

CLIMATE CHANGE AND THE CLEAN DEVELOPMENT MECHANISM:  
MONEY LAUNDERING FOR THE NEW MILLENIUM

By

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*Abstract:*

The Clean Development Mechanism, a key economic instrument used by the international community to mitigate climate change, is falling far short of its intended purpose by relying on a carbon trading market to reduce greenhouse gas emissions.

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## Introduction

Every day we are confronted with reports of disasters either present or soon to come under the umbrella term of “climate change”. We see footage of glaciers melting, intense tsunamis, and species of plants and animals disappearing. Global warming threatens life as we know it in the beginning of the twenty-first century, and looms as an unfortunate and disgraceful legacy to future generations. We are told that these changes are due to fossil fuel use and that, as responsible citizens, we should feel obliged to use less, to recycle, to ride our bikes or use public transportation in order to not only preserve precious non-renewable resources, but also to stem the tide of greenhouse gases that are emitted into the atmosphere that are causing the average global temperature to rise at an alarming rate. Indeed, any conscious human being would become alarmed at such knowledge; water shortages, unpredictable storms, droughts, floods, loss of biodiversity, food security issues, rising sea levels, mass migration and or death are all potential outcomes of a warming climate. They are events that strike fear into human beings on the most primal level. And yet, what can we really do to change was set into motion over 200 years ago at the beginning of the Industrial Revolution?

“We”, of course, is a not a universal term. “We” are industry and business interests; “we” are the average consumer in the global North; “we” are the sub-Saharan subsistence farmer, the Chinese or Indian citizen on the brink of achieving material wealth impossible to imagine 10 or 15 years ago. “We” are the indigenous tribe in Borneo noticing that the butterfly cocoons are

appearing earlier and earlier, and the Siberian locals who now swim in lakes that were previously unswimmable because they were covered in ice. “We” are politicians, lobbyists, governments, economists, scientists, and environmentalists. And because “We” are all so different, we will have different answers to that question, different responsibilities, and different degrees of willingness to make changes. In this paper, we will address what the dominant paradigms of climate change are and how some people are responding; what organizations are coining its language, framing its imagery, and creating its policy; and how a key measure, the Clean Development Mechanism, models the controversies of a North-South divide, carbon trading, and economic efficiency versus ecological responsibility. Never before has such a multitude of environmental concerns been lumped into one term, climate change, and in our examination we will bear in mind how this shift in perception is changing policy, public awareness, and the environment.

I am indebted to Larry Lohmann whose exhaustive critique of carbon trading has provided a viewpoint overlooked in much of the climate change literature. Additionally, the on the ground work of the researchers at International Rivers has been invaluable in making an accurate assessment of CDM activities and has informed much of this paper.

I would like to thank the many people who, one way or another helped in the culmination of this thesis. I thank Dr. Wayne Decker for his encouragement and faith, and Professor Paul Robbins for opening up a new way of looking at the interconnectedness of politics and the environment. I couldn't have done it them nor without my dad, Paula, Lawrence, Susannah, Jim, Ona, Lila, Jan, and Iggy, and for their support I will be forever grateful.

This thesis is dedicated to my mom, and to all the people who, against all odds, continue to fight for a better future for the Earth and all of its inhabitants.

## Chapter One: What is climate change and why is it happening?

The terms global warming, climate change, carbon emissions, and greenhouse gases are all terms thrown about in the media and in scientific discussion. But what do they mean, exactly?

Climate change is the umbrella term for the multitude of changes currently taking place: ocean-level rise, melting of the polar ice caps, the intensification of tropical storms, droughts, and loss of biodiversity, and ocean acidification, for examples, and also the events that have social repercussions related to these changes such as food security and forced migration. Global warming is the driver of this climate change, though it does not mean that every geographic area is warming at the same rate; rather, there is a great deal of uncertainty in the ways that climate change is going to manifest. What is certain is that the global average temperature has been rising rapidly in the past 150 years or so.

Greenhouse gases released as the result of human activities are the cause of this rapid elevation in temperature. Carbon dioxide (CO<sub>2</sub>) is the primary greenhouse gas (GHGs) responsible for global warming, and it is a by-product of the burning of oil, coal, and natural gas, and biomass. Other industrial GHGs are chlorofluorocarbons (CFCs), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF<sub>6</sub>), nitrogen trifluoride (NF<sub>3</sub>), trifluoromethyl sulphur pentafluoride (SF<sub>5</sub>CF<sub>3</sub>), halogenated ethers and other halocarbons, chlorofluorocarbons (CFCs), and hydrochlorofluorocarbons (HCFCs).<sup>1</sup>

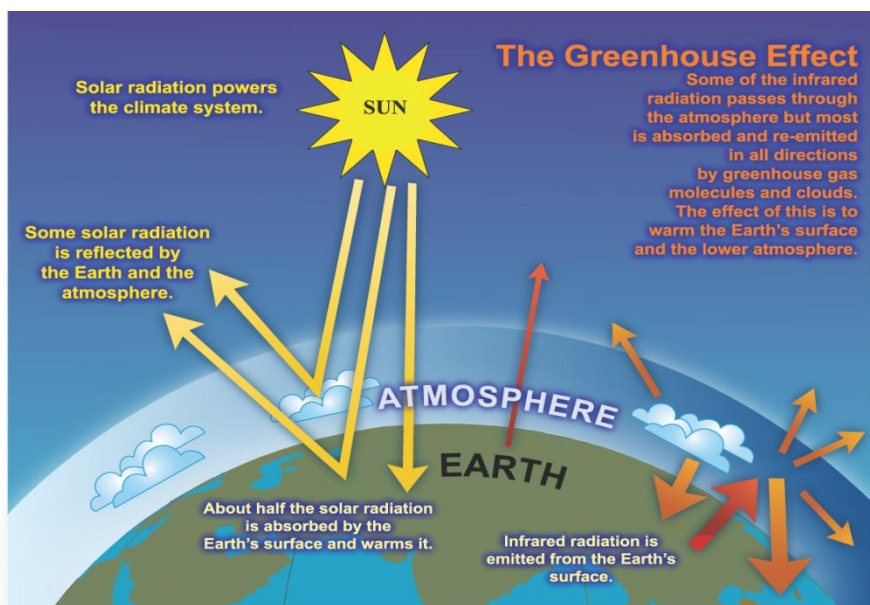
Though climate change has only relatively recently come to the forefront of the public consciousness, scientists have long been aware of the correlation of the release of greenhouse

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<sup>1</sup> IPCC. Frequently Asked Questions. <<http://www.ipcc-nggip.iges.or.jp/faq/faq.html>> (6 March 2009)

gases in the atmosphere with rising average global temperature. In fact, in the mid 19<sup>th</sup> century, mathematician and physicist Jean Joseph Fourier recognized the connection between greenhouse gases and rising global temperature in examining how the sun's heat is retained in the Earth's atmosphere. Later in the 19<sup>th</sup> century, Nobel prize-winning chemist Svante Arrhenius, considered the father of climate science, demonstrated that increasing carbon emissions would mean increased global temperature.<sup>2</sup> Neither one, however, foresaw the dire implications of the release of excessive greenhouse gases into the atmosphere or perhaps couldn't even imagine how much of them would be released. Arrhenius even imagined a more habitable world for future generations in which they would be living under "milder skies".<sup>3</sup>

<http://www.ipcc.ch/graphics/graphics/ar4-wg1/jpg/faq-1-3-fig-1.jpg>

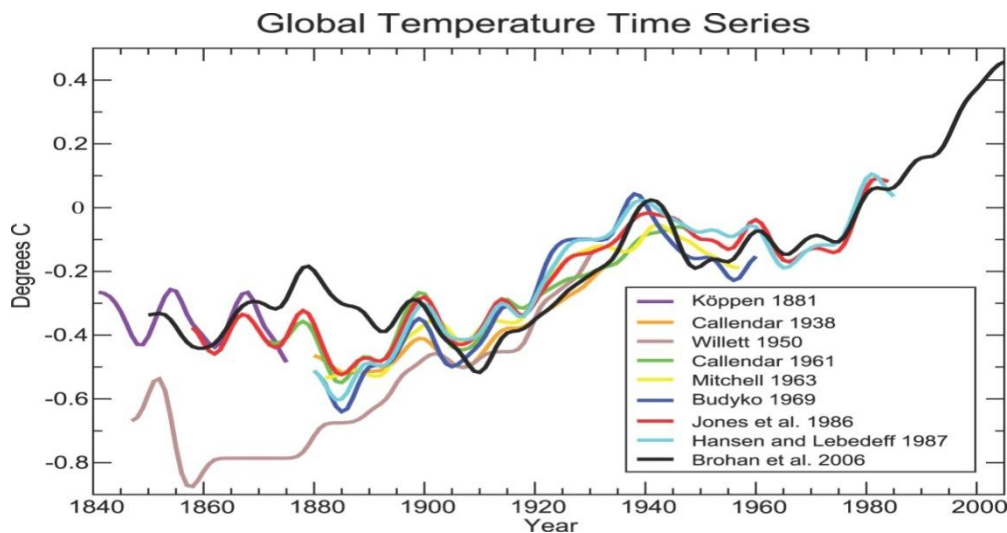


<sup>2</sup> Michael Common and Sigrid Stagl, *Ecological Economics* (New York: Cambridge University Press, 2005), 483

<sup>3</sup> Ian Sample, "The Father of Climate Change," *The Guardian*, 30 June 2005.

<<http://www.guardian.co.uk/environment/2005/jun/30/climatechange.climatechangeenvironment2>> (5 March 2009)

So why are greenhouse gases so bad? In and of themselves, they're not. Naturally occurring greenhouse gases are what have made this planet much more habitable to human beings. In fact, without them the average temperature of the planet would be approximately 30°C (86°F) colder than it is at present. But the greenhouse effect has become a problem. The release of excess greenhouse gases has increased global surface temperature by .8° C just since the industrial revolution. How this happens, put simply, is that the sun heats the Earth's surface as it rays enter the atmosphere (see table above). This infrared energy is then reflected off the Earth, and some of it escapes back into space. Greenhouse gases, however, trap some of this heat and reflect it back to Earth,<sup>4</sup> causing a rise in temperature. Since the Industrial Revolution, human activity has emitted more GHGs than ever before seen in human history. In the United States alone, carbon dioxide emissions increased by 20% between 1990 and 2004.<sup>5</sup>



<http://www.ipcc.ch/graphics/graphics/ar4-wg1/jpg/fig-1-3.jpg>

<sup>4</sup> Daniel Lashof and Dennis Tirpak, US Environmental Protection Agency, Policy Options for Global Climate Change (New York:Hemsiphere:1990) , 2

<sup>5</sup> US Environmental Protection Agency, Greenhouse Gas Emissions, <<http://www.epa.gov/climatechange/emissions/index.html#inv>> (19 April 2009)

Pre-industrial levels of carbon dioxide (prior to the start of the Industrial Revolution) were about 280 parts per million by volume (ppmv), and current levels are greater than 380 ppmv and increasing at a rate of  $1.9 \text{ ppm yr}^{-1}$  since 2000. The global concentration of  $\text{CO}_2$  in our atmosphere today far exceeds the natural range over the last 650,000 years of 180 to 300 ppmv. According to the IPCC Special Report on Emission Scenarios (SRES), by the end of the 21<sup>st</sup> century, we could expect to see carbon dioxide concentrations of anywhere from 490 to 1260 ppm (**75-350%** above the pre-industrial concentration).<sup>6</sup>

The more greenhouse gases there are in the atmosphere, the more heat will be trapped. Fortunately, the greenhouse gas effect is moderated by “carbon sinks”. Carbon sinks are oceans, soil, rocks, forests and plant life which serve to absorb active carbon and prevent heat from being trapped in the atmosphere. But the large-scale destruction of natural carbon sinks seen in the past century, combined with the large scale emission of greenhouse gases has created an atmospheric overload. The oceans, a major carbon sink, have already absorbed up to one third of their ultimate absorption capacity<sup>7</sup>. The two events are proving to be a dangerous combination, as greenhouse gases are being emitted at a higher and faster rate than ever before seen and the ability for natural, biological processes to handle the carbon and other GHGs is diminished.

We, meaning industrialized countries, are emitting more greenhouse gases than the Earth can process without raising global surface temperature, while at the same time destroying the natural carbon sinks that help to regulate it. The concentration of GHGs in the atmosphere is higher than has ever been seen in human history, and is rising. Consequently, since the late 1800s there has been rise in temperature of  $.8^\circ \text{C}$ . By 2020, this will increase to  $2\text{C}$ , and by 2100, global temperature will rise an additional 1.4 to 5.8 degrees C ( $2.5^\circ$  to  $10.4^\circ\text{F}$ )<sup>8</sup>.

<sup>6</sup> NASA, Global Warming <<http://www.ncdc.noaa.gov/oa/climate/globalwarming.html>> (30 April 2009)

<sup>7</sup> Larry Lohmann, Carbon Trading (Uppsala: Corner House:2006), 6

<sup>8</sup> NASA, Global Warming <[http://www.nasa.gov/worldbook/global\\_warming\\_worldbook.html](http://www.nasa.gov/worldbook/global_warming_worldbook.html)>(18 April 2007)

At this point it is impossible to reverse the damage done, as once these gases are released it takes millions of years for them to cycle out of the system. Moreover, as Rajendra Pachauri states, “The inertia in the climate system is such that even if we were to stabilize the concentration of greenhouse gases (GHGs) in the atmosphere today, climate change would continue for decades.”<sup>9</sup>

The dangers inherent in global warming have been known for some time. In the 1950’s American physicist Gilbert Plass started warning the US government that it might become a serious concern, and in 1970’s more and more research came out that indicated that significant global warming was indeed happening and promised serious consequences. For the past thirty-odd years, many recommendations have been made to reduce GHG emissions, which include the use of alternative energies, carbon sink conservation, and more efficient industrial, residential and transportation practices.<sup>10</sup> But many have rested on their laurels in terms of making real changes to reduce emissions. It’s a complicated and costly proposition, and those with the most invested in fossil fuel economies, those in the Industrialized North, have not been willing to forego economic growth for reduced emissions.

It wasn’t until only twenty or so years ago when scientists from all over the world banded together under the auspices of the Intergovernmental Panel on Climate Change (IPCC) that climate change truly took on an international presence, and the alarms were sounded globally of the pressing dangers of global warming to all aspects of life on Earth. Years were then spent debating whether or not the changes being seen were caused by human activity, a debate which has largely been put to rest. The United Nations Framework Convention on Climate Change (UNFCCC), the world’s foremost policymaking authority in the field,<sup>i</sup> in its *Framework*

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<sup>9</sup> Rajendra Pachauri, Speech <<http://www.augty.org/pdf/rajendra.pdf>>,2 (20 April 2009)

<sup>10</sup> Lashof and Tirpak

*Convention on Climate Change*, defines climate change as: ‘a change of climate which is **attributed directly or indirectly to human activity**<sup>ii</sup> that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”<sup>11</sup>, and it is from this conclusion that we will move forward.

What does climate change look like and who will be the most affected?

From a historical perspective, developing countries with 80 per cent of the world's population still account for only 20 per cent of the cumulative emissions since 1751; the poorest countries in the world, with 800 million people, have contributed less than 1 per cent of these cumulative emissions.<sup>12</sup>

What can we expect as a result of global warming?

While it is not possible to forecast exactly what will happen, we do have some indication of coming events.

- Reduced crop yields in most tropical and subtropical regions
- Reduction in crop yields in mid-latitudes for changes of more than a few degrees centigrade
- Decreased water availability in water-scarce regions
- Increase in human exposure to vector –borne (malaria) and water-borne (cholera) diseases
- Increase in heat-stress mortality
- Increased risk of flooding-more heavy precipitation events and sea level rise
- Increased energy demand for summer cooling
- Increased flood, landslide, avalanche, and mudslide damage
- Increased soil erosion
- Increased pressure on government and private flood insurance systems and disaster relief
- Increased incidence of death and serious illness in older age groups and urban poor

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<sup>11</sup> IPCC, *Glossary* <<http://www.ipcc.ch/pdf/glossary/ar4-wg1.pdf>>,3 (20 April 2009)

<sup>12</sup> “Carbon Emissions Rise Worldwide,” *Telegraph* 7 October 2008  
<<http://www.telegraph.co.uk/earth/3352449/Carbon-emissions-rise-worldwide.html>>(21 April 2009)

- Increased heat stress in livestock and wildlife
- Increased risk of damage to a number of crops
- Reduced energy supply reliability<sup>13</sup>

Some, however, could experience positive results from global warming. Among its beneficial effects are:

- Increased crop yields in some mid-latitude regions for changes of less than a few degrees Celsius
- Increased timber supply from “appropriately managed forests”
- Increased water availability in some water scarce regions (parts of SE Asia)
- Reduced winter mortality rate in mid and high latitudes
- Reduced winter demand for energy<sup>14</sup>

It is clear that the most vulnerable populations are most likely to be poorest, and ironically, the ones who create the fewest emissions. People who are most directly reliant, and exposed, to the processes of the natural world are expected to experience the most hardship. According to economist William Nordhaus,

The damages are likely to be most heavily concentrated in low-income and tropical regions such as tropical Africa and India. While some countries may benefit from climate change, there is likely to be significant disruption in any area that is closely tied to climate-sensitive physical systems, whether through rivers, ports, hurricanes, monsoons, permafrost, pests, diseases, frosts, or droughts.<sup>15</sup>

IPCC chairman Rajendra Pachauri offers a few scenarios of what will happen, some of which are particularly relevant to the developing world:

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<sup>13</sup> Common and Stagl, 494

<sup>14</sup> Common and Stagl, 494

<sup>15</sup> William Nordhaus, The Challenge of Global Warming: Economic Models and Environmental Policy (2007) <[http://nordhaus.econ.yale.edu/dice\\_mss\\_072407\\_all.pdf](http://nordhaus.econ.yale.edu/dice_mss_072407_all.pdf)> p 15 (22 April 09)

- The number of people living in severely stressed river basins would go up from 1.4 to 1.6 billion in 1995 to 4.3 to 6.9 billion in 2050.
- Roughly 20-30% of species assessed are likely to be at increasingly high risk of extinction as global mean temperatures exceed 2°-3° above pre-industrial levels. We are getting close to that range.
- Abrupt and irreversible changes are possible, such as collapse of the Greenland or West Antarctic ice sheets, which can lead to Sea Level Rise of several meters. For Greenland, the temperature threshold for breakdown is estimated to be about 1.1° to 3.8° C above today's global average temperature. Again we are close to that range too.
- Adverse health impacts will be greatest in low income countries.
- Smallholder and subsistence farmers, who are generally dependent on rainfed agriculture pastoralists and artisan fisher folk, are likely to suffer complex, localized impacts of climate change.
- Small islands, whether located in the tropics or higher latitudes, have characteristics which make them especially vulnerable to the effects of climate change, will experience sea level rise and extreme events.
- In some countries of Africa, yields from rainfed agriculture could be reduced by 50% by 2020. At the local level many people are likely to suffer additional losses to their livelihoods when climate change and variability occur together with other stresses, such as conflict.
- If current warming rates are maintained, Himalayan glaciers could decay at very rapid rates.
- Decline in river flows as a result could affect 500 million people in South Asia<sup>16</sup>

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<sup>16</sup> Rajendra Pachauri, Nobel Lecture , 10 December 2007  
<[http://nobelprize.org/nobel\\_prizes/peace/laureates/2007/ipcc-lecture\\_en.html](http://nobelprize.org/nobel_prizes/peace/laureates/2007/ipcc-lecture_en.html)> (18 April 2009)

## What is being done about it?

Fortunately, reliance upon fossil fuels and other GHG producing materials to provide our food, transportation, heating, cooling, clothing, housing, industry and basic infrastructure is now being admitted by many to be only a temporary solution to human needs. It is clear that not only are these resources finite, but more importantly, that their overuse threatens the health and well-being of every living organism on this planet. However, what actions will be taken to stem climate change vary as much as those confronting it, and while there are policy recommendations that have been widely known for decades, the degree to which and they are implemented, as we will see, is far from simple. We already know about the irreversible damage that's been done up until the present, but the question remains as to how we will mobilize to minimize future damages. For those concerned about sustainability-the responsibility to ensure that future generations experience a decent quality of life-there is no doubt that drastic measures must be taken in these drastic times. For the most radical (and perhaps realistic), the answer is simple. As Lohmann says, "The basic truth (is) that most fossil fuels will have to be left in the ground."<sup>17</sup>

But short of immediate, violent changes in climate that can be proven to be the result of GHG emissions-which might cause a worldwide moratorium on the use of gas, coal, and oil-*will* most fossil fuels be left in the ground? Sadly, the answer for now is no. Though alternative technologies exist, much of our present worldwide economy is based on continued growth and development through the use of fossil fuels. The fact is that alternative technologies are still assumed to be more costly, though with proper incentives this could be reversed. In the

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<sup>17</sup> Lohmann, 6

meantime, business-as-usual (BAU) practices continue all over the world, in developing and industrialized countries alike. In China alone, one new coal fired power plant is built *per week*.<sup>18</sup>

A standoff has existed between the highest volume emitters, The United States and China, with both sides refusing to commit to reducing their GHG emissions until the other one does. The United States has not been willing to modify its practices and risk reduced growth, especially in light of its competition with China. China is not willing to sacrifice growth for the sake of sustainability, especially not if the US will not make a move in that direction either. Fortunately, the Obama administration has made great leaps simply by admitting that GHGs are danger and must be regulated. But fossil fuel industries are strongly represented in government and it is extremely unlikely that these major players in the world's economy will simply be regulated out of existence.

For example, Jim Rogers, CEO of Duke Energy, the third largest emitter of CO<sub>2</sub> in the US, when asked how he would respond to NASA scientist Jim Hansen's recommendation that no new coal fired plants be built in order to save the planet, responds, "I say, 'Mr. Hansen, can't get done, won't get done. We've got to keep our economy going. We've got to make the transition. And I'm gonna do everything I can with the greatest sense of urgency to make the transition. But to do what you ask me to do now is just not doable.'" <sup>19</sup> Apply this attitude to energy producers and governments across the world and it is clear that despite grave warnings to stop emitting at present rates, it's just not going to happen.

Billions of people already rely on the fossil fuel economy, and add to that many of those in the developing world who are actively seeking to replicate the lifestyles of the most high-volume consumers. Those who do not seek such lifestyles often find themselves lacking the

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<sup>18</sup> Jim Rogers, interview by Scott Pelley, *60 Minutes*, Columbia Broadcasting System, 23 April 2009. <[http://www.cbsnews.com/stories/2009/04/23/60minutes/main4964301\\_page4.shtml](http://www.cbsnews.com/stories/2009/04/23/60minutes/main4964301_page4.shtml)> (24 April 2009)

<sup>19</sup> Ibid.

resources they have depended on over millennia such as adequate water, heating material, and agricultural land<sup>iii</sup>. Fossil-fuel reliant agriculture, transportation, and energy have insinuated themselves into every aspect of life of those in developed countries, and there is little chance that this situation will be reversed as quickly as it needs to be according to climate scientists.<sup>iv</sup> We can assume that in our lifetimes we will not shift to a largely decarbonized economy if regulation, or lack of it, continues as it is.

Nevertheless, we still must act to address both mitigation of and adaptation to climate change. There is an international movement afoot to address all the aspects of it, from creating alternative technologies to dealing with the on-the-ground impacts facing communities, to raising public awareness about the importance of consuming less. It is important to recognize that these institutions also have power to change the tides, and that informing the public as to what dangers it faces and how to deal with them are imperative to getting real results in reducing emissions.

It is important to ascertain who is creating the language and policy of climate change as within it are key political, ethical, and economic concerns. Though NGO observers have been reporting on unfair and unsustainable practices for years now, it is not they who are considered the leading authorities on how to address what to do about climate change; rather the international authority rests in the hands of two key organizations. What measures are being taken by them to tackle the plethora of regrettable circumstances now collectively known as “climate change”, and whose interests are being represented?

## Chapter Two: Key International Institutions

The two most respected and influential institutions charged with addressing climate change issues on an international level are both bodies of the United Nations. They are the Intergovernmental Panel on Climate Change (**IPCC**) and United Nations Framework Convention on Climate Change (**UNFCCC**). Each play different roles but are directly connected to one another; the IPCC primarily focuses on research and the UNFCCC on policy.

The IPCC was set up by the World Meteorological Organization (WMO) and the United Nations Environmental Program (UNEP) 1988 to create an umbrella organization to compare the findings of different domains of climate and social sciences. Its constituents are composed of governments of UN and WMO member countries, and of climate and social scientists. The IPCC itself does not conduct its own research. Its mandate is to “provide the decision-makers and others interested in climate change with an objective source of information about climate change,” but to remain “policy neutral”.<sup>20</sup>

Some argue that due to its constituency, and the funding from which much of its research is derived, that it cannot remain policy neutral. Lohmann goes so far as to say that the IPCC was initially created, in fact, not to warn of global warming but rather to “‘contain’ scientists talk” of it and to serve the interests of private US firms and the agenda of the World Bank.<sup>21</sup> It is important to note that not all scientists are created equal, and that some of the IPCC’s original contributing scientists were funded by corporate-backed groups such as the Business Roundtable,

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<sup>20</sup>IPCC, [About IPCC](http://www.ipcc.ch/about/index.htm). <<http://www.ipcc.ch/about/index.htm>>(18 April 2009)

<sup>21</sup> Lohmann, 40

the Coalition for Vehicle Choice, the Advancement of Sound Science Coalition, all organizations that represent interests that would be hit hard economically if forced to change from business as usual practices.<sup>22</sup> Additionally, many of the authors contributing to IPCC reports are “affiliated with environmental consultancies, mainstream economic institutes or faculties, industry associations, official agencies and government-funded research institutions”<sup>23</sup> which clearly can turn “pure” scientific evaluations into de facto policy prescriptions.

Lohmann suggests that ideas such as carbon offsetting projects as a way to reduce emissions can seem like neutral solutions to climate change, when in fact they have contained in them a neoliberal agenda based in cost-cutting for the wealthiest constituencies within them. The ability for the IPCC to remain “policy neutral” in light of who its contributors are is thus doubtful. Nevertheless, it is the most authoritative body of scientific work addressing climate change.

The IPCC published the first of its highly influential Assessment Reports in 1990, with subsequent reports released in 1995, 1997, and 2001. The latest, Fifth Assessment Report is due to come out in 2014. In between Assessment Reports the IPCC publishes Working Group, Methodology, and Special Reports; and Technical Papers and Supporting Material.<sup>24</sup> In these reports are the updated findings on topics covering everything from glacial ice-melt to use of renewable energies to adaptation strategies in Africa, to assessing future emissions scenarios through modeling, to impending food security crises. The IPCC recommends a two-pronged approach to climate change, mitigation and adaption. *Mitigation* addresses reducing GHGs and *adaptation* refers to ways to deal with imminent, on-the-ground damages due to climate change.

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<sup>22</sup> *ibid.* 41

<sup>23</sup> Lohmann, 37

<sup>24</sup> IPCC, [IPCC Reports](http://www.ipcc.ch/ipccreports/assessments-reports.htm) <<http://www.ipcc.ch/ipccreports/assessments-reports.htm>> (22 April 2009)

Twelve years after its publication, the IPCC's 1997 Assessment Report has spurred both international consciousness and policies that aim to reduce GHGs. Whether or not those policies have been effective is another question, and something we will investigate further. But there is no doubt that that never before has there been such a sense of urgency by climate scientists in terms of warning the world of the dangers we all face if warming continues unchecked. Rajendra Pachauri, chairman of the Intergovernmental Panel on Climate Change, has stated that, in fact, we should have acted globally twenty years ago to prevent the damage we are seeing now, and seeing as we haven't, it is "too late"<sup>25</sup>.

To its credit, the IPCC does appear to be taking into the impacts of climate change in terms of the diversity of people and interests that will be affected by it, and is considering alternatives to neoclassical economic frameworks to address it. Neoclassical economics is notorious for its lack of consideration of economy-environment interdependence.<sup>26</sup> For example, the following is from the IPCC's Fourth Assessment Report:

Costs and benefits of climate change mitigation policies can be assessed at project, firm, technology, sectoral, community, regional, national or multinational levels. Inputs can include financial, economic, ecological and social factors. In formal cost-benefit analyses, the discount rate is one major determinant of the present value of costs and benefits, since climate change, and mitigation/adaptation measures all involve impacts spread over very long time periods. Much of the literature uses constant discount rates at a level estimated to reflect time preference rates as used when assessing typical large investments. *Some recent literature also includes recommendations about using time-decreasing discount rates, which reflect uncertainty about future economic growth, fairness and intra-generational distribution, and observed individual choices*<sup>27</sup>. Based on this, some countries officially recommend using time-decreasing discount rates for long time horizons.<sup>28</sup>

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<sup>25</sup> Rajendra Pachauri, lecture, Institut d'Etudes Politiques, Paris, 2007, personal notes

<sup>26</sup> Common and Stagl, 13

<sup>27</sup> Italics mine

<sup>28</sup> IPCC, Assessment Report, Framing Issues 2007 <<http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter2.pdf>> (21 April 2009)

The fact that an alternative to a the neoclassical model of discount rates, long criticized by environmentalists as being inapplicable to environmental processes, is being considered as a tool to measure costs and benefits is definitely a progressive step. Moreover, Pachauri, IPCC Chairman since 2002 and Nobel Prize winner for his work in climate change, is known for being especially strong in expressing the urgency for action, and is particularly vocal about the threats it poses to those in the developing world and the need for effective adaptation policies there. Clearly there is not a single world view or economic agenda contained in IPCC reports. In the scheme of things, the IPCC is in fact, one of the less controversial institutions in the climate change debate.

The United Nations Framework Convention on Climate Change (UNFCCC) is another body of the United Nations. The UNFCCC is an international treaty created “to begin to consider what can be done to reduce global warming and to cope with whatever temperature increases are inevitable.” This is to be achieved through economic policy prescriptions.<sup>29</sup> It is intimately linked with the IPCC, who is its informing body on scientific data. The UNFCCC was entered into force in 1994 in response to the IPCC’s first Assessment Report, released in 1990. The UNFCCC’s mandate has manifested, up until the present, in two predominant ways. One is by creating national inventories of greenhouse gases, and monitoring them. The second way, through the Kyoto Protocol, has been to create ways for developed countries to meet their emissions targets in “economically efficient” ways. Through the Kyoto Protocol, these two elements are one in the same. We will explore this below. Other activities include community outreach programs, implementation of adaptation measures, technology transfer, and not least, providing funding to member parties that need assistance with either adaptation or mitigation.

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<sup>29</sup> UNFCCC, Essential Background, <[http://unfccc.int/essential\\_background/items/2877.php](http://unfccc.int/essential_background/items/2877.php)> (24 April 2009)

As of this writing, 192 countries have entered into this treaty,<sup>30</sup> One must keep in mind that powerful lobbying groups of oil companies and other industrial interests, while not direct parties, are intimately linked to government representatives. This link might explain some of the instruments of policymaking instituted by the UNFCCC.

Members of the UNFCCC gather approximately once per year in a Conference of Parties (COP) which serves as a forum to assess new scientific findings and to recommend policy. Members are composed of representatives of all countries registered with the UNFCCC.<sup>31</sup> The next COP meeting, COP15, will take place in December of 2009. This meeting is expected to be history-making in terms of creating policy, with political leaders needing to tackle new ground as the Kyoto Protocol's term will soon be coming to an end in 2012, and as the latest scientific findings indicate that global warming and climate change are occurring more quickly and severely than previously thought.<sup>32</sup>

The major instrument aimed at reducing GHGs to come out of the UNFCCC is the **Kyoto Protocol**. It entered into force in 2005 and will expire in 2012. The Kyoto Protocol is an agreement among 37 industrialized (Annex B) countries and the European Union to stick to "binding" GHG emissions **caps** set by the UNFCCC<sup>33</sup>. Within it, these countries are allotted a certain number of emissions credits, and by signing the Protocol they agree to stay within, reduce, or in some cases, *increase* the amount of their greenhouse gas emissions, always relative

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<sup>30</sup> UNFCCC, Essential Background, Feeling the Heat

<[http://unfccc.int/essential\\_background/feeling\\_the\\_heat/items/2913.php](http://unfccc.int/essential_background/feeling_the_heat/items/2913.php)> (24 April 2009)

<sup>31</sup> UNFCCC, Convention Bodies.

<[http://unfccc.int/essential\\_background/convention/convention\\_bodies/items/2629.php](http://unfccc.int/essential_background/convention/convention_bodies/items/2629.php)> (19 April 2009)

<sup>32</sup> "Climate Change is Accelerating Warns Top German Scientist," Climate Progress

<http://climateprogress.org/2008/12/30/climate-change-is-accelerating-warns-top-german-scientist/>

<sup>33</sup> "Countries, or Parties, are divided into three categories: Annex I, Annex II; and the others [non-Annex I countries]. Annex II Parties are basically the members of the Organization for Economic Cooperation and Development (OECD). The Annex I Parties were the Annex II Parties plus the countries that formerly comprised the Soviet Union and its satellites. Essentially, Annex I countries were the industrial economies and the rest were the developing countries-the two groups corresponded closely to the 'North' and the 'South' as those terms had been used in the international relations context..." Common and Stagl, 511. Annex B parties are essentially comprised of the same members as Annex 1.

to 1990 levels. Additionally, Annex B countries are allowed “flexible mechanisms” to enable them to meet their GHG targets in a cost effective way. Several key points are either acknowledged or implied in this agreement:

- That reducing greenhouse gases is an international priority,
- That the most industrialized countries emit the most GHGs,
- That, therefore, the industrialized world has a responsibility to reduce its GHG output,
- That developing countries should not have emissions caps imposed in order not to halt their development,
- That part of industrialized (Annex B)<sup>34</sup> countries’ responsibility is to provide technology transfer to the developing world to reduce the developing world’s emissions,
- That Annex B (industrialized) countries should commit, domestically, to caps on GHG emissions,
- That, perhaps most importantly, “flexibility” should be offered to Annex B countries to allow Annex B countries to achieve their emissions caps in *economically efficient way*<sup>35</sup>

It is common sense that the way to reduce GHGs is to reduce, change, or eliminate practices that create them. To achieve this goal, the countries that signed on to Kyoto have agreed to reduce their domestic emissions output, which are monitored by the UNFCCC.

However, though countries are committed to “binding” targets, binding “consequences” for not

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<sup>34</sup> Annex B countries are effectively the same as Annex 1 countries

<sup>35</sup> UNFCCC, Kyoto Protocol <[http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php)> (23 April 2009)

complying are optional and don't apply to any country that doesn't consent to it.<sup>36</sup> The technicalities of this process are beyond the scope of this paper, but it is a point worth noting.

The decision to ratify the Kyoto Protocol opened up a new frontier in dealing with GHG reductions. With it, carbon and other GHGs were commodified, placing the emphasis of how to reduce emissions on a market-based program. Obviously, the architects of Kyoto had more in mind than setting caps for countries to stick to for a real reduction in emissions; rather, they created mechanisms that follow a framework geared far more toward economic efficiency for Annex 1 countries than actual emissions reductions. Indeed, a perusal of the UNFCCC website demonstrates that the above mechanisms are the principal instruments promoted to reduce global warming. This is a major point, as the UNFCCC, as mentioned before, is the key policy making institution in climate change. The implied assumption is that the market should determine the value of carbon, that it should be commodity, and that in so doing, emissions will be reduced. Kyoto set the groundwork for a worldwide carbon trading market whose efficacy in terms of truly reducing GHGs in order to stop reduce global warming is at best unclear and at worst completely useless. The value of carbon credits, as a subject of the market, is subject to volatility. Thus, if it is not economically efficient to pursue carbon reduction measures, they will not happen. Moreover, the actual GHG reduction to be expected from offsetting projects is far from an exact science, with projected emissions savings often being far off the mark. Kyoto is a process that is part of a neoclassical economic system that has failed to take into consideration the value of the environment and sustainability, or has failed to value it adequately. And we will see that substituting real decreases in the use of fossil fuels and other GHG producing materials for schemes that instead depend on carbon trading is not an effective way to reduce GHG

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<sup>36</sup>Joseph Aldy, Scott Barrett, Robert Stavins, 13+1, A Comparison of Global Climate Change Policy Architectures, 3 March 2003 <<http://www.rff.org/Documents/RFF-DP-03-26.pdf>>,10 (24 April 2009)

emissions. We will also see that though these schemes promise also to improve the developing world through increased investment and more efficient technology, that the on-the-ground reality does not prove it.

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With the entry into force of the Kyoto Protocol was the institution of three flexibility mechanisms. These mechanisms are: the creation of Emissions Trading, or the carbon market; Joint Implementation (JI); and The Clean Development Mechanism (CDM). But before explaining how these mechanisms work, we will examine the Kyoto Protocol's assumptions and provide a critique.

The UNFCCC's stance is that is clear at this point in time that anthropogenic GHGs are producing warming that is creating changes in the climate system. In light of the findings of the IPCC, international reaction and cooperation is essential to reducing emissions. The UNFCCC, as the world's foremost policy creator, has been charged with finding economically feasible solutions to reducing GHG output. The emphasis of UNFCCC policies is always on economic efficiency, namely on what is economically efficient for industrialized countries.

What's the problem? With increasing information, it is becoming clearer and clearer that climate change is progressing at a rate quicker than previously thought and promises extremely damaging consequences. While economic efficiency is certainly also a major concern, it is time to change the focus off of maintaining economic growth-particularly for the most polluting countries-and instead focus on ways that deliver real results in lowering emissions. It is time to admit that some economic efficiency will have to be sacrificed in order to protect future

generations, and that decarbonisation of present economies is as important as maintaining current levels of growth. It might be time to admit that the bottom line is not always economic.

The UNFCCC's stance is that industrialized countries have been found to release the most emissions, and therefore have a greater responsibility to reduce them. Creating emissions caps is part of the solution and developed countries must have emissions caps. Developing countries are less culpable and therefore do not need emissions caps. Meeting emissions targets should be done in an economically efficient way.

What's the problem? There are two problems here, actually. It true that industrialized countries are indeed been the biggest emitters, and do indeed have a responsibility to reduce their emissions. The decision to create emissions caps, however, which are based on models that demonstrate by what quantites emissions need to be reduced to ameliorate global warming, is more controversial. This is due to the way caps were allocated in the Kyoto Protocol. The 37 countries that signed on for Kyoto were, to begin with, among the most polluting countries.<sup>37</sup> These Annex B countries were charged with reducing their combined overall emissions to 5.2% below 1990 levels. The caps were set based on what are business-as-usual practices were, relative the amount already being emitted (granted at 1990 levels). Setting caps at 1890 levels might have made more sense, relative to gravity of the problem. In essence, the most polluting countries were given not only permission, but credit, to continue polluting. Essentially granting countries permission to continue polluting at levels of about 94.8% of their 1990 levels hardly seems effective in making a dent in the reducing emissions at the levels needed. Moreover, what this does is give countries ownership rights to pollution credits. This is 'convenient' because once emissions are capped, they can be traded, and trade is the key feature of the Kyoto Protocol.

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<sup>37</sup> With the major exception of the United States and China, the world's two highest volume polluters, neither of whom agreed to set emissions caps

The way in which the caps were set gives industrialized countries credits to trade that they earned only because of the high levels of GHGs they have already emitted. And along those lines, it is telling that some countries are even allowed to emit *more* than their 1990 levels. The EU-15, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, and Switzerland agreed to stay 8% below 1990 levels; Canada, Hungary, Japan, Poland at 6% below 1990 levels; but Norway, Australia, and Iceland agreed to 1, 8, and 10 percent *above* 1990 levels, respectively.

Secondly, the fact that no caps were placed on developing countries is problematic. Let us assume that caps had been set more with an eye towards truly reducing global emissions and less on economic efficiency meant to protect the interests of Annex B countries, meaning more fairly. If this had been the case, it would be wise for developing countries to have caps, not for the purpose of hindering their development, but for encouraging sustainable development based on non or lower GHG emitting technologies. Caps, in this case, would be guides to how to develop without compromising the health of future generations. But seeing as caps were not, in fact, based upon this objective, it perhaps not as tragic that developing countries don't have them. Moreover, current emissions inventories do not say anything about the links between countries, don't say who is using the emissions, and don't say exactly where and when they occur.<sup>38</sup>

If the goal of Kyoto is to reduce emissions across the board, why are some Annex 1 countries allowed to exceed their 1990 levels? And moreover, who exactly decided at what level it was appropriate to cap emissions and why? Why is it significant that developing countries have no emissions caps? Is it simply an acknowledgement that industrialized countries have

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<sup>38</sup> Glen Peters, International Trade and Forest sequestration as Components of Fair Climate Policy, 9 March 2009, IARU Climate Change Congress, Copenhagen

created the bulk of emissions, and that developing countries should not be restrained in their growth? Or is it a way to set the groundwork for a neoliberal economic agenda that allows for carbon trading activities that couldn't exist if developing countries were as restrained as industrialized countries? If it were not for the lack of restraints on developing countries, offsets could not exist. And moreover, emissions caps imply ownership of emissions. Without someone having ownership of them, they couldn't exist. The UNFCCC has allocated these ownership rights to member countries. Is this an equitable way to reduce emissions and encourage sustainability?

A conclusion can be reached when we look further into how the UNFCCC prescriptions, thorough Kyoto, instruct industrialized countries to reduce their emissions. While the Kyoto Protocol acknowledges that developed countries are the highest volume polluters and therefore have the greatest obligation to reduce their emissions output, the protocol instituted is curious in its execution. Namely, rather than simply mandating a reduction of GHGs emissions nationally through changes in business as usual practices, the focus on how to reduce emissions was placed primarily on market based methods that allow Annex B countries to reduce their overall emissions through carbon trading and offsets in developing countries. Essentially, the UNFCCC gave countries a certain number of credits to pollute.<sup>39</sup> Caps set to reduce emissions nationally, but three "flexible mechanisms" were instituted to help Annex 1 countries reduce their emissions in an "economically efficient" way.<sup>40</sup> In fact, it appears that these mechanisms take precedence over changing BAU practices.

So what is the real reason why developing countries have not had emissions caps imposed on them? Is it truly in order not to hinder their development as the UNFCCC implies?

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<sup>39</sup> Lohmann, 75

<sup>40</sup>UNFCCC, Emissions Trading <[http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php)>(April 26 2009)

Unfortunately, there evidence to the contrary. If developing countries had they their own domestic caps to stick within, they would have their own responsibility to cap emissions domestically, and Annex B countries would be much more restricted in the amounts of credits they could receive from offset projects such as the Clean Development Mechanism. This is clear instance of how the global North, or Annex B, or industrialized countries-whichever terminology is preferable-depends on its wealth from the poorest of countries, only this time it framed in climate change terms, for the sake of saving the planet.

It is ironic that those who have contributed least to GHG emission and have also benefitted least from them are now the ones being depended upon to ameliorate the excesses of the industrialized countries, and moreover are the ones expected to experience the most disruption due to climate change owing to lack of resources, infrastructure, and stability.

### The Three Flexibility Mechanisms: A more in-depth view

#### Emissions Trading, Joint Implementation, and the Clean Development Mechanism

Emissions Trading, or carbon market, commodifies carbon and allows parties of Annex B of the Kyoto Protocol (essentially the same group as Annex 1 countries) to trade Assigned Amounts Units (AAUs) of emission credits to other Annex B countries that exceed their targets. In this process, “carbon is now tracked and traded like any other commodity.”<sup>41</sup> v Additionally, “more than actual emissions units can be traded and sold under the Kyoto Protocol’s emissions trading scheme.”<sup>42</sup> These may be in the form of “removal units” (RMU) which account for land

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<sup>41</sup> UNFCCC, Emissions Trading  
<[http://unfccc.int/kyoto\\_protocol/mechanisms/emissions\\_trading/items/2731.php](http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php)>(27 April 2009)

<sup>42</sup> Ibid.

use changes such as reforestation that act as carbon sinks; emission reductions units (ERU) from Joint Implementation projects; and certified emissions reduction (CER) resulting from Clean Development Mechanism Projects. The creation of this market provides an institution for Annex B countries (at this point primarily European Union countries and Japan) to trade credits earned through offsetting projects, always with the objective of reducing emissions at a cheaper price. The value of the global carbon market, as of 2008, doubled from 2007 to 118 billion dollars.<sup>43</sup>

Joint Implementation (JI) is a scheme that allows Annex B countries to sponsor emissions reductions or removal projects in other (generally lower GDP) Annex B countries, mostly in Eastern Europe. It is promoted as a cost-efficient way for parties to fulfill their commitments, while providing benefits such as technology transfer and economic investment to other countries. The assumption is that “offsetting”-projects that reduce emissions somewhere else-can serve to build up credits for a sponsoring country that they can then use to either to trade or for themselves to continue business-as-usual (BAU) practices in their own countries.

The Clean Development Mechanism (CDM), perhaps the most controversial of the three mechanisms, is a scheme in which UNFCCC funds and private capital from Annex B countries sponsor (primarily) technology transfer projects in Non-Annex 1 countries. Credits (CERs) gained can, again, be traded or used by domestically by sponsoring countries. As both land and labor are cheaper in Non-Annex 1 countries, investing in these projects is appealing to wealthier countries. The majority of CDM projects are currently taking in place in China, a country that has not signed on to the Kyoto Protocol and therefore has no cap; and who is now currently the highest emitter of GHGs in the world.

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<sup>43</sup> Christina Voigt, The clean development mechanism: striking a balance between environmental integrity, promoting sustainable development and economic efficiency 9 March 2009, IARU Climate Change Congress, Copenhagen

## The Clean Development Mechanism and Why it Doesn't Work

“The Clean Development Mechanism is a sham.”

-William Nordhaus, Yale University economist<sup>44</sup>

As a key element of the Kyoto Protocol, the CDM has been promoted as a way for industrialized countries to meet their emissions targets by sponsoring carbon offset projects in developing countries. In this scheme, Annex B countries sponsor technology transfer or carbon-sink projects in the developing world in exchange for credits that they can then use to meet their own emissions caps in, again, a cost effective manner. Examples are the funding of cleaner coal burning power plants, methane capture, dam building, and retrofitting of already existing, highly polluting industrial sites.

The CDM is the largest of the three “flexible mechanisms” to come out of the Kyoto Protocol. It is a “baseline and credit” system that rewards the emissions reduction of a project that reduces GHG emission below a baseline<sup>45</sup>. The baseline represents the GHGs that would have been emitted had the project not been instituted, and the credits represent emissions saved. For example, if a landfill is emitting high amounts of methane, that amount of methane is considered its baseline. By retrofitting the landfill, the amount of methane is reduced. This reduction is quantified into credits to be used by the sponsors of the project. The higher the baseline of a project, the more credits it is eligible to have. Credits gained from this transaction

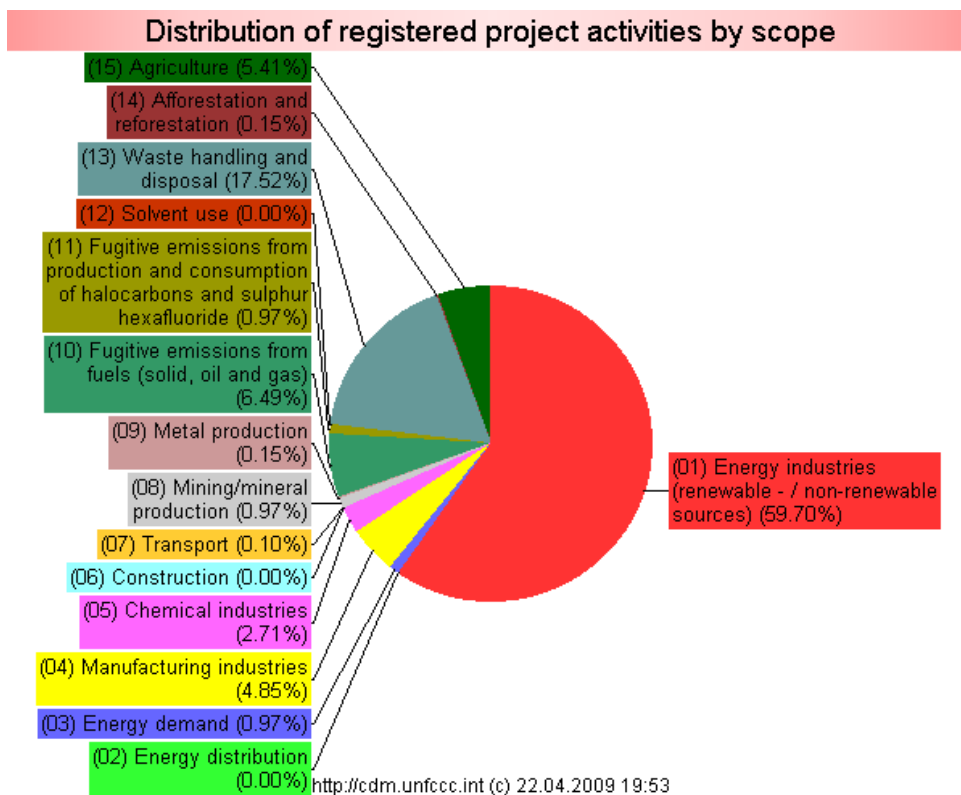
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<sup>44</sup>IARU Climate Change Conference, 9 March 2009, Copenhagen

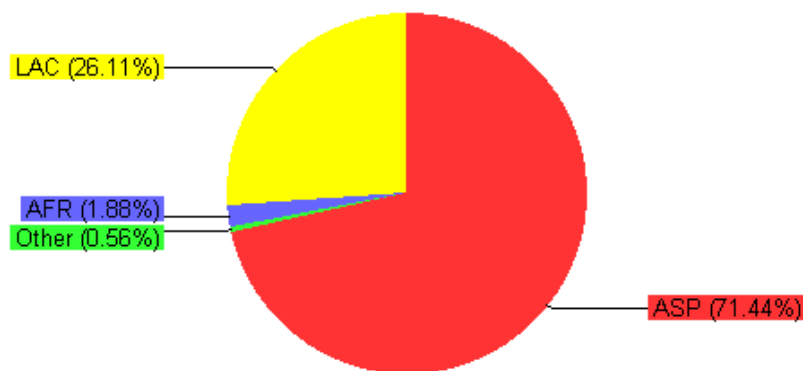
<sup>45</sup> Werner Betzenbichler, The role of the verifier: Validation and verification in “cap & trade” and “baseline & credit” systems,” *Internationaleconomics* 39, no.3 (2004): 123-127. [Springerlink](http://www.springerlink.com/content/81h52m74661t584/)  
<<http://www.springerlink.com/content/81h52m74661t584/>> (26 April 2009)

are called Certified Emissions Reductions (CERs) and are equivalent to one metric ton of carbon. As of this writing, and since 2001, 4,200 projects are in the “project pipeline” with 1,593 already registered, the majority of which are in China. The UNFCCC estimates that by the end of Kyoto’s term in 2012, more than 1,570,000,000 certified emissions reductions (CERs) will have been issued, which, as stated above, can be used either for trading in the carbon market or to continue BAU practices in sponsoring countries.

The following two charts, provided by the UNFCCC, display what projects are sponsored and where they are located.



Registered projects by region. Total 1593

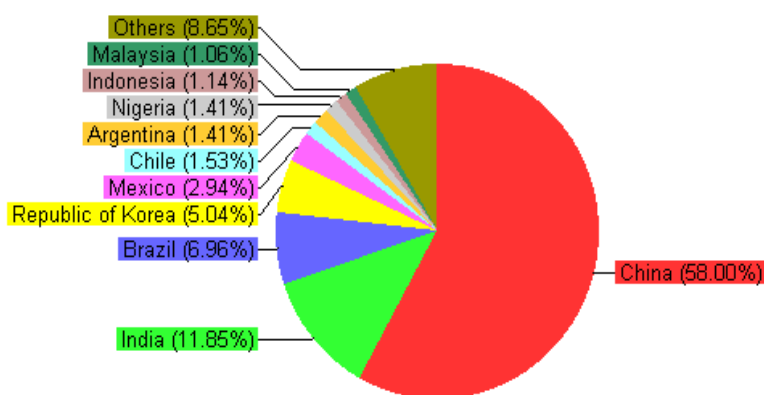


<http://cdm.unfccc.int> (c) 22.04.2009 19:53

China hosts 33% of all CDM projects, followed by India at 26%, with Brazil at 10%, Mexico at 7%, Malaysia at 3%, Chile at 2%, with all other countries combined at 20%.<sup>46</sup>

The amount of certified emissions reductions (CER) units by country:

ected average annual CERs from registered projects by host party. Total: 292,466



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<http://cdm.unfccc.int> (c) 30.04.2009 14:52

<sup>46</sup> <http://cdm.unfccc.int/Statistics/Registration/NumOfRegisteredProjByHostPartiesPieChart.html>

<sup>47</sup> <http://cdm.unfccc.int/Statistics/Registration/AmountOfReductRegisteredProjPieChart.html>

Though the UNFCCC promotes the CDM a success, there have been many who challenge that assessment. Opponents of the CDM range from environmental NGOs to neo-classical economists. While it is true that some CDM projects do reduce emissions in developing countries, the bulk of the projects do not appear to meet this goal. Besides the basic problems surrounding the commodification of GHGs explained above, the CDM poses a particular set of ethical, political, and environmental problems of its own. They are:

1. That CDM projects reduce incentives for real reductions in the use of fossil fuels and other GHG producing pollutants in industrialized countries; and the CDM discourages national regulation of emissions in developing countries by creating greater financial incentives through CDM projects<sup>48</sup>

By allowing offset projects to aid in meeting overall GHG caps, there is less pressure on industrialized countries to reduce emissions on their own turf. Though this might be more beneficial for protecting already existing economies, for the purpose of reducing emissions, there is no two ways about it-they only way to truly reduce them is to not produce them in the first place. By providing incentives to receive funding from the CDM, developing countries are less inclined to instate their own, domestic GHG policies. If they were obliged to meet their own targets, industrialized countries could not claim the credits they receive by financing CDM projects.

2. That, though the CDM is promoted as a way to improve developing countries, the fact remains that such an arrangement can exist only because of the very underdevelopment of these countries.

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<sup>48</sup> Lohmann, 176

If developing countries were as economically successful, and therefore as highly emitting as industrial countries, they would not be able to provide the service of mitigating the pollution of the developed world. A question of fairness arises as industrialized countries, in attempting to be economically efficient, choose to fund cheaper strategies while at the same time being allowed to continue reaping the profits of polluting practices. Also, while in some cases CDM funding does actually go to areas who could not otherwise afford GHG reducing technologies, the fact is that the majority of CDM funds go to China and India, as opposed to the least developed and poorest countries. The bulk of CDM funds aimed at the “developing world” have, in large part, gone to already highly developed economies i.e., China and India.<sup>49</sup> And projects that require less capital (such as retrofitting) yet produce large amounts of CERs are more likely to be sponsored by Annex B countries than more expensive, yet essential, real technology-transfer projects that support community development

3. That the very existence of carbon trading credits is an instrument of a neoliberal economic policy that both undermines the urgency of real measures to reduce emissions and assumes privatization of polluting rights that are more favorable to already existing industry practices and industrialized countries; and that reliance on highly volatile carbon trading markets is ultimately ineffective in reducing emissions.

New anthropogenic GHGs from any source, from any country, are going to contribute to global warming, so the foremost point of the UNFCCC is therefore ignored. The argument is that it is unfair to limit the growth of lesser developed countries (LDCs) in imposing emissions targets. Perhaps this is true. But if the goal, which is in the interest of all countries, developed or

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<sup>49</sup> Environmental Defense, CDM and the Post-2020 framework Discussion Paper August 2007  
<[http://www.edf.org/documents/6838\\_ED\\_Vienna\\_CDM%20Paper\\_8\\_22\\_07.pdf](http://www.edf.org/documents/6838_ED_Vienna_CDM%20Paper_8_22_07.pdf)> (28 April 2009)

not, is to reduce GHGs, unfettered use of them is not going to meet this objective.

Implementation of more efficient and low-carbon technologies with financial help from the developed world, domestic regulation, with penalties for non-compliance, are suggestions for bringing development and sustainability at the same time to the developing world. What failing to cap emissions in the developing world does do is two things: one is to allow for business as usual (BAU) practices to continue in the developing world, through mechanisms such as carbon trading markets and the Clean Development Mechanism; and the other is to disincentivize clean and sustainable growth in the developing world.

Even assuming that a neoclassical economic policy is the best way to effectively reduce emissions, some neoclassical economists harshly criticize the CDM, saying it is both too slow to be effective in GHG reductions and that it is too dependent on market volatility. "The two year or more lag between conceptualization of a CDM project and the start of credit generation limits the CDM's effectiveness as a cost-containment mechanism. This time lag means that the CDM is not quickly responsive to changes in the supply and demand of CERs."<sup>50</sup>

If a key component of emissions reduction is going to be market-based, a recommended alternative to trading carbon is carbon taxing, in which the highest emitters would have the highest prices to pay, thereby reducing demand. Eventually, it would be so costly to emit that it would no longer be profitable to do so. William Nordhaus, Yale economist and outspoken critic of the CDM says, "The CDM produces highly opaque instruments which are the climate equivalent of mortgage-backed securities and structured credit derivatives,"<sup>51</sup> and recommends carbon taxing in its place. Certainly, as Berkeley economics professor Dan Kammen says, carbon

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<sup>50</sup> Friends of the Earth, Problems with the Clean Development Mechanism  
<[http://action.foe.org/t/3877/content.jsp?content\\_KEY=4815](http://action.foe.org/t/3877/content.jsp?content_KEY=4815)> (30 April 2009)

<sup>51</sup> Oliver Tickell, "Replace Kyoto protocol with global carbon tax, says Yale economist," The Guardian, 12 March 2009 <<http://www.guardian.co.uk/environment/2009/mar/12/carbon-tax-should-replace-kyoto-protocol>> (27 April 2009)

taxing would have to be supported by “legislation, policy, regulation, and efficiency standards.”<sup>52</sup> Clearly, though, even among economists, the CDM is not doing the job it was set up to do.

4. *Additionality* is often dubious in CDM projects.

Additionality is a prerequisite to obtaining financing of a CDM project. What it means is that those who want to start a project in a developing country must prove that that project would not otherwise have been pursued without CDM status and funding. Obviously, if the project were to be part of a local/national effort, it would not be eligible as an additional project for which CERs could be issued. In a grab for CDM financing, some developing countries and their Annex B sponsors are claiming their projects are additional when, in fact, they are not. Issuing CERs (assuming, for the sake of argument, that the carbon trading market in general is effective in reducing emissions) to projects that are non-additional is a lose-lose situation as far as reductions go. Annex 1 countries gain credits that they haven't really earned but still have the right to emit or trade their equivalents.<sup>53</sup> Also, it is virtually impossible to estimate the amount of GHGs that would have been emitted had an offset project *not* been created and therefore the amount of credits that should be assigned to it cannot be accurate.<sup>54</sup>

Several researchers have discovered that CDM projects are often not additional. In her on the ground work in India, researcher Barbara Haya discovered that at least 70% of the two hundred fifty to three hundred CDM projects there were already in progress before they received CDM

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<sup>52</sup>Ibid.

<sup>53</sup> Barbara Haya, Measuring Emission against and alternative future: a fundamental flaw in the structure of the CDM, IARU Conference, 10 March 2009

<sup>54</sup> Lori Pottinger (2008) “Bad Deal for the Planet: Why Carbon Offsets Aren't Working... And How to Create a Fair Global Climate Accord,” Dams, Rivers and People Report 2008, International Rivers, Berkeley, CA. <[http://internationalrivers.org/files/DRP2English2008-521\\_0.pdf](http://internationalrivers.org/files/DRP2English2008-521_0.pdf)> p 6 (April 20 2008)

funding.<sup>55</sup> Moreover, CDM funding provides very lucrative incentives for projects already in the works to apply for CDM status. International Rivers, an NGO, says about the CDM:

Many hundreds of millions of the supposed “emission reduction” credits represent not a single molecule of avoided pollution, because the offsets are being sold by projects – most commonly hydropower dams, but also wind turbines, biomass power plants, changes to industrial processes, capturing methane from coal mines and many other schemes – that never needed income from the CDM to be built. In these cases, the CDM is increasing global emissions because polluters in industrialized countries are meeting their legal requirements to cut emissions by buying fake credits rather than actually cutting their own emissions.<sup>56</sup>

If projects are not additional, meaning they would have built anyway, with or without CDM funding, they cannot be considered to reduce emissions. Meanwhile, the industries charged with building the new projects receive financing that could and should have gone to projects with the intended goal of truly reducing emissions.<sup>57</sup>

5. With carbon offsets, quantifiable and accurate carbon-reduction cannot be obtained, or for that matter, accurately traded. Moreover, CDM projects rely on third-party verifiers whose private interests can influence documentation of a projects, making it appear more eligible for CDM financing than it actually is<sup>58</sup>

The UNFCCC requires that third party verifiers assess the viability of potential CDM projects. They are called designated operational entities (DOE). These third party verifiers, who are unregulated and independent, are charged with determining what amounts of CERs can be gained by instituting a project. They are hired by parties either in the Annex B or non-Annex B country. There are three problems with third party verifiers. One is, it is virtually impossible to determine how many emissions are saved when comparing what *would* have happened in terms

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<sup>55</sup> Haya, IARU conference

<sup>56</sup> Pottinger, 4

<sup>57</sup> International Rivers, [The CDM: Kyoto's Carbon Offsetting Scheme](http://internationalrivers.org/en/global-warming/the-cdm-kyotos-carbon-offsetting-scheme) <<http://internationalrivers.org/en/global-warming/the-cdm-kyotos-carbon-offsetting-scheme>> (30 April 2009)

<sup>58</sup> Pottinger, 5 p.5

of reductions had a project not been built-measuring carbon credits are different than measuring emissions.

Two, the more reductions DOEs can claim, the more funding will be received by non-Annex B parties, and the more CERs Annex B countries will receive, respectively. It's similar to the problem of additionality, in which paperwork for projects already in progress is modified to appear eligible for CDM funding. Unfortunately, cases have been documented in which CERs have been drastically overestimated for the purpose of receiving funding, in a move which benefits developers but does not reduce emissions, and which uses funds that could have gone to truly effective projects. Therefore, reductions measurements cannot be considered to be accurately represented.

And lastly, even if third party verification were an accurate and reliable instrument for quantifying reductions, hiring a third party firm is a costly proposition. Because it is cost prohibitive, it discourages smaller and poorer countries from applying for funding. The unequal distribution of CDM projects can in part be attributed to this.<sup>59</sup>

6. Many CDM funded projects are actually contributing to *more* emissions by financing projects that do not rely on advanced technologies, and some projects displace and or jeopardize local communities and ecologies with the assumption that “the atmosphere doesn't care where emissions reductions take place.”

Many CDM projects do not rely on sustainable technologies. “Super-critical” coal-fired power plants are one example of this. They are only marginally more efficient, and still rely on a non-renewable and polluting resource, yet they are financed by the CDM.<sup>60</sup> Additionally,

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<sup>59</sup> Environmental Defense

<sup>60</sup>Kevin Smith, “Global Coal Gets a Boost from the Carbon Market”, Environmental Finance 2008, Transnational Institute. <[http://www.tni.org/detail\\_page.phtml?act\\_id=18831](http://www.tni.org/detail_page.phtml?act_id=18831)> (1 May 2009)

projects like carbon capture and storage (CCS), in which CO<sub>2</sub> is captured from coal fired plants and then piped and stored in the a ground, is a potentially unsafe and definitely unproven CDM approved technology that is being instituted in the developing world.<sup>61</sup>

“Hydro [essentially, dams] is now the most common technology in the CDM, representing a quarter of all projects in the project pipeline,” says NGO International Rivers.<sup>62</sup> According to them most of these dam projects a. were already in the works before receiving CDM funding, b. do not represent new and cleaner technology, rather they are business as usual and c. are threatening local communities and ecologies. One of the proposed projects in the CDM pipeline includes harnessing hydropower by damming the Saleen/Nu River, the largest as-yet undammed river in Southeast Asia which passes thorough Tibet, China, Burma and Thailand. Damming has been proven to be harmful to the environment and to local communities. In this case, The livelihoods of six million people depend on the free-flowing river, in which 140 species of fish inhabit 47 of which are found nowhere else in the world. China is planning to build 13 dams along this river, nine of them in nature reserves, ostensibly with CDM funding.<sup>63</sup> Additionally:

The large dams now angling for CDM certification also impose significant environmental and social damage. The massive 880 MW Campos Novos Dam in Brazil (completed in 2005, yet applied for credits in 2007) displaced 3,000 people, many without being granted the promised compensation. Local project opponents were subjected to arbitrary arrests and police violence.<sup>64</sup>

Projects that are known to be environmentally damaging are receiving financing via the CDM, quite opposite of its initial intention.

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<sup>61</sup> “Carbon Capture and Storage,” Greenpeace, , <<http://www.greenpeace.org/international/campaigns/climate-change/coal/carbon-capture-and-storage>> (30 April 2009)

<sup>62</sup> Failed Mechanism: Hundreds of Hydros Expose Serious Flaws in the CDM,” International Rivers, “<<http://internationalrivers.org/node/2326>>(2 May 2009)

<sup>63</sup> Ann-Kathrin Schneider, CDM Hydropower and the EU ETS (28 February 2008) <[http://www.jiko-bmu.de/files/basisinformationen/pdf/application/4\\_international\\_rivers\\_position.pdf](http://www.jiko-bmu.de/files/basisinformationen/pdf/application/4_international_rivers_position.pdf)>

<sup>64</sup> Failed Mechanism, *ibid*

Carbon offsetting, in seeking the most economically efficient ways to reduce GHGs, assumes that where it is cheapest to do so, it is the best. The International Emissions Trading Association itself says, “The atmosphere does not mind where reductions take place.”<sup>65</sup> Such an approach completely discounts whether the people living in these areas mind or not, nor whether, in the larger picture CDM projects are environmentally appropriate. If it were the case that the large majority of CDM projects actually served local communities by introducing clean technologies that replace fuel burning to aid development or in ameliorating other polluting practices, *and* that the majority of people on the ground were amenable to this proposition, perhaps the location of emissions reductions through offsets could be seen as irrelevant. This is not the case, however, and though the atmosphere might not care where reductions take place, the people living where it’s happening most certainly do. Offsetting is an inherently political proposition, a point which proponents of carbon trading fail to address.

- The fact is, since Kyoto, in most <sup>vi</sup> Annex 1/Kyoto Protocol member-countries, national emissions have gone *up*.<sup>66, 67, 68</sup> We think.

This is a debate in itself. Some countries (UK, France) claim to have met or gone below their targets. Depending on the source, emissions have either gone up or down. According to carbon traders, they have down, and according to environmental NGOs and independent journalists they have gone up. The difficulty in measuring actual reductions is apparent. Why did emissions go

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<sup>65</sup> Carbon Trading Holds the Greatest Hope for Reducing Global Emissions, Opposing Views, International Emissions Trading Association, <<http://www.opposingviews.com/arguments/carbon-trading-holds-the-greatest-hope-for-reducing-global-emissions>> (1 May 2009)

<sup>66</sup> Toni Johnson, “G-8’s Gradual Move Towards Post-Kyoto Climate Change Policy”, 25 January 2008, Council on Foreign Relations <[http://www.cfr.org/publication/13640/g8s\\_gradual\\_move\\_toward\\_postkyoto\\_climate\\_change\\_policy.html?breadcumb=%2Fbios%2F13408%2Ftoni\\_johnson%3Fgroupby%3D2%26page%3D1%26hide%3D1%26id%3D13408](http://www.cfr.org/publication/13640/g8s_gradual_move_toward_postkyoto_climate_change_policy.html?breadcumb=%2Fbios%2F13408%2Ftoni_johnson%3Fgroupby%3D2%26page%3D1%26hide%3D1%26id%3D13408)> (1 May 2009)

<sup>67</sup> H. Sterling Burnett, “Carbon Offsets: No Sure Bet to Prevent Climate Change,” 24 February 2009, National Center for Policy Analysis, <<http://www.ncpa.org/pub/ba646>> (1 May 2009)

<sup>68</sup> Roger Harrabin, “UK in ‘delusion’ over emissions,” BBC News, 31 July 2008 <<http://news.bbc.co.uk/2/hi/science/nature/7536124.stm>> (1 May 2009)

down in some places? Was it due to offset projects? How is measured and by whom? The lack of standardization makes it so measurement is virtually impossible. CDM projects, by the nature of their uncertainty, cannot be seen to truly reduce emissions. Moreover, current emissions inventories do not say anything about the links between countries, don't say who is using the emissions, and don't say exactly where and when they occur.<sup>69</sup>

The point cannot be stressed enough that virtually all climate scientists at this point proclaim that global warming is more severe than previously thought and are collectively calling for drastic action to dramatically reduce GHG emissions. The only sure way to reduce GHG emissions is to eliminate the sources from which come and to protect and reinforce already existing carbon sinks. Period. This is true for both industrialized and developing countries. No amount of offsets will reduce overall emissions if emissions are allowed to continue elsewhere. Though this is an incredibly difficult task, the urgency of the situation demands stronger measures, even at high economic costs. In light of this, the CDM serves only to deflect attention away from reducing emissions from where they originate by offering a market fix that benefits industries that are the cause of the problem.

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<sup>69</sup> Glen Peters, IARU

## Chapter Three: Conclusions

There is much uncertainty in the world of climate change. No one is really sure exactly how changes are going to manifest, who is going to be the most affected, what the best ways are to mitigate the damage already done, and how, precisely, to adapt to the coming changes. Add to that those who still refuse to modify their practices to limit emissions, and the few who still claim that climate change is not caused by human activity. Nevertheless, the international community must act, based in the information we have so far, to address the mistakes we have made that have gotten us into this predicament. The CDM has been one way to do so, and unfortunately its results have been less than satisfactory.

To its credit, the UNFCCC has not been entirely oblivious the problems inherent in the CDM. As a result of reports that demonstrate the problems of additionality and the funding of business as usual projects that have nonetheless received CDM funding, the Executive Board has been more discriminating in the projects that it approves, and is working on having a more standardized verification system that makes creative accounting on the part of verifiers less of a problem. However, a few inherent problems remain. First and foremost, the only way to truly reduce emissions is to prevent them from ever coming into existence. The option of offsetting deflects the importance of simply emitting less domestically. Dependence on a volatile carbon trading market places the incentive to reduce emissions into the realm of the intangible and arbitrary. Baseline emissions-what would have happened if no changes had been made- are neither verifiable nor reliable. The primary beneficiaries of the CDM have been neither the small

communities of the developing world nor the atmosphere, but rather industries that practice business as usual, and carbon trading marketeers.

With a drastic overhaul that recognizes not only the importance of economic efficiency but of real contributions to sustainable development, the CDM could be more effective. If projects were evaluated and chosen more carefully to insure that they were not simply a small modification of business as usual, and if far greater importance were placed on financing projects in the developing world that were based on renewable energies and that benefitted local communities, the CDM could be an effective way to transfer wealth in an ecologically beneficial way. However, the tying of offsetting credits to emissions reductions will always be fatal flaw inherent in the system. While it is essential to aid the developing world in its sustainable growth, carbon trading schemes are clearly not the way to go about it.

The Kyoto Protocol's term will run out in 2012. It remains to be seen what policies the UNFCCC will recommended post-Kyoto. In December 2009 in Copenhagen, the 15<sup>th</sup> Convention of Parties (COP15) of the UNFCC will convene to discuss the latest IPCC findings and to begin to work out what the next phase beyond Kyoto will be. The latest scientific findings indicate that change is happening more quickly and dramatically than previously thought and are urging the international community to react appropriately.

In light of the CDM's ineffectiveness in truly reducing emissions, it will be interesting to see what role it will play in the future. Many claim it is here to stay, flawed though it might be, as part of a global carbon market that is worth 118 billion dollars as of 2008.<sup>70</sup> Christina Voigt, of the University of Oslo Faculty Of Law, points out that though CDM projects need more oversight and regulation, they have been so strongly embraced by the market that she does not

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<sup>70</sup> IARU Conference, Christina Voigt, University of Oslo, Faculty of Law, IARU Climate Change Congress, 10 March 2009, Copenhagen  
71,72 IARU Newsletter, not presently available online

see the CDM going away anytime soon. Due to large amount of investment already happening in CDM, most likely she is correct.

As one of the key instruments of UNFCCC for mitigating climate change, it is unfortunate that the CDM has focused so heavily on the economic efficiency aspect as less on real emissions reductions. This focus has encouraged unethical behavior, shady science, and a slowing of real reductions. The hope at this point is that there will indeed be better regulation and that projects will be picked more selectively. If the CDM is going to remain a major instrument in addressing climate change, it is the best that can be expected.

In the meanwhile, scientists are urging more immediate and effective actions. In March 2009, over 2000 scientists, economists, anthropologists (many of whom participate in IPCC reports) and others gathered in Copenhagen under the auspices of the International Association of Research Universities (IARU) to share information on all aspects of climate change, and to provide their findings to the COP15 in December. They describe this event as “a summit of science for politics”<sup>71</sup> and where the IPCC falls short of recommending policy, this group seeks to influence it.

Their key messages are that climatic trends follow the worst-case scenarios of the IPCC reports (sometimes even worse); that social disruption will be great, particularly in the poorest and most vulnerable communities; that emissions targets must be lower than previously estimated; that a socially just adaptation strategy must be adopted that addresses differences between countries, generational equity, and impacts on the natural world; that we already have knowledge and technologies capable of mitigating climate change and that these must be

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instituted immediately; and that societal, governmental, and economic inertia must be overcome to allow significant action to address climate change to be put into effect.<sup>72</sup>

How to achieve all of this depends on who you ask. At this conference was ethnoecologist Edmond Dounias who reported on the observations of the tribespeople of Borneo who are noticing that insect behavior has been changing in the past few years. He recommended more attention be paid to local observations such as this one when assessing climate changes and damages. Also there were Swiss and German investors and economists, keen to defend the CDM as a viable though admittedly flawed way to meet emissions targets in the cheapest way possible. Representatives of alternative energies such as wind and solar power promised that technology would be able to deliver the power needed to develop the future, and geographer Diana Liverman promoted a large scale awareness campaign aimed at consumers both to alert them of the changes ahead and to encourage them to consume less. Economists such as Nicholas Stern and William Nordhaus debated the best economic policies to mitigate climate change, and climate expert John Schellnhuber presented a worldwide agricultural plan that replaces traditional farming areas with ones that will be most productive in light of warming temperatures. Many social scientists were on hand to suggest ways to deal with adaptation and its social justice and equity aspects. Climate scientists reiterated the urgency of their findings, demonstrated the worst-case scenarios of earlier IPCC reports.

Clearly, climate change needs to be dealt with on all these fronts, there is no single solution, nor any real consensus on how to go about it. However, there is no doubt that in order to minimize the impacts of future generations, the only answer is to drastically reduce GHG emissions from their source.

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The starting point on which actions are to be measured has been quantified into a target of 2°C. The IPCC has determined that if CO<sub>2</sub> emissions are halved by 2050 compared to 1990, global warming can be stabilized below two degrees.<sup>73</sup> This rise in temperature will, of course, have repercussions, but they are less drastic than a greater rise, and form the basis of many climate models. UNFCCC policies aim to follow this target. However, it is becoming clear that with the actions so far taken, global surface temperature will far exceed two degree range. To maintain this target, a maximum of 1000 billion tons of carbon could be emitted between 2000 and 2050.<sup>74</sup> We have already reached one third of this amount. If all available fossil fuels were burnt until then, we would reach two to three times the level recommended to keep warming to the 2 degree target. The consensus of climate scientists at the IARU meeting, however, is that with the current political agenda, warming will far exceed 2 degrees and could go as high as 4 to 6 degrees Celsius by the end of the century.<sup>75</sup>

Figures like this demand better solutions than ones like the CDM, and carbon trading and offsets in general. They require real emissions reductions via less burning of fossil fuels, truly sustainable development, and legislation that enforces these ends. This requires multilateral agreement and efforts that acknowledge that we can no longer afford to *not* address climate change. It means that that public must be informed on the real changes happening in every geographic location, which will prompt it to elect politicians who enact legislation that take make real differences in GHG emissions.

Never before have we confronted such an enormous and far reaching global dilemma. It is this natural that mistakes should be made in fixing the problem. As far as the CDM is

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<sup>73</sup> "How the 2 degree C Target Can be Reached," ETH Life, Swiss Federal Institute of Technology <[http://www.ethlife.ethz.ch/archive\\_articles/090430\\_Knutti\\_Nature\\_su/index\\_EN](http://www.ethlife.ethz.ch/archive_articles/090430_Knutti_Nature_su/index_EN)> (1 May 2009)

<sup>74</sup> Ibid.

<sup>75</sup> David Adam, "World will not meet 2C warming target, climate change experts agree," The Guardian 14 April 2009 <<http://www.guardian.co.uk/environment/2009/apr/14/global-warming-target-2c>> (1 May 2009)

concerned the time has come to admit that it is a mistake, and is not serving to meet the goals of emissions reductions. Instead let us focus on more viable solutions such as global legislation, carbon taxing, alternative technology subsidies, public awareness campaigns that encourage less consumption, and an overall decarbonization of our economies and our daily lives, here in the industrialized world. In the developing world, let us not tie projects that mitigate emissions and replace polluting activities with ones that don't (such as solar power) to trading schemes. Yes, the industrialized world has both the responsibility and the means to aid sustainable development in the developing world. However, it should not be rewarded for the negative externalities it has already made to the changing climate by being allowed to profit off the developing world while continuing the practices that got us to this point.

It is also essential to notice here that many of the dilemmas now being examined under the term "climate change" have, in fact, been in existence for much longer than the climate change-specific debate itself. The use of fossil fuels in agriculture in the forms of pesticides and fertilizers, for example, spawned an organic food movement not long after the Green Revolution, and the debate has continued ever since. Mass rainforest destruction that threatens local ecologies and communities has long been contested by environmentalists and indigenous rights activists alike for decades. Food security and population growth have been buzzwords since 1970s. The inequality of resource distribution between the global North and South and its environmental and social justice damages have been observed and documented for years now, and NGOs have been rallying against these inequalities for decades. A positive example of what can be done is legislation like the US's Clean Air and Water Acts in the 1970's, through which irresponsible and polluting industrial practices have been brought about under more control. There are many more concerns that could be added to this list.

The difference now is that though the elements that make up these movements have existed for at least a century, only now are the cumulative effects of mistakes made in the past being gathered together under the name of “climate change”. Never before have these concerns been linked together in the way that the new language of climate change is connecting them.

Under the term “climate change” it is finally acknowledged that the Earth’s biosphere does not respect international borders, that we are all connected in a shared environment, and that the multitude of unsustainable practices that have been promoted for past 150 years are going to affect everybody. What’s more, the changes that will need to take place do not exist solely in a scientific domain, but are inextricably linked to the social, political, and the economic.

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