, it is the architecture itself that performs the central abuses. Accordingly, what are conventionally classed as scams or frauds are an inevitable feature of carbon offset markets, not something that could be eliminated by regulation targeting the specific businesses or state agencies involved. Because the underlying problem is not, essentially, a matter of poor implementation or individual malefactors, it can only be eliminated by eliminating the offset market itself.

Creating the project baseline

A central difficulty is that, for every offset project, carbon consultants must devise a unique storyline describing a hypothetical world without the project and quantify the GHG emissions associated with that world. They must then show that the project will make carbon savings 'additional' to those of this baseline world. By subtracting the emissions of the project world from those of the baseline world, they arrive at the number of carbon credits that the project can sell. In other words, carbon accountants must present the counterfactual without-project scenario not as indeterminate and dependent on political choice but as measurable,

singular, determinate, and a matter for economic and technical prediction. This assumption, as Kevin Anderson, director of the Tyndall Centre for Climate Change Research in the UK, has observed, is a 'meaningless concept in a complex system'. As Anderson explains, the counterfactual 'baseline' against which the purported emissions savings of a carbon offset project must be measured must be calculated over 100 years to correspond with the approximate residence time of carbon dioxide in the atmosphere. For example, a wind farm in India may claim to be generating carbon credits because it is saving, over a century, fossil fuels over and above what would have been saved without the project. However,

> the wind turbines will give access to electricity that gives access to a television that gives access to adverts that sell small scooters, and then some entrepreneur sets up a small petrol depot for the small scooters, and another entrepreneur buys some wagons instead of using oxen, and the whole thing builds up over the next 20 or 30 years. … If you can imagine Marconi and the Wright brothers getting together to discuss whether, in 2009, EasyJet and the internet would be facilitating each other through internet booking, that's the level of … certainty you'd have to have over that period. You cannot have that. Society is inherently complex.[41]

Therefore, there is no general scientific consensus about the number of credits, if any, generated by a particular carbon project. Even the question of whether a project goes beyond 'business as usual' in saving carbon, as carbon trader Mark C Trexler and colleagues noted years ago, has 'no technically "correct" answer'[42]; as the US General Accounting Office concluded in 2008, 'it is impossible to know with certainty whether any given offset is additional'.[43]

Proving additionality

It follows that it is also impossible to know for certain whether any given offset is non-additional. Hence it is a misdiagnosis of the recurring scandals in carbon offset markets to say that they are due to consultants claiming falsely that non-additional projects are additional. The problem goes deeper. Scientifically speaking, there is no such thing as 'additionality' or 'non-additionality', and thus no standard that either market participants or regulators could use either to clarify the accounting rules or to prevent scamming.[44] If it is impossible to distinguish

between fraudulent and non-fraudulent offset calculations, regulators' power to enforce climate benefit becomes illusory.[45] They have no choice but to fall back on aesthetic, political, or pseudo-scientific criteria in deciding whether to wave projects through. As Lambert Schneider of Germany's Oko-Institut has noted, 'If you are a good storyteller, you get your project approved. If you are not a good storyteller, you don't get your project through.'[46] The problem, in other words, is not that the tools for regulating the offset market need to be developed further, or that they are not being used correctly. The problem is that no credible tools exist.

But if the offset markets cannot be regulated in this way, proceeding as if they could be will inevitably encourage both unscrupulous manufacturers of carbon credits and Northern fossil fuel polluters who are only too happy to buy them without enquiring too closely into their validity. The central 'abuse of public office for private gain' in the carbon offset trade does not stem from individual corporations getting special treatment from individual public officials in return for bribes. It derives, rather, from the way in which public officials across the world acquiesce in the use of fake mathematics and science to benefit a fossil-fuel-dependent corporate structure as a whole at the expense of public and environmental welfare. It is less the antics of market players than the attempt to construct an unfeasible market that is corrupt and corrupting.

Calculating emission reductions

The need in carbon offset accounting to isolate a unique storyline describing a hypothetical world without an offset project also leads to a second abuse of power and wealth inherent in the trade. Offset accounting frames the political question of what would have happened without carbon projects as matter of technical prediction in a deterministic system, while at the same time framing project proponents as free decision-makers whose carbon initiatives 'make a difference'. Carbon offset mathematics dictate that, in any given situation, 'no other world is possible' as an alternative to 'business as usual' except that created by corporations wealthy enough to be in a position to sponsor carbon offsets. This suppression of unknowns built into offset mathematics entails the suppression of climate alternatives pursued by the less powerful and wealthy. Among the first observers to call attention to this built-in bias were social activists from Minas Gerais in Brazil who were campaigning against the attempt of a local charcoal

and pig iron company, Plantar, to acquire carbon credits for the environmentally destructive eucalyptus plantations it had established on occupied land. The activists categorised the company's argument that without carbon credits it would have to switch from eucalyptus charcoal to coal as an energy source as a

> sinister strategy … comparable to loggers demanding money, otherwise they will cut down trees. … what we really need are investments in clean energies that at the same time contribute to the cultural, social and economic well-being of local populations.[47]

For the activists, the suppression of knowledge of the plurality of choices in the course of carbon accounting amounted to an abuse of power, blocking popular pathways to an alternative future. As this monograph suggests in chapter three, offset accounting has played a similar role in Uganda, where for some forest communities the carbon market functions as the 'frame' – or only option – for development.

Carbon offset accounting also drives corruption in another, more indirect way: through its drive to establish that different technologies in different places are climatically 'the same'. In its push for liquidity, the carbon offset market encourages thousands of technical experts to search relentlessly for far-fetched 'equivalences' among the most disparate and distant activities. Calculations may be devised that make diverting Nigerian methane from flaring to productive use 'the same as' shutting down a Nebraska coal-fired power plant. Techniques may also be formulated to render the annexation of forested land in the DRC 'the same' as improving the efficiency of Spain's housing stock. Rather than seeking ways to effect a structural shift away from fossil fuels in Northern countries, offset market actors are driven toward constructing more and more novel equations for shifting climate burdens onto the South in the name of increased liquidity and cost-effectiveness. In political economy terms, the proliferation of such equations reflects a use of expertise and money to take advantage of a multitude of local resources and local political weaknesses across an expanding global field that is ever more difficult to police. Therefore, far from solving the market's problems, market expansion not only increases the ecological debt of the North to the South, but is also a recipe for growing obscurity, evasions, and cheats of all kinds, greatly advantaging centralised market actors while weakening the possibility of local oversight. As even the

conservative economist Willem Buiter of the London School of Economics has noted, offset accounting requires:

> [T]he impossible verification of how much carbon dioxide equivalent would have been emitted in some counterfactual alternative universe. … [this] makes one shout out: impossible! Fraud! Bribery! Corruption! Wasteful diversion of resources into pointless attempts at verification! And indeed this is what is happening before our eyes. Enterprises get paid for not cutting down trees and for installing filters and scrubbers they would have installed in any case. The new Verification of the Carbon Counterfactual industry is growing in leaps and bounds. The amounts of money involved are vast and the opportunities for graft, bribery and corruption limitless. The offset proposal has birthed a monster.[48]

Such a 'vastly complicated apparatus,' Clive Crook of the *Financial Times* has agreed, is by its nature a 'playground for special interests'.[49]

CORRUPTION AS EROSION OF THE RULE OF LAW BY MONEY AND INFLUENCE?

Stories of offset developers finding ways of evading the law through bribery or abuses of influence abound in the carbon markets.[50] Moreover, as Interpol has observed, bribery and intimidation are certain to be ingredients of the growing forest carbon offset market;[51] for example, a nephew of Papua New Guinea's prime minister has been accused of pressuring villagers to sign away their land for carbon deals despite there being no carbon trade laws in place.[52]

The conventional response to such stories, including that of many environmental NGOs, is to repeat the mantra that regulation is capable of saving the alleged 'real potential' of offset markets from the menace of corruption.[53] Such responses again overlook the extent to which the erosion of the rule of law is part of the design of carbon trading, not an incidental feature that can be remedied by applications of democratic governance. For an illustration of this point, it is useful once again to turn to the Niger Delta.

For 50 years, energy companies active in the delta have been burning off the great bulk of the methane found in underground oil reservoirs. Although methane is a valuable fuel, it is cheaper for Shell, Chevron, and other firms simply to flare it

on site than to use it in power plants or re-inject it underground. As a result, local people are subjected to continuous noise, light and heat, acid rain, retarded crop yields, corroded roofs, and respiratory and skin diseases. Although, in Nigeria, flaring is prohibited by law, oil companies have so far contented themselves with paying penalties for non-compliance. In this context, one focus of local and international environmental activism is simply to insist on the rule of law. The CDM, however, takes breaches of the law in Nigeria as the 'baseline' for carbon accounting. The Italian oil corporation Eni-Agip, for example, plans to buy some 1,5 million tonnes of cheap carbon dioxide equivalent pollution rights a year from a project at an oil-gas installation at Kwale that was registered with the UN in November 2006.[54] The core of the credit calculation is that,

> whilst the Nigerian Federal High Court recently judged that gas flaring is illegal, it is difficult to envisage a situation where wholesale changes in practice in venting or flaring, or cessation of oil production in order to eliminate flaring, will be forthcoming in the near term.[55]

Accordingly, the project creates an incentive for the Nigerian authorities to replace legal sanctions with prices, and the rule of law with markets for environmental services. Here, as elsewhere, carbon trading tends to ignore or undermine, rather than support, efforts to institute improved environmental oversight, or to deal with the underlying causes of violations of environmental law.[56]

In many other host countries as well, the Kyoto offset market is creating incentives not to promulgate or enforce emission-related environmental laws, since the greater the 'baseline' emissions, the greater the payoffs that can be derived from carbon projects.[57] These incentives are explicitly spelled out in UN policy. In August 2007, for instance, the CDM Executive Board published forms for the submission of applications for a new type of carbon project called programmatic CDM, or 'programmes of activities' (PoA). A PoA, it stated, could be additional and thus acceptable as a CDM even if a law already existed which mandated the measures that the PoA would bring about, if that law was not being 'enforced as envisaged but rather depend[ed] on the CDM to enforce it', or if the PoA would 'lead to a greater level of enforcement of the existing mandatory policy/regulation than would otherwise be the case'.[58] Here, as elsewhere, corruption interpreted as the erosion of the rule of law by financial interest is

a structural principle of carbon offset trading. Regulation curbing corruption would have to outlaw offset trading itself.

CORRUPTION AS CONFLICTS OF INTEREST?

The carbon offset market is beset by pervasive conflicts of interest. These are present at all levels, but particularly afflict the carbon markets' regulatory systems. For example, Lex de Jonge, head of the carbon offset purchase programme of the Dutch government, also chairs the CDM Executive Board, the UN offset market's regulatory body.[59] Other members of the board have been accused of being 'very active in defending projects that come from their country or that are hosted in their country, or where some companies have a particular interest'.[60] Barclays Capital, a major speculator in the carbon markets, has boasted openly that 'two of our team are members of the Executive Board'.[61] The new executive secretary of the UNFCCC itself, Christiana Figueres, was, at least up until her appointment, senior adviser to C-Quest Capital, a private carbon finance company focusing on CDM investments; principal climate change adviser to Endesa Latinoamerica, the largest private utility in Latin America; and vice-chair of the rating committee of the Carbon Rating Agency, a private firm applying credit rating expertise to carbon assets. In addition, like credit ratings firms in the financial markets, private sector carbon auditors approved by UN regulators have a strong interest in gaining future contracts from the companies that hire them; unsurprisingly, they wave through an overwhelming majority of projects under review.[62] Meanwhile, banks that own equity stakes in carbon offset projects, or are 'going long' on carbon credits, may also be carbon brokers or sector analysts, 'creating a temptation to bid up carbon prices to increase the value of their own carbon assets'.[63] For example, Goldman Sachs holds a stake in BlueSource, a carbon offset developer, while JPMorganChase controls EcoSecurities and holds a stake in Climate Care, another offset specialist.

Regulation will not root out such conflicts. First, supply and demand in this trade, as well as the nature of the commodity itself, are dependent on decisions made by small elites within governments, all of whom – whether buyers or sellers – are interested mainly in creating as many carbon credits as possible. This means that there is little incentive on any side to enquire too closely into whether the manufacture of those credits is good for the climate or not. While buyers of blue jeans care about whether they will wear out or not, acting as a check on the

temptation of manufacturers to cut corners, buyers of carbon credits care only about whether regulators will accept them in lieu of local compliance.[64] And while most markets have regulators whose careers depend on checking to see whether the goods on sale are what they say they are, regulators in the carbon offset market, as often as not, are buyers or sellers themselves, whose interests lie elsewhere. 'I don't see us as police,' the chair of the CDM Executive Board confirmed in 2007.[65] Peter Zapfel, co-ordinator of the EC's carbon markets and energy policy, and a disciple of US advocates of pollution trading, who has played an important role in convincing European bureaucrats and governments to commit themselves to carbon trading,[66] has openly called for 'cross-fertilisation between regulators and regulated'.[67] Nor could environmental impact assessments (EIAs) compensate for the lack of market incentives working in favour of climatic stability, even if carbon project EIAs were tasked with assessing climate impacts, which they are not. Throughout the world, conflicts of interest are also an inherent part of the EIA process, since consultants contracted to perform EIAs are typically paid by project developers themselves.

Second, the trade in carbon commodities, like that in advanced credit derivatives, is so complicated and lucrative that the experts best qualified to regulate it are almost certain to have vested interests in it, whether directly making money from the carbon market, advising interested governments and other parties interested in it, or designing it. As early as 2000, John Houghton, a leading scientist of the Intergovernmental Panel on Climate Change, admitted that it was impossible to staff his scientific panel on forestry offset accounting without recruiting experts with financial interests in selling carbon credits.[68] Today, when the largest buyers of carbon credits are financial sector speculators bent on creating complex new instruments with them – including Goldman Sachs, Morgan Stanley, Barclays Capital, Deutsche Bank, Rabobank, BNP Paribas Fortis, Sumitomo, Kommunalkredit, Cantor Fitzgerald, Credit Suisse and Merrill Lynch – meaningful regulatory oversight has become even less likely. Meanwhile, given the complicated nature of the commodities on offer, the likelihood that lay members of the public will be able to educate themselves sufficiently in the tricks of the trade to act as effective whistle-blowers seems small. The temporary suspension of the accreditation of the leading verifier of CDM credits, the Norwegian firm Det Norske Veritas,[69] on the comparatively trivial ground that a company employee had signed off five projects without surveying them,

unwittingly reveals the impossibility of regulators' coming to terms with the central issues involved, much less engaging in meaningful action. So does the ineffectual UN reaction to rumblings about corruption on the CDM Executive Board, namely that determining whether members are subject to conflicts of interest is left to 'their own individual discretion', and that they need do nothing more than state under oath that they have 'no financial interest in any aspect of the Clean Development Mechanism'.[70]

In short, conflicts of interest in the carbon offset trading system appear to have been 'normalised'. Indeed, the very concept of conflict of interest has been eroded to the extent that it has become difficult to distinguish legal activities from illegal manipulations of the system for personal gain.

Box 3: The revolving door syndrome

Within the insular, tightly knit professional climate mitigation community, experts are constantly passing through 'revolving doors' between private carbon trading consultancies, government, the UN, the World Bank, environmental organisations, official panels, trade associations, and energy corporations. For example, Martin Enderlin, a CDM board member from 2001 to 2005, is now director of government and regulatory affairs at EcoSecurities, the CDM project developer.[71] As one principal of a carbon asset management firm who is also a member of the UN's CDM methodology panel noted at an industry meeting in London in October 2008, 'I helped set the rules; now my firm plays by those rules.'[72]

Revolving doors host a flow of traffic to and from many other zones of the carbon market as well. James Cameron, an environmental lawyer who helped negotiate the Kyoto Protocol, now benefits from the market he helped to create in his position as vice-chair of Climate Change Capital. While at the same firm, Kate Hampton was seconded to the UK's Department for Environment, Food and Rural Affairs (DEFRA) as a senior policy adviser during the 31st G8 summit, hosted by the UK, in 2005 (which focused on climate change). In 2009, Climate Change Capital's vice-president for Carbon Finance, Paul Bodnar, took charge of climate change finance at the US State Department. Moving in the opposite direction, Henry Derwent, a former director of international climate change at

Britain's DEFRA, who was responsible for domestic and European climate-change policies, is now president and chief executive of the International Emissions Trading Association, the industry alliance. Sir Nicholas Stern, author of the British government's Stern Report on Climate Change, has meanwhile championed the initiative of his private firm, IDEACarbon, to set up a carbon credit ratings agency that many observers are likely to see as subject to the same type of conflict of interest that earlier afflicted Moody's and other credit ratings agencies, who depended for their income on the companies whose products they were rating.[73]

Conflicts of interest are also deeply entrenched in the unregulated 'voluntary' markets for carbon credits. Laurent Segalen, formerly a carbon trading manager at the failed Lehman Brothers investment bank, expressed a wide consensus when he affirmed that 'traders should be the ones designing and determining the standards'.[74] The secretariat of the UK's All-Parliamentary Committee on Climate Change, which proposes regulatory policy for the voluntary carbon offset market, is housed at The Carbon Neutral Company, whose business depends on such regulation. Such conflicts are repeated at the regional and local levels, as noted elsewhere in this monograph.

CONCLUSION

Preliminary reactions to corruption and abuse in the carbon offset trade, such as scandal stories in the media, a few arrests or suspensions and calls for better regulation, have served a useful purpose in that they have been a first indicator of fundamental problems in market structure. But this first reflex response needs now to be supplemented with an analysis of what underpins the scandals: by themselves, knee-jerk calls for 'reform' and 'regulation' are only likely to worsen social exploitation and climate danger.

A first step is to understand that the principal problems of corruption in carbon markets are not located in the transgressions of individual firms, government officials, or rogue traders, in the form of fraud or bribery. Rather, they are to be found in the structure of the markets themselves. As argued above, the contradictions built into the markets, including the unverifiability of carbon credits, the mutually reinforcing relationships between carbon commodity production and the erosion of checks and balances and the rule of law, systematic bias

entrenching the power of fossil fuel-dependent corporations at the expense of public interest, and so forth, cannot be resolved by regulation any more than they can be addressed by 'learning by doing'.[75] To continue to claim that carbon offset markets can be regulated is to legitimise continued corruption and to undermine popular struggles against it, as well as to harm the causes of climate action and climate justice.

By the same token, because the problems are systemic rather than criminal in a conventional sense, to call for the suspension, arrest, prosecution, or shaming of the US and European economists, officials, policy-makers and experts who have created carbon offset products or promoted their official acceptance is neither appropriate nor necessary. Despite their responsibility for helping to entrench inherently corrupt and damaging trading systems in national and international law, the correctible problem lies in the existence of those systems itself, not in their inventors and advocates; in any case, no clear legal basis exists for claims of causality or intent to defraud. No more purpose would be served by pursuing the officials and experts responsible than by attempting to prosecute the individuals responsible for the development and spread of certain hazardous chemicals or financial instruments such as collateralised debt obligations.

It should be sufficient, instead, for society to take the conventional and easily implementable self-protective path of abolishing the trade in question, just as it has banned, or could ban, the manufacture or trade of certain chemicals, weapons, or financial derivatives. Careful investigation of the corruption built into the carbon offset markets shows that they do not need to be purified but eliminated. Doing away with this trade would be a simple and effective approach to preventing a type of corruption that is threatening not only ordinary land-holders, workers and victims of pollution, but also human prosperity, and indeed human survival.[76]

NOTES

1 Larry Lohmann, Marketing and making carbon dumps: commodification, calculation and counterfactuals in climate change mitigation, *Science as Culture* 14(3) (2005), 203–235.

2 Larry Lohmann (ed), *Carbon trading: a critical conversation on climate, privatization and power*, Uppsala: Dag Hammarskjöld Foundation, 2006; Carbon trading, climate justice and the production of ignorance: ten examples, *Development* 51(3), 359–365.

3 Tim Webb and Terry Macalister, Carbon trade wrong, says Lord Browne, *The Guardian*, 8 March 2009. Even the academic economists who first mooted the idea of pollution trading in the 1960s are sceptical about the effectiveness of today's carbon markets.

4 These now include James Hansen, Jeffrey Sachs, Joseph Stiglitz, William Nordhaus, Kevin Anderson and Gregory Mankiw.

5 The hedge fund Pure Capital, for instance, believes there is a 30 per cent chance that the carbon market may collapse. See Lawrence Fletcher, Hedge fund firm pure capital targets carbon, food, *Reuters*, 18 June 2009.

6 State or regulatory capture occurs when private firms gain undue influence in shaping regulatory and other policies that affect their own interests. For example, corporations may contribute to a political party's election fund in return for lower environmental standards, or treasury ministries may be staffed by financiers or traders who plan to return to the private sector after promulgating policies that benefit their old firms or harm their competitors. State capture is as prevalent in the North as in the South, and tends to be exacerbated by economic liberalisation. State capture is particularly prevalent in carbon markets, since its very product is created by government action. As the financial analyst John Kay explains, 'when a market is created through political action, business will seek to influence market design for commercial advantage'. Why the key to carbon trading is to keep it simple, *Financial Times*, 9 May 2006.

7 Lohmann, When markets are poison.

8 United Nations Environment Programme Risoe Centre on Energy, Climate and Sustainable Development, *CDM pipeline*, http://www.cdmpipeline.org/.

9 Matt Taibbi, The great American bubble machine, *Rolling Stone,* 1082-1083, 2009.

10 Larry Lohmann, Regulatory challenges for financial and carbon markets, *Carbon & Climate Law Review* 3(2), (2009), 161-71; When markets are poison: learning about climate policy from the financial crisis, Corner House Briefing Paper No 40, September 2009, www.thecornerhouse.org.uk/subject/climate.

11 Nassim Nicholas Taleb, Preface to Pablo Triana, *Lecturing birds on flying: can mathematical theories destroy the financial markets?* New York, Wiley, 2009.

12 Lohmann, When markets are poison.

13 See Andre Standing, *Corruption and industrial fishing in Africa*, Anti-Corruption Resource Centre, Bergen, 2008, 9, for an interesting discussion of legal corruption.

14 Fiona Harvey, Beware the carbon offsetting cowboys, *Financial Times*, 26 April 2007.

15 *The Economist,* Money grows on trees, 6 June 2009.

16 Jeffrey Ball, Pollution credits let dumps double dip: landfills find new revenue in trading system meant to curb greenhouse emissions, *Wall Street Journal*, 20 October 2008.

17 Nadene Ghouri, The great carbon credit con, *Daily Mail*, 1 June 2009.

18 Nathaniel Gronewold, Secretive UN board awards lucrative credits with few rules barring conflicts, *Climate Wire*, 4 July 2009.

19 Tom Young, UN suspends top CDM project verifier, *Business Green*, 1 December 2008, http://www.businessgreen.com/business-green/news/2231682/un-slaps-cdm-verifier.

20 Nina Chestney and Michael Szabo, Europol expects more arrests in carbon fraud probe, *Reuters*, 20 August 2009.

21 Barbara Haya, Failed mechanism: how the CDM is subsidizing hydro developers and harming the Kyoto Protocol, San Francisco, International Rivers, 2007, http://www.internationalrivers.org/files/Failed_Mechanism_3.pdf.

22 Sunanda Creagh, Forest CO_2 scheme will draw organised crime: Interpol, *Reuters*, 1 June 2009.

23 Ray Purdy, Governance reform of the the Clean Development Mechanism after Poznan, *Carbon & Climate Law Review* 3(1), 5–15.

24 Moritz von Unger and Charlotte Streck, An appellate body for the Clean Development Mechanism: a due process requirement, *Carbon & Climate Law Review* 3(1), 31–44.

25 Ilona Millar and Martijn Wilder, Enhanced governance and dispute resolution for the CDM, *Carbon & Climate Law Review* 3(1), 45–57.

26 Francesca Romanin Jacur, Paving the road to legitimacy for CDM institutions and procedures: learning from other experiences in international environmental governance, *Carbon & Climate Law Review* 3(1), 69–78.

27 Wytze van der Gaast and Katherine Begg, Enhancing the role of the CDM in accelerating low-carbon technology transfers to developing countries, *Carbon & Climate Law Review* 3(1), 58–68.

28 Refers to the UN climate change meeting, the Conference of Parties (COP)15, in December 2009, where an international agreement was meant to be signed.

29 International Rivers Network, What's in a name? Corker mentions our CDM work in Congress, http://www.internationalrivers.org/en/node/3817.

30 Lohmann, *Carbon Trading*, 147.

31 Ibid, 292–94.

32 Catherine Brahic, 'Green' funding for coal power plants criticised, *New Scientist* 2697, 27 February 2009.

33 See, for example, UN Framework Convention on Climate Change, Yangquan coal mine methane (CMM) utilization for power generation project, Shanxi Province, China, http://cdm.unfccc.int/Projects/DB/TUEV-SUED1169658303.93.

34 Timothy Gardner, Blue Source to capture Kansas CO_2, up oil output, *Reuters*, 22 August 2007, http://www.planetark.com/dailynewsstory.cfm/newsid/43843/story.htm.

35 Channel 4 (UK), Dispatches: The great carbon smokescreen, 2007.

36 Haya, *Failed Mechanism*.

37 *Financial Times*, 16 February 2005.

38 Consulting firms deny wrongdoing in drafting Indian PDDs, *Point Carbon*, 11 November 2005, http://www.pointcarbon.com.

39 Isaac Osuoka, Paying the polluter? The relegation of local community concerns in 'carbon credit' proposals of oil corporations in Nigeria, April 2009.

40 CleanTech Blog, REDD the basis of a 'carbon Federal Reserve'?, http://www.cleantechblog.com/2009/05/redd-basis-of-carbon-federal-reserve.html.

41 Kevin Anderson, testimony before the UK Parliamentary Environmental Audit Committee, 23 June 2009, http://www.parliamentlive.tv/Main/Player.aspx?meetingId=4388.

42 Mark C Trexler, Derek J Broekhoff and Laura H Kosloff, A statistically driven approach to offset-based GHG additionality determinations: what can we learn?, *Sustainable Development and Policy Journal* 6 (2006), 30.

43 UN General Accounting Office, International climate change programs: lessons learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism, GAO Report GAO-09-151, November 2008, 39.

44 Perhaps partly for this reason, it has repeatedly been proposed that the additionality requirement be eliminated. However, all other proposals for defining an offset have proven no less problematic. For example, proposals for 'sectoral' or policy-based CDM again leave judgements about whether carbon credits are climatically effective up to officials with vested market interests, with insufficient or non-existent checks and balances.

45 All regulation currently proposed for carbon markets assumes incorrectly that the distinction between fraud and non-fraud can be made and enforced. Under the Kyoto Protocol, this assumption forms the basis of the work of the CDM Executive Board. In the US, it is the unexamined assumption of, for example, the Emissions Allowance Market Transparency Act (s2423) proposed by Senator Dianne Feinstein, the Waxman-Markey Act, and the Climate Market Auction Trust and Trade Emissions Reduction System (HR 6316) introduced by Congressman Lloyd Doggett.

46 Lambert Schneider, presentation at conference on Review of the EU ETS, Brussels, 15 June 2007.

47 FASE et al., Open letter to executives and investors in the Prototype Carbon Fund, Espirito Santo, Brazil, 23 May 2o003; A P L Suptitz et al, Open letter to the Clean Development Mechanism Executive Board, Minas Gerais, Brazil, 7 June 2004. Recent moves by the World Bank and other UN agencies to open up native forests to carbon accounting are similarly viewed as providing an opening for governments to threaten to destroy their forests if they are not granted carbon credits. See, for example, *World Rainforest Movement Bulletin*, December 2008, www.wrm.org.uy.

48 Willem Buiter, Carbon offsets: open house for waste, fraud and corruption, http://blogs.ft.com/maverecon/2007/07/carbon-offsets-html/.

49 Clive Crook, Obama is choosing to be weak, *Financial Times*, 8 June 2009.

50 Officials allied to offset developers may receive land concessions that communities are denied, and faulty project documents are routinely approved by government departments. Lohmann, *Carbon trading*, 243.

51 Creagh, Forest CO_2 scheme will draw organised crime.

52 Ilya Gridneff, PNG PM's nephew 'pushing carbon deals', *The Age*, 3 July 2009, http://news.theage.com.au/breaking-news-world/pngs-pm-nephew-pushing-carbon-deals-20090703-d7g8.html.

53 See, for example, the presentations of Patrick Alley of Global Witness and colleagues at the Bonn climate negotiations, 3 June 2009, http://unfccc2.meta-fusion.com/kongresse/090601_SB30_Bonn/templ/ply_page.php?id_kongresssession=1757&player_mode=isdn_real.http://www.redd-monitor.org/2009/06/05/forests-corruption-and-cars-why-redd-has-to-be-about-more-than-carbon/.

54 UNEP Risoe Centre on Energy, Climate and Sustainable Development, CDM/JI pipeline Analysis and Database, cdmpipeline.org.

55 Det Norske Veritas (DNV), Clean Development Mechanism Project Design Document form for recovery of associated gas that would otherwise be flared at Kwale Oil-Gas Processing Plant, Nigeria, 2004, http://www.dnv.com/focus/climate_change/upload/final%20pdd-nigeria%20ver.21%20%2023_12_2005.pdf.

56 This tendency is also reflected in the tensions that exist between many CDM projects described in this monograph and local affected communities pressing for secure land tenure or improved access to services. Nevertheless, it is often difficult to determine the extent to which CDM projects can be blamed for complicity in what are often underlying failures of the state to enforce the law and protect the welfare of its citizens.

57 Lohmann, *Carbon trading* 148, 292.

58 Christina Figueres, The CDM and sustainable development, *Environmental Finance*, December 2007, s50, s51.

59 CDM market in good shape: official, *Point Carbon*, 2 April 2008.

60 Gronewold, Secretive UN board.

61 Chris Leeds, Carbon markets and carbon trading: greener and more profitable, presentation, 13 June 2008.

62 Ball, Up in smoke.

63 Michelle Chan, Subprime carbon? rethinking the world's largest new derivatives market, San Francisco, Friends of the Earth, 2009, http://www.foe.org/subprime-carbon-testimony.

64 David M Driesen, Markets are not magic, *The Environmental Forum*, November/December 2003, 1827, 22.

65 S Nicholls, Interview with Hans-Juergen Stehr, *Environmental Finance*, December 2007, s42.

66 Marcel Braun, The evolution of emissions trading in the European Union: the role of policy networks, knowledge and policy entrepreneurs, *Accounting, Organizations and Society* 34(3–4) (2009).

67 Notes from Carbon Finance 2008, Environmental Finance Conference, 8–9 October 2008.

68 Larry Lohmann, Democracy or carbocracy? Intellectual corruption and the future of the climate debate, Corner House Briefing Paper No 24, October 2001, http://www.thecornerhouse.org.uk/subject/climate.

69 Young, UN suspends top CDM project verifier.

70 Gronewold, Secretive UN board.

71 Ibid.

72 Notes from Carbon Finance 2008.

73 Fiona Harvey, Carbon credit ratings agency is launched, *Financial Times*, 25 June 2008.

74 Stien Reklev, Cowboys or cavalry? *Trading Carbon*, December 2007, 2728. Similarly, the International Emissions Trading Association has argued in a letter to US Senators Dianne Feinstein and Olympia Snowe, who had introduced a carbon market governance bill, that '[t]he market itself recognizes the importance of integrity and exerts discipline on participants … Trading companies set their own trading limits to guard against excessive speculation. The market itself punishes firms that exceed responsible limits by downgrading credit ratings, lowering lines of credit or barring individuals or firms from trading'. IETA, letter to Sens. Feinstein and Snowe, 4 March 2008, http://www.ieta.org/ieta/www/pages/getfile.php?docID=2938).

75 The learning that has been going on is primarily in how to exploit the system for commercial gain, and make regulation more friendly to profiteers and scammers.

76 The argument in this article that corruption is inherent in the carbon offset market and is only furthered by regulatory efforts also applies to the second component of carbon markets, cap and trade. For example, the climatic efficacy and 'climatic equivalence' of emissions cuts undertaken at different places and times, and using different technologies, cannot be verified under cap and trade any more than can the climatic efficacy of offsets, making it impossible to distinguish between abuse and non-abuse. Similarly, bribery is a structural feature of all existing cap and trade systems in the form of the 'grandfathering' of allowances, regardless of the legal or illegal conduct of individual allowance grantees. However, such topics lie beyond the scope of this chapter. Some of them are taken up in, for example, Lohmann, Regulatory challenges; Lohmann, Carbon trading; Lohmann, When markets are poison; and Lohmann, Uncertainty markets and carbon markets, forthcoming in *New Political Economy*. Many thanks to Trusha Reddy, Joe Zacune and Andre Standing for helpful comments on and criticisms of a draft of this chapter.

Part 5 Conclusions

9 Conclusion

Trusha Reddy

This chapter summarises the key issues raised in this volume, and makes recommendations, largely based on the findings of this study, aimed at African governments, civil society, and researchers.

SUMMARY OF KEY ISSUES

Scientific evidence shows unequivocally that the world's climate is changing, and that this is largely due to carbon emissions caused by the use of fossil fuels. In order to keep temperatures below the tipping points of global sustainability, global emissions must be reduced by 45 per cent by 2020, and 85–95 per cent by 2050, from 1990 levels. Africa is particularly vulnerable to climate change despite contributing the least to the problem in terms of its contribution to greenhouse gas (GHG) emissions (barring South Africa, which is one of the top 20 GHG emitters in the world). The effects of global warming include more frequent and more severe natural disasters, such as flooding and droughts; increases in sea levels; reduced water supplies; new and more severe vector-borne diseases; and reductions in agricultural land, all with serious implications for human settlement. Societies marked by poor governance, political instability and poverty are

less able to cushion the impacts of climate change and adapt to them. Moreover, climate change will make it more difficult for them to address these challenges and achieve their developmental goals.

Adopted in 1997 under the UNFCCC, and brought into force in 2005, the Kyoto Protocol is the first international treaty that has sought to address the immense problems surrounding climate change, and has been widely lauded as a result. It set itself two main goals for its five-year life span from 1997 to 2012: to set emissions targets for developed countries, historically the worst emitters of carbon dioxide; and to create a mechanism for achieving those targets. The target was set at 5,2 per cent below 1990 levels, which was very modest considering that scientists believed it should be 50–70 per cent below 1990 levels. This was seen as the only way in which industrialised countries – which were reluctant to alter their carbon-intensive growth paths – could be persuaded to accede to the protocol.

The mechanism chosen to achieve these targets was carbon trading, which was seen as a flexible market-based solution, and a further vehicle for compromise. Carbon trading, which effectively allows developed countries (listed in Annex 1 to the protocol) to trade pollution in the form of carbon credits, is one of the main mitigation mechanisms being implemented internationally. Trading in pollution began many years earlier in the US with a domestic market in sulphur dioxide emissions. The US (and big corporations) pushed for this kind of approach in the Kyoto Protocol, but the US eventually did not ratify the protocol itself.

Besides sanctioning emissions trading, which is problematic in itself, carbon trading allows developed countries to avoid reducing their domestic emissions. Instead, they can invest in supposed environmentally friendly and sustainable development projects – called clean development mechanism (CDM) projects – in the developing world (non-Annex 1 countries) in order to gain emissions reduction credits. This is also called offsetting. This has also given rise to a voluntary offset market which is not subject to the regulations imposed by the UN system. Joint Implementation (JI) is similar to the CDM, but allows credits accumulated in Annex 1 countries to be offset in other Annex 1 countries, albeit newly industrialised ones such as those in Central and Eastern Europe.

Carbon trading is seen as a way of putting a price on carbon that will work to reduce emissions, and inspire a shift to 'greener' technologies. Its proponents see it as a 'win–win' situation in which companies can continue to make profits while reducing their emissions. However, experience thus far

has shown that while some companies may have profited from the sale of credits, and business is booming, emissions have not been reduced, or may in fact have increased in many instances. The issue of the profitability of projects is key to understanding why carbon trading is not reducing carbon emissions, and will never do so substantially. The drivers of CDM projects are often businesses which are attracted by the investment potential and generation of emissions credits. This means that projects will not be chosen because of their environmental merits, and will therefore not reduce emissions on the scale needed to combat climate change. In fact, carbon trading sets out to achieve exactly this: to make it cheaper and easier for businesses to reduce emissions. Fraud and corruption are therefore rife in carbon trading. Even if more regulations are introduced, or anti-corruption units put in place, this will not change the underlying dynamic.

Fundamental questions also arise about who actually benefits from offset projects, as opposed to those who are meant to benefit. What this really means is that finance is provided to corporations to continue polluting the atmosphere. One of the dangers of having more offset projects, meaning less domestic reductions at the source of pollution, is that real action on climate change is delayed.

As suggested above, CDM projects have thus far been riddled with abuses, inconsistencies and confusion, which this study has explored. In fact, it is difficult to find a sound CDM project, as the system is beset with a host of design, implementation and verification problems. Yet, given that less than two per cent of CDM projects are located in Africa, the continent is still seen as not taking enough advantage of the opportunities for financing development efforts which the CDM arguably provides. The new Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD) mechanism could change this, however, as development funding in the forestry sector could be made conditional upon linking projects to carbon trading.

This study has delved more deeply into the various dimensions of carbon trading as it relates to Africa, and explored issues from a governance and corruption perspective. The findings are based on a review of the following projects (proposed and implemented) and aspects of carbon trading:

- A proposed CDM co-generation project at a Sasol plant in South Africa
- A registered CDM Nile Basin reforestation project in Uganda
- A registered CDM West Nile rural electrification project in Uganda

- A completed pilot voluntary offset cook stove dissemination project in Ethiopia
- World Bank financing of forestry projects in Africa
- Corruption and regulation in carbon trading

Sustainable development

One of the most important criteria for a CDM project is that it should meet the host country's sustainable development goals. Several concerns need to be raised in this respect. Job creation is often cited as a major indicator of sustainable development. However, our case studies show that the Sasol project in South Africa would create only 30 to 35 jobs. Similarly, members of communities surrounding the reforestation project in Uganda were not convinced of its supposed social benefits, and cynically noted the statement in the Project Design Document (PDD) that 500 jobs would be created only during the establishment phase. This project also lacks income-generating opportunities in a country that regards poverty reduction as a priority.

The electrification project in Uganda held the promise of job creation only indirectly, as a result of increased economic activity. Moreover, critics expressed concern that the rural poor outside of the municipal areas would not benefit from the electricity generated in trading centres or in their homes. It appeared that the reforestation project in Uganda would not create any sustainable jobs at all. Moreover, as with the electrification project, traditional communities were due to be displaced to accommodate the project (through dispossession of land and the enclosure of livelihoods). This amounts to depriving communities of their livelihoods, and could be recorded as a negative effect in terms of sustainable development.

A more fundamental issue is the lack of a universal definition of sustainable development. In its absence, assessments of sustainable development remain arbitrary and prone to skewed claims by host country governments which are keen to attract investors.

Community consultation

Community consultation is another key requirement of CDM projects. In general, our case studies show that local communities and other interested parties did

not receive clear, accurate and timely information about the projects in question. In some cases, such as the Ugandan reforestation project, there were complaints of corruption and conflicts of interest about the way in which contracts were awarded to outsiders instead of the local community, as promised in project documents. The World Bank's consultation processes for REDD Readiness Plan Idea Notes (R-Pins) were criticised for being little more than a formality. In fact, in many cases communities were not consulted at all because the project was managed by international NGOs based in developed countries, or consultancies with ties with logging companies. The latter, of course, constitutes a serious conflict of interests.

Additionality

Another important criterion is that of additionality. Again, there are some general problems surrounding additionality, notably that it is a vague concept with many possible interpretations. The chapter on corruption and regulation explored this and argued that it is impossible to know with certainty whether any project is non-additional, because scientifically speaking there is no such thing as additionality and thus no standard for clarifying the accounting rules or preventing graft. Proving additionality therefore amounts to nothing more than good story telling. The case study of the rural electrification project in Uganda examined both environmental and investment additionality, although these aspects are not explicitly referred to in the CDM guidelines. As a result, the study seriously questions the legitimacy of both claims. Sasol is criticised for being a highly polluting company that has flouted existing regulations to curb pollution. Such corporates should take these sorts of steps to reduce their emissions and improve their energy efficiency in any case, yet now seek to benefit from non-compliance with regulations under the CDM.

Creating the baseline

The chapter on regulation and corruption argues that a true baseline cannot be created because it is subject to the stories created to justify each project. In carbon accounting logic, there needs to be a unique storyline describing a hypothetical world in which the project does not exist. This leads to a potential abuse of power and wealth in carbon trading in terms of which project partners could

have an interest in establishing a baseline with high emissions levels in order to acquire a large number of Certified Emission Reductions (CERs), thus effectively rewarding many credits for little or no actual reductions in GHG emissions.

The proposed Sasol project perhaps demonstrates the misuse of this logic in the most dramatic way. Sasol argues that, without the project, it would have to continue using energy from coal-fired power stations (which generate most of South Africa's power), thus implying that the national power utility, Eskom, would cease to generate the electricity that Sasol would no longer buy. However, given the high levels of demand for energy in South Africa, the electricity in question would simply be consumed by others. Therefore, Sasol's proposed project would merely add to the country's fossil fuel generating capacity.

The situation is even more complicated when it comes to forest projects under REDD, because they are linked so closely to logging companies whose main aim is to cut down trees, not promote their conservation. A baseline which shows that these trees would be cut down unless the conservation project goes ahead is a potentially corrupt way of viewing the situation. When emission reductions are difficult to prove, especially in respect of plantations, claims such as these are also impossible to verify.

Calculating emission reductions and proving environmental integrity

All the case studies pointed to difficulties in calculating emission reductions and proving the environmental integrity of projects. Because the CDM tends to support the easiest and cheapest projects, they are often also the least environmentally sound. The big industrial project involving Sasol demonstrates that reductions in emissions as a result of energy efficiency projects are often minuscule when measured against overall – and often increasing – emissions. Even 'good' renewable energy projects feature dubious reduction calculations, which do not factor in emissions construction work, for example. And, in the case of the small hydro project in the West Nile region, the planners have omitted the construction of a dam in the second phase of the project, and simply assumed that people will widely switch to electricity from using wood fuel, which may not in fact occur. These issues point not only to inaccurate calculations but also to a lack of transparency – or even fraudulent attempts

to claim reductions. Given the loose, unscientific nature of carbon accounting, these practices are actually quite common.

Monitoring and evaluation

Since carbon trading involves a host of consultants, often with ties to the project developers, it is difficult to assess the validity of monitoring and evaluation (M&E) reports. In other words, consultants have vested interests in ensuring that environmental impact assessments (EIAs) and M&E reports create a favourable picture of the projects in question even when this may be doubtful. In some cases, including the Ugandan reforestation project, there is insufficient information available to assess how well the project has delivered on its objectives. In others, such as the small hydro project in Uganda, information is simply omitted. In the case of the Ethiopian voluntary offset project, the developers kept information confidential. This prevented public scrutiny, which would have served to evaluate the project developer's own assessment. In effect, therefore, the developers are asking the purchasers of carbon credits to 'trust' that they are doing a good job, and that the project will be beneficial.

ACTORS INVOLVED

Developers

The involvement of big industrial players like Sasol speaks to some of the most serious criticisms of carbon trading. It is clear that Sasol intended to produce electricity from its gas supply as routine business practice in order to lower costs. Developers of voluntary projects are even more suspect, as they claim and sell credits without any regulation or oversight.

Financiers

The World Bank's carbon fund portfolio has come under scrutiny for its lack of democratic governance, conflicts of interests, and creating perverse incentives for polluters. The Forest Carbon Partnership Facility (FCPF) has been beset with problems since its inception, among them adverse impacts on human rights, and

the poor inclusion and participation of communities. For these reasons, Chapter 7 argues against the World Bank being involved in REDD financing, and climate finance in general.

Designated National Authorities and CDM Boards

Most or all DNAs are undercapacitated, which compromises their ability to evaluate the integrity of projects. Documents are often taken at face value, without any inspections on the ground. Furthermore, DNAs typically view projects in isolation, and fail to evaluate a developer or company's broader record of emissions. Public participation and project review are also limited, and transparency hindered, by poorly managed websites. Moreover, DNAs are subject to conflicts of interest, with their primary task usually being to promote the CDM, and their secondary task to regulate it.

Consultants/independent third-party verifiers

There is significant evidence to show that with the right investors, accountants, and consultants, project developers can bypass even the most rudimentary tests of integrity. Independent verifiers are also in question because they are usually closely linked to or employed by the project developers, who stand to gain from the sale of credits.

CONCERNS ABOUT CORRUPTION

This study has highlighted a number of concerns about corruption in carbon trading in general and in Africa in particular.

Perverse incentives

The CDM often creates incentives for highly polluting companies to profit from the sale of CERs while continuing with business as usual (BAU). This issue is difficult to address because it relates to the fundamental design and operation of the CDM. One may argue that it is the actual intention, which is to preserve BAU, as compared to the stated intention, to reduce GHG emissions, which

gives rise to many of the challenges surrounding corruption described in this volume.

Conflicts of interest and the 'revolving door' syndrome

Carbon trading appears to sanction and encourage the convergence of various roles and interests. For these reasons, the divide between regulators and the regulated is also unclear. This may be seen as inevitable, because the networks of players are so limited and their interests so similar. Sometimes these conflicts of interests are encouraged when EIAs as requested – and paid for – by project developers themselves. It is also common for those who once regulated or designed the rules of the system to become traders and investors themselves – a feature often described as a 'revolving door'. The primary concern here is that actors who stand to benefit from the system are also able to influence its design. However, this issue remains unmonitored, and there appears be no incentive to regulate it as it is not widely regarded as a problem. There are also broader conflicts of interest in terms of which major players like the World Bank fund global warming mitigation efforts as well as the fossil fuel industry. This practice is also entirely unregulated.

Transparency and access to information

This whole CDM system seems dogged by a lack of openness and transparency. While the voluntary offset market is more obviously closed to scrutiny, the CDM is also prone to inaccessible information. Transparency and openness are important because they allow for oversight. Vested interests seeking to profit from the system – whether developers, consultants, or local elites – tend to benefit from obscurity and therefore prefer their activities to be hidden from the public view.

Fraud

Fraudulent or seemingly fraudulent claims about emission reductions or sustainable development are common under the CDM. This tends to happen because project designs are difficult to verify, and dubious projects based on a good storyline therefore go ahead. At the other end, independent verifications of claimed

reductions in emissions are almost impossible to procure, as verifiers are usually employed by project developers, or others who stand to gain from the sale of credits. The system thus sets up a host of untrustworthy interactions, made worse when there is a lot of money to be made, especially from REDD projects.

Erosion of the rule of law by power and influence

Polluting companies are usually expected to adhere to environmental laws in the countries in which they are based. However, the CDM creates an incentive to replace sanctions with prices, and the rule of law with markets for environmental services. It also eschews and potentially derails processes to ensure better oversight of environmental problems. Moreover, the CDM tends to aggravate existing problems for communities at the site of carbon offset projects, such as those around access to services and land.

RECOMMENDATIONS

Carbon trading is only one proposed solution to climate change. Given the challenges surrounding it, other solutions should be considered. A proposed plan of action follows for dealing with climate change in Africa, spelling out steps to be taken in the short, medium and long term.

African governments and policy-makers

Short-term responses and measures

Given the systemic problems inherent in the CDM and the other problems it generates in practice, this mechanism should be abolished. However, should African governments feel bound to the Kyoto Protocol, the following steps should be taken in respect of the CDM and voluntary offset projects until the first phase of the Kyoto Protocol ends in 2012. These are only mitigating measures, though, and do not deal with the fundamental problems inherent in the CDM system.

- The system and structures responsible for authorising and monitoring CDM projects must be reviewed. In particular, DNAs must be capacitated to consider submissions from local communities, and review EIAs more rigorously.

- Access to information must be improved, and by non-elite means as well (usually information is available on the internet only, which prevents community access).
- There must be more direct oversight over projects and conflicts of interest must be monitored and regulated.
- The 'revolving door' feature of the current system must be recognised and dealt with to ensure that it does not have an undue influence over projects.
- Claims of emission reductions in respect of proposed projects must be more carefully scrutinised, and independent reviews conducted on the ground to ensure that possible omissions in documentation are rectified. Should omissions amount to fraud, action should be taken. Offenders should be 'named and shamed' as well as sanctioned.
- The actual benefits of projects – or otherwise – must be considered more carefully by performing more holistic analyses of community impacts and sustainable development gains.
- The extent to which carbon trading and individual offset projects chime with national sustainable development goals should be more carefully examined. Sustainable development goals should also be clearly listed and described to help eliminate arbitrary claims.
- Severe sanctions should be introduced for fraudulent credit verifications and project proposals.
- The CDM Board should be asked to revise its code of conduct in order to help prevent abuses of the CDM system.
- Buyers of credits should be publicly identified.
- Revenues from CDM projects should be taxed, because these are additional profit made by the developers.
- Given the total lack of regulation, voluntary offset projects should be banned.
- Regulations should be introduced for evaluating projects in the context of the broader operations of their developers, including those in other world regions, to determine whether or not they will really reduce emissions.
- Companies must first comply with environmental and pollution laws and formulate and implement their own strategies for mitigating their impacts before embarking on CDM projects. Corporations must also be held to account so that they internalise the costs of all the impacts of their operations (also known as 'externalities'); appropriate carbon taxes must be raised on the consumption of energy; the environmental, socioeconomic and health impacts of

resource extraction must be critically evaluated; and the negative impacts of outsourcing production, such as transferring their operations to developing countries, must be assessed.
- Countries must explore ways of funding renewable energy projects and shifting to low-carbon development without relying on the CDM. These mechanisms must be soundly governed, and closely tied to national interests.

Besides these, African governments and organisations could adopt the following political approaches in international climate change negotiations:

- Push for the adoption of measures at UN climate meetings that will encourage governments to abide by UNFCCC principles.
- Focus more closely on emissions reduction targets instead of mechanisms such as offsetting which enable developed countries to avoid meeting their domestic emissions reduction targets.
- South Africa should be encouraged to make a more decisive commitment to reducing its emissions, and to stop promoting carbon trading on the continent.
- Africa must commit itself to low-carbon development pathways with the assistance and support of developed countries in the form of technology and finance.
- Call for a thorough review of institutions attempting to finance climate change activities, including the legitimacy and efficacy of the World Bank in financing CDM and REDD.

Medium to long-term vision and approach

Beyond 2012, African governments and intergovernmental organisations (notably the UNFCCC) should seriously consider the following steps:

- Abolish the voluntary offset market, because it is unregulated by nature and thus prone to abuse.
- Phase out carbon trading completely, given its inherent problems and its failure to benefit Africa.
- Introduce entirely new forest conservation measures that will support forest-dwelling communities, protect standing forests, and introduce a moratorium on the further destruction of forests.

- Push for climate finance from developed countries to be managed under the UNFCCC system, and consider issues of representation, participation and direct financing. There should be substantial, obligatory and automatic public funding from developed countries to generate the volume of funding needed, established on the principles of historical responsibility and the reparation of climate debt. While private finance will play a role, the carbon market, which has proven to be environmentally and socially destructive, must not be used as a vehicle for financing from developed countries.
- In its efforts to combat climate change, the World Bank must follow the recommendations of its own Extractive Industries Reviews and stop all public financing of coal, oil, and gas exploitation. The World Bank and its donors must also be held accountable for the climate footprint of project and policy activities. Donors should have the amount of GHG produced by projects they support debited against any emissions credits they hope to claim through offsetting. The World Bank should also heed calls from developing countries to step aside from the remit of global negotiating processes in order to ensure that funding from industrialised nations for climate change adaptation and clean technology transfer in developing countries remains under the auspices of the UNFCCC.[1]
- Given the lack of transparency and accountability around REDD, often resulting in the violation of the rights of indigenous peoples and forest dwellers, alternative REDD structures need to be considered. This may include the integration of REDD into mainstream development strategies to ensure that REDD financing will benefit poor communities; ensure data transparency and financial accountability; and ensure international scrutiny aimed at safeguarding human rights and good governance.[2] In particular, an attempt must be made to resolve long-standing land tenure issues to the benefit of local people rather than those of commercial interests such as logging companies. Overall, there is a strong argument for the REDD initiatives to adopt a rights-based approach, with reference to the UN Declaration on Human Rights and the Declaration on the Rights of Indigenous Peoples. REDD may therefore need to be fundamentally reconceptualised so as to place a value on standing forests and on respecting the environmental integrity of existing laws which seek to preserve forests. This also means that attempts to utilise carbon markets to finance REDD should be abandoned, as monetary values placed on uncertain

measurements of carbon reductions would detract from or hinder climate change mitigation goals.[3]
- Enable a greater oversight of corporations, and the enforcement of environmental laws.
- Fundamentally rethink the development model that regards gross domestic product (GDP) growth as the primary measure of success.
- Develop long-term visions and strategies for low-carbon development, and the mechanisms and institutions to support this.
- Build capacity to ensure the use of sustainable and equitable technologies, practices and processes; and develop local expertise to promote peoples' sovereignty over energy, forests, land and water.
- Protect the rights of all people, particularly recognising and respecting the rights of indigenous peoples and local communities to determine their own development paths, decision-making processes and activities related to climate change.
- Plan in a participatory manner that ensures the full participation of people affected by climate change in developing real solutions to global warming – including sustainable family farming, appropriate energy efficiency and a just transition to safe, clean, and community-led renewable energy.

Civil society

Civil society on the continent should play the following roles in the short and medium term:

- Monitor carbon trading projects in order to identify possible governance and corruption issues.
- Provide up-to-date information that can be analysed and reviewed so that problems and issues can be dealt with more promptly.
- Identify trends and patterns with regard to REDD, carbon capture and storage (CCS), sectoral CDM, and different national and regional approaches in order to create a clearer understanding of how the system is evolving, and what the impacts are and are likely to be.
- Monitor carbon finance and the flow of money to and from projects to detect possible corruption issues.

- Attempt to understand the actors involved in carbon trading, locally and internationally, to better monitor projects.
- Expose corruption in carbon trading, both systemic as well as project-related.
- Provide a space for local communities to voice their concerns about CDM projects.
- Engage governments and intergovernmental organisations at the national, regional, and continental level on the findings of research, and advise on the best way forward for low-carbon development and real solutions to climate change.
- Develop advocacy strategies for holding international financial institutions to account for poor practices.
- Engage horizontally with civil society and communities in seeking and promoting real solutions to climate change.

Proposals for further research

Much more research is needed to create a clearer picture of carbon trading in Africa as well as current developments and their impacts. In particular, the following should be considered:

- More case studies should be conducted to acquire a deeper understanding of issues and trends.
- Studies should employ a gendered dimension to discover the impacts of carbon trading on women.
- Issues surrounding corruption in the context of carbon trading should be more closely examined.
- The impacts of REDD, other forms of carbon trading, and proposed reforms should be studied and evaluated.
- The extent to which emissions reduction targets are weakened by the increased use of offsets, and the resultant impact on Africa, should be carefully assessed.
- The nature and impact of carbon financing should be more fully explored.

NOTES

1 This recommendation was provided by Janet Redman and is taken directly from her original chapter on carbon finance.

2 A Angelsen (ed), *Moving ahead with REDD: issues, options and implications*, CIFOR, Bogor Barat, 2008.

3 This recommendation was provided by Janet Redman and is taken directly from her original chapter on carbon finance.

10 Bibliographies

CHAPTER 1
Carbon trading in Africa: a critical review

Clifton, S-J. A dangerous obsession – the evidence against carbon trading and for real solutions to avoid a climate crunch. Friends of the Earth. 2009. Available at http://www.foe.co.uk/resource/reports/dangerous_obsession.pdf.

Gilbertson, T and O Reyes. *Carbon trading: How it works and why it fails*. Uppsala: Dag Hammarskjöld Foundation. 2009.

International Energy Statistics. World CO_2 emissions from consumption of energy. Available at http://tonto.eia.doe.gov/cfapps/ipdbproject (accessed on 15 September 2011).

Intergovernmental Panel on Climate Change (IPCC). *IPCC second assessment: Climate change 1995*. Geneva, 1995.

IPCC. Fourth assessment report (AR4). IPCC. Geneva, 2007.

Sokona, Y. Adapting to climate change in the region: Turning the Commission's report findings into reality. Presentation to event on Climate Change and Development. Institute for Security Studies/Swedish Embassy. Cape Town, 11 September 2009.

Schreuder, Y. *The corporate Greenhouse: Climate change policy in a globalising world*. New York: Zed Books. 2009.

Sutter, C and J C Parreno. Climate change: Does the current clean development mechanism (CDM) deliver its sustainable development claim? An analysis of officially registered CDM projects. July 2007. Available at http://www.cleanairnet.org/caiasia/1412/articles72508_resource_1.pdf.

United Nations Environment Programme (UNEP) and Stockholm Environment Institute. Synthesis briefing note: Estimates of the costs of adaptation in Africa. Available at http://new.unep.org/climatechange/LinkClick.aspx?fileticket=-K3E-Ya4pQA%3D&tabid=241&language=en-US.

CHAPTER 2
Climate change and carbon trading in Africa

Adger, N and K Vincent. Uncertainty in adaptive capacity. *C R Geoscience* 337 (2005), 399–410.

BBC News. African floods prompt aid appeal. 21 September 2007. Available at http://news.bbc.co.uk/1/hi/world/africa/7005969.stm (accessed on 25 September 2007).

Biersack, A. Reimagining political ecology: culture/power/history/nature. In A Biersack and J Greenberg (eds). *Reimagining political ecology*, Durham: Duke University Press, 2006, 3–40.

Bosi, M and Ellis, J. *Exploring options for sectoral crediting mechanisms*. Paris: Organisation for Economic Co-operation and Development (OECD)/International Energy Agency (IEA), 2005.

Brooks, N, Adger, H and Kelly, P M. The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. *Global Environmental Change* 15 (2005), 151–163.

Bryan, Elizabeth, Akpulu, Wisdom, Yesuf, Mahmud et al. Global carbon markets: are there opportunities for sub-Saharan Africa? IFPRI Research Brief 15(13), 2008.

Bujugali Energy. Project design document: Bujagali hydropower project. 16 July 2010. Available at http://cdm.unfccc.int/UserManagement/FileStorage/FUYJ930RA8DIXQNVSM7LBP4ZO6GK2W

Byrne, J, Glover, L, Alleng, G et al. The postmodern greenhouse: creating virtual carbon reductions from business-as-usual energy politics. *Bulletin of Science, Technology and Society* 21(6) (2001), 443–455. Available at carbonpositive.net/viewarticle.aspx?articleID=840

Carbon Retirement. The efficiency of carbon offsetting through the Clean Development Mechanism. London, 2009. Carbon Trade Watch. The sky is not the limit: the emerging market in greenhouse gases. TNI Briefing Series. 2003(1). Amsterdam: The Transnational Institute, 2003. ceep.udel.edu/politicalecology/index.html (accessed on 15 September 2007).

CDM Watch. Market failure: why the Clean Development Mechanism won't promote clean development, 2004. Available at www.sinkswatch.org/pubs/Market%20failure.pdf (accessed on 25 January 2008).

Clapp, J. Distancing of waste: Overconsumption in a global economy. In T Princen, M Maniates and K Conca (eds). *Confronting consumption*. Cambridge: MIT Press, 2002.

Creagh, Sunanda. Forest CO2 scheme will draw organised crime: Interpol. *Reuters Alertnet*. 29 May 2009. Available at http://www.alertnet.org/thenews/newsdesk/JAK500718.htm.

Dali, Salim. Algeria: ambitions to become a leader in carbon capturing. 28 June 2010. Available at http://www.lesafriques.com/en/international/algeria-ambitions-to-become-a-leader-in-carbon-capturing.html?Itemid=35?articleid=0291&sectionid=&releasecatid=&countrytitle=.

Davies, N. The inconvenient truth about the carbon offset industry. *The Guardian*, 16 June 2007.

Dooley, Kate. Why Congo Basin countries stand to lose out from a market-based REDD. Avoiding Deforestation and Degradation Briefing 7. Moreton-in-Marsh: FERN, 2009.

Dorsey, M. Green market hustlers. Foreign Policy in Focus Policy Report, June 2007.

Eraker, H. *CO_2lonialism – Norwegian tree plantations, carbon credits and land conflicts in Uganda*. Norway: Norwatch, 2000.

Figueres, C. Sectoral CDM: opening the CDM to the yet unrealized goal of sustainable development. *International Journal of Sustainable Development Law & Policy* 2 (2005), 5–27.

Gilbertson, T and O Reyes. *Carbon trading: how it works and why it fails*. Uppsala: Dag Hammarskjo'ld Foundation, 2009.

Government Accountability Office. *Lessons learned from the EU's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism*. Washington DC: GAO, 2008.

Graham-Rowe, Duncan. Hydroelectric power's dirty secret revealed. *New Scientist*, 24 February 2005. Available at http://www.newscientist.com/article/dn7046-hydroelectric-powers-dirty-secret-revealed.html.

GRAIN. Earth matters – tackling the climate crisis from the ground up. *The Seedling*, October 2009. Available at http://www.grain.org/seedling/?id=643.

Grantham Research Institute. *Possibilities for Africa in global action on climate change: the case for a strong global agreement on climate change – the African Perspective*. London: London School of Economics, 2009. Available at www.oecd.org/dataoecd/45/30/43573901.pdf.

Grothmann, T and Patt, A. Adaptive capacity and human cognition: the process of individual adaptation to climate change. *Global Environmental Change* 15 (2005), 199–213.

Grubb, M. *The Kyoto Protocol: A guide and assessment*. London: The Royal Institute of International Affairs, 1999.

Guan, D, Peters, Glen, Weber C L et al. Journey to world top emitter – an analysis of the driving forces of China's recent CO2 emissions surge. *Geophysical Research Letters* 36 (2009).

Horta, Korinna. Global climate politics in the Congo Basin: unprecedented opportunity or high-risk gamble? Berlin: Heinrich Böll Foundation, 2009. Available at http://www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf.

Intergovernmental Panel on Climate Change (IPCC). IPCC fourth assessment report (AR4): Working Group II: Impacts, adaptation and vulnerability. Geneva, 2007.

International Energy Agency (IEA). *World energy outlook 2008*. Paris: IEA, 2008.

Jackson, T. *Prosperity without growth*. London: Earthscan, 2010.

Kapp, K W. *The social costs of private enterprise*. Cambridge: Harvard University Press, 1950.

Lang, Chris. Guyana could be paid for increasing deforestation: Jagdeo. 24 November 2009. Available at http://www.redd-monitor.org/2009/11/24/guyana-could-be-paid-for-increasing-deforestation-jagdeo/.

Liverman, D. Who governs, at what scale and at what price? Geography, environmental governance and the commodification of nature. *Annals of the Association of American Geographers* 94(4) (2004), 734–738.

Lohmann, L. Carbon trading: a critical conversation on climate change, privatisation and power. Development Dialog no 48. Uppsala: Dag Hammarskjöld Foundation, September 2006.

Lohmann, L. Marketing and making carbon dumps: commodification, calculation and counterfactuals in climate change mitigation. *Science as Culture* 14(3) (2005), 203–235.

Mackenzie, K. US cap and trade bill looks even further away. *Financial Times*, 20 January 2010.

McCarthy, M. Soggy summer set to enter the record books. *The Independent*, 31 August 2007.

McCully, Patrick. Comments on Bujagali Hydropower Project's second application (Uganda), 19 August 2010. Available at http://www.internationalrivers.org/en/africa/nile-basin/bujagali-dam-uganda/comments-bujagali-hydropower-projects-second-application-ugand.

New Economic Foundation. *Chinadependence: the first UK interdependence report*. London: NEF, 2007.

Newmarch, Jocelyn. Eskom seeks Medupi carbon credits. *Business Day*, 28 April 2010. Available at http://www.businessday.co.za/articles/Content.aspx?id=107265.

Nonor, Daniel. Ghana: Massive Jatropha farming threatens food security. AllAfrica.com, 18 March 2010. Available at http://allafrica.com/stories/201003180794.html.

Osuoka, Isaac 'Asume'. Paying the polluter? The relegation of local community concerns in 'carbon credit' proposals of oil corporations in Nigeria. In Steffen Böhm and Siddhartha Dabhi (eds). *Upsetting the offset: the political economy of carbon markets*. London: Mayfly Books, 2009, 86–97.

Paul, Helena, Ernsting, Almuth, Semino, Stella et al. Agriculture and climate change: real problems, false solutions. Oxford: EcoNexus, 2009. Available at http://www.econexus.info/pdf/Agriculture_climate_change_copenhagen_2009.pdf

Polanyi, K. *The great transformation: the political and economic origins of our time*. Boston: Beacon Press, 2001.

Raupach M, Marland, G, Ciais, P, Le Quéré, P et al. Global and regional drivers of accelerating CO_2 emissions. *Proceedings of the National Academy of Sciences*, 2007. Available at www.pnas.org.

Robbins, P. *Political ecology*. London: Blackwell, 2004.

Roberts, J T and B C Parks. *A climate of injustice: global inequality, North–South politics, and climate policy*. Cambridge: MIT Press, 2006.

United Nations Framework Convention on Climate Change (UNFCCC). Copenhagen Accord 2009. Available at http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf.

UNFCCC. Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol: Consideration of further commitments for Annex I parties under the Kyoto Protocol – draft proposal by the chair. FCCC/KP/AWG/2010/CRP.2, 6 August 2010. Available at http://unfccc.int/files/meetings/ad_hoc_working_groups/kp/application/pdf/kpawgcrp2.pdf

United Nations Framework Convention on Climate Change Ad Hoc Working Group on Long-term Cooperative Action under the Convention. Negotiating text – note by the secretariat. FCCC/AWGLCA/2010/14, 13 August 2010. Available at http://unfccc.int/resource/docs/2010/awglca12/eng/14.pdf.

UNFCCC. Ad Hoc Working Group on Further Commitments for Annex 1 Parties under the Kyoto Protocol. Documentation to facilitate negotiations among Parties. Note by the chair: Land use, land use change and forestry. FCCC/KP/AWG/2010/6/Add.2, 29 April 2010. Available at http://unfccc.int/resource/docs/2010/awg12/eng/06a02.pdf.

Vidal, J and Adam, D. China overtakes US as world's biggest CO_2 emitter. *The Guardian,* 19 June 2007.

Wolf, E. Ownership and political ecology. *Anthropological Quarterly* 45 (1972), 201–5.

World Bank. *State and Trends of the Carbon Market 2007.* Washington DC, 2007.

World Bank. *State and trends of the carbon market 2009.* Washington DC, 2009.

World Bank. *State and trends of the carbon market 2010.* Washington DC, 2010.

Wysham, D. *How the World Bank's energy framework sells the climate and the poor short.* Washington DC: Bank Information Centre, 2006.

CHAPTER 3
African offset projects

Kinkead, B. Undertaking CDM projects in Africa – challenges, trends and opportunities. Ecosecurities presentation at DNA Forum, Addis Ababa, October 2007.

Reyes, O & Gilbertson, T. *Carbon trading: how it work and why it fails.* Norway: Dag Hammarskjöld Foundation, 2009.

Shreuder, Y. *The corporate greenhouse: climate change policy in a globalising world.* London: Zed Books, 2009.

CHAPTER 4
South Africa

Coal-to-Liquid Fuel Caucus. Bunning, Obama re-introduce blueprint for energy independence, 2007. Available at http://www.investorvillage.com/smbd.aspmb=4496&mn=158&pt=msg&mid=1143111 (accessed in September 2009).

Creamer, Terence. Sasol decelerates Project Mafutha pending carbon capture, refinery clarity. *Engineering News* (online), 13 September 2010. Available at http://www.engineeringnews.co.za/article/sasol-decelerates-project-mafutha-pending-carbon-capture-refinery-clarity-2010-09-13;.

Erion, G. *Low-hanging fruit always rots first*. Durban: Centre for Civil Society, 2005.

Hallows, D. & Munik, V. *Poisoned spaces*. Pietermaritzburg: GroundWork, 2006.

Hallows, D & Munik, V. *Peak poison*. Pietermaritzburg: GroundWork, 2007.

Ki-moon, B. All nations must fan the change in the air. *The Star,* 21 September 2009.

Njobeni, S. Sasol plans power play to rely less on Eskom. *Business Day*, 14 September 2009.

Sasol. *Annual Report 1999*. Johannesburg: Sasol, 2009.

Sasol. Oil test results stun Sasol Chevron GTL challenge team, 2006. Available at http://www.sasol.com/sasol_internet/frontend/navigation.jsparticleTypeID=2&articleId=14600001&navid=4&rootid=4 (accessed in February 2009).

Sasol. Sasol celebrates 5 years on NYSE, 2008. Available at http://www.ainewswire.com/?p=66 (accessed in September 2009).

Sasol. *Positive Energy 2008*. Johannesburg: Sasol, 2008.

Sasol. *Financial Reporting 2009*, 2009. Available at http://www.sasol.com/sasol_internet/frontend/navigation.jspnavid=16600001&rootid=3&cmpAd=1 (accessed in September 2009).

Sasol. CFO newsletter to investors, 2009. Available at http://www.sasol.com/sasol_internet/downloads/CFO_newsletter_to_investors_29January2009_final_1233237538178.pdf (accessed in September 2009).

Schneider, M. Making savings at Sasol. *Financial Mail*, 17 October 2008. Available at http://free.financialmail.co.za/report08/green08/jgreen.htm (accessed in February 2009).

Wang, Y. Sasol, Shenhua Group may complete coal-to-fuel plant by 2013. *Bloomberg,* 7 January 2009. Available at http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a.MSdPvb0Ep8 (accessed in September 2009).

CHAPTER 5
Uganda

Adgar, N W, Benjaminsen, T A, Brown, K et al. Advancing the political ecology of global environmental discourses. *Development and Change* 32(4) (2001), 681–515.

Aga Khan Development Network. IPS to Get $32 million in new equity for East Africa, 2003. Available at http://carbonfinance.org/Router.cfm?Page=Projport&ProjID=9616 (accessed on 19 October 2007).

Bachram, H. Kyoto fails indigenous peoples on climate change, 2005. Available at http://www.tni.org/detail_page.phtml?page=archives_bachram_montreal.

Balch, O. Carbon trade-off. *Guardian Unlimited*, 13 May 2005. Available at http://www.guardian.co.uk.

Bidwai, P. Carbon trading. *Frontline*, 30 December 2006.

CDM Rule Book. Available at http://www.cdmrulebook.org/164 (accessed on 29 July 2010).

Falkenberg, C M, and Sepp, S. Economic evaluation of the forestry sector in Uganda. Uganda Forest Department, 2000.

Greiner, Sandra and Michaelowa, Axel. Defining investment additionality for CDM Projects –practical approaches. *Energy Policy* 31 (2003).

Goufo, Yemtsa and Male, Steven. Hydropower: the small versus large debate and the policy decisions implications in developing countries, 2009. Available at http://www.ibp.org.br/eventos/33iaee/pdfs/33IAEE_770_201004131148goufoyemtsa.pdf (accessed on 29 July 2010).

Gwagge, P. Discussion of problems of climate change and the poor. Personal communication. 2 October 2007.

Haya, Barbara. Failed mechanism: how the CDM is subsidising hydro developers and harming the Kyoto Protocol. International Rivers, November 2007. www.internationalrivers.org/files/Failed_Mechanism_3.pdf.

International Panel for Climate Change (IPPC). Guidelines for National Greenhouse Gas Inventories. Workbook 2, 1996. Availalbe at www.ipcc-nqgip.iges.or.jp/public/gl/invs5a.htm (accessed on 7 October 2007).

Kanabahita, C. 2001. Forestry Outlook Studies in Africa (FOSA) Country Report: Uganda. Forestry Department, Ministry of Water, Lands & Environment. Available at http://www.fao.org/DOCREP/004/AC427E/AC427E05.htm.

Kasita, Ibrahim. Deloitte to audit Wenreco. *New Vision*, 10 May 2009. Available at http://allafrica.com/stories/200905110202.html (accessed on 29 July 2010) .

Kasita, Ibrahim. Nyagak power dam ready mid-2010. *New Vision*, 1 November 2009. Available at http://www.newvision.co.ug/D/8/220/699780 (accessed on 29 July 2010).

Kavaljit, S. *Why investment matters: the political economy of international investments*. India: Madyam Books, 2007.

Kevin, S. Carbon trading: the limits of free trade-market logic. *China Dialogue*, 20 September 2007.

Leopold, Mark. *Inside the West Nile*. Oxford: James Currey, 2005.

Lohmann, L. Carbon trading: A critical conversation on climate change, privatization and power. *Development Dialogue* 48 (September 2006).

Ministry of Finance, Planning and Economic Development. Uganda Poverty Status Report, 2005: progress in implementing the poverty eradication action plan, 2005.

Ministry of Water, Lands and Environment. The National Forestry Plan, 2002.

Ministry of Water, Lands and Environment. The Uganda Forestry Policy, 2001.

Ministry of Water, Lands and Environment: Forest produce marketing and transportation. Public Notice, 12 November 2004.

Müller, Benito. Additionality in the Clean Development Mechanism: why and what? Oxford Institute for Energy Studies. EV 44, March 2009.

Nambalirwa, Aisha. Solar loans and subsidies now available. Uganda Rural Electrification Agency Newsletter 2.1, May 2009. Available at http://www.rea.or.ug/userfiles/REA%20Newsletter%202009.pdf (Accessed on 29 July 2010).

Neple, Harald. Affirmation regarding no diversion of Official Development Assistance. Ministry for Foreign Affairs of Norway, 2005. Available at http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view.html (accessed on 16 October 2007).

New Vision. Kampala, Uganda, 5 October 2007.

Norplan Limited and Econ Center for Economic Analysis. Environmental Impact Statement for Nyagak minihydro (revised V 2), 2005. Available at www-wds.worldbank.org.

Project Design Document. Uganda Nile Basin Reforestation Project No 3, 15 October 2006.

Pustinen, Pekka. Affirmation regarding no diversion of Official Development Assistance. Ministry for Foreign Affairs of Finland, 2005. Available at http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view.html (accessed on 16 October 2007).

Reddy, T. Agrofuels – Another scramble for Africa? Institute for Security Studies, 2007. Available at http://www.tni.org/.

Republic of Uganda. Constitution of the Republic of Uganda, 1995, as revised, 2005.

Republic of Uganda. Report of the capacity needs self-assessment for implementation of the multilateral environment agreements (CBD, UNFCC, UNCCD and International Waters) in Uganda. National Environment Management Authority, Ministry of Water and Environment, Kampala, Uganda.

Republic of Uganda. The National Forestry and Tree Planting Act, 8/2003.

Sawlog Production Grant Scheme. *Plantation Guidelines* 2(3) (February 2007). Available at www.sawlog.ug.

SGS. Validation report: West Nile Electrification Project, 15 November 2006. Available at http://cdm.unfccc.int/UserManagement/FileStorage/FPFNDPIPT20U3IMMNISYI7MGIIUKQH (accessed on 16 October 2007).

Sseppuya, Michael. Nyagak Dam for commissioning in three weeks. *East African Business Week*, 27 July 2010. Available at http://www.busiweek.com/10/page.php?aid=918.

Smith, K. 'Obscenity' of carbon trading, 2006. Available at http://www.tni.org/detail_page.phtml?&page= archives_ksmith_obscenity&menu=11c.

The National Environment Management Authority. Letter of approval for the Environmental Impact Statement for the proposed Rwoho and Bugamba Forest Management Plan, 2006–2016. Kampala, Uganda, 2006.

The National Environment Management Authority. Report of the national capacity needs self-assessment for implementation of the multilateral environment agreements (CBD, UNFCC, CCD, and international waters) in Uganda. Kampala, Uganda, 2007.

The National Forestry Authority. Collaborative Forest management Plan for part of Rwoho Central Forest Reserve that lies within the boundaries of Ntungamo District. Jointly prepared by the members of RECPA and National Forestry Authority, 2006.

The National Forestry Authority. Forest Management Plan for Bugamba and Rwoho Central Forest Reserves for the period 2006–2026. Kampala, Uganda. 2006.

Uganda Rural Electrification Agency. Available at www.rea.or.ug (accessed on 16 October 2007).

United Nations Framework Convention on Climate Change (UNFCCC). CDM-Executive Board. Simplified project design document for small scale project activities (SSC-CDM-PDD): West Nile Electrification Project (Version 02, 8 July 2005). Available at http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view.html (accessed on 16 October 2007).

UNFCCC. Tool for the demonstration and assessment of additionality, 26 August 2008. Available at http://cdm.unfccc.int/methodologies/PAmethodologies/AdditionalityTools/Additionality_tool.pdf (accessed on 16 October 2007).

UNFCCC. Methodologies AMS-I.D version 9; AMS II.B version 7. Available at http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view.html (accessed on 16 October 2007).

UNFCC Clean Development Mechanism. Available at Maphttp://cdm.unfccc.int/Projects/MapApp/index.html (accessed on 16 October 2007).

United Nations Development Programme (UNDP). MDG Targets and Indicators. Available at http://www.undp.org/mdg/goallist.

West Nile Development Conference (WNDC). Technical concept paper, 2005. Electronic copy in possession of the authors.

World Bank Carbon Finance Business. Carbon Finance Document for the Uganda Nile Basin Reforestation Project, 22 April 2005.

CHAPTER 6
Ethiopia

The Learning Paper. Pilot Cookstove Project in Ethiopia (online). Available at http://www.thelearningpaper.com/clean.html (website no longer exists.)

Food and Agriculture Organisdation (FAO). Global Forest Resources Assessment 2005. Country Report on Ethiopia, 2005.

Kassahun, D. Global climate change and Ethiopia's vulnerability to environmental hazards. In E Kelbessa (ed), *Ethiopia between the sharp scissors of climate change and environmental degradation: Report on the 2006 flood disaster.* Forum for Environment, 2006, 67–78.

Ministry of Water Resources and National Meteorological Services Agency, Federal Democratic Republic of Ethiopia. Initial National Communication of Ethiopia to the United Nations Framework Convention on Climate Change (UNFCCC). Addis Ababa, 2001.

Tolossa, S. Personal interview. Addis Ababa, 18 September 2007.

Shanko, M. Personal interview. Addis Ababa, 19 September 2007.

Charlton, A. Correspondence. Addis Ababa, 10 October 2007.

Sintayehu, W. Personal interview. Addis Ababa, 30 September 2007.

Environmental Change Institute. Generating carbon credits from cooking. Cooking and Carbon Expert Workshop, 14 November 2005. Available at www.eci.ox.ac.uk/research/energy/downloads/cooking-proceedings.pdf.

Ministry of Finance and Economic Development (MoFED), Federal Democratic Republic of Ethiopia. Ethiopia: Building on Progress: A Plan for Accelerated and Sustained Development to End Poverty (PASDEP), 2005/06–2009/10. Addis Ababa, 2005.

CHAPTER 7
World Bank carbon finance and Africa's forests

Angelsen, A (ed). *Moving ahead with REDD: issues, options and implications*. CIFOR, Bogor Barat,. 2008.

Bank Information Center. About the Forest Carbon Partnership Facility. Available at http://www.bicusa.org/en/Issue.Background.50.aspx

Cameroon FCPF R-PIN, July 2008. Available at http://www.forestcarbonpartnership.org/fcp/node/62.

Carr, Christopher and Rosembuj, Flavia. World Bank experiences in contracting for emissions reductions. *Environmental Liability* 2 (2007), 114–119.

Africa Peoples Movement on Climate Change. Confronting the climate crisis: preparing for Copenhagen and beyond, 30 August 2009. Available at http://www.carbontradewatch.org/articles/declaration-of-the-africa-peoples-movement-on-climate-c.html .

UN Framework Convention on Climate Change (UNFCCC). Copenhagen Accord, 18 December 2009. Available at http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf.

Davis, Crystal, Williams, Andrew, Goerset, Lauren et al. Getting ready with forest governance: a review of the World Bank Forest Carbon Partnership Facility readiness preparation proposals. World Resources Institute, July 2010. Available at http://pdf.wri.org/working_papers/getting_ready_2010-07-13.pdf.

Davis, Crystal, Daviet, Florence, Nakhooda, Smit et al. A review of 25 readiness plan idea notes from the World Bank Forest Carbon Partnership Facility. World Resources Institute, February 2009. Available at http://www.wri.org/publication/world-bank-forest-carbon-partnership-facility-idea-note-review.

Democratic Republic of Congo. FCPF R-PIN, March 2008. Available at http://www.forestcarbonpartnership.org/fcp/node/65.

Dakolias, Maria and Rey, Christian. Access to information and trust funds. Presentation to 2010 Donor Forum in Paris, France, 18–19 May 2010. Available at http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/ORGANIZATION/CFPEXT/EXTCFPDONFOR/0,,contentMDK:22552833~menuPK:6136274~pagePK:64168445~piPK:64168309~theSitePK:1168943,00.html.

Environmental Rights Action/ Friends of the Earth Nigeria. Fact sheet: Harmful gas flaring in Nigeria, November 2008. Available at http://www.foe.org/pdf/GasFlaringNigeria_FS.pdf.

Ethiopia FCPF R-PIN. Available at http://www.forestcarbonpartnership.org/fcp/node/66.

FAO Forestry. Towards a harmonized definition of non-wood forest products. Available at http://www.fao.org/docrep/x2450e/x2450e0d.htm.

Daviet, Florence, Davis, Crystal, Goers, Lauren et al. Ready or not? A review of the World Bank's FCPF R-Plans and the UN-REDD joint program documents, July 2009. World Resources Institute Working Paper. Available at http://pdf.wri.org/working_papers/ready_world_bank_redd.pdf.

Forest Carbon Partnership Facility. FY2009 Annual Report, 2009. Available at http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/Dec2009/FCPF_FY09_Annual_Report_12-08-09.pdf.

Forest Carbon Partnership Facility (FCPF). Introduction to the FCPF: global dialogue on developing a readiness preparation proposal. Presentation, 13–14 August 2009. Available at http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PPT/Day%201_1_FCPF_%20Introduction.ppt.

Forest Carbon Partnership Facility. R-PP Submissions – most recent. Available at http://www.forestcarbonpartnership.org/fcp/node/257.

Forest Carbon Partnership Facility. Structure of the R-PP template: review and assessment criteria for R-PP. Global Dialogue on Developing a Readiness Preparation Proposal, 13–14 August 2009. Available at http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Day_1_2_RPP_structure%20.pdf.

Forest Peoples Programme. NGO statement on the World Bank's proposed Forest Carbon Partnership Facility (FCPF), 12 November 2007. Available at http://www.forestpeoples.org/documents/forest_issues/unfccc_bali_ngo_statement_nov07_eng.shtml.

Forest Peoples Programme. The FCPF: facilitating the weakening of indigenous peoples' rights to lands and resources. Moreton-in-Marsh, February 2008.

Gabon FCPF R-PIN. Available at http://www.forestcarbonpartnership.org/fcp/node/67.

Garcia, Bryan and Roberts, Eric (eds). Carbon finance: environmental market solutions to climate change. Yale School of Forestry and Environmental Studies. Report No 18, Fall 2008.

Global Witness. Honest engagement: transparency and civil society participation in REDD, December 2008. Available at http://www.redd-monitor.org/wordpress/wp-content/uploads/2009/02/redd-transparencyfinal_ed2rev1.pdf.

Indigenous Peoples' Global Summit on Climate Change. The Anchorage Declaration, 24 April 2009. Available at http://www.indigenoussummit.com/servlet/content/declaration.html.

Kumar, Anup. Bank announces US$160 million forest partnership amid protest. Climate Change Media Partnership, 12 December 2007.

Lang, Chris. Global forest coalition attacks REDD, 6 October 2008. Available at http://www.redd-monitor.org/2008/10/06/global-forest-coalition-attacks-redd/.

Lang, Chris. REDD will fail with the current definition of 'forest', 8 September 2009. Available at http://www.redd-monitor.org/2009/09/08/redd-will-fail-with-the-current-definition-of-forest/.

Mainhardt-Gibbs, Heike. Fuelling contradictions: The World Bank's energy lending and climate change. Bank Information Center with Bretton Woods Project, CRBM, and Urgewald, April 2010. Available at http://www.bicusa.org/en/Issue.Resources.48.aspx.

Mainhardt-Gibbs, Heike. World Bank Group financing for fossil fuels FY2008–FY2010. Bank Information Center, April 2010. Available at http://www.bicusa.org/en/Document.102115.aspx.

REDD-Monitor. The World Bank Forest Carbon Partnership Facility: REDDy or not, here it comes! 10 November 2008, Available at http://www.redd-monitor.org/2008/11/10/the-world-bank-forest-carbon-partnership-facility-reddy-or-not-here-it-comes/.

Redman, Jane. World Bank: climate profiteer. Sustainable Energy and Economy Network, April 2008. Available at http://www.ips-dc.org/reports/world_bank_climate_profiteer.

Redman, Jane. Dirty is the new clean: a critique of the World Bank's strategic framework on development and climate change. Sustainable Energy & Economy Network, October 2008. Available at http://www.ips-dc.org/reports/dirty_is_the_new_clean.

Republic of Congo. FCPF R-PIN, March 2008. Available at http://forestcarbonpartnership.org/fcp/node/81.

Resource Africa in support of the UN Environmental Programme. Supporting climate change negotiators in Africa: reducing emissions from deforestation and degradation, 2009.

Rietbergen-McCracken, J (ed). Getting ready for REDD: the Forest Carbon Partnership Facility. Arborvitae. The IUCN/WWF Forest Conservation Newsletter. No 34. October 2007.

Schertow, John. Thousands of Ogiek people face eviction from their land, 14 August 2009. Available at http://www.groundreport.com/World/Thousands-of-Ogieks-will-be-e/2905771.

Sustainable Energy & Economy Network and the International Trade Information Service. The World Bank and the G-7: still changing the earth's climate for business 1997–98, December 1998. Available at http://www.seen.org/page/ifis/wbstill/wbgrafx.shtml.

UN Framework Convention on Climate Change (UNFCC). Bali Action Plan, 2007. Available at http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3.

United Nations. Declaration on the Rights of Indigenous Peoples. Adopted by General Assembly Resolution 61/295, 13 September 2007. Available at http://www.un.org/esa/socdev/unpfii/en/drip.html.

US Treasury. International financial institutions and climate change. Internal memo, 17 February 1998.

World Bank Carbon Finance Unit (CFU). About us. Available at www.carbonfinance.org.

World Bank CFU. Community development carbon staff, personal conversation, 20 November 2007.

World Bank Group Forest Carbon Partnership Facility (FCPF). The Forest Carbon Partnership Facility, 2009. Available at http//www.forestcarbonpartnership.org/fcpf/ (accessed on August 25, 2009).

World Bank Group. About the Prototype Carbon Fund (PCF). Carbon Finance Unit. Available at http://carbonfinance.org/Router.cfm?Page=PCF&FID=9707&ItemID=About.

World Bank Group. Carbon finance for sustainable development 2008, May 2009. Available at http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=47061.

World Bank Group. Carbon finance for sustainable development 2009, May 2010. Available at http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/11804Final_LR.pdf.

World Bank Group. General conditions applicable to certified emissions reductions purchase agreements: clean development mechanism projects, 1 February 2006.

World Bank Group. Global gas flaring reduction partnership. Issue Brief, 2006. Available at http://siteresources.worldbank.org/INTGGFR/Resources/GGFR-IssueBrief.pdf.

World Bank Group. State and trends of the carbon market report 2010, May 2010. Available at http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:22592488~pagePK:64168445~piPK:64168309~theSitePK:4125853,00.html.

World Bank Group. Strategic framework on development and climate change. August 2008. Available at http://beta.worldbank.org/overview/strategic-framework-development-and-climate-change.

World Bank Group. The role of the World Bank in carbon finance: an approach for further engagement, 24 May 2006.

World Resources Institute. Governance of Forests Initiative: an introduction to the indicator framework, July 2009.

CHAPTER 8
Regulation as corruption in carbon offset markets

Anderson, Kevin. Testimony before the UK Parliamentary Environmental Audit Committee, 23 June 2009. Available at http://www.parliamentlive.tv/Main/Player.aspx?meetingId=4388.

Ball, Jeffrey. Pollution credits let dumps double dip: landfills find new revenue in trading system meant to curb greenhouse emissions, *Wall Street Journal*. 20 October 2008.

Brahic, Catherine. 'Green' funding for coal power plants criticised. *New Scientist* 2697, 27 February 2009.

Braun, Marcel. The evolution of emissions trading in the European Union the role of policy networks, knowledge and policy entrepreneurs. *Accounting, Organizations and Society* 34(3–4) (2009).

Buiter, Willem. Carbon offsets: open house for waste, fraud and corruption, 2007. Available at http://blogs.ft.com/maverecon/2007/07/carbon-offsets-html/.

CDM market in good shape: official. *Point Carbon*, 2 April 2008.

Chan, Michelle. Subprime carbon? Rethinking the world's largest new derivatives market. San Francisco: Friends of the Earth, 2009. Available at http://www.foe.org/subprime-carbon-testimony.

Channel 4 (UK). Dispatches: The great carbon smokescreen, 2007.

Chestney, Nina and Michael Szabo. Europol expects more arrests in carbon fraud probe. *Reuters*, 20 August 2009.

CleanTech Blog. REDD the basis of a 'carbon Federal Reserve'? Available at http://www.cleantech-blog.com/2009/05/redd-basis-of-carbon-federal-reserve.html.

Consulting firms deny wrongdoing in drafting Indian PDDs. *Point Carbon*, 11 November 2005. Available at http://www.pointcarbon.com.

Creagh, Sunanda. Forest CO_2 scheme will draw organised crime: Interpol. *Reuters*, 1 June 2009.

Crook, Clive. Obama is choosing to be weak. *Financial Times*, 8 June 2009.

Det Norske Veritas (DNV). Clean Development Mechanism Project Design Document form for recovery of associated gas that would otherwise be flared at Kwale Oil-Gas Processing Plant. Nigeria, 2004. Available at http://www.dnv.com/focus/climate_change/upload/final%20pdd-nigeria%20ver.21%20%2023_12_2005.pdf.

Driesen, David M. Markets are not magic. *The Environmental Forum*, November/December 2003, 1827.

FASE et al. Open letter to executives and investors in the Prototype Carbon Fund. Espirito Santo, Brazil, 23 May 2003.

Figueres, Christiana. The CDM and sustainable development. *Environmental Finance*. December 2007. S50S51.

Fletcher, Lawrence. Hedge fund firm Pure Capital targets carbon, food. *Reuters*, 18 June 2009.

Gardner, Timothy. Blue Source to capture Kansas CO_2, up oil output. *Reuters*, 22 August 2007. Available at http://www.planetark.com/dailynewsstory.cfm/newsid/43843/story.htm.

Ghouri, Nadene. The great carbon credit con. *Daily Mail*, 1 June 2009.

Gridneff, Ilya. PNG PM's nephew 'pushing carbon deals'. *The Age*, 3 July 2009. Available at http://news.theage.com.au/breaking-news-world/pngs-pm-nephew-pushing-carbon-deals-20090703-d7g8.html.

Gronewold, Nathaniel. Secretive UN board awards lucrative credits with few rules barring conflicts. *Climate Wire*, 4 July 2009.

Harvey, Fiona. Carbon credit ratings agency is launched. *Financial Times*, 25 June 2008.

Harvey, Simon. Beware the carbon offsetting cowboys. *Financial Times*, 26 April 2007.

Haya, Barbara. Failed mechanism: how the CDM is subsidizing hydro developers and harming the Kyoto Protocol. Berkeley: International Rivers, 2007. Available at http://www.internationalrivers.org/files/Failed_Mechanism_3.pdf.

International Rivers Network. What's in a name? Corker mentions our CDM work in Congress. Available at http://www.internationalrivers.org/en/node/3817.

Jacur, Francesca Romanin. Paving the road to legitimacy for CDM institutions and procedures: learning from other experiences in international environmental governance. *Carbon & Climate Law Review* 3(1), 69–78.

Kay, John. Why the key to carbon trading is to keep it simple. *Financial Times*, 9 May 2006.

Leeds, Chris. Carbon markets and carbon trading: greener and more profitable. Presentation. 13 June 2008.

Lohmann, Larry. Uncertainty markets and carbon markets: variations on Polanyian themes. Forthcoming in *New Political Economy*.

Lohmann, Larry. Regulatory challenges for financial and carbon markets. *Carbon & Climate Law Review* 3(1) (2009), 161–71.

Lohmann, Larry. When markets are poison: learning about climate policy from the financial crisis. Corner House Briefing Paper No 40. September 2009. www.thecornerhouse.org.uk/subject/climate.

Lohmann, Larry. Carbon trading, climate justice and the production of ignorance: ten examples. *Development* 51(3), 359–365.

Lohmann, Larry. Marketing and making carbon dumps: commodification, calculation and counterfactuals in climate change mitigation. *Science as Culture* 14(3) (2005), 203–235.

Lohmann, Larry. Democracy or carbocracy? Intellectual corruption and the future of the climate debate. Corner House Briefing Paper No 24, October 2001. Available at http://www.thecornerhouse.org.uk/subject/climate.

Lohmann, Larry (ed). *Carbon trading: a critical conversation on climate, privatization and power*. Uppsala: Dag Hammarskjöld Foundation, 2006.

Millar, Ilona and Wilder, Martijn. Enhanced governance and dispute esolution for the CDM. *Carbon & Climate Law Review* 3(1), 45–57.

Money grows on trees. *The Economist*, 6 June 2009.

Nicholls, S. Interview with Hans-Juergen Stehr. *Environmental Finance*, December 2007, S42.

Osuoka, Isaac. Paying the polluter? The relegation of local community concerns in 'carbon credit' proposals of oil corporations in Nigeria, April 2009.

Purdy, Ray. Governance reform of the the Clean Development Mechanism after Poznan. *Carbon & Climate Law Review*, 3(1), 5–15.

Reklev, Stien. Cowboys or cavalry? *Trading Carbon*, December 2007, 2728.

Schneider, Lambert. Presentation at conference on Review of the EU ETS. Brussels, 15 June 2007.

Standing, Andre. *Corruption and industrial fishing in Africa*. Bergen: Anti-Corruption Resource Centre, 2008.

Suptitz, A P L et al. Open letter to the Clean Development Mechanism Executive Board. Minas Gerais, Brazil. 7 June 2004.

Taibbi, Matt. The great American bubble machine. *Rolling Stone*, 1082–1083, 2009.

Taleb, Nassim Nicholas. Preface to Pablo Triana, *Lecturing birds on flying: can mathematical theories destroy the financial markets?* London: Wiley, 2009.

Trexler, Mark C, Broekhoff, Derek J and Kosloff, Laura H. A statistically driven approach to offset-based GHG additionality determinations: what can we learn? *Sustainable Development and Policy Journal* 6, 30.

United Nations Environment Programme Risoe Centre on Energy, Climate and Sustainable Development.*CDM pipeline*, 2009. Available at http://www.cdmpipeline.org/.

United Nations Framework Convention on Climate Change. Yangquan coal mine methane (CMM) utilization for power generation project. Shanxi Province, China, 2004. Available at http://cdm.unfccc.int/Projects/DB/TUEV-SUED1169658303.93.

United States General Accounting Office. *International climate change programs: lessons learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism*. GAO Report GAO-09-151, November 2008.

Van der Gaast, Wytze and Katherine Begg, Enhancing the role of the CDM in accelerating low-carbon technology transfers to developing countries. *Carbon & Climate Law Review* 3(1), 58–68.

Von Unger, Moritz and Charlotte Streck. An appellate body for the Clean Development Mechanism: a due process requirement. *Carbon & Climate Law Review* 3(1), 31–44.

Webb, Tim and Terry Macalister. Carbon trade wrong, says Lord Browne. *The Guardian*. 8 March 2009.

Young, Tom. UN suspends top CDM project verifier. *Business Green*, 1 December 2008. Available at http://www.businessgreen.com/business-green/news/2231682/un-slaps-cdm-verifier.

CHAPTER 9
Conclusion

Angelsen, A (ed). *Moving ahead with REDD: issues, options and implications*. CIFOR, Bogor Barat, 2008.