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CONVOCATORIA 2010-2012

TESIS PARA OBTENER EL TÍTULO DE MAESTRÍA EN ESTUDIOS SOCIOAMBIENTALES

REDD+ IN A CLIMATE OF INJUSTICE

JAMES PATRICK McBREEN

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DEDICATION

For Margarete

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Acronyms

CNC	*Comité Nacional del Clima* (National Climate Committee)
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CLAES	*Centro Latino Americano de Ecología Social* (Latin American Centre for Social Ecology)
COICA	*Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica* (Coordinating Body for the Indigenous Organisations of the Amazon Basin)
COP	Conference of the Parties
ENCC	*Estrategia Nacional de Cambio Climático* (National Climate Change Strategy)
ESRL	Earth System Research Laboratory
FACE	Forests Absorbing Carbon Dioxide (FACE Foundation)
GHG	Greenhouse Gas
GIZ	*Deutsche Gesellschaft für Internationale Zusammenarbei*t *GmbH* (German International Cooperation Agency)
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
LULUCF	Land use, land use change and forestry
MAE	*Ministerio del Ambiente del Ecuador* (Ministry of Environment of Ecuador)
MRV	Monitoring, Reporting and Verification
NASA	National Aeronautics and Space Administration
NGO	Non-governmental Organisations
NOAA	National Oceanic and Atmospheric Administration
OECD	Organisation for Economic Co-operation and Development
PNBV	*Plan Nacional de Buen Vivir* (National Plan for Good Living)
PNREDD+	*Programa Nacional REDD+* (Ecuador's National REDD+ Programme)
REDD	Reducing Emissions from Deforestation and Forest Degradation

REDD+	Reducing Emissions from Deforestation and Forest Degradation; role of conservation, sustainable management of forests and enhancement of forest carbon stocks.
SENPLADES	*Secretaria Nacional de Planificación y Desarrollo* (Ecuador's National Secretary of Planning and Development)
tCO_2-eq	Tonnes of carbon dioxide equivalent
UNDP	United Nations Development Programme
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
VCO	Voluntary carbon offsets

ABSTRACT

This research attempts to elucidate the beneficial role of the REDD+ mechanism in the mitigation of climate change, as well as justice-related issues to its implementation. It examines equity issues involved in climate change and carbon trading through the REDD+ mechanism. Addressing its shortcomings without entering into deeper debates about the legitimacy of the market system in which most of us operate. A key assumption of this research is that the impending expiration of the Kyoto Protocol is bound with the expectation that any new international agreement on actions for addressing global climate change will include the development of REDD+ programmes.

REDD+ is controversial, not least because proponents see it as a clever tool to ensure reduced CO_2 emissions from deforestation and forest degradation are achieved at least cost. Whereas critics argue that the mechanism commoditises Earth's atmosphere and forests in a manner that will allow dubious projects and the exchange of 'hot air' to substitute serious engagement on climate change. In terms of climate change mitigation, although proponents consider REDD+ a cost-effective strategy, the eventual success of such a strategy in significantly reducing atmospheric CO_2 levels over the long term, and thus avoiding catastrophic climate change, is questioned.

Implicit difficulties and risks related to the mechanisms implementation are highlighted. For instance, preventing deforestation and forest degradation will not solve the scale of the CO_2 emissions problem alone, even if the obstacles for doing so could be overcome. The significance and nature of the climate change challenge implies that other policy instruments will have to be employed in addition to carbon trading. Taxes and subsidies can also create an explicit price for carbon, and regulation creates an implicit carbon price.

Although the likelihood of achieving significant long-term reductions in GHG emissions via REDD+ programmes is questioned, it is argued that the mechanism should be seen as an opportunity to contribute to a sustainable management of forest areas and local development in Ecuador through the fulfilment of national environmental and social objectives. The REDD+ mechanism is recognised as a way to mobilise capital to fund forest and biodiversity conservation. With due consideration to the social and environmental functions of forests, it is possible for Ecuador to create additional benefits for indigenous peoples and local communities, and biodiversity conservation.

This leads the researcher to the perceived dichotomy existing between potential social and environmental benefits of REDD+ on a local level and, the view that implementation of the mechanism will be insufficient to mitigate climate change effects and prevent dangerous climate change: representing what has been described as its perverse nature on a global level. It is proposed that REDD+ is a useful secondary tool, but caution should be taken so as not to expect too much from the mechanism in the fight against climate change, which the mechanism essentially fails to address the root causes of.

However, well-managed and creatively applied, carbon financing does have the potential to address social and local development goals in Ecuador, as well as significant biodiversity conservation benefits. But ultimately, REDD+ measures will only be effectively implemented if local stakeholder participation is clearly established from the outset to ensure equity issues are adequately addressed. In light of the current political environment, it is reasoned that Ecuador, as with other developing countries, should seek to carefully manage its participation in the carbon offset and emissions permit markets.

INTRODUCTION

This thesis has lessons for the critical REDD+ community but it also has messages for those who are currently working to implement REDD+ projects. The investigation is divided into five main parts: first, an introduction and background to the research problem. In the first chapter, the current discussion on, and state of, climate change is examined in order to pinpoint the justice dilemmas related to it. The second chapter considers the inequity inherent with the climate change discourse and proposed solutions: principally, how offsetting currently governs climate change mitigation efforts, and resulting justice concerns. Followed by an analysis of REDD+ and related justice issues in the third chapter, before a discussion of the principal conclusions, demonstrating the justice dilemmas related to mitigating climate change effects—through the REDD+ mechanism—as envisaged in Ecuador.

The aim of this investigation is to provide an analysis of some of the justice issues related to climate change and REDD+, and the implications of this knowledge for societal responses for effective mitigation at this critical moment when the main architecture for climate governance must be effectively developed. Given the scale of the challenge posed by global climate change, it seems critical that those purporting to implement the REDD+ mechanism as one solution to climate change, are equipped with the implicit justice-related issues—a goal that this investigation seeks to contribute to.

Questions about the timing, level and form of the next round of mitigation commitments are moving to centre stage of the international negotiating agenda on climate change. However, if new efforts to reduce CO_2 emissions are not forthcoming—for instance, the Kyoto Protocol or similar mitigation efforts fail, as they have done to date—, the likelihood of avoiding 'dangerous climate change' is remote. We must limit warming to less than 2ºC relative to pre-industrial levels, and not surpass the upper limit of 350 parts per million by volume (hereafter ppm) of carbon dioxide equivalent (CO_2-eq)[1] if we are to stand a chance (McKibben, 2012). Such critical decisions on responses to climate change are due to be made at the end of 2012, this research is intended to provide useful information from both the scientific and academic community

[1] 'CO_2 equivalent' (CO_2-eq) may be explained thus: "GHG emissions/removals can be expressed either in physical units (such as grams, tonnes, etc.), or in terms of CO_2-eq (grams CO_2-eq, tonnes CO_2-eq, etc.). The conversion factor from physical units to CO_2-eq is the Global Warming Potential of the corresponding GHG" (UNFCCC, 2012c).

to a wide range of audiences—political leaders, indigenous peoples and local communities, NGO, private sector, and civil society in general.

Presentation of the research problem

In 1992 the world came together at the Earth Summit in Rio de Janeiro to discuss a global framework for international efforts to combat climate change. It was here that the international environmental treaty, United Nations Framework Convention on Climate Change (UNFCCC), was negotiated. Two years later, in 1994, the UNFCCC entered into force, with intergovernmental efforts to tackle the challenge posed by climate change as its principal objective. Indeed, this was a milestone and represented the first step in recognising that climate change is a global problem requiring a global solution.

The guiding objective for the Convention, as outlined in Article 2 of the treaty, is to stabilise atmospheric concentrations of greenhouse gases (GHG)[2] at a level that would prevent dangerous anthropogenic interference with the climate system (UNFCCC, 1992: 4). In its Article 3.3 the Convention also calls for 'precautionary', 'cost-effective' and 'equitable measures' to address climate change. Signalled by many as a major achievement of the Convention, was the international agreement that lead to the Kyoto Protocol; adopted in 1997—and entering into full force in 2005—it sets more powerful targets than the UNFCCC treaty.

To date, the Kyoto Protocol is the only official, legally binding, strategy designed to mitigate global climate change. One of the most significant outcomes from Kyoto was the creation of a market for certified emission reductions (CERs)—a credit issued by the Kyoto Protocol Clean Development Mechanism (hereafter, CDM). The CDM allows developed countries to finance investment projects for GHG emission abatement in developing countries. It is an instrument that generates credits that can be used to meet developed countries' GHG reduction commitments. Subsequently, this research follows the definition of developed (Annex I) and developing (non-Annex I) countries as identified by the UNFCCC (2012d), Annex I Parties include the industrialised countries that were members of the OECD (Organisation for Economic Co-operation and

[2] Greenhouse gases are gases that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. The UNFCCC (2012f) distinguish six main GHG whose emissions are human-induced: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulphur hexafluoride (SF_6).

Development) in 1992, plus countries with economies in transition, whilst Non-Annex I Parties are mostly developing countries.

The three Kyoto Protocol 'flexibility mechanisms' are designed to enable emission reductions to occur in the cheapest locations across the globe. Carbon trading was envisaged through these three flexible mechanisms in the first Kyoto commitment period from 2008 to 2012. A cap-and-trade system, or emissions trading, as set out in Article 17 of the Kyoto Protocol, "allows countries that have emission units to spare—these may be emission permits from a business or country that is emitting less than its allotment—to sell this excess capacity to countries that are over their targets" (UNFCCC, 1998: 15). This carbon market created a new commodity in the form of emission reductions or removals, and, as such, carbon is currently traded like any other commodity on the world market.

It is appropriate to contextualise what international efforts to slow climate change have achieved thus far. An analysis of countries with Kyoto targets seems to indicate more successes than failures, and the sum of emissions from these countries has also fallen significantly (UNFCCC, 2012f). Nevertheless, this comes as little recompense when emissions in the rest of the world have increased sharply—especially in China and other emerging economies (Olivier *et al*., 2012). It is significant that much of the growth in China and other emerging economies has been driven by the production of goods and services exported to developed nations.

Therefore, since the signing of the Kyoto Protocol, total global GHG emissions have as increased, as has their rate of increase. The fact that global emissions have shown no sign of slowing down leads to the conclusion that the Kyoto Protocol has been a failure in its aim of achieving a reduction in global emissions. However, it has been an important first step in global climate diplomacy, and delegates in COP 18 in Doha[3] agreed to extend the Kyoto Protocol until 2020, but the question is whether a more ambitious second step will materialise in time to avoid unacceptable risks of devastating climate change.

[3] The eighteenth session of the Conference of the Parties (COP 18) took place from 26th November to 7th December 2012 in Doha, Qatar.

The rise of climate change in the political agenda

James Lovelock, independent scientist and prolific thinker, acknowledges that the IPCC is potentially the most effective link between climate science and human affairs and policy, but equally recognises how climate observations in the real world differ greatly from the model forecasts of the IPCC. In accordance with this failure to predict what has happened, he poses concern that "political action and governmental initiatives to combat climate change all seem to assume that the IPCC is at least making reliable educated guesses" (Lovelock, 2009: 45). Whilst the IPCC define their role to, "assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation" (IPCC, 2012: 1).

The publication of the IPCC Fourth Assessment Report and the Stern Review on the Economics of Climate Change are central to why climate change has climbed to the top of the political agenda in recent years. Lord Nicholas Stern, former World Bank chief economist and his team set out to examine the economic impacts of climate change itself and the economics of stabilising GHG in the atmosphere. In summary, the report concluded that:

> The evidence shows that ignoring climate change will eventually damage economic growth. Our actions over the coming few decades could create risks of major disruption to economic and social activity, later in this century and in the next, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century. And it will be difficult or impossible to reverse these changes […] The earlier effective action is taken, the less costly it will be (Stern *et. al*., 2006: ii).

More specifically, the review warns that ignoring climate change could reduce global GDP by 20 per cent by the end of the century, and that to avoid this risk the world should spend 1 per cent of global GDP a year, starting immediately. However, in 2008, Stern announced that his report had underestimated the speed and scale of some serious climate impacts and increased his recommendation for expenditure on emissions reductions to 2 per cent of global GDP. Nonetheless, by Stern's analysis, ignoring climate change is still many times more expensive than fixing it.

Therefore Stern Review showed conclusively that it would be cheaper to act now on emissions than pay the costs later. But in criticism of this, Dumanoski (2009: 209)

stipulates, "Characterising climate change as 'the greatest and widest ranging market failure ever seen' […] Stern made it clear that the human future cannot be left to markets". It thus comes as no surprise that such mechanisms created to confront climate change are seen as representing the largest privatisation of one of the worlds' natural commodities. The Stern review's message, crucial from the perspective of enlightened capital, is that it is cheaper to take action on climate change now than in the future, and that a 'green capitalism' might be possible. The context and motivation for producing the Stern review framed in terms of GDP growth, only emphasises the problems facing us as a global society which focuses upon increasing consumption and production as the *raison d'être* for life.

Stern and his team announce that financial institutions can make billions along with carbon traders, energy suppliers and other entrepreneurs quick off the mark. "Tackling climate change is the pro-growth strategy for the longer term, and it can be done in a way that does not cap the aspirations for growth of rich or poor countries" (Stern *et al*., 2006: viii). Yet the key role of the Stern Review seems to be as "a justification for economic policy to continue with traditional growth strategies and for such policy to be seen as offering the 'solution' with a bit more trading and some new technology" (Spash, 2007: 712). The more fundamental question is why the prospect of human induced climate change is best reflected in GDP at all, why is the problem being framed like this, as the pro-growth strategy?

As aforementioned, the Stern Review was a major document mobilising global opinion on (the economics of) climate change; its authors also raise ethical issues as a central concern, and appear set to make the matter a high priority stating, "it is not possible to provide a coherent and serious account of the economics of climate change without close attention to the ethics underlying economic policy raised by the challenges of climate change" (Stern *et al*., 2006: 38). Under "the ethics of adaptation" rich countries are named as responsible for supporting the poor, due to having generated climate change via past consumption and growth (Stern *et al*., 2006: 37). This is a clear assignment of liability, contrary to the standard economic analysis of climate change.

Dumanoski adds—of the Stern Review—that "while its text certainly discusses earnestly and at length the possibility of some unspecified 'surprise' or 'catastrophe', the report nevertheless conveys the overall impression that, even at its worst, climate change

will be a manageable, albeit costly, problem" (Dumanoski, 2009: 72). Further suggesting that economic analysts in the Stern Review "could not bring themselves to imagine genuine catastrophe, a climate spasm disruptive enough to bring down the economic system. Leading climate scientists say this is not only imaginable, but frighteningly possible" (Dumanoski, 2009: 76).

An insufficient societal response to climate change

The UNFCCC identifies two options to address climate change: mitigation of climate change by reducing GHG emissions and enhancing sinks, and adaptation to the impacts of climate change. Mitigation comprises all human activities aimed at reducing the emissions or enhancing the sinks of GHG (Klein *et al*., 2005: 580). Notably however, due to the inertia in the global climate system, no mitigation effort, no matter how rigorous and relentless, is going to prevent climate change from occurring. Even if all anthropogenic CO_2 emissions ceased immediately, climate would continue to change for decades and precipitate adverse climate change impacts across the globe.

Due to its central place in the framework of the Kyoto Protocol, carbon trading has come to occupy a prime place as one of the most important instruments in the global climate policy. Indeed, it is the first global, environmental investment and credit scheme of its kind, providing a standardised emissions offset instrument, whereby projects can earn saleable CER credits, each equivalent to one tonne of CO_2, which can be counted towards meeting Kyoto targets.

The creation of a market for tradable CERs is seen by many as a significant step towards the solution of the global climate crisis. By virtue of being tradable, CERs are meant to contribute to the reduction of GHG emissions in the places where such reductions are cheapest. Protecting the climate thus becomes a matter for speculators who strive for profits from financial transactions, with little or no interest at all in climate change. So does the emissions trade represent anything more than creative CO_2 accounting, which simply allows business as usual to continue?

The first commitment period for Kyoto recently came to an end in 2012, and it is evident that CO_2 has already become one of the hottest global commodities potentially worth billions of dollars. The scale of this market is indicated by the existence of

525,926,315 annual average CERs generated by registered projects, and more than 2,070,000,000 CERs expected by the end of 2012 (UNFCCC, 2012c).

Thus, officially, tackling deforestation under the climate convention is principally driven by the desire to reduce CO_2 emissions. In this context, activities that reduce emissions from deforestation and forest degradation (REDD) and contribute to conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD+), currently occupy a prime position in the international climate regime development agenda. Therefore, the REDD+ mechanism is an instrument, that from its inception, was principally designed to mitigate climate change through the reduction of emissions from deforestation and forest degradation. The argument is that, from a global point of view, it is irrelevant where exactly GHG emissions are reduced. Thus proponents claim that protecting the climate is made possible not only cheaply and efficiently but also profitably.

Such carbon trading mechanisms have fashioned the response from UN climate talks to ever-increasing emissions of CO_2 and other GHG in the atmosphere. The effects of such policies have not only been incredibly slow, but they have also not achieved their desired outcomes. Regarding these mechanisms, Gudynas (2009: 36) questions "whether the proposals that have been circulated so far are really aimed at devising effective measures to tackle climate change". Market-based mechanisms invest where it is cheapest whilst costlier efforts to protect the climate—those efforts that demand strong investment in sustainable technologies—are neglected.

REDD+ is a complex and emotive topic of debate because it covers interconnected environmental, moral, cultural, political and economic aspects of both deforestation and climate change. Such proposals evoke ideological, political and financial passions, and this is precisely why the forest debate attracts so much attention "the REDD+ process has been characterised by an extremely high participation of concerned parties" (Rubio and Wertz-Kanounnikoff, 2007: 5). REDD+ is criticised—by such concerned parties—for several principal reasons: mainly, that it will do nothing to address the critical need, in the long term, to reduce CO_2 emissions.

Opponents contest that in addition to not solving the climate change problem, the pursuit of REDD+ projects represents an irresponsible decision made by the rich global North, whilst inevitably having unintended consequences, most probably for the poorest

global South. Indeed climate justice activists and scholars have highlighted the serious risks—notably for indigenous peoples and local communities—, and in particular for marginalised and vulnerable social groups within these forest-dependent communities.

As a point of note, Springer and Alcorn (2007: 1) describe how in an effort to recognise the rights and challenges faced by communities affected by conservation and development efforts whilst sidestepping the difficulties inherent in identifying 'the indigenous' in any particular case, in many conservation and development discussions affected communities are described as "indigenous peoples and local communities"; indeed, it is for this reason that this same terminology is used in this investigation, seeking to broaden the term to capture a wider group of stakeholders.

Where humanity should aim

James Hansen, the world's foremost climatologist, and his colleagues from the National Aeronautics and Space Administration (NASA), forewarn us that "Paleoclimate evidence and on-going changes imply that today's CO_2, about 385 ppm, is already too high to maintain the climate to which humanity, wildlife, and the rest of the biosphere are adapted" (Hansen *et al*., 2008: 228). Even an optimistic climate change scenario predicts a minimum increase of 2°C in the global mean temperature and altered patterns of rainfall and extreme weather events.

In light of such a reality, "Reducing the risk of potential planetary catastrophes is the overriding reason to keep atmospheric concentrations of GHGs within safe bounds" (DeCanio, 2009: 916). Whilst Hansen *et al*. (2008: 228) warn us in sterner words, "Continued growth of greenhouse gas emissions, for just another decade, practically eliminates the possibility of near-term return of atmospheric composition beneath the tipping point for catastrophic effects". The consequences of even small changes in natural systems indicate the very delicate balance in nature, and this is reflected when scientists talk about tipping points, which is "where a gradual change suddenly moves into a self-fuelling spiral" (UNFCCC, 2012b).

The IPCC (1996) define climatic 'surprises' as "rapid, non-linear responses of the climatic system to anthropogenic forcing (e.g., greenhouse gas increases)". Examples of climatic surprises include a collapse of the conveyor belt circulation in the North Atlantic Ocean, rapid destabilisation of the Greenland ice sheet, and warming-induced release of

methane (CH_4) from the tundra, as well as methane clathrates found in the permafrost regions of Siberia and Alaska for instance, under fresh water lakes or sediments on the ocean floors. The implications of these are precisely the kinds of non-linear events that would most likely qualify as 'dangerous anthropogenic interference with the climate system' under the Climate Change Convention, and Weitzman (2008: 3) describes how "very deep analytical problems arise because of irresolvable uncertainty about potentially catastrophic and irreversible planetary changes associated with warming". Therefore climate change is awash with such surprises because of the enormous complexities of the processes and interrelationships involved, and our insufficient understanding—or preferred ignorance—of them.

Important research on climate tipping points has arisen, for instance a synthesis of climate models published in 2006 suggests that a concentration of 450 ppm CO_2-eq gives a 50 per cent chance of not exceeding 2°C. This should be regarded as an absolute maximum concentration, especially when global climate is at stake: a one-in-two chance is not at all good odds! Furthermore, the temperature rises after which for example the Greenland ice sheet melt is likely to become irreversible suggests the 2°C target is prudent; therefore maximising the chance of maintaining average global temperature increase well below 2°C is a moral imperative for *all* humanity and life in Earth.

In response to the question about what is necessary to achieve atmospheric stabilisation of CO_2, Wigley *et al*. (1996) estimate that to achieve between 350 and 450 ppm CO_2-eq, emissions would have to be reduced to roughly 15 to 30 per cent of their levels in the year 2000. Whilst the Scientific Expert Group (2007) and the Stern Review (2006), "put 450 ppm CO_2-eq as their lowest recommended stabilisation target. Yet both acknowledge that 450 ppm CO_2-eq has at best even odds of keeping below 2°C warming, and something like a 20 per cent likelihood of exceeding 3°C warming" (Baer *et al*., 2007: 90).

It is with these considerations that this investigation establishes to:

i) Contribute towards addressing and confronting injustices in the climate change debate.

ii) Contribute with elements for shaping fair future climate politics.

iii) Contribute towards enhancing policy debate and formulation.

iv) Provide an interface into the basis for the moral positions adopted and their relationship to the global climate change debate.

Principally setting out to respond to the following hypotheses:

H_1 – REDD+ is a clear illustration of climate injustice.

H_2 – REDD+ and carbon offsetting schemes only benefit high emitting developed countries and promote corporate interests over the livelihoods of indigenous peoples and local communities in Ecuador.

General objective

1. Within a framework of justice, analyse the REDD+ mechanism in an Ecuadorian context.

Specific objectives

- Identify the environmental and social implications that could result from REDD+ implementation in Ecuador.
- Establish to what extent REDD+ addresses distributive and procedural aspects of climate equity.
- Identify who benefits—and how—from REDD+ implementation in Ecuador.
- Analyse REDD+ proposals to highlight the key notions of justice at play in the international and national arena.

Theoretical Framework

The term 'climate justice' can be found in academic literature by authors such as Brown Weiss (1989) and Shue (1992). However, academic use of the term did not spawn the movement, this instead was the result of development and environmental groups from the Global North and developing country negotiators who began to use the term at the COP-13 and COP-14 negotiations[4]. As Herman Ott *et al*. describe,

[4] The Thirteenth session of the Conference of the Parties (COP 13) took place from 3 to 14 December 2007 in Bali, Indonesia; and the Fourteenth session of the Conference of the Parties (COP 14) took place from 1 to 12 December 2008 in Poznań, Poland.

> [COP-14 in] Bali saw the emergence of a social justice movement on climate change […] Organizations ranging from Oxfam to the Third World Network and Focus on the Global South are now taking the issues of climate change seriously. As a result of their participation, the content and tone of the negotiations are beginning to change and their support has led to greatly increased confidence on the part of the larger developing countries (Ott *et al*., 2008: 94).

Conversely, Roberts *et al*. (2009: 394) describe how the movement arose much earlier from the work of various elements around the world, when the Rising Tide[5] coalition for climate justice was formed at the COP-6 negotiations in 2000. These same authors acknowledge that UN climate change conferences have been important forums for such bridge-building to occur.

Issues of equity and justice are high on international agendas dealing with the impacts of global climate change. But what are the implications of climate change for equity and justice amongst vulnerable groups at a local level? "Certain groups of developing countries are recognised by the Convention as being especially vulnerable to the adverse impacts of climate change […] Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures" (UNFCCC, 2012d). There is considerable literature suggesting that the poorest and most vulnerable groups will disproportionately experience the negative effects of climate change, and that such changes are likely to impact significantly on developing countries, such as Ecuador. It is for this reason that this important question will be examined at greater depth.

Ideas about distributive justice are as varied as the cultures with which they are bound up. Climate justice is diverse to such a degree that "nearly every analyst has sought to derive their own typologies" (Rowlands, 1997: 4). To further complicate issues, the majority of these typologies are organised differently and "operate at different levels of generality" (Ringius *et al*., 2002: 4) thus giving rise to "conceptual pluralism" (Fermann, 1993: 30). However, John Rawls' theory of justice as fairness plays a central role in any discussion of equity-based justice, and it is on this foundation that the application of equity to climate change for this study will, in-part, be based. However,

[5] Rising Tide is "an international network of groups and individuals committed to a grassroots approach to fighting for climate justice [who] believe that the Kyoto Protocol will fail to combat the climate change crisis. Instead the Protocol promotes the self-interest of corporations and industrialized nations and marginalises issues of global equity and the environment" (Rising Tide, s/f).

other approaches will also be used in order to examine problems of equity within the climate change discourse, and as illustrated, in arguments over REDD+ in particular.

Environmental justice is "a term coined and extensively used in the scholarship that has focused on different exposure of minorities to environmental stresses and risks" (Ikeme, 2003: 197). The term could also be used to refer to the fair treatment and meaningful involvement of all people regarding the development, implementation, and enforcement of environmental laws. Perhaps one of the most familiar arguments of environmental justice movements is that the poor bear much of the environmental risks due to low representation and access to power and decision-making (Camacho, 1998).

Environmental justice understood as a broad overarching concept that encompasses all justice issues in environmental decision-making—including both procedural and distributive justice—is what is usually meant by equity. However, the diversity of perspectives on the ethical concepts of equity and environmental justice in the environmental literature means that a definition of a unifying framework is required. This unifying framework will be achieved through the implementation of the following broad principles of justice: justice as utilitarianism, justice as liberal egalitarianism, market justice, justice as mutual advantage, communitarianism as justice, and, justice as meeting needs. These will be utilised as the basis for a framework from which to analyse the REDD+ mechanism in terms of climatic, social and environmental benefits.

Justice as utilitarianism

This conception favours (re)distribution along the lines that create the greatest amount of utility—often defined in terms of happiness—for the greatest amount of people. As Sagoff (1988) identified, the allure here is the rejection of moral elitism, there are problems with how utility is defined and whether it ought to be maximised. It is for example apparent that a "hedonistic definition of welfare or utility sits uneasily within the concept of global sustainable development" (Okereke, 2008: 37).

The politics of utility maximisation entails the aggregation of a range of different (often incommensurable) factors that affect human welfare—a feat which is virtually impossible at an individual level let alone across societies and between nations. Indeed, differences in views over the worth of forests and how forests ought to be valued (as carbon stocks, as ecosystems, or as home to indigenous peoples and local communities)

reflect, in part, differences in utility functions and which preferences ought to be maximised, and this of course is in itself, in accordance with interests and is therefore highly subjective.

Justice as liberal egalitarianism

This approach, unlike utilitarianism, emphasises the separateness of individuals and takes equality and freedom of all as the most basic good. As Sterba (1980: 5) highlights, the main distinctive feature of liberal egalitarianism is that it attempts to combine political equality and economic liberty into "one ultimate moral ideal". Whilst Rawls (1999: 303) recommends that social and economic inequalities be arranged so that "they are the greatest benefit to the least advantaged members of the society". The 'difference principle' from this same author, for example, would allocate social goods so as to result in the greatest benefit, or least burden, to the least advantaged social classes; the idea is to ensure that any difference that then arises in social and economic status is due to individual performance. Rawls calls this 'justice as fairness' and says that it is impossible to justify that the hardship of some is offset by the greater good of the collective. Pogge (1998), on the basis of this, argues for a 'global resource dividend' where nations who have used more than their fair share of the global commons are made to compensate those who have been disadvantaged.

Market justice

The main idea underpinning this philosophy of justice is that the right to property is derived from the application of labour, as defined by Nozick (1974) who referred to this approach as property rights. This notion of justice relies on markets as the main agent of wealth (re)distribution. The idea that government should intervene to redistribute resources on the basis of any other criterion is rejected as being unjust, and social inequalities are accepted as the inevitable consequence of liberty and enterprise. Justice as property rights strongly supports markets and is aligned with the rise of neoliberal governance in recent decades.

Supporters of this approach reject egalitarianism as being incompatible with individual liberty and believe, "the only task for governments in environmental affairs is

to leave markets well alone such that human ingenuity can be given full rein" (Dryzek, 2005: 121).

Justice as mutual advantage

The key idea of this approach is that justice should be conceived in terms of agreements that "have positive net benefit for all" (Grasso, 2007: 231). Justice as mutual advantage rejects rights to welfare and the notion that states should redistribute wealth to benefit the economically disadvantaged. It also stipulates that justice is the outcome of agreement entered into by rational agents with the aim of furthering their self-interests, and that the purpose of justice is to "give each person the maximum chance of achieving their good, given that everybody else is trying to achieve their (different) good" (Gauthier, 1986: 213).

In the context of REDD+, one can expect that the main objective of proposals underpinned by justice as mutual advantage would be to secure relative economic gains for its proponents. Justice as mutual advantage indeed provides that the purpose of international conventions is merely to allow states conceived as rational egoistic actors to pursue and maximise gains under an agreed political framework. An example of a manifestation of the application of this particular notion of justice can be evidenced in the continual reference of governments to sovereignty and 'national circumstances' in negotiations. Heyward (2007: 521) describes it as "a tactic to either challenge or justify *status quo* rights and historic entitlements, or more generally to secure special favour with respect to the sharing of particular burdens and benefits of international cooperation".

Communitarianism as justice

Communitarians such as Miller (2000) believe that liberal theories of justice do not give communities sufficient attention and justice can only be determined on the basis of cultural context and values associated with the good in question. In REDD+ debates, for example, proponents of communitarian ideas of justice would emphasise the need to give attention to the culture and wellbeing of indigenous and local forest dwelling communities and the effect any REDD+ policy might have on these groups. Communitarians believe that the liberal focus on individualism gives rise to two

unsatisfactory consequences: the loss of community and the neglect of the government in upholding certain public goods.

Justice as meeting needs

Finally, the obligation of justice here is derived from the moral equality of humans. The emphasis is on the obligations of states to meet the rights of citizens for opportunities to fulfil their own potential. Sen (1999) frames these in terms of enhancing the functioning capabilities of people, which is boosting people's ability to lead well-meaning lives. Critical of liberalists for focusing on political equality without addressing material equality (equal rights to resources), Sachs *et al*. (2007) point out that if material rights (basic needs) are denied, then civil-political rights are worthless. The notion of justice as meeting needs figures prominently in the sustainable development discourse, and is a key feature of the Brundtland Report, declaring that "all human beings have the fundamental right to an environment adequate for their health and well-being" (World Commission on Environment and Development, 1987: 43).

This could also be well grounded in the concept of historical responsibility—as cited by the UNFCCC—where it is demanded that richer developed countries compensate developing countries since their past overuse of global common resources (in this instance, CO_2 emissions) limits the ability of the latter to pursue their development. This is something strongly reflected in the historical debt debate. Indeed, as highlighted by Gudynas (2009: 37), "a much greater responsibility falls on industrialised countries, particularly if the question is considered from a historical perspective".

A changing climate

Hansen *et al*. (2008: 228) remind us that, "Humanity today, collectively, must face the uncomfortable fact that industrial civilisation has become the principal driver of climate change effects". As such, the climate issue is based on the belief that anthropogenic GHG emissions are the major driving force behind the changing climate. As exemplified by Ikeme (2003: 200), "Due to the far-reaching and multi-faceted nature of the potential impacts, climate change has become the most important and dangerous, and certainly the most complex, global environmental issue to date".

Essentially, climate change politics provides a good framework for illustrating the claims to environmental justice, whilst controversy over climate change has focused on economic, ethical and political issues. This can be explained by the fact that the distribution of climate change impacts is at variance with the aforementioned historical responsibility. Whilst the majority of the impacts are expected to have greater intensity in the developing countries (IPCC, 2007), the increased concentrations of GHGs in the atmosphere are due overwhelmingly to the activities of developed countries (Hamilton, 1999).

Although it could be argued that this is down to dominant neoliberal world politics, strongly oriented towards competitiveness, with the intention of maintaining and enhancing the power of the governments, corporations and elites from the global North. It is worthwhile highlighting that climate change is not exclusively a North-South issue: the lifestyles of Southern elites are as unsustainable, as those dominant in the global North. But fundamentally, the developing countries—who are more heavily at risk—have a reduced capacity to confront the challenges imposed by climate change. On this note, authors such as Sagar and Banuri (1999) suggest that the less threatened developed countries have the wealth, the technical knowledge and capacity to bear the burden of climate change, but this is certainly questionable.

For most purposes therefore, the major environmental justice and equity issues facing the climate change debate are distribution of impacts, distribution of responsibility, and distribution of costs and benefits. Fundamental to the investigation is that the global North and South act on different conceptions of equity and environmental justice in confronting this issue. For instance, it could be understood that the focus of the South has been on equality, distributive injustice and corrective justice for historical emissions. While the North, on the other hand, focuses mainly on the most economically efficient path for minimising climate impacts and delivering global ecological health and stability (Tol, 1999)—the former strongly evidenced and represented by carbon offsetting and REDD+ itself—, which will be discussed at greater length posteriorly.

A literature review indicates that the Southern conception of environmental justice emphasises that the past must play a fundamental role in addressing present entitlements—compensatory justice (Sokona and Denton, 2001); that immediate equal rights to GHG emission be accorded to each individual in the world—distributive justice

(Gupta *et al*., 1999); and finally, the adoption of fair procedures and inclusive frameworks in the decision making process—procedural justice (Kandlikar and Sagar, 1999).

Have unilateral measures been sufficient?

Neumayer (2000) observes, the overriding focus of the Northern conception of environmental justice has been largely consequentialist, and geared predominantly towards minimising burdens and ensuring the most economically efficient path for minimising climate impacts. In reaching the Kyoto target, the main consideration was the ability of countries to meet their targets given economic status and prospects. "To date, climate negotiations have been less about protecting the global environment than about protecting national interests" (Ikeme, 2003: 202).

In alignment with this, the US and China—the two major polluters—are unwilling to engage in unilateral measures to combat climate change that might undermine their geo-political position. Economic strength and energy security are as important to these nations as tackling climate change, "the US is already starting to see the world through the prism of a struggle for energy resources against the backdrop of damage inflicted by climate change. The main focus of US strategic and military planning […] will henceforth be on a competition for resources, a competition the Pentagon sees as already under way" (Giddens, 2009: 206).

As evidenced to date, countries are unlikely to embark on unilateral actions that may undermine their economic international competitiveness and global power. This is a fundamental problem of the present global climate change discourse: national interests have largely subsumed the global environmental interest. "In the United States the alleged 'cost to the economy' has proven to be a serious barrier to action […] no formula has been worked out for how to distribute across nations the obligations that surely must accompany significant climate action" (DeCanio, 2009: 915).

In addition to this, the fact that the Kyoto Protocol was never even ratified by the US and Australia[6] for instance, resulted—partly at least—in the targets falling very short of the large-scale global emissions reductions necessary to stabilise anthropogenic atmospheric GHG levels. Not helped by the fact that in 2011, Canada, Japan and Russia

[6] Australia did eventually ratify in 2008, the US has continued to decline to do so.

stated that they would not take on further Kyoto targets (The Guardian, 2011). Canada subsequently used the excuse that the Durban agreement somehow substituted their ratified Kyoto agreements—this is absurd and clearly deficient.

In addition to these facts, Gupta *et al*. (2007) also sustain that no authoritative assessments of the UNFCCC or the Kyoto Protocol asserted that these agreements had, or will, succeed in solving the climate problem. Thus, from the perspective of satisfying the UNFCCC objective of avoiding dangerous climate change, the Protocol has not and will not reduce emissions at a sufficient rate to provide a level of environmental protection to satisfy this vital objective. As such, short-term human interests are being placed above those of all else.

Criticisms of the Kyoto Protocol are also based on the idea of climate justice (Liverman, 2008: 14), this will be discussed at greater length in due course, but essentially centres on the balance between the low emissions and high vulnerability of the developing world to climate change, compared to high emissions in the developed world.

Welfare principles dominate the Northern conception of environmental justice. In this light, the Northern condition for environmental justice in the climate protection could be summarised, "Costs and benefits should be shared in such a way as to minimise overall costs while maximising total welfare across the globe. The strategy would thus focus on reducing emissions where it is most cost-effective and where the greatest opportunity for emission reduction obtains" (Ikeme, 2003: 202).

REDD+ justice

The high profile of REDD+ negotiations arise from various factors: firstly, the pivotal role of forests as carbon sinks and consequently, their importance in global climate stabilisation; secondly, the significance of deforestation to global GHG emissions; and finally, the REDD+ mechanism implicates several issues of justice and equity across different geographies and scales of governance (from local through national to international levels). Other issues arising from discussions on REDD+ include, among others, the (in)justice of land tenure systems in many developing countries, the (un)fairness of control and access rights to natural resources and the (im)morality of global management of sovereign-based natural resources.

Avoided emissions from reduced deforestation remains excluded from carbon trading under the Kyoto Protocol due to abiding technical and methodological issues. A commitment to include REDD+ in a post-2012 climate agreement was a key part of the Bali Action Plan at COP-13 in 2007 (UNFCCC, 2012a), which has led to a proliferation of positions on REDD+ being developed by state Parties and observer organisations. References to the rights of indigenous peoples and local communities and the protection of biodiversity were deleted from the draft text in Poznan, resulting in protests from indigenous peoples and civil society groups. Let us hope that this does not set the scene of things to come.

Issues of procedural justice are crucial to REDD+, especially because interested parties that canvass positions cannot always be taken to be representing the indigenous and local communities that actually live in, and depend on, the forests. Emerging REDD+ policy solutions for the post-2012 climate regime looks very likely to reflect a commitment to market-based approaches to forest governance. However, whilst such market-based approaches might serve the preferences of powerful players, climate justice activists and scholars have criticised its effectiveness in terms of mitigating climate change and securing welfare issues of indigenous peoples and local communities.

Whilst it is clear that the ideas of distributive equity favoured in official circles are those consistent with market-based conceptions of justice; this can be seen in the prominent position given to market mechanisms for governing REDD+. These approaches to justice have much in common with the dominant political economic philosophy of neoliberalism, which "at its core, entails a commitment to extending the competitive relations of the market as far as possible" (Holifield, 2004: 286); evidently best reflected in the aforementioned principle of 'market justice'. Whilst Daly (1994) argues that one of the clearest manifestations of the dominance of neoliberalism in global environmental decision-making arenas is that it forces the idea of equity to be strongly tied to the concepts of performance and efficiency, both of which are at the heart of market-based approaches to justice.

The dominance of market-based approaches to environmental governance—as manifested in the available offerings—might make it difficult to agree a mechanism that can promote justice for indigenous peoples and local communities, and such market-based approaches "can reproduce unequal power relations between project actors"

(Corbera *et al*., 2007: 378). Indeed, with such neoliberal concepts of justice tending to prevail—and fundamentally, if the REDD+ mechanism is not correctly implemented—, certainly there is a possibility that such dominance of neoliberal ideals characterising policy responses to REDD+ may result in increases of cumulative GHG emissions as well as global inequality.

Whilst Gudynas (2009: 41) observes, "the 'solutions' that beckon with the commodification of nature are not enough to tackle national environmental problems, let alone global ones. Measures such as the creation of international carbon markets are mere illusions of supposedly effective alternatives, when in fact they do nothing but exacerbate the problems". There is a great mistrust that such mitigation mechanisms would be fair or equitable, but in addition to this, the discourse that such commodification of nature always secures sustainable and environmentally benign outcomes is also dubious.

In terms of REDD+, the issuance of tradable carbon credits provides opportunities for the use of forest credits to offset fossil fuel emissions, which raises questions about the morality of rich countries to buy their way out of emission reductions in the first place, or to use the familiar expression, 'to pay-to-pollute'. Fundamentally, carbon trading is argued against on the grounds that it "reduces the political space available for education, movement-building and planning around the needed fair transition away from fossil fuels" (Lohmann, 2006: 32).

Also at the heart of the REDD+ debate are land tenure conflicts between state powers, and indigenous peoples and local communities. Ancestral and customary land rights of the latter—despite being recognised under international law[7]—are not always acknowledged, which, as outlined by Griffiths (2008), inevitably results in land conflicts. Indeed, the converging pressures of increasing commodity prices, global food scarcity and discussions of carbon trading in forests may have far-reaching implications in that customary tenure systems of the past may not provide security of tenure in the future. It is precisely for this reason critics argue that one of the reasons why the REDD+ debate is so interesting is because it brings to the international arena contentious issues of (in)justice which have long existed. The marginalisation of a section of the society can only be harboured and effectively executed by an authority if the affected group have little or no representation and influence on the REDD+ decision-making process. Thus, in this light

[7] United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), Article 26.

stakeholder participation in the decision-making process is a vitally important way of protecting the interests of all.

If the climate change regime is seen as part of the wider search for global sustainability, then it is important that proposals are judged not simply on the basis of economic efficiency outcomes but also on their ability to promote conservation and meeting the needs of the most vulnerable peoples. Here, the most important issue at stake relates to the extent to which the rights and wellbeing of Ecuador's indigenous peoples and local communities—who live and depend on forests for their livelihoods—are considered in the design of REDD+ policy arrangements. Indeed, it is widely acknowledged that indigenous peoples and local communities are often marginalised and depend to a high degree on forests and forest-related products, and as such could be especially affected by REDD+ efforts if inappropriately implemented. It is for this reason that these groups must be integrated in REDD+ processes from the outset through inclusive, participatory and consultative approaches.

There is certainly a growing awareness of possible detrimental impacts REDD+ policies may have on indigenous peoples and local communities. As a consequence of this there has been greater stakeholder involvement (both nationally and internationally) in the core REDD+ policies under consideration. Essentially there has been a formal recognition of civil society and forest owners—in particular indigenous peoples and local communities—as essential prerequisites for the development of national REDD+ programmes. This has proved fundamental in informing these relevant stakeholders, capacity building and promoting active participation.

Methodology

The main reference for this present research is the discourse around the injustice of climate change and the REDD+ mechanism as a potential solution for its mitigation, and the planned implementation of the latter in Ecuador. In an attempt to resolve it, this research uses a qualitative approach, with the following methods: a discourse analysis of relevant media and literature, semi-structured interviews and dialogue with local stakeholders and REDD+ implementing agencies, in addition to participative and non-participative observation.

A critical review of the most relevant bibliographic material on the main themes of climate justice was carried out—it is from this conceptual framework that the research began. Secondary data sources provided a further document analysis related to REDD+, climate change, and related justice issues; these sources consisted of peer-reviewed scientific and academic research, previous studies and reports (official policy documents from relevant ministries), along with reliable information from official websites, national and international convention reports (Ministries, UNFCCC, IPCC, etc.), as well as articles, books, and newspaper articles. These discourses were then critically analysed and systematised.

The articulation of key stakeholders and organisations formally involved in policy dialogue, along with the various perspectives on REDD+ in Ecuador were systematised and subsequently analysed. Providing a valuable opportunity to better understand the National REDD+ Programme currently under construction, and related negotiations currently taking place in Ecuador. This information was then classified by subject and validated along with a full theoretical reflection.

Relevant actors were selected for their knowledge and experience in both REDD+ and climate change in Ecuador; these were invited to participate in semi-structured interviews. The interviewed actors—on the basis of information provided by themselves through interviews—include governmental and non-governmental or private institutions, indigenous organisations, national and international NGOs and bilateral and multilateral cooperation agencies and other key stakeholders working in the country. A semi-structured interview guide was elaborated with questions focused on the following key areas: the design and management of the national REDD+ programme and activities; power relations, with specific attention to the input and output from stakeholders (indigenous/local community, NGO, international stakeholders); along with climate justice and equity aspects.

Further research consisted of data collection from both participant and non-participant observation, with a corresponding field diary; this provided valuable background information in order to better understand the current—and evolving—national REDD+ scenario. This was achieved through attendance at various workshops, meetings, and conferences permitting the researcher an opportunity to construct his interpretation of key stakeholder perceptions of climate change, REDD+ activities, and

justice related issues. The results from these observations do not appear explicitly in the research as they instead contributed towards formulating preliminary ideas and conceptions, serving greatly for contextualisation purposes.

The results of this research build on extensive secondary data sources and subjective perceptions from a small number of key national REDD+ stakeholders. The high complexity and depth of the research topic was a decisive factor in limiting the views and opinions of only those experts familiar with the recent national and international REDD+ developments, thus forming the focus for this component of the research. Due consideration should also be given to the fact that the REDD+ mechanism is still under construction, and as such, it remains particularly challenging to successfully illustrate the various—often hypothetical—justice issues related to it.

This research does not set out to provide a comprehensive analysis of potential risks for national REDD+ implementation in Ecuador. Rather, it should be understood as an initial step in analysing some of the REDD+ justice-related issues from diverse perspectives. Future research would especially focus on local stakeholders on a national level—and include a wider participant base—, in an attempt to obtain a more profound, and perhaps even quantitative, analysis; this would be an interesting advancement indeed. Through an initial analysis of the implications for REDD+ implementation in Ecuador this investigation explores only one aspect of the climate change mitigation challenge in detail. It leaves for further research the important task of investigating other alternatives, which have not been explored here.

CHAPTER I
CLIMATE CHANGE: THE SCALE OF THE CHALLENGE

Climate change is arguably one of the greatest challenges the world currently faces. The threats posed by climate change have set the international community the dilemma of severely limiting emissions of greenhouse gases (GHGs) or facing the considerable risks associated with global temperature rises. Many have argued that the targets in GHG reductions as agreed under the Kyoto Protocol are unlikely to be sufficient to avoid dangerous climate change.

Defining Climate Change

> Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC, 2007: 78).

Whilst the United Nations Framework Convention on Climate Change (UNFCCC), defines climate change as, "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods" (UNFCCC, 1992: 3). Both the UNFCCC as well as the Intergovernmental Panel on Climate Change (IPCC) thus make a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes—a burning distinction to say the least.

Climate change is largely the result of excessive consumption of natural resources in the economically rich North. A situation that is perpetuated by the funding mechanisms and the conditions imposed by international financial institutions, and business practices, enabled by the neoliberal economic global system. The instruments of global environmental politics are largely market-based because powerful actors consider the market to be the superior means of dealing with fundamental problems such as climate change. Ecological necessities such as reducing the use of fossil fuels, the expansion of renewable energies, as well as new concepts of mobility and new lifestyles have, until now, largely been ignored.

The climate change regime

In 1995 the first Conference of the Parties (COP 1) took place in Berlin, and two years later the Kyoto Protocol was formally adopted in December 1997 at COP 3. The Protocol came into force in 2005 and currently 192 Convention Parties are Party to it (UNFCCC, 2012c). Somewhat astonishingly, just five years before the date of this present research, the UNFCCC identified 2007 as the year in which the world learnt that "climate change was human-made, definitely happening, and that the collective global effort so far to keep greenhouse gases to a 'safe' level was grossly insufficient" (UNFCCC, 2012b). It was at this point that climate science entered into popular consciousness. This overdue realisation can be attributed, as aforementioned, to the release of the IPCC's Fourth Assessment Report released, which incidentally occurred "in the wake of an unusual number of severe weather-related disasters, and at the head of an almost unbroken series of the hottest years on record" (UNFCCC, 2012b).

The Copenhagen Accord was drafted at COP 15 in 2009, which resulted in countries submitting emissions reductions pledges or mitigation action pledges, all non-binding. McKibben (2012: 2) highlights, "167 countries responsible for more than 87 per cent of the world's carbon emissions have signed on to the Copenhagen Accord". This was followed one year later by the creation and agreement of the Cancun Agreements at COP 16 in 2010, providing a framework from which to develop a comprehensive international response to climate change, these are not legally binding either though. Finally, the Durban Platform for Enhanced Action was drafted and accepted at COP 17 in 2011 (UNFCCC, 2012a).

Identifying 'dangerous' climate change

According to the UNFCCC the ultimate objective for climate policy is, "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC, 1992: 4), and as such, all signatories to the UNFCCC have committed to this overall objective of the Convention—to prevent dangerous climate change. However, science alone cannot define 'dangerous anthropogenic interference', ultimately the meaning of 'dangerous' must be decided by society, "any decision about what is to be considered a dangerous level of impact is clearly a political and ethical issue" (Sachs, 2009: 86).

For example, reference is frequently made to a 'safe' target, which is most conveniently expressed in terms of atmospheric concentrations of GHG or temperature increases relative to pre-industrial levels. It is widely accepted that an average global temperature should not exceed 2°C compared to pre-industrial levels, as this would cause dangerous and even catastrophic impacts. The UNFCCC (2012b) provides a general outline, "The average temperature of the earth's surface has risen by 0.74°C since the late 1800s […] It is expected to go up another 1.8°C to 4°C by the year 2100 if no action is taken". Ominously, they also stress that even if it 'only' gets another 1.8°C hotter, "it would be a larger increase in temperature than any century-long trend in the last 10,000 years" (UNFCCC, 2012b).

In the words of the UNFCCC (2012c) "A 2°C rise in global temperatures from pre-industrial levels is the highest rise we can afford if we want a *50 per cent* chance of avoiding the worst effects of climate change". They also define 450 ppm as the concentration of CO_2-eq in the atmosphere that the world must stay at, or under, to stay true to the 2°C. Nonetheless, the UNFCCC is by no means the only body to offer such a 'safe' target; indeed some of the world's leading climate scientists have now revised the highest 'safe' level of CO_2. It was through his research that Hansen posited—in a 2007 paper—that 350 ppm of CO_2 in the atmosphere is the safe upper limit to avoid a climate tipping point. "If humanity wishes to preserve a planet similar to that on which civilisation developed and to which life on Earth is adapted, paleoclimate evidence and on-going climate change suggest that CO_2 will need to be reduced from its current 385 ppm to at most 350 ppm, *but likely less than that*" (Hansen *et al*., 2008: 1)[8].

Whilst Bill McKibben—founder of 350.org[9]—and colleagues stipulate in a confirmative manner, "By now […] the planet has about 392 parts per million CO_2 and this number is rising by about 2 parts per million every year" (350.org, s/f). Going on to describe how '350' signifies climate safety, referring to the certainty that in order to preserve our planet—in the words of Hansen *et al*. (2008: 1) "similar to that on which civilisation developed and to which life on Earth is adapted"—, we must reduce the

[8] Italics are those of the researcher.

[9] 350.org is an international environmental organisation, which sets out to build a global grassroots movement to raise awareness of anthropogenic climate change, to confront climate change denial, and to cut emissions CO_2 in order to slow the rate of global warming (350.org, s/f).

amount of CO_2 in the atmosphere from its current level to below 350 ppm. “350 is more than a number—it's a symbol of where we need to head as a planet” (350.org, s/f).

The consequences for exceeding a 2°C temperature rise are certainly ominous, and will undoubtedly cause climate injustices like never before experienced; including greater water scarcity for billions of people, billions at risk of hunger, make hundreds of millions homeless because of flooding. According to different scenarios, the average sea level rose by 10 to 20 cm over the 20th century (UNFCCC, 2012b), whilst the IPCC (2007) predict that warming oceans and melting glaciers due to global warming and climate change in a midrange projection could cause sea levels to rise by 20–43 cm, and its full range is 18–59 cm by the year 2100.

However, it is necessary to emphasise that these values do not reflect the reality; as highlighted (Hansen, 2007: 4; Elbers, 2012: 7) these IPCC projections are based on linear calculations. Indeed, the IPCC state that several uncertainty factors were not taken into account, and that they are unable to evaluate possible ‘rapid dynamical changes in ice flow’ for instance. As a result, “the higher values of the ranges should not be considered the upper limits for sea level rise” (IPCC, 2007: 8). The provision of such diluted calculations for sea level rise leads the general public to believe that the projected sea level change will only be moderate, whilst simultaneously those very serious suggestions that business-as-usual GHG emissions may cause a sea level rise of the order of metres are laughed off and brushed under the carpet.

There is one thing we may be sure of though, and that is the certainty that exceeding a 2°C temperature rise will threaten the very existence of low-lying areas all around the world—and indeed entire island nation states themselves—through sea-level rise.

Anthropogenic warming has, according to McKibben (2012), raised the average temperature of the planet just under 0.8°C. Such an increase has had startling consequences, far more than perhaps anticipated by many scientists. The same author cites, “A third of summer sea ice in the Arctic is gone, the oceans are 30 per cent more acidic, and since warm air holds more water vapour than cold, the atmosphere over the oceans is a shocking five per cent wetter, loading the dice for devastating floods” (McKibben, 2012: 2).

Scientific research highlights the necessity for serious emissions cuts in order to limit global average temperature rise to no more than 2°C, and indicates the scale of overall reduction required: which countries will make what proportion of these cuts must be decided in negotiations. Whilst the IPCC (2007) suggest that even 450 ppm CO_2-eq will require a 25 to 40 per cent reduction in emissions from developed countries by 2020 and a 15 to 30 per cent reduction below baseline for developing countries in the same timeframe. These ranges summarised by the IPCC assume that both developed and developing nations will achieve their targets domestically. This is a detail not reflected by offsetting; critics would argue on the contrary that the reduction of emissions from deforestation and forest degradation in one place does not reduce emissions from industry or transport in another.

The disparity between climate change predictions and what is observed is noteworthy. According to Dumanoski (2009: 71), upon reviewing the graphs of possible future scenarios calculated by the IPCC, they suggest "nothing erratic […] nothing other than an escalator ascent". The same author also cites leading climate scientists, who describe these projections as "optimistically smooth and surprise free […] they all share a larger unwritten and unstated assumption: Despite global warming, the planet will continue to operate largely as it has since the end of the last ice age, and this warming will perturb, but not unhinge, the system" (Dumanoski, 2009: 71). Indeed, this stunted mentality is of much significance in contextualising the position of the researcher, and indeed one of the principle reasons for commencing this investigation. It is a complete fallacy to believe—when all evolving scientific evidence informs us otherwise—that global warming, on its current trajectory, will 'perturb, but not unhinge, the system'. Quite the contrary!

How did we get into this mess?

The cumulative level of GHG emissions in the atmosphere increases as populations, economies and standards of living grow. As a direct consequence of coal, oil, and natural gas predominantly powering the world's economies, almost all modern human endeavours produce CO_2 emissions. However, GHG occur naturally and serve the vital function of maintaining some of the sun's warmth from reflecting back into space and thus keeping Earth at a habitable temperature. GHG are therefore essential to the survival

of human and other living beings, but it is a matter of scale, and one hundred and fifty years of industrialisation—including clear-felling forests and intensive farming methods—has been responsible for increased levels of GHG in the atmosphere.

The ecological effects of increased atmospheric GHG concentrations are global in nature—producing similar effects upon local climate regardless of their source. In spite of this there have been many attempts to deny the climate change science, and vast sums of money have been pumped into an ignorance industry by the oil and gas lobbies to continue the denial of real climate change (see Elbers, 2012). Entire think tanks to obfuscate manmade climate change have been funded by these interests—most recently The Heartland Institute, a rightwing thinktank notorious for promoting climate scepticism (Hickman, 2012). To continue to live in an ostrich-head-in-the-sand-like state is to remain paralysed from doing anything to arrest the warming, and is the very definition of climate denial. If we don't snap out of this stasis of stupidity, nothing can change for good.

Without doubt, climate change is extremely complex not only in itself but because of its implications in other often problematic concerns such as poverty, economic development and population growth. Confronting climate change will not be easy but ignoring it would be considerably worse.

Averting dangerous climate change

Until now, the debate on how to avert dangerous anthropogenic climate change has been centred mainly on the questions: 1) what is the economically optimal reduction in emissions, based on comparison of the costs and benefits of mitigating climate change, and 2) how can the cost of the emissions reductions be distributed to facilitate achievement of a global regulatory agreement. Evidently this approach has so far failed to produce a clear path forward, and it is safe to say that, to date, it has been a wholly ineffective strategy in confronting climate change.

The Keeling Curve in Figure 1 clearly exemplifies this ineffectiveness; the data in it, from the National Oceanic and Atmospheric Administration and Earth System Research Laboratory (NOAA/ESRL) represents continuous measurements taken at the Mauna Loa Observatory in Hawaii since 1958; fundamentally illustrating the rapidly increasing levels of CO_2 in the atmosphere. To provide some perspective,

Hansen (2009: 117) observes, "the curve may seem to be increasing almost along a straight line, but it is far from that. Indeed the annual carbon dioxide increase is now about three times greater than it was when Keeling began his measurements".

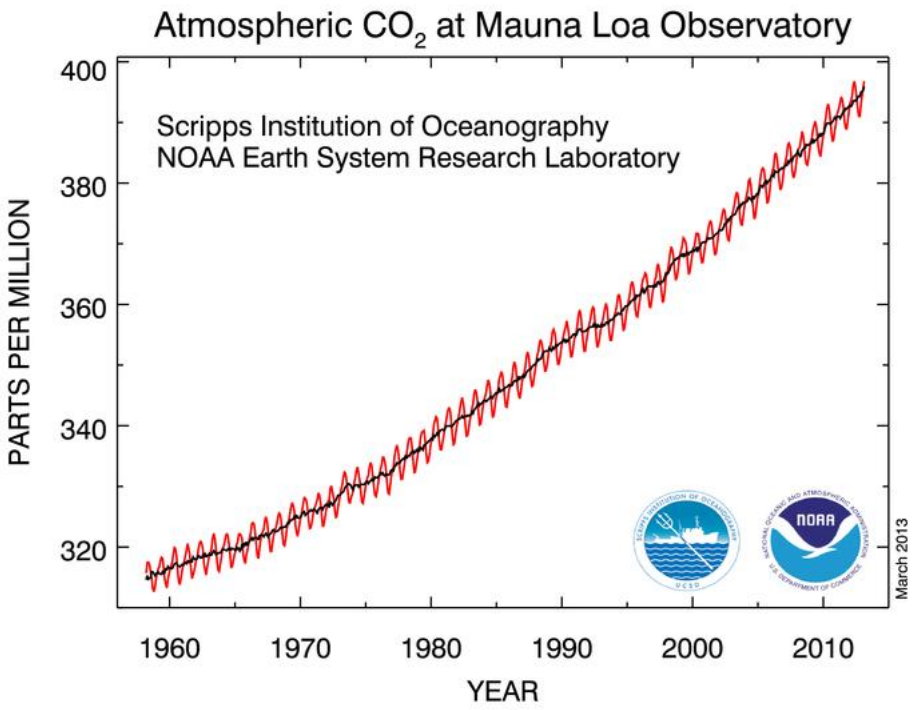

Figure 1: Keeling Curve representing mean atmospheric CO_2 at Mauna Loa Observatory, Hawaii since 1958 till present. The CO_2 data is illustrated by the red curve, whilst the black curve represents seasonally corrected data.

Source: NOAA/ESRL (2013).

Despite this, the objective of the UNFCCC and any related legal instruments is to achieve stabilisation of GHG that would prevent dangerous anthropogenic interference with the climate system. Core principles guide Parties in achieving this objective, for example the Protocol acknowledges the principle of "common but differentiated responsibilities and respective capabilities" (UNFCCC, 1992: 4) of countries at various states of economic development, and establishes a regulatory regime that calls for no commitments to reduce emissions for developing countries and only modest reductions by developed countries relative to their 1990 levels.

The responsibility of developed countries for historic GHG emissions means there is a legal obligation to reduce emissions and to provide support to developing countries. This can be interpreted in relation to the distinction the Climate Change Convention

makes between developed (Annex I) and developing (non-Annex I) countries. But clearly it is necessary to think about the reality of growth and development in our world today; the differentiation between countries on the basis of different situations and needs is not a static one, the Climate Change Convention acknowledges "that the share of global emissions originating in developing countries will grow to meet their social and development needs" (UNFCCC, 1992: 1).

In this sense, the Climate Change Convention can be viewed as a living instrument that must develop to reflect present and future conditions; it must not preclude alternative forms of differentiation which could allow the list of Annex I countries to be amended in order to include advanced developing countries and OPEC nations, for instance. This would alter the dynamic in which the negotiations take place by allowing differentiation between the large heterogeneous group of countries currently classed as developing, from the very smallest to some very large emerging economies (the BRICS[10] members). Thereby influencing the development of the second commitment period of the Kyoto Protocol, or indeed a new agreement entirely post-2012.

The voluntary reduction target set for developed nations in the first instance was a failure, and it was at the Kyoto COP meeting that the efforts to establish revised targets came to fruition. There, the UN advanced the implementation of the Climate Change Convention by setting another set of national targets and timetables for reducing GHG emissions. Although differentiated by country, the formal demand for carbon reductions was driven by the "commitments made by signatories to the Kyoto Protocol who agreed to reduce emissions from a 1990 baseline by, on average, 5.2 per cent by 2012" (Bumpus and Liverman, 2008: 132). It is worth noting, however, that both the earlier voluntary target and the revised target fall far short of the emissions reductions that both IPCC and other leading climatologists research suggests is necessary to stabilise GHG in the atmosphere.

So as a step towards achieving this goal, developed countries agreed to the above targets to cut their emissions; and measures such as the CDM were adopted to enable developed countries to buy emissions reductions from developing countries, or trade amongst themselves—buying and selling emissions rights. The Protocol, through the introduction of offsetting by beleaguered negotiators, allows developed countries to use

[10] BRICS refers to the association of leading emerging economies: Brazil, Russia, India, China, and South Africa.

offsetting as a way to meet those targets, and therefore offers considerable flexibility in the way these targets could be met (offsetting is discussed at greater length in Chapter II).

The failures of the Protocol can be explained by a deeply flawed architecture, "when viewed in totality, the hurdles to be cleared are so daunting that a sensible emission trading system is infeasible in the foreseeable future" (Victor, 2001: 7). Although, as aforementioned, the Kyoto Protocol explicitly incorporates targets and timetables, in other words, ceilings on GHG emissions and dates by which these ceilings must be met. Despite these intentions, "it has only had a marginal impact on cutting carbon emissions and only a few countries are close to meeting their targets" (Giddens, 2009: 189).

While imperfect—various major polluters have not ratified and emissions reductions are not ambitious enough—, the Protocol represents the only legally binding international commitment to reduce GHG emissions. Time is ticking, without Kyoto there is no legal imperative to reduce emissions, just a pledge-and-review system which essentially allows countries to set their own levels of ambition. The pledges on the table do not correspond with the shared objective of limiting warming to less than 2˚C above pre-industrial levels. In fact, we are on a trajectory towards 'dangerous' climate change with warming in excess of 4˚C, and perhaps more (PricewaterhouseCoopers, 2012).

A compelling sense of urgency is needed but unfortunately the horizons of political leaders tend to be short-term—usually of the order of, at most, four or five years—from a climate justice perspective the time horizons are longer yet the need to act starts now. It is imperative that the world is made fairer and safer with a legally binding agreement, one which guides us to 2050 and beyond. This is clearly what climate justice demands. However, in the absence of the necessary urgency and foresight, it becomes necessary to consider a wider range of options to strengthen a new climate change regime.

The Protocol recognises that emission reductions in the developed world would probably be more expensive than reductions in the developing world. More so, "if developed countries were forced to meet their emission-reduction targets alone, they would face economic impacts because of the high marginal costs of reductions in domestic emissions" (Bumpus and Liverman, 2008: 132). As a result, market-based

mechanisms that necessitate the commodification of the atmosphere have become the preferred mechanism for meeting the goals of the Climate Change Convention.

Commodification of the atmospheric commons

While satisfying the criteria of economic rationality for directing emissions abatement efforts, the agreements arising from Kyoto provided few specific incentives to reduce emissions in developed countries. In creating economic (emissions trading) and emission-reduction accreditation schemes, negotiators have sought to create market tools for trading the commodity of GHG emissions.

Replacing the free goods approach in which the sky was available for disposal of, in the words of Mumford (1963: 169), "atmospheric sewage", has entailed the conversion of a pollution free-market to a regulated market. Such transformations are the hallmark of capitalism's response to the identification of new resources. As aforementioned, Gudynas (2009: 41) considers such a succession as the commodification of the atmospheric commons, and that, "Measures such as the creation of international carbon markets are mere illusions of supposedly effective alternatives, when in fact they do nothing but exacerbate the problems".

Implicit to what has been described as the 'greenhouse-gas externality', is the real-life scenario in which the impacts of emissions do not fall on those conducting the activities responsible for producing GHGs. Instead these GHG emissions are an adverse effect of economically valuable activities which affect future generations and people living in developing countries; as such, those responsible for the emissions do not pay the cost (Clark, 2012).

Time is of the essence

We must be cognisant of time. The impacts of climate change are already being felt, they are already causing huge suffering to those that have very little, or no, responsibility—growing seasons are changing, sea levels rising, and people in the poorest parts of the world are at most risk. Time is running out and there is a lot of work to be done; we must clarify and demystify available options and with ambition reach for the best one—the future of the human species depends on it. In this context, climate change is one of the biggest human rights issues of the 21st Century.

A key component is to broaden and intensify participation in emission reduction so as to bring absolute global emissions trends down and allow stabilisation of concentrations of GHGs to occur in a timely manner. At some point, the mounting evidence that humans are indeed changing the climate will become impossible to ignore, even for those domestic social and political institutions that are now habitually inclined to protect the fossil-fuel-based industries that oppose—for narrowly self-interested reasons—the regulation of GHGs, which comprises an essential component of any effective climate policy.

Climate change has very important equity dimensions, and as stipulated by Markandya (2011: 1051), "the application of different equity approaches has major implications on how we perceive the distribution of costs and benefits of climate policies and, therefore, on how we formulate policy". As has been illustrated, tackling climate change urgently requires major cuts in global GHG emissions. And developed countries have failed to comply with their agreed targets to cut their carbon emissions.

Internationally, it has been argued that the moral lead must come from the per capita heaviest polluters, who are also so-called democratic nations and as such should be subject to electoral pressure, although this is not clearly illustrated. Given the widespread nature of the predicted harm of climate change in which many people stand to be significantly and adversely affected, there needs to be an international acknowledgement that we are all in this together. However, effectively addressing the problem of anthropogenic climate change requires more than simply the self-interested acknowledgement of its deleterious effects. There must be policy responses that such an acknowledgment entails, and fundamentally it also requires a commitment to fairness, as this investigation attempts to elucidate.

Offsetting: a silver bullet or a lead balloon?

Rather than control emissions through command-and-control mechanisms, market instruments are seen by many as the most effective way to reduce emissions in line with the Kyoto targets. Carbon trading has become the newest arena for a market environmentalism that assumes that the way to protect the environment is to price nature's services, assign property rights, and trade these services within a global market (Liverman, 2004).

The possibility remains for developed country governments and private companies to use carbon credits to effectively buy themselves out of their responsibility to reduce emissions domestically. The problem will only intensify once the BRICS member countries participate in the global carbon-trading market. For reasons of justice, as aforementioned, these countries are granted the right to increase emissions in order to close gaps in economic development.

Essentially in this investigation, the (hypothetical) offsets in question involve actors from a developed country investing in projects in a developing country—Ecuador––and are thus concerned with potential REDD+ projects and activities that specifically channel finance from the global North to the global South in return for carbon credits. Offsetting may now be extended to forest carbon trading through the REDD+ mechanism, which is discussed in greater detail in Chapter III but first a closer look at offsetting.

Defining Offsetting

The World Resources Institute and the World Business Council for Sustainable Development (2004: 59) define a carbon offset as occurring when an actor (individual, company, NGO, or state) invests in a project elsewhere that results in a reduction of GHG emissions—to meet a voluntary or mandatory GHG target or cap—that would not have occurred in the absence of the project. The concept of offsets emerged in the flexible mechanisms of the Kyoto Protocol, which allow developed countries to meet their emission reduction targets through the purchase of emission reductions. Together with carbon trading, these mechanisms provide an alternative to more expensive or politically difficult domestic emission reductions.

The voluntary carbon offsets (VCOs) parallel market has been developed beyond the regulated CDM, "whereby individuals and organisations can compensate for their GHG emissions by purchasing carbon credits that are generated by emission-reduction projects elsewhere" (Bumpus and Liverman, 2008: 128). Significantly, the voluntary market is currently the only market available for REDD+ projects; whether or not countries decide to wait for a formal compliance market from the UNFCCC remains to be defined, and must be decided in accordance with the unique circumstances of each country. Additionally, the linking of REDD+ to compliance markets depends largely on

whether the Climate Change Convention reaches a legally-binding post-2012 climate agreement with binding emissions reductions.

Initial offsets were created through voluntary partnerships between market environmentalist-oriented NGO and large corporate entities—many of which were large CO_2 emitters—to reduce the carbon footprint of investors for philanthropic and marketing reasons. To cite an Ecuadorian example, FACE (Forests Absorbing Carbon Dioxide) Foundation was established in 1990 by the Dutch electricity-generating board to finance the growth of forests to sequester carbon dioxide. This generation of saleable credits were then sold as credits to finance more forestry projects with carbon and sustainable development benefits (Face the Future, s/f).

How offsets work

As aforementioned the reductions achieved in CO_2 or other relevant GHG are described as tCO_2-eq. It is the ability to measure a baseline scenario against a 'with-project' scenario that is essential, and it is this difference that permits the calculation of emissions reductions created by the offset project. For every tonne of emissions reduced, a carbon credit worth a tonne of reduced carbon can be claimed. This calculation is essential if offset projects are to sell the carbon reductions—as carbon credits—from their activities.

Offsetting is underpinned by the scientific rationale that because GHG mix throughout the global atmosphere, carbon reductions may occur anywhere and still reduce overall concentrations with no relation to national boundaries. As such, offsets supposedly allow carbon to be reduced by compensating for excess emissions in one location through carbon reductions in another. International carbon offsets involve the reduction of GHG emissions by one agent somewhere, and may be implemented by private companies, by national governments or brokered through multilateral agencies.

Offsets emerged from a market logic that has created a demand for, and supply of, carbon reductions that can be priced and exchanged within the international climate regime through the binding targets and flexible mechanisms of the Kyoto Protocol or through the parallel voluntary market. In generating a price for carbon, proponents argue that an incentive is created to reduce emissions as efficiently as possible (Ekins and Barker, 2001). However, it is necessary to analyse the advantages and disadvantages resulting from the use of offsets in climate change mitigation strategies.

Benefits and criticisms of offsets

There are theoretical benefits to carbon offset agreements whether they are implemented as private agreements, as part of bilateral arrangements or multilateral funding initiatives for joint implementation of the Convention. In economic terms, the financial costs of forestry offsets in developing countries may be attractive and more cost effective in terms of tCO_2-eq emissions offset than domestic abatement. Carbon reductions are like many other resources in that they can be, "expensive to obtain locally and are often easier and cheaper in the developing world, where […] forest offsets are more effective, opportunities for implementing 'cleaner' energy systems may be less costly, and labour and land are generally less expensive" (Bumpus and Liverman, 2008: 133).

Therefore from an economic perspective, offsets are an attractive option if the cost of abating GHG emissions is lower through afforestation or through avoiding deforestation and forest degradation, than through other strategies in the domestic country. It is for this reason that some developed country governments are keen to engage in bilateral offsets of their GHG emissions. In principle at least, the gains will accrue to the developed country from having abated emissions at least cost and to the developing country in the investment in forest resources. In support of this, offsetting can be justified in economic terms, indicating that emission-abatement costs mean that such mechanisms have the potential to, "support a cost-effective final allocation of climate change mitigation that will minimise and harmonise marginal abatement costs across space through the use of market-based instruments" (Böhringer, 2003: 456).

"Brokers, consultants, carbon procurement funds, hedge fund managers and other buyers scoured the globe for opportunities to buy credits associated with projects that reduce emissions in developing countries" (World Bank, 2006: 35). Carbon trading allows companies to internalise the carbon externalities that may ultimately harm their long-term profits while providing opportunities for profit through the use of offsets in new global arenas. But in addition to these economic advantages, offsets in developing countries may provide additional co-benefits, such as biodiversity conservation and community development. There are obvious additional environmental benefits for conserving forests, which are global in nature and may be captured by the forest countries through offsets. For this reason it is important to consider the benefits of the conservation

of such forests, in terms of biodiversity, ecological functions of forests, and also in terms of income generation for indigenous peoples and local communities.

However, one important aspect in distinguishing benefits from forest conservation is that they accrue in different spatial and temporal dimensions. Certain benefits accrue to the indigenous peoples and local communities, for example the subsistence use of timber and non-timber forest products; whilst other benefits such as erosion control and watershed protection functions, accrue regionally or nationally.

Whilst benefits from carbon sequestration and protection of biodiversity are global in scale, "the carbon sequestration benefits of forests may be comparatively insignificant compared to the other functional and non-use values of tropical forests" (Brown and Adger, 1994: 223). This is a fundamental inference in terms of evaluating the (in)effectiveness of such mechanisms for mitigating dangerous climate change, whilst acknowledging all-important additional benefits on a local level.

Carbon offsets have been explained as, "unlike any securities ever created […] Unlike traditional commodities, which sometime during the course of their market exchange must be delivered to someone in physical form, the carbon market is based on the lack of delivery of an invisible substance to no one" (Schapiro, 2010: 32). Offsetting has also been criticised for resulting in fewer emissions cuts. In alignment with this latter critique, offsets may be considered as essentially a swap of an emissions cut in developed countries for a cut in developing countries. Clearly this is inadequate and action is urgently needed in the offsetting countries themselves. In addition to this, failure to reduce emissions in developed countries also results in delays in essential infrastructure changes necessary for deeper cuts in the future.

There is a lot of offsetting while continuing in bad ways—and this is clearly unacceptable. Offsetting makes it far more likely that developed countries will continue on a high-carbon path, choosing to buy cheap permits rather than invest in low-carbon infrastructure. Also delaying necessary infrastructure changes in developed countries, as offsetting weakens emission-reduction targets in developed countries, which in turn eases the pressure on polluters both to invest to cut emissions and to avoid carbon intensive investments.

Indeed, a more profound critique of offsets argues that paying someone else to reduce carbon is unethical and that all reductions should be made by the individual,

company, or country through behavioural and technical changes that reduce consumption or that sees a transition towards lower carbon technologies. This view clearly contrasts with the economic and environmental arguments that cheaper and larger reductions of equal or greater value to the atmosphere are possible in the developing world, which subsequently also stands to deny potential sustainable development and additional benefits of projects in poorer communities and technology transfer to the South.

In practice then, it appears that offsetting is not helping developing countries transform their economies to a low-carbon path, in many cases it is locking them into a high-carbon, unsustainable path. As Bullock *et al*. (2009: 5) describe, "offsetting is flawed and a highly problematic tool for tackling climate change. It is a dangerous distraction from the urgent business of decarbonising the world's economies". And it is precisely this latter point—decarbonising the world's economies—which is of utmost importance in terms of avoiding dangerous climate change.

Carbon the commodity

In order for carbon credits to be exchanged and generate revenue, carbon reduction must be turned into a tradable commodity. Offsets are generally commodified into saleable units through the development of emission-reduction projects, the outputs of which can be quantified, owned, and traded. The commodity chain may include owners of the forest where the project occurs, project developers and their local organisational partners, financial institutions and brokers who may possess the carbon credits, and individual consumers, corporations, or countries who purchase the credits.

The fundamental principle for creating carbon as a commodity is that carbon reductions should be additional to a baseline level of emissions and should be abstracted and converted into units of carbon that can be owned and traded. "Carbon offsets rely on baseline-and-credit trading systems that create assets (carbon credits) that represent the additional carbon reductions from a baseline of emissions and focus investment on emission reduction projects that would not have otherwise taken place" (Yamin, 2005: 30). This is the fundamental notion of additionality, which differentiates the emissions reductions produced by an offset project from the business as usual scenario of baseline emissions without the project.

For emissions reductions to be claimed through offsets, reduced tCO_2-eq need to be assigned rights of ownership in order for them to be traded as a commodity. Ownership can take a variety of different forms: a local community may own and use the wood grown in a forest for carbon sequestration, whereas a project developer (national or foreign) may own the carbon reductions created through conservation of the forest. Through projects, carbon is materially created in sinks or destroyed in reductions, but this carbon eventually becomes, "a virtual commodity that is abstracted and transferred across space as a tonne of reduced carbon to be 'consumed' by an organisation that wants to compensate for emissions of equal value or to be placed into markets for commensurable trading" (Bumpus and Liverman, 2008: 136).

It is clear that the selling of carbon sequestration rights may not be tolerated by some developing countries on the grounds that this represents a loss of sovereignty. As Brown *et al*., (1994: 218) stipulate, "the industrialised country could be seen to be 'buying' the tropical forest, or at least specific rights to that forest. This is not acceptable for many countries". Related to this sovereignty issue, is the question whether the offset projects are desirable on social grounds, and fundamentally whether or not the implicit shifting of property rights from local rights to global benefits leads to the undervaluing of these local benefits.

In the case of offsets, it is the right to emit carbon (pollution permits given to developed countries and companies under the Kyoto Protocol) and carbon reductions that become commodified and privatised, traded with transaction fees, and allocated and regulated by international and state institutions. Operating under conditions of unequal exchange between developed and developing countries, northern companies and southern communities. Such unequal distribution of rights to pollute the atmosphere has received criticism: communities in the South are critical of offsets and emissions trading because of unequally distributed benefits from offset projects, neocolonial approaches to property rights, and the sense that the North will continue to consume and use the South as a pollution dump (Lohmann, 2006).

It is said that capital can achieve higher rates of accumulation under carbon trading because less investment is required in domestic emission reductions. Although logical according to economics, this valuation can also be considered a form of unequal exchange in which commodities that are produced in the South are priced at less than

those in the North. As such, this North–South exchange, while economically rational to some, "can be seen as a case of unfair terms of trade and of powerful countries and carbon traders extracting the low-hanging fruit of cheap carbon reductions from the developing world" (Bumpus *et al*., 2008: 142).

Those who trace the fundamental cause of the environmental crisis to the operation of the global capitalist economy offer another critique of the reliance on market-oriented tools. The commodification of the environment transforms public resources into private property and open access into exclusive rights. Although this places a definite economic value on resources, it does not, and cannot, guarantee their protection. To these critics, placing the environment more firmly under control of the global system of capital accumulation, which created the threat in the first place, does not decrease the risk of over-exploitation (Saurin, 1996). Instead, the expanding realm of global capitalism in itself creates new dimensions of ethical challenges and disturbing new possibilities for exploitation of the environment and certain groups of people—often the most vulnerable.

Enthusiasm for the carbon markets—albeit currently diminished compared to previous zest—is predominantly driven by market actors who see possibilities for both direct investment in offset projects and indirect opportunities for commodification in secondary markets, such verification of reductions, derivatives, and insurance associated with trading in emissions (Stern *et al*., 2006). Indeed this enthusiasm can also be found in the developing world, and the Ecuadorian government is especially keen to attract investment to the country through the REDD+ mechanism. The Latin American Centre for Social Ecology (*Centro Latino Americano de Ecología Social*—CLAES) identify how in a South American context, "Bolivia and Venezuela are strongly opposed to the use of markets (including a future REDD+ mechanism) […] other countries [in South America] sees in them, economic and development opportunities" (CLAES, 2010: 29).

Organisations are positioning themselves to take advantage of the commodification of carbon, partly because the creation, transfer, and sale of carbon provide the potential to make money. Whilst local companies and residents in the developing world may benefit from offset projects through direct payments and local development opportunities, others may be losing rights to the use of land and water and

lack necessary information or skills to allow them to demand high prices for their carbon reductions.

"Carbon offsets may be seen as a case of neoliberal environmental governance in which the management of an environmental problem is partly devolved to the market and to the individual but in which the state eventually establishes the rules under which markets operate" (Bumpus and Liverman, 2008: 145). REDD+ therefore also represents a rescaling of governance to *glocalised* sites, where local and non-state actors take control of the local implementation of projects, and supranational governmental organisations set up mechanisms and ensure credibility and effective functioning.

Climate change in Ecuador

Ecuador has been party to the Convention since 1992, and ratified the Kyoto Protocol in January 2000. According to the Ministry of Environment of Ecuador (*Ministerio del Ambiente del Ecuador – MAE*) this responds to, "*la creciente preocupación del país por los efectos del cambio climático que eran cada vez más evidentes a nivel nacional en ese entonces, además como una manera para unir esfuerzos en la lucha contra el cambio climático*" (MAE, 2011b: 35). In 1999, the National Climate Committee (*Comité Nacional del Clima* – CNC) was formed in order to propose the definition and establishment of policies and strategies to comply with guidelines outlined by the UNFCCC (Asamblea Nacional, 2009: 1). The same document highlights that the National Climate Committee did not carry out this role.

The MAE cites Ecuador as having only made negligible contributions, with a percentage of total GHG emissions at 0.001 of global levels, whilst the World Resources Institute (s/f) cite the figure at 0.1 per cent. This difference between Ecuador's total GHG emissions cited as a tenth or thousandth per cent of global levels is indeed significant, and as such is undoubtedly worthwhile highlighting. "*A pesar de que la contribución de Ecuador a la emisión de GEI es marginal […] es un país comprometido con la mitigación y la adaptación a los efectos del cambio climático*" (MAE, 2011a: 103). In spite of the country's contributions, the possible climate change impacts for Ecuador are considerable and worthy of a further mention. It is perhaps wise to foresee some of the devastating effects climate change may have, particularly on the country's poorest and

most vulnerable populations, including indigenous, Afro-Ecuadorian, and other local communities.

Amongst the most probable impacts to be experienced in the country include: intensification of extreme weather events such as those caused by the 'El Niño Southern Oscillation' phenomenon; sea level rise; glacial retreat; decreased annual runoff; increased transmission of dengue and other tropical diseases; expanding populations of invasive species in Galapagos and other sensitive ecosystems of continental Ecuador; and species extinction (MAE, 2011a). According to this same source, notable impacts will also be experienced on population, infrastructure and production.

Currently, there are several specific national policy instruments for climate change issues, which have led to major advances in the management of climate change at the national level, and the mainstreaming of matters among the various central government entities. There are specific references to climate change in different instruments constituting the legal and political framework of the country (MAE, 2011b: 37).

The country recognises that climate justice is an important issue nationally (I01, 2012), and the *Secretaria Nacional de Planificación y Desarrollo*—SENPLADES (Ecuador's National Secretary of Planning and Development) describe the importance of the country's economic growth, and how it is based on productive systems characterised by natural resource extraction and cultivation of agricultural goods for export. "*Hay un énfasis predominante en la producción y el crecimiento económico en detrimento de la distribución del ingreso o los impactos ambientales de los procesos productivos*" (SENPLADES, 2009: 330).

In accordance with the results of the Second National Communication on Climate Change (*Segunda Comunicación Nacional sobre Cambio Climático*—SCN), for the year 2006, Ecuador's total emissions of the three GHG (N_2O, CO_2 and CH_4) were 410,010.75 kTon CO_2-eq. Agriculture was noted as being the largest contributing sector followed by land use, land use change and forestry (LULUCF). More up-to-date figures for reported GHG emissions in Ecuador in 2010 were 121 $MtCO_2$, which corresponds to 50th position globally; these emissions equate to 9,8 CO_2 per habitant, accordingly corresponding to number 49 in the world (MAE, 2011b: 18).

In accordance with Art. 1 of Executive Decree 1815 (Asamblea Nacional, 2009: 2), the Government of Ecuador has declared the adaptation and mitigation of climate

change as state policy, and as such constitute transversal elements in plans and programmes currently under development in all sectors of the economy (I01, 2012). In a complementary manner, the Government of Ecuador has also set the reduction in the rate of deforestation as a priority in the National Plan for Good Living (*Plan Nacional de Buen Vivir* – PNBV – 2009-2013), to reduce the deforestation rate by 30 per cent by 2013, as outlined in Goal 4.1.3. This is highly appropriate for various reasons but especially in light of the CO_2 emissions originating from deforestation in the country (MAE, 2011b: 80).

In 2012, the MAE released the country's first National Climate Change Strategy (*Estrategia Nacional de Cambio Climático* – ENCC 2012-2025). Interestingly REDD+ does not take a particularly significant role, and in fact is mentioned only on a couple of occasions throughout the document, "*la implementación de las actividades necesarias para ampliar el uso de herramientas y mecanismos internacionales que ofrecen recursos económicos (REDD+, NAMAs, MDL, Fondo Verde, Fondo de Adaptación, entre otros)*" (MAE, 2012: 82). Thus, the mechanism is portrayed as little more than a component part, along with these other opportunities for confronting climate change. This is a very important consideration, especially in light of the aforementioned criticisms of offsetting,

CHAPTER II
A CLIMATE OF INJUSTICE

To date, the discourse of the climate change regime has focused its attention predominantly on issues of reducing global GHG emissions; whilst *actual* reductions in global GHG emissions—as envisaged in the Keeling Curve—remain as elusive as ever. This chapter attempts to highlight, and address, some of the principle interrogatives and justice dilemmas implied should this focus continue post-2012. For instance, emission reductions by whom? By how much? And by when? What kind of danger is acceptable, and what kind of danger to whom is acceptable? It is the response to these questions that determines the degree of environmental injustice involved in climate politics.

The idea that climate change is unjust is not new, but the effort to address this injustice is gaining urgency as impacts are being increasingly felt in poor nations threatened by the changes. The main threats are drought and agricultural decline, sea level rise, and the growing risk of extreme weather events.

There is an enormous disparity between nations in their current carbon dioxide emission levels and the stark inequalities in responsibility for the burden of fossil fuel carbon dioxide that has accumulated in the atmosphere. Figure 2 serves as an excellent illustration; the chart on the left denotes that China, with 23.9 per cent, has now passed the United States (17.2 per cent) as the country with the largest current rate of CO2 emissions, and India in third place (6.4 per cent). However, as can be envisaged by comparing the two charts, when the proper measure of responsibility for human-caused climate change is considered—*cumulative* CO_2 emissions—then the United Sates holds about three times the responsibility than China. But in addition to this, European responsibility is a little over that of the United States.

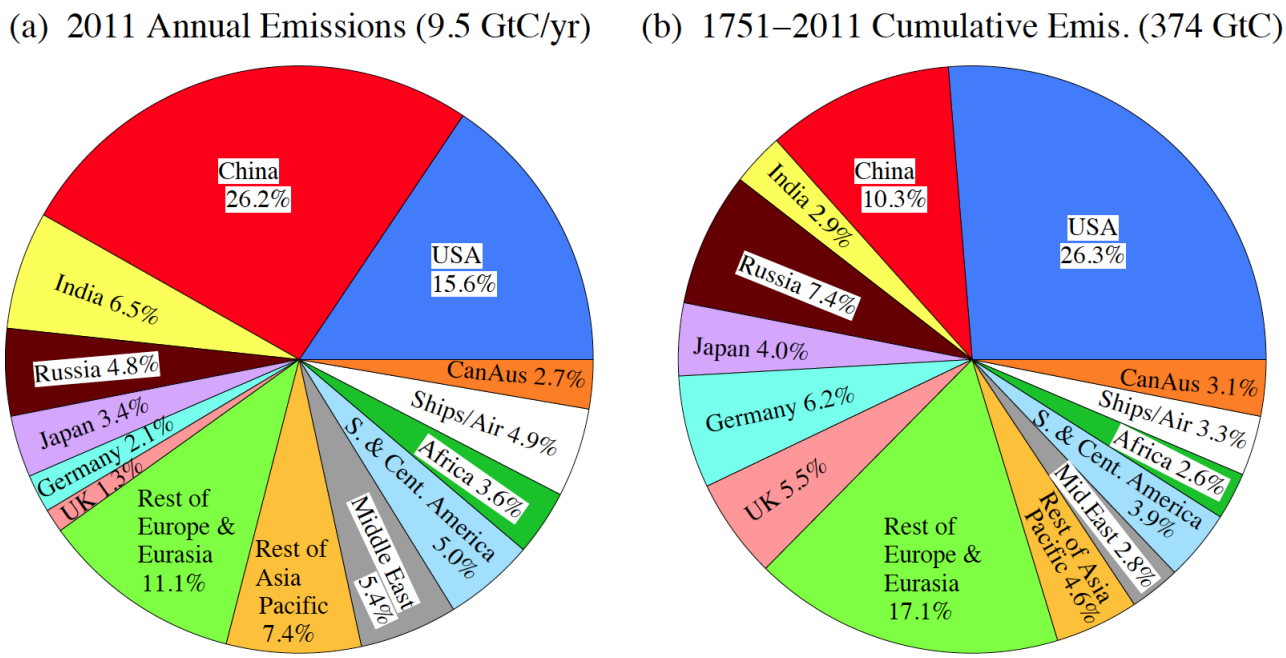

Figure 2: Current and cumulative fossil fuel CO_2 emissions.

Source: Hansen (2009: 189); Columbia University (s/f).

Climate justice: Linking human rights and development

Within the UNFCCC process, the shared vision agreement, emphasises that "Parties should, in all climate change-related actions, fully respect human rights" (UNFCCC, 2010: 2), thus explicitly recognising the existing human rights obligations of Parties to the UNFCCC. In addition to this, the Human Development Report—published by the United Nations Development Programme (UNDP)—focused extensively on the relationships between climate change, inequality, and justice. In it, the authors state that climate change, "raises profoundly important questions about social justice, equity and human rights across countries and generations" (UNDP, 2007: 22). Kofi Annan voices further concerns for the injustice the worlds least developed nations face, "The countries most vulnerable are least able to protect themselves. They also contribute least to the global emissions of greenhouse gases. Without action they will pay a high price for the actions of others" (UNDP, 2007:72). This is why climate justice importantly links human rights and development to achieve a human-centred approach to the issue, attempting to safeguard the rights of the most vulnerable peoples and sharing the burdens and benefits of climate change and its equitable and fair resolution.

Climate change impacts are almost certain to raise inequality both between countries and within a country, which is also in line with the conclusions of the IPCC's

Third Assessment Report. Effects on health and economic and social security are also expected to be particularly significant. "On the impacts side it is well known that climate change is much more likely to hurt more people in poor countries than in rich ones" (Markandya, 2011: 1052). Therefore, countries, and indeed regions within countries, are disproportionately affected by climate change essentially for two reasons: higher impacts and higher vulnerability. As such, the necessity for global solutions and fair systems to support those who are most at risk is paramount. Multilateral negotiations are thus critical, and in light of this, climate talks need to be refocused: the case for the meaningful and equitable participation of affected and vulnerable groups, such as indigenous peoples and local communities, is clear.

As aforementioned, climate change poses a threat to important development issues such as water supply, food security, human health, natural resources and protection against natural hazards. Here, an emphasis must be made that developing countries remain far behind developed countries in terms of per capita emissions, whilst these countries are also said to be relatively less able to cope with problems of rising sea levels and major climate catastrophes. "Less developed nations are impacted through climate crises in a manner inversely related to their relative contribution to greenhouse gas accumulation [compared with developed nations]" (O'Hara, 2009: 228). It is specifically this disparity of responsibility and impact which comes to characterise the term 'climate justice'. Developing countries are said to lack the resources that developed countries possess to respond to such problems; as such they are also more severely subject to climate catastrophes than developed countries.

Precisely because anthropogenic climate change is caused primarily by fossil fuel combustion—our fossil fuel-based lifestyles, and due to people's attachment to high carbon lifestyles—, and deforestation, residents of developed nations are responsible for the vast majority of the accumulated GHG that cause climate-related harm. In this sense, climate change is a by-product of the affluence of the world's most advantaged countries and persons. Yet, as the IPCC predicts, "the impacts of climate change will fall disproportionally upon developing countries and poor persons within all countries, and thereby exacerbate inequities in health status and access to adequate food, clean water, and other resources" (IPCC, 2001: 12). The net effect of such facts is a shifting of the ecological costs of the high consumption rates of the world's affluent to those who can

least afford to bear them and are also least responsible for the phenomenon that generates them.

Protecting the climate system fairly

Aside from presenting a genuinely global environmental problem then, anthropogenic climate change also presents a unique case of global injustice, where the on-going failure to adequately address the problem exacerbates the global inequity that is part of the problem itself. For this reason, ideals of fairness were from the inception of the UNFCCC made a central component of the global climate regime's mission, which, in its Article 3.1, called upon the world's nations to:

> The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combatting climate change and the adverse effect thereof (UNFCCC, 1992: 4).

As such, within the Climate Change Convention the different circumstances of countries are recognised in the sentence 'on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities'. This phrase 'common but differentiated responsibilities' has become a touchstone for the international climate equity debate.

The imperative to address climate change in a manner that promotes fairness—based on the ideals of equity and national responsibility—has both a practical and a principled justification. But the question of how we are to do so remains elusive and far from agreement. Evidently the problem of distributing the burdens of action across nations is one of equity and politics, raising issues that reach far beyond mere economics. Subsequently, it is an unexamined presumption, not a known fact, that economics can determine the proper level of regulatory stringency for GHG emissions. Any economic analysis comes up against the reality that climate policy's costs and benefits will fall unevenly on different generations, it is in this sense that no policy prescription can avoid some kind of treatment of the issue of intergenerational equity.

While self-interested concerns about climate change may be sufficient to thrust the issue onto the public agenda, they are unlikely to provide sufficient motive for accepting the costs of a genuinely effective global climate regime, given what the costs to developed countries may finally entail, especially because many of the benefits of such

efforts to avert climatic destabilisation accrue to others: residents of developing countries and to future generations.

During the COP-1 (held in Berlin in 1995), negotiators debated whether developing countries, in addition to developed countries, would commit to binding reductions for GHG emissions. Developing countries ultimately rejected binding commitments, "asserting that the historical responsibility for climate change was not theirs, that they had less financial ability to pay for reductions, and that they had more urgent priorities for their limited resources" (Cazorla and Toman, 2000: 1).

Two years later at COP-3 in December 1997, developed countries agreed to legally binding commitments to reduce their collective GHG emissions by an average of 5 per cent compared with 1990 levels during the first commitment period from 2008 to 2012. Consistent with the Berlin Mandate at COP-1, developing countries did not agree to any targets at Kyoto, "it became clear that developing countries would not give up their 'right' for increasing emissions without serious concessions in other fields of the development agenda which satisfy the demand for global equity and poverty reduction" (Ott *et al*., 2004: 261). Developing countries do however share with developed countries some common obligations for emissions monitoring and reporting, and under the Climate Change Convention, all countries are encouraged to take steps to enhance sustainable development that would limit the growth of GHG emissions.

Mitigating climate change equitably

Recently, debates on climate justice have focused on mitigation of GHG emissions because of the urgency of promoting international action to reduce the causes of human induced climate change. Mitigation presents a well-delineated dilemma to the global community, which is how to allocate rights to emit GHG to the global atmospheric sinks between countries. However, some consider that allocation of responsibility is itself deeply unjust to developing countries, given historic contributions from developed countries to cumulative GHG emissions.

While climate change impacts are often presented and projected at the global, continental or national levels, they are ultimately felt at the local level. And whilst the rationale for the enactment of the Climate Change Convention is the global scope of climate change, there is considerable variation in the potential impacts at the sub-global

scale. Also, in terms of emissions levels of GHG assessed either by national totals or national per capita attributions, there are great differences among countries (UNFCCC, 1992).

Therefore, any defined emissions cuts by developed countries as a whole have major implications for development and equity for developing countries. In particular, developing countries could be indirectly committing themselves to inequitable cuts if developed countries follow current ambition levels (or lack thereof). Indeed developing countries themselves have called for greater ambition from developed countries, for example Bullock *et al*. (2009: 6) describe how developing countries called on developed countries to accept targets of at least 40 per cent by 2020, citing that "the G77 and China petitioned for much deeper reduction commitments [which] must reflect their historical responsibility as well as evolving scientific evidence".

With regard to this challenge however, there have been several proposals for fair sharing of the burden of mitigation (Müller, 2001; Ringius *et al*., 2002; Baer *et al*., 2007). Regarding the question of distribution of cuts and their related costs, a number of proposals have been put forward to allocate emissions reductions globally on an equitable basis. In this sense, a possibility is to acknowledge current levels of GHG emissions (or a proportion of them) as rights as implied by the Kyoto Protocol. Another possibility relates to the contraction and convergence argument, which proposes a transition from the current income-based distribution of emissions to an equal per capita distribution. But perhaps the most equitable, as outlined by Baer *et al*. (2007), is the possibility to allocate emission rights according to the countries' historical responsibility for GHG emissions and ability to pay.

None of these proposals are without their problems; for example, the moral force of the 'first come, first served' principle underlying acknowledgement of present levels of emissions as rights is dubious. Equal per capita emission rights may initially appear equitable but fundamentally ignore responsibility for past emissions, the geographical and historical coincidences that influence the size of emissions and sinks, as well as present levels of development. Acknowledgement of present levels of emissions as rights and equal per capita emissions have been described as, "solutions which treat burden sharing in mitigation as a problem of only distributive justice and omit whether a solution can be negotiated fairly under the pertinent international treaties" (Paavola and Adger, 2006:

595). More precisely, such solutions ignore exactly what decision-making processes on burden sharing would be fair and equitable.

While such proposals deserve consideration in the debate over how to achieve equity, it is not clear that pure equity arguments will be sufficient to induce concerted global action on climate change. For instance, in post-Kyoto negotiations, nations scramble for allowances to use the atmosphere as a dumping-ground for GHG. In this context climate equity is about equality among nations, "causing the dumping ground to overflow gives rise to numerous climate threats, possibly to such a degree that fundamental rights might be violated. Climate equity in this context is about human rights" (Sachs, 2009: 85).

Economics alone cannot specify how these rights should be assigned. At the heart of the dispute regarding emissions rights are contesting ideologies of whether the atmosphere is essentially a 'commons resource' subject to equitable treatment or, alternatively, a commodity subject to trade (Byrne, 1997). Objections against the apparent reliance on various market-oriented tools to reduce emissions have come from advocates of Southern-nation interests (Agarwal and Narain, 1995) and those concerned over the potential for injustice. In response, alternative schemes to reduce emissions have been developed in an attempt to create a more equitable means of linking emissions reductions to economic capacity and existing emission levels (such as the 'atmospheric commons' concept).

As argued by Vanderheiden (2009: 103), the issue is that "there is no natural 'distribution' of atmospheric space, so climate defies conventional theories of property by presenting a case of a pure public good that is fully international". In this sense then, the global climate and the upper atmosphere do not form part of any territory but instead form part of the global commons. It is precisely in this sense that the tragedy of the global commons—regarding the world's climatic conditions—poses a very serious, and almost inevitable, problem in todays global society.

Distributive and procedural justice

This investigation explores theories of justice in an attempt to identify concepts and principles that could help to resolve justice dilemmas involved in mitigation of climate change; such justice dilemmas can be resolved in many ways. In the area of distributive

justice, Aristotle's contributory principle, Bentham's rule of greatest happiness for greatest numbers, priority of those in need, Rawls' maximin rule—referring specifically to making the choice that produces the highest reward for the least advantaged position in society—and equality of opportunity, resources and welfare are examples of some of the rules for making fair decisions (Sen, 1992: 12).

These principles are often applied so that justice appears as a matter of fairly distributing one overarching good—such as money or utility—between involved parties. This requires commensuration of what we can consider 'good and bad' and essentially allows compensating one type of bad with another kind of good. For example, adequate compensation could be considered to fully resolve justice dilemmas related to the incidence of climate change impacts. However, it is not at all obvious that such an approach should be accepted.

Distributive justice refers to the incidence of benefits and costs, broadly conceived so as to encompass non-pecuniary advantages and burdens (Kolm, 1996) as well as "the consideration of non-humans" (Attfield, 2005: 43). Whilst, procedural justice relates to the way in which parties are positioned *vis-à-vis* processes of planning and decision-making, encompassing issues such as recognition, participation and distribution of power. Such distributive and procedural justice considerations are relevant both within a generation and between generations, as such there are many contentious intra-generational as well as inter-generational equity questions associated with climate change. The intra-generational ones relate to the distribution across individuals of climate change mitigation costs and climate change impacts at different points in time.

Such intra-generational issues may include how the burden of reducing GHGs should be shared across countries and across social groups, should the history of past use of fossil fuels have an impact on the distribution of the present burden? Finally, what is the likely distribution of impacts across countries and social groups, now and in the future, and what implications does this have for international carbon trading? Whereas the intergenerational aspects relate to the divergence in time between the short-term burden of mitigation costs and the climate change impacts that occur over much longer time horizons. There is also an intergenerational issue about the historic responsibility that certain countries have for the current stock of GHGs in the atmosphere.

Distributive justice alone is unlikely to be sufficient for climate justice for the simple reason that procedural justice is necessary in order to underpin the legitimacy of the climate change regime. Procedural justice is sometimes associated with the arguments of libertarian philosophers such as Nozick (1974) and economists such as Hayek (1976), according to whom we should accept outcomes of processes such as markets and voluntary action as 'just' even if they would be unequal. It is evident that such theories are problematic, not only because they deny the significance of unequal starting points but also they postulate the legitimacy of their favourite procedures and result in the affirmation of the fairness of status quo.

Procedural justice fosters legitimacy because it assures those whose interests are not endorsed by a particular decision that their interests have been considered and that they have a chance to count in other decisions. "Procedural justice enables affected parties to express their dissent or consent and to maintain their dignity" (Schlosberg, 1999: 90).

Fair representation

Distributive and procedural justice are not independent of each other, and if groups (such as indigenous peoples and local communities) are not recognised and cannot participate in planning and decision-making regarding climate change or its mitigation, then their interests are unlikely to inform subsequent plans and decisions. Indeed, one of the ways in which non-decision making takes place is by preventing access to certain groups; this is clearly represented by the power differentials between nations in climate change negotiations, and the fact that some nation's interests are clearly more equal than others. There are instances (such as the 'Danish text' episode in Copenhagen) in which, rather than being empowered by their participation, some developing countries feel disempowered because decisions are taken without their participation. There is a risk that this may also apply within a national context, and especially with certain stakeholders.

It is noteworthy that not all national governments may protect the interests of all of their citizens equally—the most vulnerable people often have the least voice. This underlines the importance of fair processes which recognise and enable the participation of affected communities in planning and decisions regarding climate change policies, including mitigation mechanisms such as REDD+. It is for this reason that proposals and

decisions can often aggravate inequality rather than reduce it. Interestingly, as O'Neill (2001) observes, the interests of future generations and non-human species are not reflected in the outcomes of decisions simply because they are not effectively represented. Whilst it is evident that such concerns for future generations and non-humans should be recognised, they are not.

It could also be suggested that the responses to global climate change negotiated within the Climate Change Convention reflect the values of only a select group of countries: developed nations. If the problem of global climate change is to be addressed effectively, differences such as the unequal levels of responsibility for the emission of GHG should be reflected in the discourse. Response measures, as required by the UNFCCC itself, should involve the equitable distribution of costs and benefits internationally, nationally, regionally, and locally.

Essentially, the use of market mechanisms within the Climate Change Convention leaves the destructive processes of atmospheric degradation in place and systematically denies broader environmental values. Indeed, if developed countries drive global patterns of consumption, then clearly there is a divergence between the development agenda of the developed and the developing world's environmental agenda.

An ethical perspective

The equity debate has major implications for how we judge different instruments for reducing atmospheric GHG. Taking the measures for reducing GHG, the central equity question has been how the burden should be shared across countries (Shukla, 2005). Such an analysis of equity has important implications for the sharing of mitigation costs. "As far as measures to reduce GHG are concerned, a given reduction of GDP or other measure in a poor country will have greater impacts in terms of health, poverty, and other indicators than the same reduction in a rich country" (Markandya, 2011: 1052).

On a utilitarian basis, assuming declining marginal utility, the case for wealthy to undertake more of the burden is strong—for they are the ones to whom the opportunity cost of such actions would have less welfare implications. To the extent that more of the wealthy live in developed countries, a greater burden should be imposed on such countries. However, burdens allocated by country are not the same as burdens allocated to individuals.

An example of a rights-based approach in the context of climate change would be to entitle every individual alive at a given date an equal per capita share of 'use rights', in the intrinsic capacity of the Earth's atmosphere to absorb GHG emissions. Individuals who exceed their use rights would then have to acquire them from those who used less (for a thought-provoking proposal see: German Advisory Council on Global Change, 2009). In a utilitarian approach this compensation would be based on an estimate of the opportunity cost of giving up these rights. An overview and assessment of different rights-based equity principles and their consequences on emission allocations and costs have been discussed at length (Tol and Verheyen, 2004).

Most schemes recognise that it is cost effective to allow countries to buy or sell emissions reductions. Thus developing countries may have small reductions targets, or no targets at all, but it may be cost effective for them to undertake reductions and sell or trade any surplus over their target to developed countries. Such decoupling of the allocation of rights from the physical location of reductions is considered by some to be a more equitable solution under any ethical framework.

Although an equal per capita share allocation of use rights may appear the most equitable, it is not the only ethical basis for sharing use rights and distributing the burden of reducing GHG emissions into the atmosphere. Indeed many alternatives have been proposed; Bodansky *et al*. (2004) have assembled a collection of 44 proposals that have been either published or publicly presented. Fundamentally, they identify long-term principles of distributive justice to determine the appropriate allocation of burdens among countries, categorising: Allocation-based approaches, which share burdens among countries according to a general principle for the distribution of emissions (common levels of per capita emissions, historical responsibility, or ability to pay); Outcome-based approaches, which rely on models to project the costs of different burden-sharing arrangements and focus on the expected outcomes of different arrangements; and, Process-based approaches which define a procedure for deciding how to share burdens (by a particular voting rule for instance) (Bodansky *et al*., 2004: 16).

While the ethical rules for equity are framed at the individual level, the discussion of climate change burdens, as evidenced, is at the national level. Sen (1999) makes a distinction between international equity—that is, between nations—and global equity which relates to equity between individuals without regard to their citizenship. Global

equity has been described as, “the most appropriate for measuring the equity impacts of climate policies” (Markandya, 2011: 1054), a view with which the investigator strongly concurs.

Whose responsibility is it anyway?

Major disagreement abounds on responsibility for causing the increase in atmospheric concentrations of GHG between developed and developing countries. If the increase in concentrations of GHG historically occurred as a result of both deforestation and industrialisation in the North, then it is argued that the North has no moral grounds not to allow the South to do the same. Emissions from biotic sources and loss of natural sinks comprise a major contribution to the increased concentration of GHG in the atmosphere. However, the most important source of GHG, and that which is undoubtedly responsible for most of the increase in atmospheric concentrations, is from fossil fuel burning in developed, and increasingly developing, countries.

Developing countries may have development priorities which may conflict with efforts to stabilise emissions of GHG; indeed this is recognised in the Climate Change Convention, and these countries therefore claim that developed countries have the greatest responsibility for climate change, which industrialised first and who long ago deforested their lands. Interestingly Brown and Adger (1994: 218) propose that some emissions, most notably those “associated with agriculture and forestry activities are ‘necessary’ emissions (compared with ‘luxury’ emissions associated with increased consumption in developed countries)”. Such a distinction is paramount to the idea that reductions of such ‘necessary’ emissions in developing countries should not necessarily be required. However, this is contentious, not least when considering the ever-increasing emissions from leading emerging economies, such as the BRICS members.

Indeed, in the negotiations leading to the drafting of the Convention, developing countries took the stance that they had an unalienable right to exploit resources within their borders in a sustainable manner (however defined). Indeed this concept is enshrined in the Convention which declares that States have “the sovereign right to exploit their own resources pursuant to their own environmental and development policies” (UNFCCC, 1992: 1).

Inadequate ambition from developed countries, combined with offsetting, will lead to a steep relative worsening in inequality for developing countries. Data on cumulative emissions from 1850 show that developed countries bear a far greater responsibility; 76 per cent of emissions from 1850 to 2002 came from developed countries; in 2002 developed countries had less than 20 per cent of the global population (World Resources Institute, 2005). "Whereas the current per capita carbon consumption in developed countries is at least three times that of developing country per capita emissions" (Bullock *et al*., 2009: 24), it is estimated that an offsetting scenario presented by the same authors would increase this inequality to a factor of more than eight. These scenarios are described as "morally unjustifiable, conflicting with agreements under the UNFCCC and possibly undermining other international treaties including the UN Declaration on the Right to Development" (Bullock *et al*., 2009: 24).

Essentially, inequitable and unjust outcomes can be avoided only if developed countries take on much greater cuts than currently agreed, with the use of offsetting kept as a supplementary measure in order to ensure emissions reductions are achieved on a predominantly domestic basis. A fair global transition to a low-carbon future must be achieved through cooperation between developed and developing countries. Persistent accusations of blame by developed countries at total emissions from populous developing countries in no way conceal the injustice of the developed countries' positions and the implied developing country emissions pathways in per capita terms. Developed countries have an obligation to substantially raise their emissions reductions commitments—and fundamentally, must do so domestically—without which it is highly unlikely that we will achieve effective collective action in avoiding dangerous climate change.

CHAPTER III
SEEING REDD+ IN ECUADOR

Defining RED, REDD, and REDD+

The use of forests to offset greenhouse gas (GHG) emissions is implied in the terms of the Climate Change Convention, under which, developed country parties have agreed to prevent 'dangerous climate change'. As such, carbon offsets have emerged at the forefront of debates on strategies to mitigate climate change; seen as alternative or supplementary ways for individuals, organisations, and governments to reduce their emissions. By way of recapitulation, the fundamental rationale conveyed by proponents of offsets, it is easier, cheaper, and faster to pay for GHG reductions elsewhere than achieving domestic reductions. Thus, under this same rationale, offsets will provide greater benefits to the atmosphere and to sustainable development, especially when offsets involve the realisation of projects in the developing world.

In 2007, the Subsidiary Body for Scientific and Technological Advice (SBSTA) recommended a draft decision (Decision 2/CP 13), subsequently adopted at COP 13 in Bali, Indonesia, that called for, "Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" (UNFCCC, 2008: 8).

Initially Parties to the Convention discussed RED—Reducing emissions from deforestation—, which included only those changes from 'forest' to 'non-forest' lands, or in other words, changing carbon-rich forest land into another land use with lower carbon stocks. Followed by the addition of a second 'D'—degradation of forests—, and RED became REDD. Here, forest degradation refers to human activities that reduce canopy cover and/or lower carbon-stock densities within a forest (for instance, animal grazing, fuel-wood extraction, timber removal or other such activities) but which does not involve a land use change from forest to non-forest land. The discussion next broadened to also consider and include a REDD '+' which equates to forest conservation, sustainable forest management, and enhancement of forest carbon stocks. This addition of conservation, sustainable management and the enhancement of forest carbon stocks was intended to avoid creating incentives for countries whose rates of deforestation remain at very high

levels whilst simultaneously rewarding those whose forest cover is more protected due to conservation and sustainable management.

This research defines REDD+, following Angleson (2009: 2), as "an umbrella term for local, national and global actions that reduce emissions from deforestation and forest degradation, and enhance forest carbon stocks in developing countries". Under this definition, enhanced forest stock includes forest regeneration and rehabilitation, negative degradation, negative emissions, carbon uptake, carbon removal or just removals of carbon from the atmosphere.

The global deforestation rate is estimated to prevail at roughly 13 million hectares annually (FAO, 2010), whilst deforestation and forest degradation contribute about 17 per cent of global GHG emitted into the atmosphere (IPCC, 2007). It is also important to consider that deforestation and forest degradation act as major drivers of biodiversity loss. It is in this context of international climate negotiations that avoiding deforestation through forest conservation, sustainable forest management and the enhancement of forest carbon stocks as a means of curbing GHG emissions are key themes. For this reason the REDD+ mechanism is currently being developed under the UNFCCC to provide compensation payments for avoided deforestation and forest degradation.

Natural sources and sinks evidently play an important role in the global carbon cycle, and human intervention in this natural cycle—primarily in terms of land use change—accounts for approximately 30 per cent of GHG emissions. Forests are particularly important in the global carbon cycle, forming a major sink for carbon. In principal then, the potential to offset emissions through slowing deforestation and forest degradation appears to be large. As such, there is some scope to enhance natural carbon sinks, and therefore reduce net emissions of GHG, through afforestation and conservation of existing forests, which includes avoided deforestation and forest degradation.

Any comprehensive strategy for avoiding catastrophic climate change through stabilising atmospheric concentrations of GHG should consider these natural sources and sinks. Though significantly, forest conservation—as opposed to afforestation—can also bring about additional co-benefits such as biodiversity conservation and local and community development. GHG emission reduction through afforestation is ultimately a limited option; fundamentally limited by the availability of land, given associated opportunity costs for other land uses.

In the global effort to mitigate climate change, investments aimed at slowing the pace of deforestation and forest degradation are believed by proponents to be a cost-effective approach to reduce CO_2 emissions. Through REDD, institutional mechanisms are being designed to provide policy and financial incentives for developing countries to protect standing forests and rehabilitate degraded forests, whilst REDD+ aims to provide further incentives for the conservation and enhancement of carbon stocks.

"Significant funds are expected to flow once REDD+ programmes are fully operational—up to US$28 billion per year, to reduce the rate of global deforestation by 50 per cent" (Barr, 2011: 329). Another essential element that should be considered is that future REDD+ funding will largely be determined by the state of the global economy. As acknowledged by one of the interviewees, "The recent economic crisis experienced in the European Union and the US has had a markedly negative effect on the financial aspect of the REDD+ mechanism" (I01, 2012).

On this same note, REDD+ should only compensate individuals, forest-dwelling communities, and organisations for reducing activities that contribute to deforestation or forest degradation. This must be achieved by initiating environmentally and economically sustainable alternative activities that contribute to conservation, sustainable management and enhancement of forest carbon stocks. As outlined by IUCN (s/f), "payments or benefits should be in excess of the costs of REDD+ action or lost opportunity costs of land use changes that are prevented". Fundamentally, the prevention of illegal activities should not be rewarded, and in a country with such a high rate of illegal deforestation, this will be a difficult task indeed (I05, I06, and I07, 2012).

REDD+ project preparation, consultation, implementation and monitoring will be costly, it is important that expectations of possible REDD+ payments are realistic among stakeholder groups. There is an inherent risk in the extraordinarily high expectations indigenous peoples and local communities have come to adopt regarding how much money they will eventually receive from REDD+ funding. Ultimately though, benefit sharing mechanisms must be equitable and should, in particular, target the strengthening of sustainable livelihoods of vulnerable groups such as indigenous peoples and local communities. "The clarification of rights over carbon tenure and the use of forests are important for the development of equitable benefit-sharing mechanisms" (IUCN, s/f).

A fundamental question arises, if the mechanism will not reduce atmospheric CO_2—lest we forget, the purpose of its inception—then what will the mechanism actually achieve? Following on from Lovera (2009: 48), who reflects that "REDD will, by definition, not contribute anything to emission reductions, as every ton of carbon saved by reduced deforestation will be compensated for by an extra ton of carbon emitted in the global North". Another valid argument is highlighted, "REDD+ adopts a neoliberal approach that tries to solve the problem with the same practices that caused it in the first place, failing to address the fundamental issue of consumption that drives environmental degradation and which will continue to drive deforestation if unaddressed" (Brown, 2010: 262).

Deforestation in Ecuador

Ecuador's total forest area in 2008 was calculated at 9'599,678.7 hectares (ha), which makes up about 55 per cent of the country's terrestrial area, and is mostly tropical rainforest located in the Amazon region (MAE, 2011c). In 2011, the MAE presented preliminary results from the Historical Deforestation Map; on the basis of this information the annual deforestation rate was calculated at -0.68 per cent (74,300 ha/year) for the period 1990 and 2000; and -0.63 (61,800 ha/year) between 2000 and 2008 (MAE, 2011c). In that same year, the deforestation rate was an estimated 61,764.50 hectares, corresponding to an annual rate of 0.63 per cent[11] for the period 2000-2008 (MAE, 2011c). Land use change (principally deforestation) was identified as being responsible for approximately 83 per cent of GHG emissions in the country (MAE, 2011b). Thus signifying the important role of combatting deforestation and forest degradation in the country.

In response to this, the Government of Ecuador has publicly committed to reducing emissions from deforestation. Additionally, avoiding deforestation and forest degradation is critical to biodiversity conservation in the country. However, the importance for the protection and conservation of forests and other ecosystems is not only paramount for the conservation of biodiversity in itself but also because of environmental and socio-economic benefits to often-vulnerable forest-dependent peoples. Forests are both home and a food source for many of these indigenous peoples and local

[11] The deforestation rate of 0.63 per cent is the result of a net balance which quantifies changes—losses and gains—in forest cover (MAE, 2011c).

communities and provide critical environmental goods and services, including carbon sequestration—subsequently, the principal interest of REDD+.

Ecuador's National REDD+ Programme

Since 2008, the Government of Ecuador, through the Ministry of Environment, has actively participated in international REDD+ negotiations and, in turn, has carried out national activities in order to build the foundation for the implementation of the REDD+ mechanism in the country (I01, 2012); and it is within this framework that the MAE was designated the National Environmental Authority, the governing body for climate change and the management of forests in the country. Fundamentally, the MAE is responsible for driving the design and implementation of policies for mitigation (and adaptation) to climate change, led by the Understate Secretariat for Climate Change, and the sustainable management of forests and the reduction in the rate of deforestation in the country, led by the Understate Secretariat for Natural Heritage (I01, 2012).

Ecuador has been part of the United Nations Programme for REDD (UN-REDD) since October 2009 when the country was formally accepted as an observer of said programme. Through the acceptance of the National Assembly, Ecuador passed from observer-status to become a partner country, and joins the twelve pilot countries where activities are implemented in preparation for the REDD+ mechanism. Currently the country is in a REDD+ preparation phase, focused on information generation and improving technical and institutional capacities, consultative processes and policy design and analysis.

In order to meet the goal of reducing deforestation, the MAE is leading several initiatives as part of good governance of forest resources, and contributing to climate change mitigation through the reduction of GHG emissions associated with deforestation. Such REDD+ preparation activities realised by the MAE include the design and construction of the country's National REDD+ Programme (*Programa Nacional REDD+*, PNREDD+). Whilst another important initiative from the MAE to reduce deforestation includes the Socio Bosque Programme (MAE, 2011b: 80).

The PNREDD+ aims to simultaneously contribute to climate change mitigation and to managing the country's forests in a sustainable manner. It is part of the National Climate Change Mitigation Plan (*Plan Nacional de Mitigación del Cambio Climático*),

which in turn is part of the National Climate Change Strategy. The PNREDD+ is articulated with the Forestry Governance Model in order to achieve its objectives. The PNREDD+ serves as the reference framework for the development and implementation of REDD+ activities in Ecuador, and thus aims to contribute to achieving the goal—established in the PNBV—of reducing deforestation by 30 per cent by 2013 (MAE, 2011b: 80).

Ecuador sees in REDD+ an opportunity to reduce deforestation, and to support the conservation and sustainable management of forests and their biodiversity, to contribute towards the mitigation of climate change, and importantly, also to safeguard the welfare of indigenous forest-dependent peoples and local communities. In recognition of this, in December 2010, the country along with other States parties to the Convention, agreed to recognise REDD+ as a formal mechanism that gives the possibility for countries to gain access to a higher level of funding and encourage efforts for forest conservation, reducing emissions from deforestation and forest degradation, sustainable management of forests and enhancement of forest carbon stocks (I01, 2012).

It is in this light that Ecuador seeks to implement a national level REDD+ so as to contribute towards reducing deforestation in the country and towards climate change mitigation. The REDD+ mechanism in Ecuador will contribute to both the new Forestry Governance Model and the National Climate Change Strategy. The Government of Ecuador upholds the view that REDD+ is cost-effective and will contribute to the fulfilment of two national objectives: the management of a reduction in the deforestation rate, along with contributing towards other climate change mitigation and adaptation strategies (I01, 2012). Thus, in international negotiations the country supports a national level mechanism, which counts on just one system of registration, accounting, verification and monitoring of GHG emissions reduced by REDD+ activities in the country (I01, 2012).

There are several pilot REDD+ initiatives in Ecuador that are in early design stages (Sirua Foundation–Fauna and Flora International, Profafor–Face the Future, *Mancomunidad del Norte del Ecuador*–MNE), all of these initiatives are linked to the voluntary carbon market. Essentially, they seek to execute local or regional activities and receive performance-based payments once GHG reductions related to reduced

deforestation are demonstrated. They are in initial development and are facing various challenges discussed in due course (I03, I05, I06, and I07, 2012).

Ecuador's Legal and Institutional Framework for REDD+

Over recent years, Ecuador has developed a series of legal provisions and national policies intended to create favourable conditions for the sustained reduction of deforestation in the country. As we have seen, the Government of Ecuador shows considerable interest in turning its rainforests into carbon trading revenue within the framework of the REDD+ programme.

The Ecuadorian Constitution recognises the rights of nature and promotes the enforcement of these rights. It includes specific mandates to mitigate climate change, protect biodiversity, and regulate environmental services. The Constitution, along with other legal provisions, forms a solid policy platform for defining the country's PNREDD+.

With specific regard to the REDD+ mechanism, the following provisions predominate, Art. 261 of the Constitution states, "*El Estado central tendrá competencias exclusivas sobre […] Los recursos energéticos; minerales, hidrocarburos, hídricos, biodiversidad y recursos forestales*". While Art. 407 stipulates, "*Se prohíbe la actividad extractiva de recursos no renovables en las áreas protegidas y en zonas declaradas como intangibles, incluida la explotación forestal*". On the other hand, "*El Estado se reserva el derecho de administrar, regular, controlar y gestionar los sectores estratégicos*" (Art. 313); therefore biodiversity is identified as a strategic sector that the State reserves the right to administer, regulate, control and manage in conformity with the principles of environmental sustainability, precaution, prevention, and efficiency.

However, probably the most important constitutional prescriptions for climate change and REDD+ in the country include Art. 413, "*El Estado promoverá la eficiencia energética, el desarrollo y uso de prácticas y tecnologías ambientalmente limpias y sanas, así como de energías renovables, diversificadas, de bajo impacto y que no pongan en riesgo la soberanía alimentaria, el equilibrio ecológico de los ecosistemas ni el derecho al agua*". Art. 414 establishes that, "*El Estado adoptará medidas adecuadas y transversales para la mitigación del cambio climático, mediante la limitación de las emisiones de gases de efecto invernadero, de la deforestación y de la contaminación*

atmosférica; tomará medidas para la conservación de los bosques y la vegetación, y protegerá a la población en riesgo". The sub–section of Art. 74 states, "*Los servicios ambientales no serán susceptibles de apropiación; su producción, prestación, uso y aprovechamiento serán regulados por el Estado*" (Asamblea Nacional, 2008).

The subject arose in various interviews of existing projects where carbon credits have already been sold (I02, I03, I05, I07, and I08, 2012). This is indeed interesting, aside from the fact that a regulated carbon market for REDD+ does not yet exist, Article 74 of the Ecuadorian Constitution clearly states that "*Los servicios ambientales no serán susceptibles de apropiación*". In addition to this, and in accordance with Executive Order 495, "*El Estado, a través del Ministerio del Ambiente, registrará las acciones de mitigación e impulsará medidas de compensación que permitan apalancar recursos financieros adicionales*".

Should these credits have been sold on the voluntary carbon market, what social and environmental safeguards are in place? How have additionality and permanence issues been negotiated in the contracts? Who are the purchasers of these carbon credits?

In addition to mentioning the complexities of Art. 74 of the Constitution, these same interviewees acknowledged that 2013 is an electoral year in Ecuador, and therefore it is highly unlikely that controversial decisions will be taken before elections. In light of this, what implications does this have for those projects—such as the Commonwealth of Northern Ecuador (*Mancomunidad del Norte del Ecuador* – MNE)—which have already surpassed constitutional mandates for example? This was a recurring theme amongst the majority of interviewees: concerns were voiced about the legitimacy of such carbon trading activities already under way in the country.

Risks and opportunities

It is important that risks for the implementation of REDD+ be defined based on the specific goals associated with its implementation. That said, REDD+ remains an evolving concept whereby rules and regulations on a national and international level, continue to be developed, debated, and improved. On the basis of this, they are extremely difficult to specify here, as such, the following constitute just some of the challenges and prospects most likely encountered in developing future REDD+ activities in the country.

Governance risks

Weak forest governance facilitates widespread forest-related corruption and financial fraud, which in turn are major drivers of illegal and unsustainable forest harvesting. This represents an unavoidable challenge for REDD+ in that countries with high rates of deforestation tend to also have high levels of corruption. Consistent with interview results, forest governance in Ecuador—although significantly better than it has ever been—is still weak and therefore susceptible to corruption (I02, I03, I04, I05, and I07, 2012).

Correspondingly, a number of existential questions must be asked. Will the flow of REDD+ dollars in Ecuador create new opportunities for corruption and fraud for powerful political and economic actors? Indeed, should this transpire, there is the question of whether such funding will significantly exacerbate the deforestation and forest degradation that the mechanism is designed to slow. Undeniably a very real and serious risk: should REDD+ funding not work towards slowing deforestation and forest degradation, the global community—in creating and supporting REDD+—will have done little more than distract attention away from other opportunities for significantly reducing global GHG emissions.

REDD+ proponents frequently dismiss such possibilities by emphasising that the payments are designed to be performance-based. The argument goes that if carbon emissions are not reduced, the money will not flow. Implicit in such assurances is a twofold assumption: first that REDD+ programmes will have effective institutions for the MRV of forest-based emission reductions and carbon stock enhancements—Ecuador is currently in the design process; and, second, that REDD+ payments will be guided by the empirical assessments of such MRV processes (this remains unclear).

There are also inherent issues with the resources whose use stand to be affected by REDD+. These include trees themselves (potentially used for timber, food, fuel, and cultural traditions), non-timber forest resources, and local landholdings adjacent to forests under REDD+ protection. Thus, governing the impacts of climate change through the reduction of deforestation and forest degradation requires governing many different types of land use cover, livelihood activities, ecosystem services and governance capacities (Angleson, 2009).

Measuring and verifying forest carbon credits

The vast majority of REDD+ payments are expected to be delivered as compensation for output-based activities—that is, for verified reductions of forest carbon emissions and/or enhancement of carbon stocks. To function effectively, REDD+ institutions will therefore require reliable tools for measuring such changes and assessing the extent to which they resulted from REDD+ funded activities.

Ecuador's national reference level is a projection of the country's forest-related carbon emissions and removals over a defined period of time, based on documented past and anticipated future levels of deforestation and forest degradation. It is intended to serve as a baseline against which carbon emissions reductions and/or carbon stock enhancements will be credited under REDD+. In accordance with the majority of interviewees, to a considerable degree national reference levels are politically negotiated, and they are often strongly contested (I02, I03, I05, I06, and I07, 2012). Different approaches for calculating reference levels can have far-reaching implications for how much REDD+ funding Ecuador may ultimately receive.

REDD+ performance in Ecuador will need to be measured and verified in terms of reduced CO_2 emissions and/or the conservation, sustainable management and enhancement of forest carbon stocks. Thus, the PNREDD+ is being designed to have mechanisms for regularly measuring, reporting and verifying project activities to determine whether the planned carbon benefits are actually being achieved (I02, 2012). Different options are under consideration for MRV that balance participation and ownership by stakeholders with enhanced transparency and accountability whilst also encouraging improved performance. As with the indicators, the MRV process must necessarily be specific to Ecuador and therefore be defined within the context of national interests and needs; yet how this is to be concretely achieved nationally still remains to be defined.

Validation of carbon offset projects must be carried out in order to determine whether 'additionality' will be achieved—that is, whether the projected reductions or enhancements would be above and beyond those that would have occurred without REDD+ funding. The accounting of actual emissions reductions also implies preventing double counting—when more than one stakeholder lays claim to the same emissions reduction—of carbon credits. These are all issues which should constitute key objectives

for the national MRV programme for Ecuador. It must also ensure that 'leakage' does not occur—that is, the displacement of carbon emissions from REDD+ activity areas to non-REDD+ areas (where deforestation is shifted rather than prevented).

Progress has been made in Ecuador and MRV activities have already begun through two national projects: the National Forest Evaluation (*Evaluación Nacional Forestal*) and the aforementioned Historical Deforestation Map (*Mapa Histórico de Deforestación*). The objective of the National Forest Evaluation project is to estimate stored carbon in the nine different forest strata identified for the country. The Historical Deforestation Map on the other hand, seeks—through the use of satellite imagery—to analyse national vegetation cover (I01, 2012).

As part of the REDD+ readiness process, bilateral and multilateral donor organisations (GIZ, KfW, UN-REDD) are working with the MAE to assist in the formulation and strengthening of institutional capacity for national and subnational MRV programmes. Such efforts will take time however, and in order to receive REDD+ payments it is paramount that Ecuador has MRV mechanisms capable of verifying compliance-grade credits.

But despite the central importance of validation and MRV capacity building for forest monitoring and carbon accounting is not simply a technical process; in many contexts it is also a political challenge for government forest management agencies. Indeed, the disorganised and highly opaque state of forestry statistics in Ecuador is symptomatic of more fundamental problems with how forests are administered.

It is also conceivable that certain powerful elites may seek to control MRV institutions to influence how payments from REDD+ activities are allocated. Whether this presents an immediate concern in Ecuador seems to have been refuted by the indication (from various interviewees) that a potential national financial REDD+ fund could eventually be centrally administered by the MAE. Undoubtedly some would argue in favour of such an arrangement, whilst others would express trepidations.

As MRV mechanisms are still not yet fully functional in Ecuador, REDD+ payments could in fact offer incentives for corruption by government officials and project sponsors seeking to game the system. Although REDD+ is still in the preparation phase, a growing number of cases suggest how corruption and fraud may undermine forest carbon payment schemes. Brown (2010) describes how many examples of inappropriate

validations of CDM projects have been documented, which offer especially important lessons for REDD+.

One of the largest problems in forest conservation for carbon offsets however, is enforcement. Enforcement of forest conservation projects in Ecuador has been cited as being notoriously difficult for a number of reasons, including the lack of trained and motivated personnel and poor infrastructure (I05, I06, and I07, 2012).

Misappropriation of carbon rights

Predicting considerable profits to be made from forest carbon once REDD+ is fully operational, there are cases of carbon brokers and project developers moving aggressively to secure the carbon rights of tropical forest. An Ecuadorian example arose from one interview, where the following incident was described: the interviewee was approached by three different NGO, who had in their possession signed powers of authorisation; these permitted said NGO to sell carbon rights, not to their own forest land, but for land owned by indigenous peoples and local communities (I07, 2012).

Fortunately—on the above occasion—these propositions were declined. However, it is an important lesson which serves to illustrate how, in the absence of the necessary measures to prevent it, indigenous peoples and local communities can become victims of carbon-related fraud. Under such fraudulent activities, contracts are negotiated allowing brokers, project developers, and carbon 'cowboys' to sell the carbon sequestered in forests that are owned not by them but by indigenous peoples and local communities (I08, 2012).

Representatives of forest peoples' organisations have raised similar concerns, principally that it is common for such negotiations not to be conducted in a free and open manner, and that the significant disparities of information and power can lead to, as in the above example, fraudulent misappropriation of local landowners' carbon rights (Forest Peoples Programme, 2009). In theory at least, this does not present an immediate concern in Ecuador, at least with legal regulations in place. For instance, the Ecuadorian Constitution recognises and guarantees the collective rights of the communes, communities, indigenous peoples and nationalities, along with their property, which it declares inalienable, indefeasible and indivisible. In addition to this, the same document also prohibits the appropriation of environmental services (Articles 57, 321 and 74

respectively). However, the mere existence of these legal regulations does not guarantee their objectives, and as such they have been described as grossly insufficient—especially in the circumstance where large quantities of money could be made (I04, I05, and I08, 2012).

The MAE has the intention of overseeing all REDD+ activities and projects in the country (I01, 2012). But is this really feasible with the financial and human resources they currently possess? As has been illustrated, REDD+ preparation and implementation is a complex process which requires quite significant investments. Regardless of this, for REDD+ to be truly effective, there must also be incontrovertible procedures in place to prevent the misappropriation of carbon rights from occurring in the country.

Risks of non-permanence

Another central challenge for REDD+ lies in the risk that forest carbon emissions reductions may not be permanent. How can we ensure that trees saved this year will not be felled next year? The risks of non-permanence become especially problematic for REDD+ credits that are traded on the carbon market. Assuming that high standards for verification in Ecuador are met, forest carbon credits are expected to become fungible with mitigation credits and allowance units from other sectors once they enter the market. This becomes particularly important if REDD+ credits are used as offsets for emissions in other sectors. As one interviewee highlighted, when an offset is claimed and it doesn't work, the climate is swindled twice over—first because the same amount of forest has been cut down, and second because of the additional GHG pumped into the atmosphere on the assumption that the gases will be locked away by the now dead trees (I07, 2012). Under such a scenario, the offset would not have prevented emissions but instead would have doubled them!

More generally, creating new forms of financial securities to address 'permanence' risks related to REDD+, as well as emission credits from other sectors raises fundamental concerns about systemic weaknesses in the global carbon trade. Indeed, a growing number of analysts are questioning whether the world's rapidly expanding markets for carbon credits may be yet another financial bubble, which at some point is bound to burst (Lohmann, 2009). Indeed, the parallels with the most recent housing bubble (notably in the US, Spain, and Ireland) are difficult to miss. In the

absence of transparency and effective regulation, there is a very real chance that market actors who know how to game the system are likely to make big profits, while most others suffer substantial losses. Moreover, just as the recent subprime market in housing triggered a financial crisis of global proportions, so too could a subprime market in carbon: only this time, with far more serious implications for life on planet Earth.

Safeguards: doing no harm

In recognition of the importance of social and environmental safeguards that must be in place within any REDD+ programme, safeguards are designed as precautionary principles or practices that lower the likelihood of any social or environmental risks from REDD+ activities.

All the emerging REDD+ mechanisms and initiatives—including UNFCCC, FCPF and UN-REDD—are developing such safeguards. REDD+ has received criticism for vague definitions of additionality and development benefits, for neocolonial practices of unequal exchange and the dispossession of rights in selling cheap credits to the North obtained from projects in the South, and for the lack of transparency and participatory governance. The response to these criticisms includes new regulatory efforts to legitimise and stabilise the REDD+ mechanism, including the creation of the Social and Environmental Standards (REDD+ SES), and similar forms of regulation such as the Climate, Community and Biodiversity Project Design Standards (CCB Standards)[12] and the Verified Carbon Standard (VCS)[13].

With a growing awareness at both international and national levels of the need for effective social and environmental safeguards, it is timely that Ecuador is currently one of five pilot countries[14] for the REDD+ Social & Environmental Standards (REDD+ SES). The national application of this initiative is facilitated by the Climate, Community & Biodiversity Alliance (CCBA) and CARE Ecuador. Essentially, REDD+ SES is a set of international standards developed through an inclusive multi-stakeholder process to support the design and implementation of government-led REDD+ programmes and

[12] CCB Standards—from the Climate, Community and Biodiversity Alliance (CCBA)—are "voluntary standards designed to evaluate land-based carbon mitigation projects in the early stages of development" (CCBA, s/f).

[13] "The VCS is a GHG accounting programme used by projects to verify and issue carbon credits in voluntary markets" (VCS, s/f).

[14] The other countries participating in the REDD+ SES initiative include Brazil, Indonesia, Nepal, and Tanzania.

ensure that positive benefits are achieved. The standards consist of social and environmental safeguards designed to ensure support for a higher level of social and environmental performance from the PNREDD+.

These standards will be used by the MAE and other relevant ministries, NGO, financing agencies and other stakeholders in the country to effectively design and implement REDD+ projects and activities that respect the rights of indigenous peoples and local communities and also generate social and biodiversity co-benefits. In 2012, they were applied to the implementation and early outcomes of the Socio Bosque Programme (*Programa Socio Bosque*)[15] in order to evaluate the social and environmental quality—under controlled conditions—of the 66 social and environmental indicators planned for use in the PNREDD+.

The design of these standards is such that they are relevant for government-led programmes implemented at national or local level and for all forms of fund-based or market-based financing. By providing a comprehensive framework of key issues to address, with regards to the social and environmental performance of the PNREDD+, the standards provide guidance to assist with REDD+ design and also provide a mechanism for reporting on the social and environmental performance of REDD+ projects and activities implemented in the country.

As aforementioned, while potential REDD+ benefits are quite high, there is also a risk that it could cause harm if inappropriately implemented. It is for this reason that it is critical Ecuador plans to demonstrate compliance with safeguards during the process. If indigenous peoples and local communities are going to benefit, for example, they cannot lose their rights to forests. They also need to benefit fairly, which means designing a system for the REDD+ payments, as well as non-monetary benefits, to be distributed fairly. Safeguards have to be integral to Ecuador's policies, institutions and financing systems. These safeguards must be secured through participation in decision-making, transparency, accountability and equity at every stage of the REDD+ process in the country.

At present, it is still unclear exactly how the safeguards are to be made operational under the PNREDD+. A similar uncertainty applies to the design of both social and

[15] Implementation of the Socio Bosque Programme (an incentive-based policy for forest conservation) began in 2008 in Ecuador, and forms an integral part of the incentive-based policies component of the National REDD+ Programme.

biodiversity monitoring in order to verify observance of social and environmental safeguards within the country (I01 and I02, 2012). As these measures must still be developed and implemented, they should be carefully monitored in order to ensure adherence to these most significant issues.

Indigenous peoples and local communities

On a worldwide level, forests form an integral part for the livelihoods of over a billion people, "1.6 billion people worldwide depend on forests and many are among the poorest on earth" (IUCN, s/f). In addition to this, 29 per cent of the world's population use biomass fuels for cooking and heating their homes, and in developing countries, protein is provided through hunting and fishing, and wood as an energy source, from these forest areas (MAE, 2011b).

In Ecuador, "Indigenous territories cover 64.8 per cent of the country's Amazon region" (MAE, 2011b: 75) and, "more than 6.8 million hectares of forest are owned by ancestral peoples, indigenous communities and Afro-Ecuadorian communities" (Bertzky *et al*., 2010: 2). In light of this link between forest dependent indigenous peoples and local communities and forest ecosystems, it is critical that the country ensures collective rights are respected and that multiple benefits from REDD+ implementation are achieved. In this respect Ecuador is seeking to implement a 'high quality' REDD+, which not only contributes to the reduction of emissions from deforestation, but which also promotes other social and environmental benefits (I02, 2012). Compliance with environmental and social safeguards proposed by the UNFCCC was also established as a national priority (I01, 2012).

As aforementioned, instances have been reported where communities have signed agreements surrendering forest use rights for money or other 'compensation'. Indeed there are cases in which the community leaders have given land titles in exchange for large sums of money, and who have subsequently fled the communities (MAE, 2011b: 74). Apart from these instances of abuse, the participation of actors with rights over the forests in REDD+ is completely voluntary in Ecuador; an important point which was emphasised by almost all interviewees, and which is fully recognised by the MAE as the National REDD+ Authority.

However, participation can hardly be effective as an end in itself, because meaningful participation can only occur when the purpose and outcome of it is tangible to those who are offered the opportunity to participate. Due to the nature of REDD+, many land use changes are dealt with, which can have both negative and positive impacts on a wide variety of stakeholders. The engagement of these stakeholders—along with the full consideration of their needs and interests—is thus fundamentally important in order to develop REDD+ strategies that respond to local needs and concerns while effectively targeting the drivers of deforestation and forest degradation.

Under the leadership of the MAE, Ecuador is undertaking the Participatory Governance Assessment for REDD+ (PGA), which is intended to facilitate meaningful participation towards a legitimate, inclusive and action-oriented assessment of governance in the REDD+ sector. In order to ensure legitimacy, country relevance and accuracy of the assessment, all stakeholders, public and private, national and local, are included in the process in all its phases (I02, 2012). The success of the PGA unmistakably depends on the active contribution of all the stakeholders.

REDD+ Indígena Amazónico

Some indigenous peoples' organisations and forest activists in Ecuador reject a business as usual approach to REDD+. They seek to use the REDD+ discussion as an opportunity to press for reforms that recognise customary rights, promote community-conserved forests and community-based forest management, clarify tenure rights and increase community control over forests. Community and indigenous leaders are looking to adopt a rights-based approach that empowers indigenous peoples and forest dwellers and ensures participation in the formulation of national and local REDD+ policies and programmes. Crucially, these groups have stressed that to be sustainable, REDD+ policies must address the full spectrum of land, natural resource and human rights issues (COICA, s/f).

By way of confirmation, the general consensus among indigenous peoples groups concerning REDD+ activities is presented in the Anchorage Declaration from the Indigenous Peoples' Global Summit on Climate Change which states,

> All initiatives under […] REDD must secure the recognition and implementation of the human rights of Indigenous Peoples, including security of land tenure, ownership, recognition of land title according to traditional ways, uses and

> customary laws and the multiple benefits of forests for climate, ecosystems, and Peoples before taking any action (Galloway *et al*., 2009: 6).

REDD+ Indígena Amazónico is an alternative for REDD+ implementation in indigenous territories proposed by Amazonian indigenous peoples. Through the regional Coordinating Body for the Indigenous Organisations of the Amazon Basin (*Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica* – COICA), the intention is to apply the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the holistic management of the mechanism by the peoples of their own territories, reduce the global ecological footprint, and the use of community monitoring to reduce drivers of deforestation and degradation (COICA, s/f).

This alternative sets out to be more effective, efficient and simple, correcting perceived problems with the conventional REDD+ approach. Also intending to overcome the confusion associated with offsetting emissions, the dependence on an uncertain carbon market, and conflicts with 'carbon cowboys'. The proposal is to develop the approach and tools of said alternative through 'learning by doing', achieved through implementation in five specific indigenous territories, in coordination with indigenous organisations in these respective countries[16] (COICA, s/f).

The anticipated result is to have 4 million hectares of conserved forest, hundreds of thousands of tonnes of CO_2 preserved carbon stocks, productive use and conservation through holistic management by the indigenous peoples themselves (COICA, s/f). The focus reflected in *REDD+ Indígena Amazónico* rests on the alignment of the indigenous peoples and local communities' concern for their own well-being, political legitimacy and security with the larger REDD+ goal of managing climate change to achieve planetary well-being.

[16] In Brazil (COIAB), Peru (AIDESEP), Colombia (OPIAC), Bolivia (CIDOB) and Ecuador (CONFENIAE).

CHAPTER IV
DISCUSSION AND CONCLUSIONS

This final chapter provides an opportunity to reflect on the climate justice issues associated with REDD+ implementation in Ecuador. In many respects the two principal hypotheses of this thesis represent a dualistic worldview. That is, they may be viewed as Manicheistic, in that they represent a dualistic philosophy dividing the world between good and evil principles. Essentially, both hypotheses contribute to an attitude of moral dualism, in which the moral course of action—to implement REDD+ or not—involves a choice between 'good' and 'evil'. However, the choice is not as simplistic as one might perhaps like. As illustrated, there are serious considerations to be made before accepting or rejecting outright any REDD+ implementation in the country.

H_1 – Does REDD+ clearly illustrate climate injustice?

"Indigenous peoples' groups and organisations place heavy emphasis on the importance of free, prior and informed consent (FPIC) of indigenous peoples involved with all REDD+ activities" (Tauli-Corpuz *et al*., 2009: 58); these same groups recognise and cite the need to fundamentally uphold the UNDRIP (2007). Indeed, in the current preparation phase of REDD+ in Ecuador, there seem to have been efforts to foster participation by indigenous peoples and local communities to meet this requirement. This necessity to provide due consideration and attention to the culture and wellbeing of indigenous peoples and local communities reflects principally communitarian ideas of justice; whereupon the main objective of the discourse is to place a strong impetus on the effect any REDD+ policy might have on these, often most vulnerable, peoples.

In many ways REDD+ could be said to oversimplify the causality of deforestation and forest degradation, especially when focusing on indigenous peoples and local communities who live in and around forest areas. A disproportionately large portion of the blame for forest damage is assigned to local communities while downplaying the level of responsibility held by other stakeholders in the REDD+ process. Analytical examinations of REDD+ must remain cognisant of, and respond to, the ways in which REDD+ oversimplifies this supposed relationship. An analysis of this assignment of blame could lead us to conclude that the blame itself is a critical tool for legitimising

REDD+ governmental efforts to control the locations and behaviours of these communities (I08, 2012).

It is also true that institutional requirements of REDD+, in their current form, present the real possibility of recentralisation of forest management that could undermine local participation in REDD+ project design and management. "Communities may participate in collecting forest-specific data, but carbon accounting, a major REDD+ component, will require centralized management […] with billions of dollars at stake, governments could justify recentralization by portraying themselves as more capable and reliable than local communities at protecting national interest" (Phelps *et al*., 2010: 312).

Regarding land tenure, is there a possibility that the Government of Ecuador will move to enforce state ownership? It would appear that this does not represent a risk—at least not on paper—because land use rights and tenure of indigenous peoples and local communities are guaranteed by the Constitution. However, a perverse outcome for indigenous peoples and local communities is more likely because the global environmental change governance system is not structured in a way that gives official voice to non-state entities.

According to justice as meeting needs, the Government of Ecuador essentially has an obligation to ensure that all citizens are provided with sufficient opportunities to fulfil their own potential; this could be interpreted in the sense that the Government must provide the institutional and legal framework for REDD+ in order to accommodate those indigenous peoples and local communities interested in developing REDD+ projects. Thus, providing increased resources and opportunity—in the words of Sen (1999)—to lead well-meaning lives.

Indeed, for REDD+ policy to meet the needs of the poor—and in line with the tenet of Brundtland's definition of sustainable development—, it is important that policy approaches do not focus simply on not making the poor worse off. Rather, REDD+ policies should actually be such that they both respect rights as defined under international law, and provide legal obligations for those with resources (at national and international level) to take an active step in ensuring the most vulnerable have at least enough resources to fulfil their basic human needs.

Without a doubt, REDD+ implementation in Ecuador is a polemic issue with many interested parties, all of whom have their own interests and agendas. Until now,

most of the discussion has taken place at the global and national levels, while what matters is the impact at the individual—local—level. For instance, should Ecuador resolve Art. 74 of the Constitution anytime soon, the allocation of use rights on a national basis will not necessarily guarantee that the benefits within the country will go to the most deserving. Neither on an international level, does it imply that the allocation between countries will reflect the distribution of the poor among them.

To many it would appear nothing less than ludicrous to maintain allegiance to an economic orthodoxy which perpetuates the dominant political myth that traditional economic growth can be both sustained, and answer all our global climatic problems. Besides perpetuating myths, the fact is that in the real world its effect is one of diverting attention away from alternative approaches, away from ethical debates over harming the innocent, the poor and future generations, and away from the fundamental changes needed to tackle the very real and serious problems current economic systems pose for environmental systems in general. Whilst it does seem somewhat inappropriate to address a problem with a solution that stems from the same basic principles—inappropriate neoliberal policy measures—the reality is that REDD+ is being implemented as part of the 'solution' to climate change in Ecuador (I01 and I02, 2012).

If the climate change regime, and specifically REDD+ proposals, are seen as part of the wider search for global sustainability, then it is important that proposals are judged not simply on the basis of economic efficiency outcomes but also on their ability to promote conservation and meeting the needs of the most vulnerable peoples. Here, the most important issue at stake relates to the extent to which the rights and wellbeing of millions of indigenous peoples and local communities who live and depend on forests for subsistence are put into consideration in the design of REDD+ policy arrangements. It is noted that the dominance of market-based approaches, as manifested in the available offerings, might make it difficult to agree a mechanism that can promote justice for indigenous peoples and local communities. Of course, the danger here is that market-based approaches "can reproduce unequal power relations between project actors" (Corbera *et al*., 2007: 378)

Limits of participation

Interview results and critical literature on the participation of indigenous peoples and local communities in REDD+ highlight the limits of participation; most of these critiques focus on the issues of government that shape the structure and limitations of participation (Forest Peoples Programme, 2010). Other criticisms relate to insufficient information being provided to indigenous peoples, resulting in the further marginalisation of already vulnerable groups. Moreover, it was suggested that the current REDD+ preparation phase in Ecuador is suffering from an insufficient alignment of interests among its many stakeholders (I03, I05, and I08, 2012).

Another important aspect is that as the REDD+ mechanism becomes ever more complex, a markedly reduced participation and understanding on the part of local stakeholders can be expected. A future risk is embodied in the lack of clarity of the long-term impact on the indigenous peoples and local communities traditional knowledge and customary sustainable uses of forests under REDD+ implementation, if indeed there is even a risk.

Therefore serious considerations must be made as to how the participation of indigenous peoples and local communities and other stakeholders can be facilitated in the national REDD+ process in Ecuador. It is important to ensure that the voices of a wide range of affected people might be heard in this process, and to make a significant effort to make participation as unconstrained as possible, so as to hear the real concerns and needs of these communities as these programmes and projects move forward.

It is only through significant engagement with these stakeholders that REDD+ goals will be aligned with stakeholder interests, ranging from indigenous peoples and local communities to national and international organisations. Unless significant attention is paid to the way that indigenous peoples and local communities are incorporated into REDD+ governance then the ability of these programmes to attain their primary objective of mitigating climate change is remote. Further, if that goal is attained without tangible changes that address those needs then the costs to forest-dependent people are likely to be irreversible, and REDD+ runs the risk of coming to represent another addition to a history of marginalisation of vulnerable groups, something which is clearly unacceptable.

Clearly the increasing role of Ecuador in the REDD+ debate highlights issues about procedural justice. Recent tensions between stakeholders indicates that rather than

being a coalition of the consensus views, the MAE—as the dominant voice in the debate––has its own agenda in promoting a particular outcome. This has been demonstrated at recent workshops and conferences when stakeholders have taken to the floor in order to voice various concerns about the national REDD+ process. The MAE affirms that it speaks on behalf of all stakeholders in the process, even though views may differ significantly. A common view substantiated by many interviewees was that the current situation demonstrates the dominant role held by the Government of Ecuador and the extent to which—under such circumstances—there might be an inability for various stakeholders to project their views in a candid manner.

Noteworthy, is that environmental policymaking—both national and international—is not simply a pluralistic process where every idea or proposal has equal chances of adoption. It would be naïve to suppose that the various proposals and conceptions of justice are simply competing for space in a moral or value neutral platform; rather, as noted, there are pre-commitments to particular ideals. The prevailing notion that the market is an efficient and equitable distributor of resources manifests itself in the dominance of such REDD+ proposals that recommend performance-based approaches to global forest governance and market-based conceptions of distributive equity.

Ineffective national finance distribution, the continuation of illegal logging practices as well as the insufficient involvement of forest-dependent peoples are perceived as major challenges for REDD+ implementation in Ecuador (I03, I04, I05, I06, and I08, 2012). While important in their own right, concerns for such issues as land tenure, the distribution of benefits, and the recentralisation of forest management under REDD+ are questions framed by underlying governance issues.

These complex pressures on forests—the demand for forest products, illegal logging, displacement of people from other lands and colonisation—demand complex governance arrangements, which are not necessarily suitable to forest carbon trading. As such, any mechanism intended to reduce deforestation and forest degradation must be designed to fully address these issues for it to be both effective and just. As highlighted, there are significant differences in the utility functions placed on Ecuador's forests, and these are a direct reflection of the maximisation of preferences of various stakeholders, which all possess different interests.

Rawls stipulates that governments are "the representative and effective agent of a people as they take responsibility for their territory and its environmental integrity" (Rawls, 1999: 38). As evidenced, the Government of Ecuador are planning to play a significant role in the carbon market nationally but the conception of market justice—the idea that government intervention for the redistribution of resources is unjust—is in contravention to the idea of the possibility that the national government might eventually 'manage' a centralised national fund for REDD+ proceeds. In the words of a market justice proponent, the government should, "leave markets well alone such that human ingenuity can be given full rein" (Dryzek, 2005: 121).

Market-based approaches marking the way forward

Although they appear to be neither the most just nor the most effective in terms of emissions reductions, the international community seems to have settled on market-based approaches such as REDD+ for mitigating climate change. As evidenced, this approach has drawn sharp criticism from climate justice activists and scholars, who stipulate principally that this would lead to injustice to become deepened. The rationale for this is that they are fundamentally financial instruments which transfer the responsibility to reduce emissions to developing countries.

Reviewing submissions on historical debt, "excessive use of the earth's limited environmental space" (UNFCCC, 2009: 6) by developed countries has essentially denied environmental space—the capacity of the atmosphere to sequester CO_2—to the poorer majority who need it in the course of their development. Following on from this argument, a fund-based financial framework for REDD+ could be proposed, one which is based on historic responsibilities of developed countries to fund the full incremental costs for mitigation in Ecuador and other developing countries. Under such circumstances, the money which developing countries demand from developed countries is not simply based on the polluter pays principle, but would also serve as compensation for this historical overuse of the atmosphere as an unpriced sewer, and for the limitations this imposes on current and future generations.

As such, Ecuador appears to be in agreement with the point noted by Pogge (1998) where nations who have used more than their fair share of the global commons are made to compensate those who have been disadvantaged. Under such a critique REDD+

is clearly aligned to this principle of justice as liberal egalitarianism; essentially as a mechanism designed to acknowledge the unequal historical emissions of CO_2 in the atmosphere. Thus responding to the 'common but differentiated responsibility' as outlined by the Climate Change Convention. In addition to the fact that potential REDD+ funds—if correctly invested—*could* contribute towards improving sustainable local development in the country; the mechanism *could* also respond directly to the needs of the least advantaged, and often most vulnerable, members of society.

Important references to distributive justice have been identified in Ecuador, as well as issues of procedural justice and participation in decision-making. There are at least two notions of justice that can be identified: first, by incorporating the notion of historical debt, there is clearly an appeal to what Metz (2000) describes as a 'cumulative liability' interpretation of justice. In total, two different interpretations of historical responsibility are made (Gardiner, 2004: 8), on the one hand the Government of Ecuador makes a straightforward argument that since developed countries are responsible for the majority of the emissions the world is now attempting to solve, it is only fair that they should fund the collective programme designed to mitigate climate change. Also appealing to the common sink argument, as proposed by Gardiner (2004), following the rationale that by excessively using forests—one of earth's finite resources—the developed countries have effectively imposed limitations on forest use by developing countries and thus on their development options (UNFCCC, 2009: 6).

Ecuador appears determined to apply a human rights-based and participatory approach to REDD+ (I01 and I02, 2012); this is positive indeed. The position of the country's government also implicates the notion of justice as meeting needs—more specifically the needs of indigenous peoples and local communities. Ecuador argues that indigenous peoples and local communities deserve adequate protection under any REDD+ scheme, insisting that these peoples have inviolable rights to subsistence and that they are the most appropriate stewards of the forest. Under this logic then, if indigenous peoples and local communities have indeed been effective stewards of their lands and forests, until now it has occurred without the necessity to compensate them financially for doing so.

The principles of 'avoiding dangerous climate change', and 'forward-looking responsibility' address responsibility for climate change impacts. Whilst the principle of

putting the most vulnerable first addresses the question of how benefits ought to be distributed, and the principle of equal participation of all addresses the questions of procedural justice. As such, these principles could certainly help the global community make progress towards a just mitigation for climate change.

The question whether or not REDD+ will create real reductions in the risk of dangerous climate change—primarily through avoided CO_2 emissions related to deforestation and forest degradation, and secondly by increasing carbon stocks—is perhaps not as straightforward as one might suppose. But what is certain is that until we tackle the problem—dependence on fossil fuels and high carbon lifestyles—at its source, even a with-REDD+ scenario may only serve, at best, to temporarily postpone increasing levels of atmospheric CO_2-eq.

H_2 – Will REDD+ only benefit high emitting developed countries?

Stern *et al*. (2006) described REDD+ as the simplest and most cost-effective means of mitigating climate change. For many, this contributed largely to interests and motivations for continuing on with a REDD+ path for the future of climate change mitigation policies. However, the emerging literature on the ethics and economics of the climate and carbon trading regime suggests that the costs and benefits of climate policies may not be equally distributed (Adger *et al*., 2006). The mechanism was certainly not designed with altruism at the forefront of negotiations, so inevitably there are interests at play; subsequently, a view shared by all interviewees.

"The Kyoto negotiations in themselves benefited certain countries that were able to meet their commitments fairly easily because of industrial restructuring […] or to negotiate stable or increased emissions" (Bumpus and Liverman, 2008: 141). Thus, there is risk that the allocation of rights to carbon emissions and reductions will provide enormous benefits to some, while simultaneously disadvantaging others. For instance those less powerful in negotiations, or who assign their carbon rights to others at a low cost, perhaps with the most vulnerable forest owners in developing world countries such as Ecuador being the most susceptible.

Whilst it is true that offset projects are a rapidly growing business opportunity for those who develop and broker projects and credits, it must be acknowledged—as Bayon *et al.*, 2007) and others do—that offset projects have become, and look certain to

continue to be, a new source of funding for development and conservation in the global South. Therefore it would be wholly inaccurate to suggest that only high-emitting developed countries benefit from carbon offset schemes. The majority of interviewees concurred that Ecuador, and any REDD+ implementing country, also stands to benefit in other ways. Examples cited include the creation of both environmentally and financially sustainable alternative productive activities to prevent deforestation and forest degradation (I02, I03, I05, I06, and I07, 2012). Therefore, by substituting the extraction of timber and non-timber forest products with other activities, there are social benefits—through capacity building etc., as well as environmental benefits—achieved through the conservation of biodiversity in these forest areas.

With all the services that forests provide both to humanity and planet Earth, there is now widespread appreciation of a simple yet profound fact: that forests are more important left standing, than cut. Therefore, controlling and limiting deforestation and harvesting of other forest resources, while requiring governance of complex, locally-specific activities and environments, is likely to result in far more comprehensive gains than reducing carbon emissions alone. In addition to possible mitigation of climate change, reducing deforestation and forest degradation and supporting sustainable management of existing forests—with appropriate REDD+ implementation—will also produce co-benefits, also ensuring that multiple benefits of forests are maintained and enhanced. These include local use benefits—sustainable forest management of REDD+ areas—accruing to local communities, soil erosion and watershed protection accruing locally, nationally and regionally, and the global benefits of both carbon storage (and avoided carbon emissions), as well as the protection of biodiversity, and the preservation of cultures and traditions.

There is concern that much of the carbon trade money will be used up in the implementation and transaction costs of REDD+ activities. "If the high revenues expected from REDD+ are not managed transparently and with stakeholder oversight, there are high risks that the forest communities will see little of the REDD+ benefits" (Dix, 2011: 346). On this same note, a very important point which arose in all interviews is the focus on monetary benefits from REDD+, an apparently foolish error to have committed in the early design phase of the mechanism. Why did this occur, was it perhaps a strategy to generate wider acceptance of the mechanisms' initial proposal?

Overly optimistic expectations have lead indigenous peoples and local communities to believe they will receive large quantities of money should they agree to REDD+ projects in their forests. Any funds eventually received by communities from a future REDD+ project—once internally divided within the community—, are likely to be far below expectations and therefore likely to create mistrust or contempt for REDD+ over the long-term. What must be addressed is replacing deforestation activities with alternative socially, environmentally, and financially sustainable activities within the communities—in order to prevent deforestation and forest degradation[17].

There are benefits associated with the requirements of REDD+ implementation; in Ecuador for instance, these include the Historical Deforestation Map, Reference Emissions Level, etc. Such benefits for the country often arise as a direct consequence for the necessity of carrying out these exercises and methodologies as established by the broader preparation phase of national REDD+ implementation. This is a fine illustration of how a well-functioning carbon market can be very beneficial to countries that want to start benefitting from REDD+ funding.

Beyond avoided climate impacts, a number of other specific policy benefits may be triggers for mitigation; including ecosystem stability and resilience as well as the ability for natural resource systems to continue to provide the necessary resource base for future economic development—in a post-extractivism sustainable development sense. Another set of benefits may be related to sustainability goals of the country, regions or local communities within Ecuador, for example, synergies with GHG mitigation can improve local environments and reduce health risks from urban air pollution. Thus in addition to concern about the magnitude and distribution of the direct impacts of climate change, and about the costs of mitigation, the researcher contemplates a variety of other policy benefits which may begin to drive national action to strengthen climate policies in the country.

In spite of the climate justice aspects discussed, the researcher questions whether Ecuador, like other smaller and less fast-growing countries, should continue to justify a zero or very low emissions reductions burden. In fact, Ecuador has already pledged to voluntarily reduce emissions, helping in part towards abating dangerous climate change. But it is important to consider that such emission cuts are also justified in and of

[17] 'Preventing' deforestation here is meant rhetorically, as it is impossible to reduce the rate of deforestation to zero; with or without REDD+ or any other mechanism.

themselves—insofar as they generate benefits to the local residents, for instance, through reductions in local pollutants harmful to health.

Final remarks

Despite its basis in scientific research, climate change is more of a political than a scientific problem: as an essentially discursive matter we need a better vocabulary for organising interests, rather than a better science. The Kyoto Protocol is due to expire at the end of 2012, what is clear is that new arrangements will have to be made. Such arrangements will have to find some way to balance the equity and other considerations so as to account for the growing emissions and growing population share of the developing world. It is expected that REDD+ will play a role in these newly negotiated arrangements.

Without action, we risk catastrophic and perhaps irreversible changes to our life-support system. Our primary goal must be to take planetary responsibility for this risk, rather than placing the welfare of present and future generations in jeopardy. The necessity that a new climate regime is needed, and must be in place before 2015, is something—in principle at least—that will serve as a basis on which to work. However, with reference to the international agenda for the challenge ahead, the outlook is not a particularly good one. The analysis presented in this investigation is not intended to portray an impossibly bleak picture but instead it is intended to demonstrate that the current negotiating positions of some developing countries are inadequate and unfair, and need to change urgently. Neither is the intention to blame everything on developed countries but it must be acknowledged that these nations must adopt stronger, binding agreements for emissions cuts without further delay.

The authors of the UNDP Human Development Report highlight the importance of the "very large carbon debt that the rich countries owe the world […] repayment of that debt and recognition of human development imperatives demand that rich countries cut emissions more deeply and support low-carbon transitions in the developing world" (UNDP, 2007: 50). Clearly there is a necessity for a significant increase in developed country public sector funding to achieve the unified goal of avoiding dangerous climate change. But on the other hand, there are developing country governments who insistently demand financial assistance and technology transfer to take mitigation actions; such a

stance is without doubt appropriate and understandable, but inevitably risks going so far––to what the authors at CLAES (2010: 29) describe—as "becoming the centre of the issue, where it appears that a South American country will only advance decisively in dealing with climate change if they receive external financing".

Private capital flows through offsetting mechanisms will not be sufficient or appropriate to address the root causes and solutions to climate change, and as such, new—perhaps complementary—mechanisms must be agreed. Preventing deforestation or forest degradation alone will not solve the scale of the CO_2 emissions problem, even if the obstacles for doing so—as outlined in this investigation—could be overcome. Long-term climate stability will require developed countries to move away almost entirely from CO_2 emitting technologies, which requires huge changes in their infrastructure—starting now. Because developed countries are delaying infrastructure changes, offsetting may well prove a major barrier to action in preventing dangerous climate change. It is widely accepted that reducing emissions from fossil fuels will have the greatest effect on atmospheric carbon concentrations; thereafter preventing deforestation and forest degradation *could* have the next biggest impact, should it eventually be implemented successfully on a just and widespread scale.

High levels of inequality make it very unlikely that a North-South consensus will spontaneously emerge on the basis of a single fairness principle. A truly global consensus on climate change will require countries to reconsider and negotiate their own beliefs about what is fair or just. But importantly, and in light of the urgency to act, "we merely need a solution which is commonly regarded as sufficiently fair to remain acceptable" (Mu□ller, 1999: 3).

To achieve forest conservation and enhanced carbon stocks, REDD+ must align the interests of *all* stakeholders to these broad goals. Thus far, the efforts at aligning the interests of various REDD+ stakeholders remain principally focused on those stakeholders engaged and comfortable with measures and governmental structures common to the Global North. For REDD+ to successfully conserve existing forest resources while enhancing carbon stocks, it must facilitate the design of projects that align the interests of the communities in and around these resources with these larger conservation goals.

It is high time climate change be understood at its core as an ethical problem. Principally because it is a problem caused by some people in certain parts of the world that are threatening other people who are often far away and most vulnerable. In addition, such harms to these victims are potentially catastrophic. Ultimately, developing countries are less able to protect themselves and instead must hope that those causing the problem will see that their ethical duties to the victims requires them to drastically lower GHG emissions. The best prospect for those currently suffering—and the many more who will suffer—the consequences of climate change is that high GHG emitting developed countries will respond, as justice requires of them. The question of whether people demanding higher material standards of living and using the atmosphere as an unpriced sewer to achieve unsustainable growth-oriented goals more rapidly is ethical is a value-laden debate that will heat up—along with the planet—as atmospheric GHG concentrations continue to rise.

Key actors in the current climate justice movement have established a position that is directly opposed to carbon trading, referring to it as promoting neoliberal environmental governance, and neocolonialism under the pretence of curbing atmospheric releases of CO_2. However it is worthwhile noting that the outright rejection of carbon trading stands to marginalise, partly if not completely, the movement in international negotiations and in national discussions. It is in light of the co-benefits of REDD+ implementation that such an outright negation poses obvious disadvantages.

The value position of the investigator is to immediately enact (and act on) policies that slow down the rate at which we perturb the climate system, also allowing for the development of lower-cost decarbonisation options. This way, the costs of mitigation can be reduced well below those that would otherwise be incurred if there were no policies in place to provide incentives to reduce emissions and invent cleaner alternatives.

In the face of potential surprises and irreversibilities, we must not become trapped in conventional economic wisdom that suggests we should emit now and abate later; rather, we must take action now. Slowing down the pressure on the climate system may be viewed as our insurance policy against such non-linearities and irreversibilities. Such non-linearities will undoubtedly be the topic of frequent debate in the next few years, as more and more decision-makers come to understand that what action we do—or do not—take now, will have ineffaceable impacts on future generations.

Modern economic growth has been locked-in to dependence upon fossil fuels and these are the historical source of the majority of anthropogenic GHG emissions. Humanity is facing the transformation of the economy away from this dependence; that transformation will come whether humanity chooses to plan for it or not. A permanently smaller material economy has been positively advocated, by literature on steady-state economics and degrowth, as something for which we should be planning. Powerful economic interests have advocated for market-based instruments and asserted that these should not interfere with growth targets or economic competitiveness. As a result, Enrique Leff (2005: 7) argues that mechanisms such as REDD+ and those stipulated in the Kyoto Protocol will not make it possible "to reduce emissions more quickly than the rhythm of economic growth would allow".

If REDD+ works, in addition to supposed avoided emissions from deforestation activities and sequestration of CO_2, the mechanism could also provide a valuable service to the environment and to society that is worth paying for. Principally protecting biodiversity, reducing poverty and contributing to a more sustainable type of development. With due consideration to the social and environmental functions of forests, it will be possible for Ecuador to create additional benefits for communities, people and biodiversity conservation. However, although many consider the mechanism a cost-effective strategy in terms of climate change mitigation, the researcher questions the eventual success of such a strategy in significantly reducing atmospheric CO_2 levels over the long term.

In light of the current political environment, it is argued here that Ecuador, as with other developing countries, should seek to carefully manage their participation in future markets in carbon offsets and emissions permits. There is a need for theoretically informed policy and policy-makers who comprehend the structural impediments facing developing countries and how carbon finance opportunities—with additional benefits—can be pursued in a responsible manner at this important moment in history. The question of what is appropriate in the carbon market and what is abuse must be answered; for instance, simply offsetting and carrying on with bad habits is wholly unacceptable. At this time when the REDD+ architecture is still in construction this must be watched very carefully.

Given that market-based approaches are now so deeply entrenched in the present discourse, the investigator contemplates the implications of the climate justice movement continuing to maintain a position of total opposition to REDD+. Maintaining allegiance to carbon taxes, charges, or dividends—even though such approaches could be considered more just—they are difficult to implement. Under a post-2012 global climate regime, and with a superficially improving economic crisis in the next few years, there may finally be a major flow of financial resources for REDD+ to help developing countries create more equitable growth, encourage economic diversification, and deliver significant social and environmental benefits.

This does not mean developing countries such as Ecuador should open the gates carelessly. Well-managed and creatively applied, carbon financing has the potential to address social and local development goals, as well as significant biodiversity conservation benefits. But ultimately, REDD+ measures will only be effectively implemented if local stakeholder participation is clearly established from the outset to ensure equity issues are adequately addressed.

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