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# Climate Change: The Political Economy of Kyoto Flexible Mechanisms

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## Abstract

The Kyoto Protocol entered into force on February 16, 2005. Emissions reductions targets established by the protocol will be met by domestic policies and by three international flexible mechanisms: clean development, joint implementation, and emissions trading. Following a value-theoretic and class-based approach, the purpose of this paper is to analyze these flexible mechanisms. In particular, the paper investigates the nature and adoption of flexible mechanisms, and their class and environmental links and implications. Carbon-intensive capitalist firms and developed economies are found to be exerting great influence on the shaping and implementation of flexible mechanisms. Environmental effectiveness and justice, and equal sustainable development raised and claimed by worker-citizens, social movements, local communities, and developing countries have not been secured. Thus flexible mechanisms do not present a real challenge to current institutions and practices for sustainable climate conditions for the workers-citizen of the world.

**JEL classification:** B5, P1, Q4

## Keywords

climate change, labor value theory, environmental policies, Kyoto Protocol

## 1. Introduction

Climate change is often recognized as the most serious global environmental problem. However, actions to prevent or mitigate it are intensely debated. This is because effective solutions involve major changes in the economic, political, scientific, and cultural aspects of contemporary societies.

Since climate change is a global problem, effective solutions to it could be engendered only through planetary negotiations. Coordinated global actions were indeed initiated under the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and led to the adoption of the Kyoto Protocol in 1997. The protocol went into force in 2005.

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The objective of this paper is to investigate critically the flexible mechanisms that have been established by the Kyoto Protocol to mitigate global warming (GW). These mechanisms include joint implementation, clean development, and emissions trading. Our analysis follows a Marxist politico-economic approach to the environment and natural resources, building upon the works of Marx (1991), Fine (1986), Harvey (1982), O'Connor (1988), Resnick and Wolff (1987), and Shaikh (1978). An extensive discussion of this approach can be found in Vlachou (2002, 2004, 2005). The second section provides a theoretical and concrete analysis of the process of establishing the Kyoto flexible mechanisms and, in particular, the major environmental and politico-economic issues involved. The third section investigates the actual workings and outcomes of flexible mechanisms. In the final section, some concluding and evaluating remarks are offered. Critically engaging with mainstream arguments and empirical findings throughout the paper, the analysis reveals the different non-neutral environmental and politico-economic impacts of global warming and Kyoto flexible mechanisms on different competing firms, classes, social groups, and countries.

## 2. The Development of the Kyoto Flexible Mechanisms and Their Implications

Global warming is the result of increasing anthropogenic emissions of greenhouse gases (GHGs), with CO<sub>2</sub> being the major contributor. The responsibility of developed countries for the GW problem is compounded by the long life of past GHG emissions in the atmosphere. The major contributors are the United States (with a share of 36.1 percent in 1990 CO<sub>2</sub> emissions from Annex I countries), the European Union (15 members, with a share of 24.2 percent), the Russian Federation (17.4 percent), Japan (8.5 percent), and Canada (3.3 percent) (UNFCCC 2003: 15). The evidence on GHG emissions points to the fact that the intensification of GW is rooted in the historical patterns of capitalist development. Capitalist expansion at a global scale was predicated by, and resulted further in, increased energy use and electrification, road transport systems, deforestation, and changing land use, which have been recognized as the main causes of GHG emissions.

Climate conditions sustain natural resources and conditions (including temperature and sunlight) that are needed by firms in requisite quantities and qualities for their profit-making activities in contemporary capitalism. Moreover, climate conditions sustain human life and, for that matter, they provide elements which are necessary for the reproduction of labor power bought as a commodity by capital. Consequently, the intensification of GW is expected to have adverse effects on capitalist firms and economies which will (at least in part) register as increases in costs, values, and prices, resulting in changes in profits, rents, and wages (Vlachou 2002, 2003–4).<sup>1</sup>

Various conflicts, tensions, and changes can be instigated between GHG emitters and various victims of GW because of the negative impacts of climate change. These multiple struggles give rise to national and international policies to mitigate GW. In particular, the inter-capitalist struggle or competition among capitals and the struggles taken up by the working and ecological

<sup>1</sup>When deteriorating natural conditions become part of the conditions of production of regulating capitals in a particular sector, they increase the price of production of the commodity produced, given the average economy-wide profit rate, and change the structure of differential rents, *ceteris paribus*. Changes in prices and differential rents impact, in turn, upon profits, wages, and other class payments. On the one hand, in those instances when the real wage is virtually unchanging, increased prices of production raise the cost of constant and variable capital of production in other sectors and tend to reduce other sectors' profitability, all other things being equal. On the other hand, however, increased prices of production result in decreasing real wages in instances when wages are undergoing change (Vlachou 2005).

movements play an important role in the shaping of environmental regulation (see also Vlachou 2004). In the international arena, historical accountability for GW fuels the conflict over climate policy between developing countries and developed ones.

In particular, capitalist firms in developed countries which have been relying on cheap and abundant fossil fuel resources for their expansion, like firms in the United States, and oil companies tend to argue against significant emissions restrictions on the grounds that they will increase their costs and/or reduce their profits. On the other hand, Japan and emitting countries which are members of the European Union (EU), excluding the U.K. and Norway, have long been importing a significant proportion of the energy they consume, especially oil, and hence their firms have long suffered from high prices and the instabilities of energy markets. These countries have been more willing to accept GW policies which imply energy conservation, energy efficiency, and reductions in imported energy. Nevertheless, they are concerned that unilateral GW action will jeopardize the position of their capitals in the world market (Vlachou 2000).<sup>2</sup>

Additionally, there are capitalist firms which will be adversely affected by climate change and which push openly for GW regulation. Moreover, manufacturers of energy-efficient and GHG-abatement technologies, and manufacturers of gas and renewable energy technologies, also tend to favor GW policy to the extent that multinational oil capitals do not have a controlling interest over them.

Working people strive to protect their conditions of life threatened by pollution and climate change through various political forms such as labor and environmental movements and political parties (Vlachou 2004). Beder (2002: 235), for example, informs us that surveys conducted in 1997, on the prospect of the Kyoto agreement, found that the majority of the people in Australia and the United States were in favor of measures to cut GHG emissions.

Proposed GW actions have been strongly questioned by many less developed countries. Experts and delegations from many developing countries to international forums on GW have correctly held the developed countries accountable for GW and claimed that it is their responsibility to undertake actions to mitigate it. Many of them resisted proposals that impose GHG restrictions on them on historical accountability grounds (Pachauri 1994; Paterson 1996; Vlachou 2000).

Scientific research has already suggested several specific ways to mitigate GW, although their course is influenced by various class and non-class interests and conflicts. The reduction of GHG emissions can be achieved by replacing more emitting fossil fuels (e.g. coal) with carbon-free energy like hydropower and solar energy, or with less emitting fuels (e.g. natural gas); by improving energy efficiency and conservation; by reducing industrial by-product and process gas emissions; and by carbon removal and storage. Reducing deforestation or increasing afforestation can be only a temporary means of controlling carbon emissions as they increase in the short and medium run the earth's ability to sequester carbon.

In the last two decades and within the above general setting, global deliberations and negotiations have taken place on the issue of climate change in response to the demands on the state or quasi-state international institutions (like the UN) to mediate access to the global commons. At the United Nations Conference for Environment and Development, held in Rio de Janeiro in 1992, 155 countries signed the UNFCCC, aiming at limiting GW. However, no significant binding commitments have emerged out of this convention, which entered into force in 1994.

In December 1997, the parties to the UNFCCC negotiated a new agreement, the Kyoto Protocol. The protocol establishes legally binding quantified emissions reduction commitments that

<sup>2</sup>Japan, for instance, stressed that the Kyoto Protocol would make sense only if the United States, as the world's biggest emitter of GHGs, would carry out the treaty (see Böhringer 2002).

cover the emissions of six GHGs from a wide range of sources for the period 2008 to 2012 for 38 countries (Annex I parties).<sup>3</sup> The commitments represent a 5.2 percent average reduction from the 1990 emissions of the Annex I parties (far below the 15 percent reduction proposed by the EU), and a 10 percent to 20 percent reduction from their projected emissions during the 2008 to 2012 period. Emissions reductions targets range from -8 percent to +10 percent. The EU, with a target of -8 percent, established a joint commitment (a "bubble") for its members (Intergovernmental Panel on Climate Change [IPCC] 2001: 405; UNFCCC 1997, 2003). Given that, according to the estimations of IPCC (2007: 3-4), GHG emissions increased by 24 percent between 1990 and 2004 and are projected (under non-mitigation scenarios) to increase by 25-90 percent between 2000 and 2030, the Kyoto emissions target seems quite inadequate.

The Kyoto Protocol adds new policy instruments to conventional ones in order to mitigate the concentration of GHGs in the atmosphere. In particular, Article 6 defines joint implementation (JI) of projects to reduce emissions in an Annex I party, Article 12 establishes the clean development mechanism (CDM) for projects in non-Annex I countries, and Article 17 allows (Kyoto) emissions trading (KET) among Annex B parties (Annex B includes Annex I parties with emissions limitation targets). The stated rationale behind these policy options was to provide opportunities for Annex I parties to fulfill their commitments in a flexible, cost-effective way.

Cost-efficiency in the choice of instruments is important to individual polluting capitals as it relates to their profits. In particular, when mitigation expenditures have not yet become part of the regulating capital in a sector (and thus cannot be part of the cost price of the produced commodity), they are being financed by the profits of the mitigating firms. On the other hand, when GHG regulation applies to regulating capitals, GHG mitigation costs affect the cost and market prices of commodities. In this case, cost minimization in complying with the Kyoto Protocol is of importance to all capitals which buy these Kyoto-regulated commodities (like energy) as inputs.

Flexibility allows for considerable degrees of freedom over compliance strategies and has steadily been advocated by large GHG emitters (capitalist firms and industrialized countries) in the negotiations before and after the adoption of the Kyoto Protocol. The same parties have resisted the adoption of direct measures (e.g. mandated clean technologies) or an international harmonized carbon tax to reduce GHG emissions such as the proposed EU carbon tax (for a discussion, see Ikwue and Skea 1994). They favored instead market approaches such as an emissions trading system.<sup>4</sup>

Emitting companies have been engaged for years in promoting international emissions trading (ET) and in shaping its modalities. In 1991, the International Emissions Trading Association, a corporate lobby group, was set up under the auspices of the UN Conference on Trade and Development to investigate and promote ET. From a business perspective, it has been asserted that "the genius of these [carbon] markets is that, by turning units of pollution into units of property (allowances), they make it possible to allocate resources for pollution reduction where likely to have the greatest impact" (Bayon 2002). Moreover, in a dynamic setting of capitalist competition, ET could allow for cost savings for capitals in the face of new, less costly, and more effective abatement technologies, improving the competitive position of innovating firms (ibid; Hoffman 2004).

Interestingly, energy companies have chosen to initiate internal ET schemes so that "they would be well positioned to influence the policy as it develops and react to it as it is in place"

<sup>3</sup>Annex I countries include almost all industrialized European countries and also Australia, Canada, Japan, New Zealand, and the United States.

<sup>4</sup>For instance, the three criteria that have high priority for ExxonMobil when analyzing and comparing the various policy options to address the risks of climate change are: "ensure a uniform and predictable cost of reducing CO<sub>2</sub>," "maximize the use of market forces," and "promote global participation" ([www.exxonmobil.com/Corporate/energy\\_climate\\_views.aspx](http://www.exxonmobil.com/Corporate/energy_climate_views.aspx), accessed October 10, 2007).

(Hoffman 2004). In particular, expertise gained by BP and Shell in the design of their intra-company ET schemes allowed them to assume advisory roles in developing the British and the EU ET schemes respectively (ibid). The Kyoto ET, which can link all flexible mechanisms as we will see, has been directly and indirectly influenced by all these private initiatives of the energy companies aiming at securing their high profitability while complying with the Kyoto targets.

The negotiations among the Kyoto Protocol parties on the specifics of the flexible mechanisms aimed at ensuring the fulfillment of the cost-effectiveness objective while addressing concerns around the pursuit of environmental integrity and equity. Let us examine the major issues that were (and some still are) raised in the process of making the flexible mechanisms operational.

### 2.1. Kyoto Emissions Trading

Only Annex I parties to the Kyoto Protocol (UNFCCC 1997) with emissions limitations and reductions commitments can participate in KET. A legally binding limit is set on each Annex I party's emissions (i.e. the emissions reductions targets inscribed in Annex B to the protocol), and the parties are allowed to trade these assigned amount units (KET-AAUs) of emissions between them. In particular, countries whose actual emissions are less than their assigned amounts can either sell the unused portions to countries whose emissions exceed their assigned amount or bank them for future use. A KET regime may thus provide polluting enterprises/countries with an incentive to exploit low-cost energy efficiency and conservation opportunities in other countries.

Article 17 of the Kyoto Protocol states that ET "shall be *supplemental* to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments" (ibid). The implication of this requirement is that countries (and their GHG emitters) cannot escape emissions control at home by solely buying unused emissions quotas from other countries. Moreover, this requirement induces companies to realize that, in a dynamic setting, they cannot rely on acquiring emissions permits. Despite the obvious short-run benefits of such a choice, in the long run, as the price of permits (and the cost of abatement) increases, their competitive position will deteriorate. Moreover, debates over the implementation of the provision of a "supplemental" trading system led several parties and environmental organizations to propose a *quantitative limit* on the proportion of commitment which could be achieved through KET (and by other flexible mechanisms; see, for example, Greenpeace 1998, 2001).

A worrying problem with international ET would arise in the case that an initial allocation of KET-AAUs turned out to exceed a baseline projection for a country's emissions (sometimes referred to as "hot air"). This could be relevant for some signatories of the Kyoto Protocol that have undergone substantial changes in political and economic systems since 1990 (e.g. Russia and Ukraine). Economic recession and/or the closing of inefficient enterprises would have reduced emissions whether or not Kyoto rules were in effect. However, the KET may allow these countries to sell these excess KET-AAUs, limiting the emissions reductions that would have been achieved in the Annex B parties (developed countries) of the Kyoto Protocol.

Restricting trade of "hot air" was proposed by some parties, including the EU, but opposed by a number of powerful countries such as the United States and Canada. Opponents of the restrictions argued that selling and buying limits on KET would increase the costs of compliance. In addition, it was argued that constraints on hot air trading would make the protocol less attractive for some countries with "hot air allocation" (like Russia) and thus unlikely to be ratified by them (IPCC 2001: 425).

Expected shirking on compliance complicates an international ET scheme like KET. Liability provisions intend not only to enhance environmental integrity but also to secure the development



and very functioning of the carbon market. KET may also be proved vulnerable to market power, thus becoming a vehicle for extracting monopoly rents by the energy firms. To the extent that the global energy markets are dominated by few large energy-producing multinationals, even an international ET market cannot eliminate the possibility of market power being extended to the permits market system, especially an “upstream” one, involving producers and importers (see IPCC 2001). Additionally, large-scale polluters are likely to benefit from KET because they do not face high overall transaction costs as a percentage of overall compliance costs. In general, high transaction costs reduce or preclude trading, questioning KET’s effectiveness.

Moreover, when there are serious uncertainties in the market, carbon markets may even collapse altogether. In particular, given the assigned amount, a reduced rate of economic growth (as is the case of countries with “hot air”) or an over-estimate of baseline emissions (as seems to be the case with the EU ET system in its first phase 2005–7 period) may result in low prices of permits, jeopardizing the environmental effectiveness of ET. Correct projections of baseline emissions are to be safeguarded by strict accounting, reporting, and review procedures under the Kyoto Protocol.

Several concerns were (and still are) raised over scientific and policy uncertainties regarding sink activities that are allowed by the protocol to be used by a party in order to achieve its commitments and also get involved in ET. These concerns have led to proposals to limit sink activities. For example, one of the environmental non-governmental organizations (NGOs), Greenpeace, proposed that limits of sink activities be allowed only to those defined in Article 3.3 or, alternatively, that countries be prohibited from trading assigned amounts created by sink activities (Greenpeace 2001: 22).<sup>5</sup>

Moral objections were also raised against the Kyoto ET scheme. For example, M. Sandel argued that ET would “undermine the ethic we should be trying to foster on the environment.” In particular, he maintained that “turning pollution into a commodity to be bought and sold remove[d] the moral stigma that is properly associated with it.” ET might “undermine the sense of shared responsibility that increased global cooperation requires” (Sandel 2005: 355–6).

Critical thinkers and activists ground their moral objections to KET on equal human rights to the atmosphere and climate justice (see, for example, Athanasiou and Baer 2002; CDMWatch 2004a). They are critical of the *gratis* distribution of permits on the basis of historical emissions. While these arguments are well-received, they tend, however, to ignore the class aspects of capitalism with which the climate change problem is interwoven and which come into shaping the initial allocation and the subsequent trade of permits, thus limiting the chance for a lasting solution to the GW problem.

## 2.2. Joint Implementation

JI allows an Annex I country, an industrialized country with a commitment inscribed in Annex B of the Kyoto Protocol, to contribute to the implementation of a project to reduce emissions or to enhance a sink in another Annex I country. The investor country receives emissions reduction units (JI-ERUs) equal to part or all of the emissions reduction (sink enhancement) achieved, which can be used by it to fulfill its national emissions limitation commitment. JI is a project-based system with the requirement that projects be *additional* to what would otherwise have occurred in the host country (IPCC 2001: 426).

JI was favored by developed countries which had already introduced measures to limit their emissions and claimed that further reductions would be relatively more expensive for them than

<sup>5</sup>Article 3.3 states that only emissions reductions and removals from afforestation, reforestation, and deforestation activities since 1990 can be used to modify a developed country’s assigned amount.

for countries which have not yet largely introduced measures for improving energy efficiency or developing renewable energy systems. It was expected, for example, that Japan, the Nordic countries, and Switzerland would be the most interested in investing in JI projects in Central and Eastern European countries and the states of the former Soviet Union, countries heavily dependent on fossil fuels. It should be noted that since both host and donor countries have emissions commitments, there would be no overall change in the assigned amount for Annex B countries.

The notion of supplementarity and its implications were intensely debated in the negotiations on the flexibility mechanisms. Central to JI was the operational definition of what emissions would have been in the absence of the project, i.e. the *baseline* from which emissions reductions (or sink enhancements) were to be measured. In the case of host countries whose assigned amounts of emissions were larger than their projected emissions (like Russia and Ukraine), there might be little incentive to ensure that JI-ERUs generated by a JI project would really be additional to those that would have occurred in the absence of the project. Moreover, JI projects involving activities in land use and land-use-change and forestry (LULUCF) sectors (these sink projects would be allowed if the provisions of Article 3.3 would be extended) would be hard to verify as additional activities.

### 2.3. The Clean Development Mechanism

The CDM is also a project-based mechanism. It allows a project to reduce emissions or enhance sinks in a country without a national commitment to generate certified emissions reductions (CDM-CERs) equal to the reduction achieved. Investing Annex I parties can use CDM-CERs to meet national emissions limitation commitments. CDM projects have been rationalized as opportunities for developed countries to meet their commitments more cost-effectively and as a means to assist non-Annex I parties (developing countries) to achieve sustainable development (IPCC 2001: 426). It was required that CDM-CERs be certified by “operational entities” to ensure that they created real, measurable, and long-term benefits related to the mitigation of climate change and reductions in emissions that were *additional* to any that would occur in the absence of the certified project activity—a requirement that would be difficult to assert especially for sink projects.<sup>6</sup>

One major concern raised regarding CDM was that, unlike with KET and JI, it allows developed countries to add CDM-CERs, generated from projects in developing countries, to their assigned amounts of emissions. Therefore, *CDM-CERs will increase the overall level of emissions of industrialized countries beyond their assigned amount units*. This problem will get compounded if the rules allowed forest projects (enhancing sinks) to be included in the CDM. Given the high rates of deforestation in developing countries, forest projects may become very attractive as CDM projects. However, a net reduction in deforestation cannot be guaranteed and would become difficult to certify, as the deforestation activity may be moved to another region. It might give rise to a case of “moral hazard,” that is, it could create an incentive to clear natural forests and re-plant with fast growing plantations in order to count them as CDM projects. Similarly, given that developing countries do not have emissions targets, both investor and host have an interest in maximizing the reductions achieved by a project through inflating the emissions baseline. Hence, an independent and reliable review of the certification of the emissions reductions will not be easy to achieve.

Another major issue under debate was the type of emissions reduction technology to be allowed under the CDM. The options of “clean coal” technologies and nuclear technologies were

<sup>6</sup>CDM was to begin to create CDM-CERs upon ratification of the Kyoto Protocol. Moreover, the period up to the 2008-2012 commitment period will be a pre-commitment banking period for investing countries.



questioned since they lock the host country into these technologies for a great number of years. Moreover, concerns were expressed that investments in CDM projects by Annex I governments could lead to a reduction in the official development assistance received from industrialized countries (IPCC 2001: 427).

Due to all of the above concerns, a *quantitative limit* was proposed on the amount of CDM-CERs which developed countries can use to achieve their emissions commitments. Additionally, a limit was proposed on the increase in the total assigned amount that a developed country can achieve by CDM.

#### 2.4. The Negotiations and the Marrakesh Accords

The Fourth Session of Conference of the Parties (CoP4) in Buenos Aires in November 1998 adopted a plan of action that included the development of principles, modalities, rules, and guidelines for the three Kyoto Protocol mechanisms for adoption in the CoP6 at The Hague in November 2000; this was the deadline for negotiations under the Buenos Aires Plan of Action. However, at The Hague conference, the complexity of the political issues at stake led to a dead-lock in the negotiations.

The differences among parties were significant and were related to the concerns discussed above. They also included the issue of whether the major developing countries should undertake emissions reduction commitments, as well as issues regarding the reliability of monitoring and reporting emissions reductions. These differences are illustrated by the positions taken by two major players, the EU and the United States, in these negotiations summarized by Peter Zapfel (2002: 17–19) of the EU Directorate General (DG) of the Environment and David Gardiner (2002: 22–24), member of the White House Climate Change Task Force under President Clinton. The EU argued that industrialized countries should use flexible mechanisms as a supplement to, and not a substitute for, domestic policies and measures. Moreover, it proposed that, in the CDM's initial phase, only projects based on a "positive list" of clean technologies should be eligible to obtain CDM-CERs. The EU insisted that projects based on sinks should initially not qualify under the CDM. Regarding ET, the EU argued that strict participation criteria governing parties' eligibility needed to be laid down and applied for a party to enter KET.

On the basis of the considerable scientific uncertainties and fears of abuses that prevailed about the sinks, the European Commission argued that in the article of the Kyoto Protocol that covers net changes in GHG emissions from afforestation, reforestation, and deforestation since 1990 (Article 3.3), both *credits* from carbon absorption and *debits* from carbon emissions—for instance, due to harvesting of forests—should be counted. The EU also expressed reservations with respect to Article 6 that gives rise to the possibility for carbon absorption through "additional human-induced activities," including LULUCF beyond Article 3.3, to be counted towards emissions targets for the first commitment period. It supported the view that such additional activities should not be counted towards the targets unless the serious concerns associated with them are met.

Regarding compliance, the EU wanted to establish a strong and comprehensive compliance system. For countries not in compliance, the EU favored restrictions on the use of the mechanisms and economic penalties per excess ton of CO<sub>2</sub> equivalent emitted, accruing to a "compliance fund" to be invested in emissions reduction projects to offset this excess.

Given that about three out of four of the countries involved in the negotiations were developing countries, the EU realized that for decisions to be taken with consensus, it was imperative to address their concerns. To that end, an "adaptation fund" was already agreed upon in Kyoto that would be covered by revenues from a levy on CERs generated by the CDM. The goal of the EU

for The Hague conference (CoP6) was to develop a process to further cater to the adaptation needs of developing countries.

The United States departed in several respects from the EU's positions on flexible mechanisms. On grounds of cost-effectiveness, the United States strongly pushed for the widest possible level of international trading in GHGs. In addition, it supported the position that the appropriate credit should be given for storage of carbon through forest and agricultural management, arguing that these activities provided cost-effective reductions in GHG emissions, while the EU favored limitations to the use of such carbon sinks. The United States also insisted on the meaningful participation of key developing countries, arguing that the CDM would provide the means for many countries to take additional actions while spurring domestic economic growth.

In March 2001, the Bush administration declared its withdrawal from the protocol, reasoning that the costs to the U.S. economy would be too high and exemption of developing countries from binding emissions targets would not be acceptable. Given that the United States was at the time the world's largest emitter of GHGs, its withdrawal was a major set-back in the negotiations, jeopardizing the survival of the protocol itself.

Talks reconvened in Bonn in July 2001, and they resulted in the Bonn Agreements which included numerous concessions, especially by the EU and developing countries, to countries like Canada, New Zealand, Japan, Russia, and Australia (see also Böhringer 2002). At the 7th Conference of Parties (CoP7) in Marrakesh, Morocco (October-November 2001), negotiators built on the Bonn Agreements and adopted the decisions known as the Marrakesh Accords which contain more detailed rules and compromising advances for the implementation of the Kyoto Protocol, marking the close of a major negotiating cycle (UNFCCC 2003: 4).

The Marrakesh Accords assert that the protocol creates no "right, title, or entitlement" to emit to Annex I parties (developed countries) in an effort to answer worries about privatizing the global atmosphere. Moreover, they require that the actions of Annex I parties to reduce emissions must also aim at reducing the gap between developed and developing countries toward achieving sustainable development. The accords also require that domestic actions constitute a significant element of the strategies adopted by each Annex I party to meet its target. However, the Marrakesh Accords impose *no quantitative limits or caps* on the extent to which the Kyoto flexible mechanisms can be used to meet emissions targets. Annex I parties must, nevertheless, provide information in their national communications to prove that their use of the mechanisms is supplemental to domestic action (UNFCCC 2003).

The Marrakesh Accords also assert that JI projects such as reforestation schemes involving activities in the LULUCF sector must conform to the protocol's wider rules on this sector. This, in practice, provides a substantial credit for carbon dioxide absorption by sinks under JI to Australia, Canada, New Zealand, Japan, and Russia, considerably watering down the provisions of the protocol as originally agreed. However, Annex I parties are to refrain from using JI-ERUs generated from nuclear facilities to meet their targets. The accords also require that emissions reductions from JI must be additional to domestic action (Böhringer 2002).

With respect to ET, the modified protocol does not foresee any concrete caps on the share of emissions reductions that a country can meet through the purchase of permits from other industrialized countries, nor does it envision a cap on the amount of permits it can sell.

CDM rules are also laid down in the Marrakesh Accords. In particular, rules are established for including afforestation and reforestation activities in the CDM for the first commitment period. Annex I parties face limitations as to how much they may use CDM-CERs from such sink activities towards their targets: up to 1 percent of the party's emissions in its base year, for each of the five years of the commitment period (to be compared with emissions reduction targets of -8 percent to +10 percent). The CDM-CERs generated by CDM projects will be subject to a levy known as the "share of the proceeds" (UNFCCC 2005: 30).

With respect to sinks, the protocol allows for emissions reductions and carbon removals from several LULUCF activities as long as they began in or after 1990. On the basis of these activities, an Annex I party can issue removal units (RMU). The extent to which the parties can account for emissions and removals in this way during the first commitment period is limited by a series of caps, according to the UNFCCC (2003).

With respect to compliance, the Kyoto Protocol (Article 18) and the Marrakesh Accords set specific *accounting, reporting, and review* procedures. In addition, enforcement of flexible mechanisms is ensured by effective *monitoring and verification* mechanisms of emissions reductions and with a liability system with penalties for non-compliance.

The Marrakesh Accords established two new funds—the Special Climate Change Fund and the Least Developed Countries Fund—to assist least developed countries (LDCs).<sup>7</sup> In addition, the Marrakesh Accords established the Adaptation Fund which will finance practical adaptation projects and also support capacity-building activities (UNFCCC 2003: 10).

All of the above specifications and adjustments of the Kyoto Protocol, and in particular of flexible mechanisms, signify the strong influence of the large GHG emitters who were primarily concerned with cost-efficiency, flexibility, and enforcement requirements during the negotiations. Concerns with environmental integrity and climate justice within and across nations have been heavily compromised, indicating that developing countries, working classes, and ecological and social movements in developed countries had limited access and influence over the shaping of Kyoto mechanisms. As for the future course, putting in practice these mechanisms will become another arena where private investors, along with international financiers like the World Bank, will seek to further challenge the Kyoto Protocol. For instance, monitoring and verification of emissions reductions are expected to become the site of disputes and conflicts between CDM and JI investors seeking approval, the UNFCCC's relevant branches, and local stakeholders and environmental NGOs.

The Kyoto Protocol entered into force on February 16, 2005. In order for the agreement to enter into force, it had to be ratified by at least 55 countries, and the ratifying countries had to account in total for at least 55 percent of the industrialized world's CO<sub>2</sub> emissions (the most important GHG) in 1990. According to the UNFCCC, as of December 12, 2007, 177 countries had ratified the protocol; among them, 32 Annex I parties accounted for 63.7 percent of 1990 CO<sub>2</sub> emissions from Annex I (industrialized) countries. The countries that have ratified the protocol include the EU (15 members), Japan, Canada, Poland, Russia, and recently (December 12, 2007) Australia. Russia's ratification on November 11, 2004, was critical to put the protocol into force. Despite the watering-down of the protocol by the Bonn Agreements and the Marrakesh Accords, the United States did not change its negative stance towards the agreement.

### 3. Flexible Mechanisms in Practice

In this section, we attempt to provide an understanding of the actual workings of the Kyoto flexible mechanisms. The mechanisms are scrutinized in order to reveal their politico-economic and environmental impacts and the reactions to them.

Turning first to CDM, projects that sought approval up to the year 2004 were reviewed by CDMWatch (a non-profit organization that monitors CDM) and were found to be dominated by

<sup>7</sup>A Special Climate Change Fund was set up to finance projects in countries highly dependent on income from fossil fuels (i.e. capacity-building, adaptation, technology transfer, climate change mitigation, and economic diversification projects). A Least Developed Countries Fund was established to support a special work program to assist LDCs.

a small number of large countries and a small number of high volume projects. The contribution of renewable energy projects to CERs generation was quite limited.<sup>8</sup> Large hydropower projects were undertaken and often misrepresented as renewable energy. Similarly, unsustainable forest projects such as large industrial plantations were pushed under CDM as carbon sinks to allow the release of GHG emissions in developed countries via the buying of CDM-CERs (CDMWatch 2004b).

Actually, the use of forests as carbon sinks under CDM (and the other Kyoto flexible mechanisms) reinforces the concerns about environmental effectiveness and class and other social implications. We find the case of the Plantar plantation project to be an exemplar, as it vividly illustrates the different opposing arguments, the class interests involved in using forest projects under the CDM, and the leading role of the World Bank in carbon sink projects. The Plantar S.A. project in Minas Gerais, Brazil, was one of the first projects seeking registration under the CDM. The project is developed under the auspices of the World Bank's Prototype Carbon Fund (PCF), a partnership between seventeen companies and six governments, operational since April 2000, which serves as the bank's vehicle to develop projects under the CDM. The Plantar project involves the expansion of the company's vast eucalyptus plantations by another 23,000 ha for the production of charcoal, which will then be used in pig iron production. If this production of charcoal did not materialize, the company would have had to import coal instead. It is in this sense that the project claims carbon credits for avoiding fuel-switch. Moreover, the company argued that without revenues from carbon credits, charcoal production would be uneconomical and it would have to switch to imported coal. Besides this "avoided fuel-switch," the project originally claimed 13 million credits over 21 years for the carbon that will be sequestered by the new plantations; it is considered, for that reason, as one of the largest CDM projects (see The World Bank Carbon Finance Unit n.d.).

On the one hand, the World Bank seems to consider the Plantar project as a prototype well-managed forest project made possible by CDM. According to the World Bank, "the PCF's support for the Plantar Project aims to demonstrate how carbon finance for well-managed forests—made possible by the Kyoto Protocol's Clean Development Mechanism—can reduce destruction of native forests, help conserve their unique biodiversity, help preserve local community use of forest fruits and other non-timber products, and secure high-quality employment in rural areas with few other employment opportunities" (ibid). In this carbon finance/CDM context, the World Bank claims that industrial plantations, established on land which was not forested before, can help to conserve and eliminate the pressure on the unique ecosystems of native primary forests.

The report ("Forest Fraud") of FERN and SinksWatch (2003) in collaboration with CDMWatch paints quite a different picture of the Plantar project. Despite criticism from Brazilian and international NGOs, the Plantar project retained the support of three "supposedly anti-sink" European governmental investors (Sweden, the Netherlands, and Finland) and two corporate investors (Gaz de France and Belgium's Electrabel, both state-owned companies) to the PCF. The project was first criticized on ecological grounds. Plantar committed to maintaining its plantations and

<sup>8</sup>The Status Note published by CDMWatch in March 2004 on CDM reviewed 75 Design Documents of CDM projects, none of which had been officially approved at the time. While the 75 projects were spread over 26 countries, Brazil and India hosted 27 projects claiming 73 million of the total 131 million CDM-CERs. Moreover, the 20 projects that capture or destroy non-CO<sub>2</sub> gases such as methane and HFC-23 were to supply 54 percent of the CDM-CERs. Although renewable energy projects (with biomass being the most prevalent among renewables) were the most common type of project (accounting for 39 percent of projects), they were estimated to generate only 13 million of the total 131 million CDM-CERs. Furthermore, many renewable projects might not meet the additionality criterion (CDMWatch 2004a).

their carbon stock for only 42 years; this means that CO<sub>2</sub> is not removed in perpetuity by Plantar's plantation and thus no permanent benefit to climate occurs. Moreover, local peasant communities are reported to have been opposed to Plantar's expansion for many years since they expect their lands to dry up as new plantations encroach, followed by a slow drying out of their wells, thus jeopardizing even a plain subsistence livelihood. In addition, it was argued that Plantar's plantations need vast land holdings while thousands of people are landless in Minas Gerais, awaiting allocation of land for subsistence food production. As for the claim that 3,000 jobs are to be created and maintained by the project, it was argued that many of these jobs are temporary and that employment in charcoal production in this region is perceived as one of the most hazardous and worst-paid jobs (ibid). Importantly, in its final validation report on the Plantar project (dated June 31, 2002), even the validator Det Norske Veritas (DNV), a Norwegian-based company, stated that it could not ensure that carbon will be sequestered permanently and that there will be a long-term benefit to climate.

It is also interesting to look at the fortune that such projects have had with the CDM approval procedure under the Kyoto Protocol. In 2003, the Methodologies Panel of the CDM Executive Board warned that approval of the "avoided fuel-switch" baseline methodology used in the case of V&M do Brazil (similar to that used by Plantar) represents a "moral hazard that is related to the fact that the project activity consists of continuing current practice." The Methodologies Panel of the CDM Executive Board earlier rejected the baseline methodology of the V&M project which, however, was resubmitted for assessment a few months later. In December 2004, the board accepted the Methodologies Panel's recommendation to reject the modified baseline methodology of the V&M project with clear implications for the Plantar project (SinksWatch at [www.sinkswatch.org/projects/plantar.html](http://www.sinkswatch.org/projects/plantar.html) accessed on October 5, 2007; UNFCCC-Methodology Panel, eighth meeting, [unfccc.int/](http://unfccc.int/), accessed on September 11, 2006). The CDM approval process is obviously being pulled and pushed to accommodate investors; the long-run outcome remains to be seen.

The World Bank, nevertheless, insisted on supporting the Plantar and similar projects. The Plantar project was approved in April 2003 by the PFC, which will purchase 1.5 million tons of CO<sub>2</sub> in emissions reductions from the Plantar project through 2012. The project agreement claims to offer additional safeguards that answer the concerns raised. In particular, it claims that all sequestration emissions reductions will be replaced with emissions reductions generated by the GHG mitigation components of the project (<http://carbonfinance.org/>, accessed September 11, 2006). However, questions are still raised as to whether it is possible for the Plantar project itself to generate reliably the scale of mitigation activities necessary to replace sequestration emissions reductions. And even if it did so, the sequestration emissions reductions would constitute a subsidy to the Plantar plantation that could be questioned on grounds of equity and sustainability.

The World Bank also has a record of supporting projects notorious for their environmental inequalities. The Bisasar Road landfill in Durban, South Africa, is a telling example. This toxic dump was opened by white rulers under apartheid and has been causing serious health impacts on black residents for years. During the mid-1990s, cleanup promises were made by African National Congress leaders. However, in 2002, the World Bank proposed to keep the landfill open as a source of "clean" power. In particular, by collecting and flaring a portion of the methane generated by the landfill to produce electricity, the town would profit both by selling the power locally and by selling emissions reductions to PCF under CDM (<http://carbonfinance.org/>, accessed October 10, 2007). The World Bank's investment extends in this way the life of this environmentally unjust project (see also Wysham 2005).

In short, through its support for particular CDM projects, the World Bank is debilitating the mechanisms' rules (especially the additionality requirement, and consequently their



environmental effectiveness) to make them friendlier to investors.<sup>9</sup> The World Bank profits from this activity: it earns 5 to 10 percent in commissions on the carbon credits it purchases for the funds that it manages.

As of October 2007, the UNFCCC's statistics on CDM projects showed that, of the 806 registered projects by host party, 35.11 percent of the total were hosted by India, 14.76 percent by China, 13.40 percent by Brazil, 11.54 percent by Mexico, and 2.48 percent by Chile ([cdm.unfccc.int/statistics/](http://cdm.unfccc.int/statistics/), accessed October 5, 2007). Thus, a few large developing countries with significant international economic relations with the developed world seem to attract the interest of Annex I investors to take advantage of CDM opportunities in their countries.<sup>10</sup>

Turning to *joint implementation*, it should be noted that JI has received much less international attention than CDM. Projects which start in 2000, if they meet the requirements, may be listed as JI projects; however, JI-ERUs can be issued for a crediting period starting after the beginning of the year 2008. Significantly, in order to avoid the danger of double counting, a corresponding subtraction of ERUs generated by such projects is made from the assigned amount of the host party.

In practice, JI projects have been taking place in economies-in-transition (EIT) countries. Despite the World Bank's pivotal role in developing a core JI market, JI projects under the World Bank-managed Prototype Carbon Fund (PCF) were fewer than anticipated, accounting for only 10 percent of the fund (Bosquet 2004). Emissions reductions purchasing agreements have been signed mostly for projects involved in energy efficiency, fuel switching, landfill gas recovery, and renewable energy (<http://carbonfinance.org/>, accessed October 10, 2007). As in the case of CDM, concerns are raised about these projects with regard to the additionality requirement and their fuel-switch baseline methodology.

*Emissions trading* links together all the flexible mechanisms, giving rise to a carbon market. The units which can be traded under KET include the AAUs and emissions reductions generated from project activities. The ET system under the Kyoto Protocol has been predicated on a *free initial allocation* of AAUs to Annex I countries, *based on historical emissions*. This free initial allocation has eased the tensions over the establishment of binding GHG reduction targets by the Kyoto Protocol, but, at the same time, it assigns *de facto* "rights to pollute" to industrialized countries for the time duration of the permits and allows them to appropriate rents by selling these permits among themselves. This, of course, bears serious consequences regarding the fairness of the Kyoto Protocol.

Moreover, ET implies significant transaction costs, especially for units generated by CDM, JI, and land-use-change and forestry activities due to verification and validation procedures which are estimated to be higher for small projects (The World Bank-PCF 2000). As a result, the World Bank calls for the simplification and standardization of the CDM cycle to reduce transactions costs.

The World Bank is also critical of the heavy review process of CDM and JI projects by the UNFCCC as being complex and time consuming. Instead, it recommends to the parties of the

<sup>9</sup>Hence, the World Bank is fostering a process of turning the "Clean Development Mechanism" into a "Mechanism for Continued Devastation," as FERN and SinksWatch (2003) have spiritedly argued.

<sup>10</sup>The distribution of registered project activities by scope is as follows: agriculture 80 projects (7.66 percent), energy industries (renewable, non-renewable sources) 554 projects (53.01 percent), waste handling and disposal 216 projects (20.67 percent), fugitive emissions from fuels 80 (7.66 percent), manufacturing industries 65 (6.22 percent), and other sectors 50 (4.78 percent), ([cdm.unfccc.int/statistics/](http://cdm.unfccc.int/statistics/), accessed October 5, 2007). The UNFCCC does not provide official statistics on-line of the expected average annual CDM-CERs from registered projects by the scope/activity of projects. So the fact that there are numerous projects involved in energy industries (renewable, non-renewable sources) may be misleading to the extent that the contribution of renewable projects to the annually generated CDM-CERs is small.



climate convention that they take advantage of the capacity of the private sector to play the role of operational entities for validation, verification, and certification, that is, to accredit private sector operational units (*ibid*).

The Kyoto flexible mechanisms have been essential in the development of an international carbon market. As it becomes evident from the previous analysis, the World Bank has emerged as a major player in the carbon market created by the Kyoto Protocol. The World Bank's carbon funds are the biggest buyer of carbon credits of CDM and JI projects. The World Bank also plays an important role in shaping the rules and modalities of the flexible mechanisms. Geared by the interest of international capital and promoting neoliberal policies such as the privatization and deregulation of many sectors (especially the energy sector) in developing and EIT countries, the World Bank uses the Kyoto mechanisms to promote investments which, despite its own statements, do not aim at climate sustainability. Its catalytic role in the carbon markets, when combined with its investment commitments, leads to a further watering-down of the Kyoto Protocol.<sup>11</sup>

Moreover, the portfolio of CDM projects of the World Bank's carbon funds indicates that investment is focused on the richer developing countries and on projects involving emissions reductions from landfills, coal mines, and large hydropower and chemical plants. Under the leadership of the World Bank, the carbon market, incorporating the Kyoto flexible mechanisms, bypasses the poorest communities and countries, in particular in Africa (see, also, for similar reactions from the NGOs' side, [www.seen.org](http://www.seen.org) and [www.cdmwatch.org](http://www.cdmwatch.org)).

Summarizing, GW mitigation through Kyoto flexible mechanisms seems to be advanced with small influence from, and little consideration for, local communities' and workers' welfare both in developed and developing countries. In particular, enhancing the forest sinks threatens the subsistence livelihood of local peasant communities. Moreover, GW mitigation is financed by reductions in peasants' and workers' real wages to the extent that it results in cost and price increases of wage goods without corresponding income compensation or increases in nominal wages of the current generation; they may also result in loss of jobs.

However, if and to what extent GW policies will be ecologically unjust and distributionally regressive depends in part on the struggle waged by working people and social movements to counteract such tendencies. On the basis of their results, these struggles over climate have not been well organized and effectively fought. There are several reasons for this outcome. GW is a long-term global problem and its severe effects cannot be readily perceived by the people, except for cases of severe natural disasters. Discussions over GW policies tend to become extremely technical and tailored to the capitalist world order so that other real alternatives are not part of the negotiating agenda. Large environmental NGOs like Greenpeace and the World Wildlife Fund have changed their stance over the years, taking more compromising positions, possibly as the only way in their judgment "to save the Kyoto Protocol," whereas grassroots movements and critical NGOs often lack the resources and are underrepresented so as to make a systematic intervention at international forums. Participating in the "multi-shareholders" dialogues within the UNFCCC (and the EU, for that matter) with almost no power over the agenda and over the composition of the discussion panels or the decision-making bodies, major mainstream environmental and other social NGOs have often ended up providing more legitimacy to GW policies that they had been

<sup>11</sup>The World Bank Group's (WBG, including the Global Environmental Facility and Carbon Finance) commitments to the energy sector were estimated to be US\$4.4 billion for the fiscal year 2006 (The World Bank 2006); the Bank's commitments for renewable energy and energy efficiency were US\$858.8 million for the same year. In particular, the World Bank financed US\$220.8 million in renewable energy, US\$191.6 million in hydropower with a capacity greater than 10 megawatts, and US\$447.4 million in energy efficiency (The World Bank 2007). Overall, leaving aside large-scale hydropower, the share of renewables financing to total energy financing was only 5 percent in the fiscal year 2006.

previously criticizing. Several mainstream NGOs, by refusing to recognize the class aspects of GW and the radical social changes needed for sustainable climate conditions, have been vulnerable to co-opting in terms of corporate funding of their activities and of participating in emissions reductions studies and verifications for private polluting companies (see also Beder 2002).

#### **4. Concluding Remarks**

Many of the major issues involved in GW are related to class and other social aspects of contemporary capitalist societies. Policies to limit GW affect seriously the energy industry, and to a certain extent the automobile sector, so that companies in these sectors resist any strict restrictions on GHG emissions. Under the influence of the business interests of large emitters, certain developed countries argued against significant emissions restrictions, culminating in the U.S. refusal to ratify the Kyoto Protocol. Similarly, countries which depend heavily on oil production and exports are hostile to GW policies as they expect their earnings to deteriorate. On the other hand, several multinational firms, and especially energy firms, have started engaging in the shaping and implementation of flexible mechanisms in order to influence the rules and modalities of the latter and to use them as instruments for innovation and restructuring in an attempt to advance their competitive positions over their rivals.

Many companies that expect to suffer from global warming (agribusiness, insurance, and so forth) are calling for policies to limit GW as they worry about the losses they will suffer if GW intensifies. GW policies are also favored by the part of the energy industry that hopes to benefit from them. However, energy multinationals with strong interests in fossil fuels have (often controlling) interests in the research and development of energy efficiency and renewable technologies, which might result in undermining the development and diffusion of alternative technologies, at least in a timely fashion.

The scope of CDM and JI projects undertaken by the Annex I investors, the grandfathering of emissions permits, the pressures for unrestricted trade in carbon emissions and for simplified approval and verification procedures, and the under-funding of the flexible mechanisms' regulation within the framework of UNFCCC all lead to the conclusion that flexible mechanisms are being shaped under the influence of the GHG emitters' interests.

Less developed countries, especially from the standpoint of their working people and local communities, seem to have little influence on flexible mechanisms. In the framework of continuing uneven development, the economic problems of less developed countries, and in particular their indebtedness, make the protection of climate and sustainable development in these countries almost impossible. In particular, domestic firms in developing countries are in great need of financial resources and technologies in order to expand and compete with multinationals and other rival firms based in more developed countries. The evidence on the nature of CDM and JI projects being implemented points to this direction. Moreover, in their effort to attract international capitals to promote growth, there is a real danger that the governments in less developed countries and in economies in transition might tend to avoid a strict and verifiable enforcement of the Kyoto Protocol mechanisms in order to create a "competitive advantage" for the incoming capitals. The governments of host countries might tend to engage in review procedures that satisfy investors and thus contain or prevent the undertaking of costly sustainable projects to reduce GHG emissions in less developed countries.

GW mitigation through Kyoto flexible mechanisms ends up being ecologically unjust, with little consideration of local communities' and workers' well-being (both in developed and developing countries). In order to become politically effective, the struggles of radical movements for climate sustainability need to be combined with other environmental and social struggles to transform capitalist societies. When collective non-exploitative production relations would

characterize the production, appropriation, and distribution of surplus in a future society, it is reasonable to expect that ecological and climate sustainability will be nurtured as a *desideratum* and will be shaped by communal culture, politics, and economics. People are expected to prudently protect natural conditions and processes that support life on the planet; in particular, they would protect their health, the natural means of their subsistence, life of other species, the natural forces of production, and the produced means of production which are also built by labor and raw materials from nature.

Working towards a socialist transformation of society, ecosocialists need to embed in their vision a new energy structure which would primarily depend on renewable, and in particular solar, energy. Energy efficiency and conservation should also be a governing principle in the design of machinery and buildings. GHG emissions reduction and abatement provisions need to be an important aspect of production and consumption activities. Forests should be sustainably used and preserved, and even increase through afforestation for many ecological reasons, only one of which is climate sustainability.

The unfavorable experience of ecosocialists and other social and environmental movements to put on the agenda long-lasting solutions to climate change and social injustices invites us to draw the following conclusion. Only a large and sustained coalition of labor and environmental movements, able to support a critical scientific understanding of climate change and to reveal the interconnectedness of climate change with the class aspects of modern capitalist societies at a global level, could lead to effective radical interventions to protect the global climate in sustainable and just ways for the worker-citizens of the world.

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