Draft version

Greater than its parts
The Clean Development Mechanism in Brazil

Lars Friberg[*]
Potsdam University

Paper to be presented in the panel
Multi-level Sustainable Energy Governance: Pathways of 'Soft' Power
at the 4th General Conference of the European Consortium for Political Research

Pisa, Italy, 6-8 September 2007

Abstract

The Clean Development Mechanism (CDM) of the Kyoto Protocol has the dual goal of providing cost efficient greenhouse emission reductions and local sustainable development benefits through projects in developing countries. The resulting *carbon credits* are the first tradable commodity created through an international environmental agreement. As discussed by (Andonova, 2005b) trans-governmental institutions like the CDM are having an increasing influence and are a new form of multilevel governance. While the states set the constitutive rules in Marrakech the regulative rules are to an unprecedented degree influenced by all the market actors through formal and informal ways. The article will analyse the impact of CDM's unique multilevel governance in Brazil. I will argue that the carbon market constitutes a new epistemic community (Haas, 1992) and that the impact of this community is greater than the individual parts and actors that make up the mechanism.

[*] Lars Friberg friberg@uni-potsdam.de is a Research Fellow at the Research Center (SFB) 700 *Governance in Areas of Limited Statehood* www.sfb-governance.de

Introduction

According to Al Gore “the climate crisis is the biggest and most dangerous crisis our world has ever confronted” (Economist, 2007). Devising and implementing effective measures against climate change is arguably the greatest policy challenge of our time. The intrinsic role of fossil energy in fuelling the development of our societies since the industrial revolution as well as the overriding importance of functioning international cooperation on this global common is tremendously difficult (Dietz et al., 2003). Environmental governance while still inadequate is clearly, as observed by Oran Young and others (Haas, 1992, Young, 1997, Cashore, 2002, Haas, 2002), developing into a source of institutional innovations in international politics. This is also true for the involvement of non-state actors in governance. The governance debate on the role of non-state actors acknowledge a relocation of authority from national entities to non-state actors (Rosenau and Czempiel, 1992, Levy, 2005, Porter and Ronit, 2006, Slaughter, 2004, Falkner, 2003, Pattberg, 2005). This notion has been taken up by recent debates on global environmental governance e.g. (Biermann and Dingwerth, 2004, Levy, 2005, Smith et al., 2005, Jagers and Stripple, 2003) while the authors do not agree on all fronts the literature does seem to agree on a demand for policy instruments that go beyond the traditional state-centred approach in order to tackle emerging global environmental problems and a need for a flexible, multilevel approach to governance.

This is particularly true for the United Nations Framework Convention on Climate Change (UNFCCC, 1992) the subsequent Kyoto Protocol and the numerous national and regional policies developed in order to meet Kyoto obligations (Andonova, 2005a, Andonova, 2005b, ICTSD, 2006, Slaughter, 2004, Oberthür and Ott, 1999). The Kyoto Protocol through its Clean Development Mechanism (CDM) created the first internationally traded commodity ever developed by a multilateral environmental agreement, *certified emission reductions* (CERs). The technical details of the CDM are not the focus of this article rather what impact this new hybrid form of governance has in the case of Brazil. Trans-national relations, defined as political transactions that connect societal or government actors across national boundaries, are not a new phenomenon but the significance of and linkages among multiple layers of governance in the CDM is unprecedented. This article will focus on the case of CDM in Brazil, showing that the mechanism is indeed having an impact greater than its individual parts as well as unintended side effects.

The Clean Development Mechanism

The Kyoto Protocol created three 'flexible' market-based instruments: *International Emissions Trading* (IET); the project based *Joint Implementation* (JI) carried out in countries in transition; and the *Clean Development Mechanism* (CDM) that focuses on projects in developing countries. In the 1990s the creation of emission markets were considered a controversial element and was opposed throughout the Kyoto negotiations by environmental NGOs who feared the environmental integrity of the whole protocol would be undermined and also initially by developing countries who felt that industrialised countries should reduce their emissions at home. Eventually, and largely on US insistence, CDM and the two other flexible mechanisms were included into the Kyoto Protocol. It is one of the great ironies of the climate regime that the concept of emissions trading would become the corner stone of the EU policy to tackle climate change despite initial scepticism and that the United States who despite being a principal architect of the protocol later rejected it as 'fatally flawed', for a more detailed description of the CDM rules and the negotiation process leading up to this situation see (Michaelowa and Dutschke, 2000, Yamin and Depledge, 2004, Gulbrandsen and Andresen, 2004, Mintzer and Leonhard, 1994). For critical views of the use of market mechanism in the climate regime, see (Lohmann, 2006). Following a start up period where the system struggled under financial constrains, institutional trial and error, and the uncertainty of if the Kyoto Protocol would ever enter into force the CDM has gained momentum. The former common 'CDM bashing' among climate pundits is no longer heard of; instead CDM is hailed by politicians and policy makers as one of the great successes of the Kyoto Protocol.

Brief description of the CDM

Article 12 of the Kyoto Protocol states that:

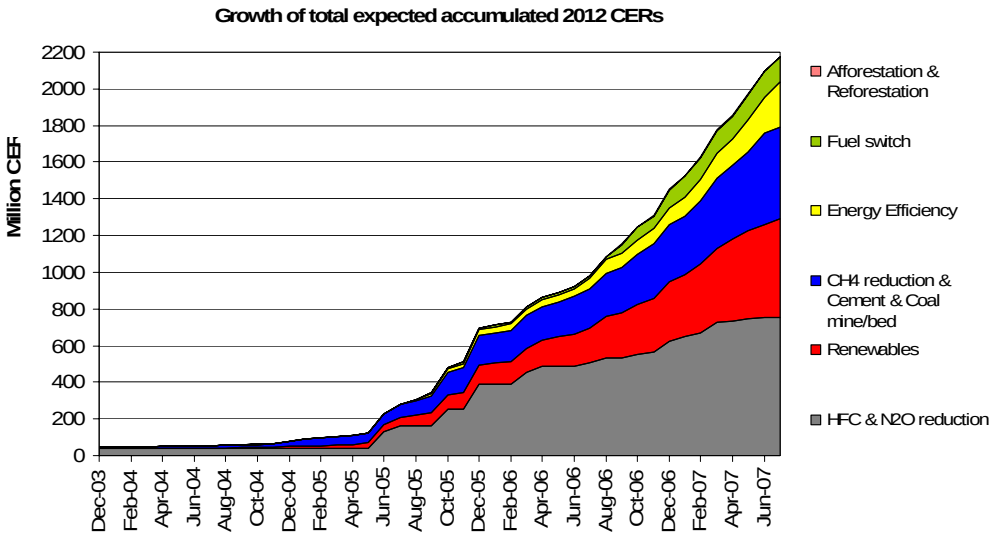
The purpose of the Clean Development Mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their [Kyoto] commitments.

CDM is a mechanism to reduce GHG emissions through investments in clean energy projects that reduce or avoid emissions in developing countries. The modalities of the CDM were worked out over a number of years and where completed in 2001 at the seventh meeting of the climate convention (COP 7) in Marrakech. After a seven step accreditation process involving two stages of 3rd party verification carried out by licensed private certifiers - *Designated Operational Entities* (DOEs); host country approval from the *Designated National Entity* (DNA); and final OK from the international *CDM Executive Board* (EB); the project developer receives Certificates of Emission Reductions that he can sell onwards. It is the prerogative of the host country government to assess if a project contributes to sustainable development requirements. The CDM Executive Board supervises the CDM, under the authority and guidance of the Conference of the Parties of the Kyoto Protocol (COP/MOP). It is composed of six members from developing countries and four members from developed countries (Non-Annex I and Annex I respectively in Kyoto jargon) serving in two year terms, appointed by the COP/MOP. The board approves projects and issues CERs after a successfully completed registration and verification process. The demand for CERs comes from Annex I countries that can use CERs towards their Kyoto reduction compliance, one ton reduced in a developing country means one ton less has to be reduced at home. The 12.000 industry installations covered by the EU emission trading system (EU ETS) can also use CERs for compliance within this internal EU system for CO_2 reductions.[1] Also some Japanese companies buy CERs to meet the voluntary targets they have taken on.

[1] Under the EU ETS, each EU country assigns a certain allowance of CO_2 emission credits to individual installations of the covered power and heavy industry sectors. In theory the overall allocation should be smaller then business as usual forcing companies to either lower their own emissions or buy additional credits from other industry actors that have lower abatement costs, in reality the first phase (2005-2007) of the EU ETS was a failure as reducing emissions as EU member states had over-allocated permits to their companies causing the market overall to be long - not short as intended causing the price to collaps. Through an EU law from 2004 called the linking directive, companies under the EU ETS may use CERs generated from CDM projects to account for a part of their emission reduction obligations.

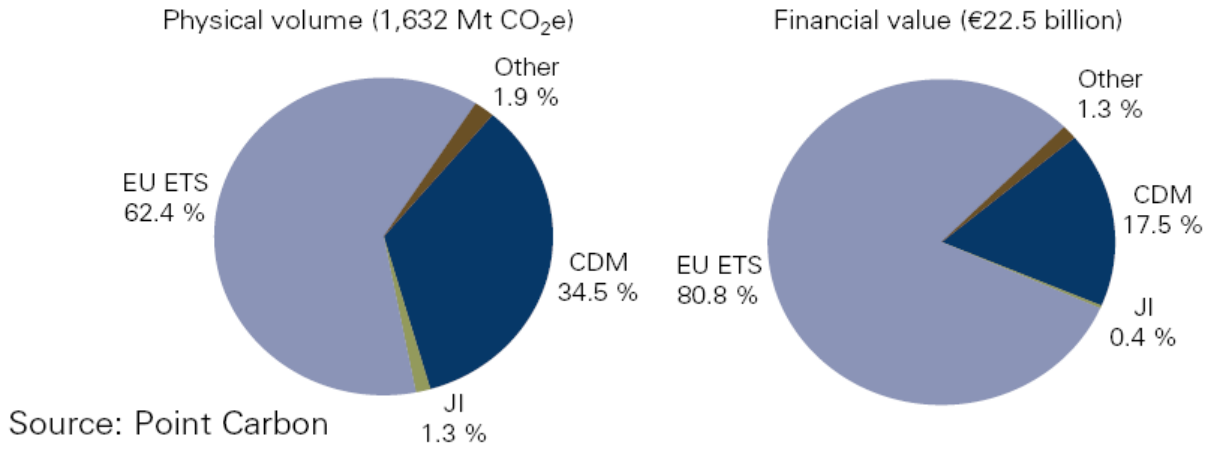
CDM in Numbers

Chart 1 Expansion of CDM (Source: Fenhann, 2007)



As of August 20, 2007, a total of 2328 CDM projects were in one of the CDM project cycle phases; 731 were already registered by the CDM Executive Board, and 1.597 were in other phases of the cycle (CIMGC, 2007). Today CDM dominates the project based carbon market with reductions in 2006 representing 93% of the traded volume of certified reductions. The volume and value of the CDM market is smaller than the European Emission Trading System (EU ETS) but the significant difference is that in the European system companies are allocated a quota for free of tradable emission credits whereas CERs have to be paid for (Point Carbon, 2007).

Chart 2 Size of Carbon markets in 2006



The CDM has been growing very successfully in the recent years and its immediate future also looks bright. The majority of CDM projects are concentrated in China (31%), India (30%), Brazil (10%), and Mexico (7%) (CIMGC, 2007) . These countries currently account

for 84% of total expected credits by 2012 and 79% of total proposed projects. China alone accounts for 53% of expected credits to 2012, mainly due to a small number of very high volume industrial gas destruction projects (Ellis and Kamel, 2007). If the average issuance success would stay around the current 83%, the current CDM project portfolio is expected to deliver 2,2 billion tons of CO2-eq greenhouse gas emission reductions by 2012 (Fenhann, August 2007), equivalent to 17% of Annex I Parties' 1990 year GHG emissions. In total, governments and companies have earmarked over USD11 billion for buying CERs to 2012 (Ellis and Kamel, 2007).

CDM in Brazil

Brazil is a country of continental dimensions, 187 million people living in perhaps the most inequitable country in the world. Economically, Brazil has for quite some time been regarded as a future dominant actor on the global scene. With a GDP of 1.655 trillion (2006 PPP est.(CIA, 2007) it is already the ninth largest economy in the world, larger than all the other South American economies together. Brazilians takes great pride in being the originators of the idea of a Clean Development Fund that evolved into the CDM at the negotiations in Kyoto (Johnson, 2001). Brazil also hosted the seminal UNCED – United Nations Conference on Environment and Development, the so called Rio conference in 1992 that saw the birth of the framework convention on climate change.

Governance structure of CDM in Brazil

As there was no specific body within the structure of the federal public administration of Brazil to coordinate and integrate the various actions for the implementation of the necessary measures under the UNFCCC, the creation of an Interministerial Commission on Global Climate Change (CIMGC) was proposed. On July 7, 1999, the Brazilian President Cardoso published a decree creating the Interministerial Commission on Global Climate Change (CIMGC, 2007), that it was a presidential decree and not one of the lower levels of regulation signals the importance given to the issue. Since the Ministry of Science and Technology had previously been developing the national activities towards compliance with the initial Brazilian commitment under the United Nations Framework Convention on Climate Change, it was charged with presiding over and hosting the Executive Secretariat of the Interministerial Commission. Included in the tasks of the Commission is that of acting as the Designated National Agency (DNA) for the CDM in Brazil. The other tasks of the Commission are to pro-

vide input on the Government's positions in the climate negotiations under the UNFCCC; interact with representatives of civil society in order to promote actions towards meeting Brazil's commitments under the UNFCCC.

The ministries that are part of the Interministerial Commission on Global Climate Change that meets at least every two months are:

- Ministry of Science and Technology;
  (Chair and host of the executive secretariat of the Commission)
- Ministry of Environment; (Vice Chair)
- Ministry of Agriculture, Livestock and Supply;
- Ministry of Transportation;
- Ministry of Mines and Energy;
- Ministry of Development, Industry and Trade;
- Ministry of Cities;
- Ministry of Foreign Relations;
- Ministry of Planning, Budget e Management;
- Ministry of Economy
- Civil House of the Republic's Presidency;

Because of the horizontal character of the scientific topic of climate change – which includes all the activity sectors involved in the climate change issue – the hope is that the Ministry of Science and Technology may conciliate different sectoral interests. With the creation of the Interministerial Commission Brazil was the first country to assign a *Designated National Authority* (DNA), the host country body for CDM stipulated by the Marrakech Accords.

Brazil was not only early in creating the necessary on active in the CDM. A Brazilian project methodology was one of the first approved by the Executive Board (Landfill – Salvador da Bahia) and a Brazilian project was the first CDM project registered (Nova Gerar).
The Brazilian DNA is considered thorough but fair by market actors in its handling of applications and a guardian of the environmental integrity of the whole CDM system. The processing period of a project is on average 4-6 month, compared to a month in China, and only a week in India – earning India the reputation of rubberstamping projects. Dr José Miguez from the Ministry of Science and Technology has for a long time been the General Coordinator on Global Climate Change as head of the Executive Secretary of the Interministeral Commission and he has also been very influential on the international level through his work as Chair of

the CDM Executive Board. It is also worth noting that while the DNA tries to facilitate the development of CDM projects in Brazil, for example via the development of regional electricity greenhouse gas baselines, it does not see its role as a promoter of the CDM contrary to some other DNAs.

Sustainable Criteria for CDM

It one of the central tasks of the Interministerial Commission on Global Climate Change to examine if the proposed CDM projects do contribute to the sustainable development of Brazil. The that the projects are evaluated by where developed by Centro Clima/COPPE, Federal University of Rio de Janeiro for the Commission, the project are asked to describe how they contribute to:

- local environmental sustainability;
- labour conditions development and net employment creation;
- income distribution;
- capacity building and technological development;
- regional integration and sectoral relationship.

Brazilian CDM projects in numbers

Brazil occupies the third place globally in number of project activities, with 232 projects (10% of global). In terms of expected emissions, Brazil ranks third, being responsible for a reduction of 198 million CO_2e (corresponding to 6% of the worldwide total) after China and India. A majority of Brazilian CDM projects are in the energy sector where 2/3^{rds} of projects reduce carbon dioxide with methane making up the last third, projects abating N_2O are responsible for 22% of the annual reduction despite being only two project at this time (CIMGC, 2007).

Chart 3 Brazilian CDM statistics (Source: CIMGC, 2007)

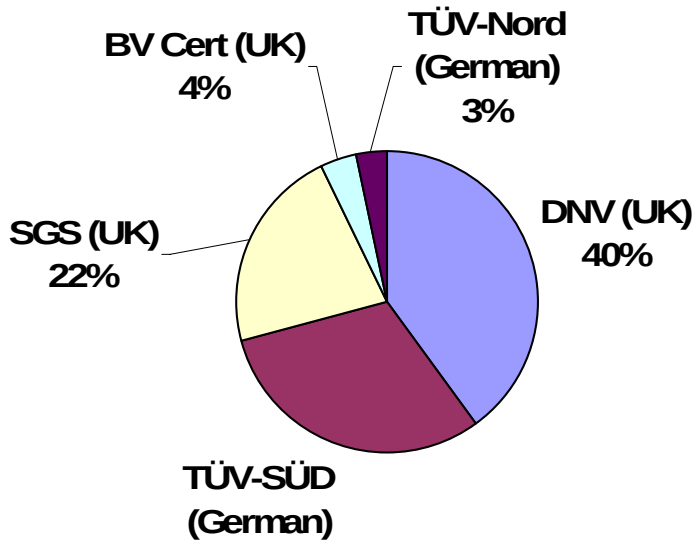
Projects under Validation/Approval Process	Number of projects	Annual emission reduction	Emission reductions on the 1st crediting period	Number of projects	Annual emission reduction	Emission reductions on the 1st crediting period
Energy generation	140	7.847.499	59.233.640	60%	29%	29%
Swine	38	1.964.633	19.152.149	16%	7%	9%
Landfill	26	8.723.035	65.584.704	11%	32%	32%
Manufacturing industry	11	1.853.002	14.119.206	5%	7%	7%
Energy efficiency	9	48.440	406.496	4%	0%	0%
Waste Handling and Disposal (others)	4	315.112	2.904.653	2%	1%	1%
N2O	2	6.041.274	42.288.918	1%	22%	21%
Chemical industry	1	17.137	119.960	0%	0%	0%
Metal production	1	80.286	802.862	0%	0%	0%
Total	232	26.890.418	204.612.588	100%	100%	100%

The Geographical distribution of CDM projects is centred in the more economically developed South-eastern region of the country. The states of São Paulo and Minas Gerais has 24% and 14% respectively; followed by the state of Rio Grande do Sul and Mato Grosso, with respectively 9% and with few projects in the Northern region (CIMGC, 2007). This reflects a similar situation globally where the vast majority of projects are in more affluent developing countries and only a handful of projects are in Africa.

The role of Validators of Brazilian CDM projects

A vital part of the design of the CDM process is that all proposed projects have to be checked twice by private third parties for accuracy and validity. A project developer needs to describe their project in the Project Design Document (PDD). The PDD will then have to be checked that the chosen CDM methodology has correctly been applied by a certified validator, the *Designated Operational Entity* – DOE.

Chart 4 Market share of DOEs in Brazil



Source: Based on UNEP Risø Centre CDM Pipeline 27/07/07.

Once a project is up and running its emission reductions also needs to be verified. This process is performed in order to verify ex-post what emission reductions and/or removals have effectively occurred. This check is also carried out by a DOE but it is not allowed to be the same firm that did the first check. From this brief description it is clear that the private companies working as DOEs play a very important role in ensuring the environmental integrity of the CDM. As the profitability of the CDM project depends on how many CERs it will produce DOEs face tremendous pressure from project developers to OK projects. There is a clear risk of moral hazard built into the system as stringent DOEs fear loosing market share to less strict competitors it is also not uncommon that project developers refuse to pay if their project

are not approved. The main guarantee against moral hazard is that for many of the DOEs CDM verification is only a small part of their business and they can ill afford reputational damage. As can be seen from the chart above, there is still no Brazilian validator that has been successful in entering into the DOE market segment even if there are rumours of a local institution trying to become certified to validate projects. Given the specific expertise knowledge needed and the fact that project developers might prefer to stay with an established DOE to make sure they will pass the EB the barrier to entry is very steep, similar to the oligopoly of credit rating agencies like *Standard and Poor's* or *Moody's*.

The involvement of Brazilian Business

According to a survey of some of the largest Brazilian companies carried out by PricewaterhouseCoopers - Brazil on behalf of the Ministry of Development, Industry and Foreign Trade there is a clear trend that climate change, carbon markets and CDM is generating a lot of attention and is entering into the economic mainstream. 79% of the 163 companies surveyed are already active in CDM or plan to be (PWC, 2006). As these firms do not have to meet any reduction obligations in Brazil their motivation to engage is not the same as that of European firms, one of the drivers seems to be improved corporate image and not necessarily profit motive as the income from CER sales is quite marginal compared to their main business field.

Brazilian CDM consultancies

Several of the most successful CDM consultancies globally where founded by Brazilians even if they have since then relocated abroad they are still very active in Brazil. The CDM market in Brazil is very rapidly developing with some 15 companies involved in developing projects with great interest from others to enter into this niche market (Zibas and Cavasin, 2007). While there is not the same market concentration as with the DOEs a few 'Eco' firms stand out among the competition in the local carbon market: *Ecoinvest Carbon; Econergy; Ecosecurities;* and *Ecologica.* These firms are the project developers behind the majority of projects in Brazil, there are a number of other project developers in play but most often they have only developed a handful of projects.

Discussion and conclusion

CDM contributing to Brazilian awareness of the climate change problem

Following a recently conducted global online survey on consumer attitudes towards global warming carried out by ACNielsen, the world's largest market information company, Brazilians are among the most aware and most concerned about global climate change (ACNielsen, 2007). Other studies have come to similar findings even if one should be careful in interpreting online surveys from countries as unequal as Brazil given their bias towards urban, well educated better off participants. It is clear though that the Brazilian DNA is putting a lot of staff time and effort in updating and maintaining its website (http://www.mct.gov.br/clima). The site was created in September 1995, very early days for Internet in Brazil, and already in the year 2000 the trilingual site had around 3000 individual pages: 992 in Portuguese, 952 in English and 976 in Spanish (MCT, 2004). The fact that Brazil is one of the largest host countries of CDM projects and has a growing community of carbon market experts is likely to have contributed to this high level of awareness. The business of creating and trading carbon credits from CDM projects is a rapidly growing business area, attracting the attention of the broader business audience in Brazil. Several interviewed Brazilian carbon market participants proudly mentioned that the selling of CERs now constitutes the 20th largest category of exports according to Brazilian Central Bank statistics. That kind of information gets the attention of business people who normally do not pay much attention to the quaint antics of international environmental negotiations.

Increased transparency

Another area where the CDM is having a positive impact is in the way it is establishing a culture of transparency and public consultations. Compared to how many national governments and development organisations operate the CDM is quite transparent in its operations. For example, the report and annexes from the meetings of the CDM Executive Board are available on the UNFCCC website as well as the meeting it self is to a large extent open to observers, including via On Demand Web casts of the meetings. There is critique from some market actors that not the whole of the meetings are public but compared to many other processes, both governmental and intergovernmental, the CDM is setting an example of transparency. Also in Brazil this is having an impact. The facts that all proposed CDM projects have to conduct a process where the public can comment and the DNAs commitment to transparency is a clear

development from the norm in Brazilian bureaucratic policy formulation that traditionally was a heavy handed technocratic top down approach.

CDM outperforming traditional governance

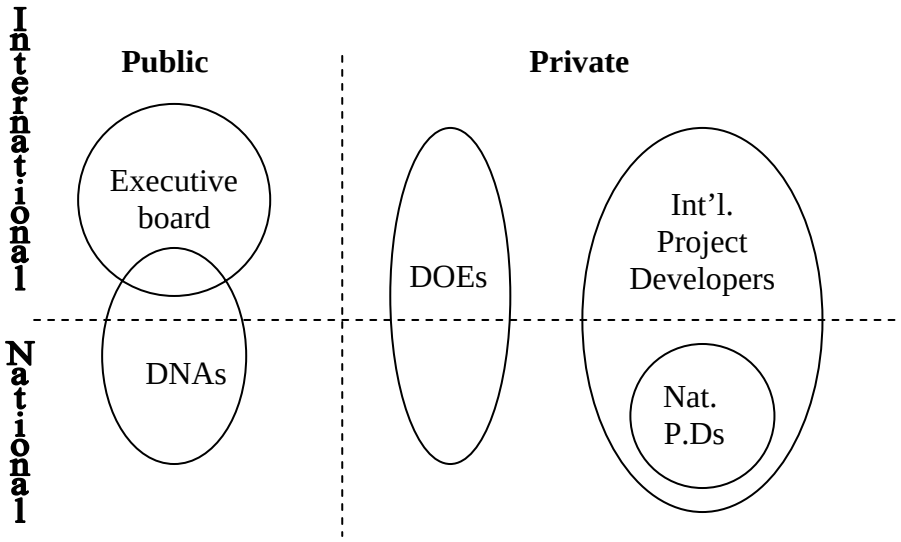
There is also an interesting example where the CDM has clearly outperformed a dedicated government program, the creation of additional sources of renewable energy. Following the energy crisis of the period between 2000 and 2002 where a season of poor rainfalls, led to considerable decreased energy output from dams and blackouts and with growing energy demand the Brazilian government established PROINFA, (Programa de Incentivo às Fontes Alternativas) a governmental initiative to promote Renewable Energy.[2] Unfortunately, so far PROFINA has failed miserably and the CDM has been notably more successful in promoting renewable energy. By early 2007 CDM had guaranteed the inclusion of about 1237 MW of renewable energy generation into the Brazilian matrix, distributed into 14 MW of wind plants, 258 MW small Hydro and ca. 968 MW of biomass plants (mainly from sugarcane Bagasse projects). From this some 170 MW are from projects also participating in the PROINFA. When excluding this amount, there was an equivalent of 798 MW of biomass plants solely relying on the CDM included into the electricity grid, 219 MW more than the total installed via PROINFA (Chaves, 2007). That the CDM, has been more successful in creating additional renewable electricity capacity than the mediocre result of PROINFA probably has more to due with PROINFAs constant change of regulations and failure to attract and maintain investors than the excellence of the CDM, although the CDM has a fair amount of changes to its rules itself as methodologies are merged and updated.

[2] Brazil is heavily dependent on hydro power plants for its energy supply. Some 4/5 of its electricity comes from hydro power, notably Itaipu the world's largest dam in generation capacity. As many of these dams where built decades ago with World Bank support their current generation costs are very low, making it hard for new renewable generation capacity to compete without support or subsidies.

Conclusion

The CDM is an interesting example of multilevel environmental governance where there is great interplay between private actors and public authorities, both on the global level and in host countries.

Chart 5 Schematic overview of groups of actors in CDM
(Authors own design)



Analytically speaking, the CDM constitutes a multilevel governance mechanism that can be differentiated into two levels, a regulatory framework and an operational framework. The regulatory structure, with the institutional set up of the CDM Executive Board (EB) as well as the basic "rules of the game", e.g. project approval process was all set down by the Marrakech accords by states through negotiations between nation states. Hence, this regulatory framework depicts modes of regulation, which can be described by classical steering theory. On the whole the regulatory structure integrates a shadow of hierarchy since it is backed up by nation states acting through the UN and with the Conference of the Parties (COP) to the Kyoto Protocol as the ultimate, accountable decision making authority.

However, on the operational level, i.e. in the daily running from developing projects to selling CERs, different modes of transactions and interactions between the various carbon market actors, verifying bodies and the CDM Executive Board make up the 'steering mechanisms' of the CDM. Dependent on the actors' constellations, interactions vary with regard to their role. Market logic driven rent seeking behaviour, trying to maximise the carbon credits from a project (a role sometimes taken also by Annex I governments in their role as buyer), to public-

interests concerns to uphold the environmental integrity of the system, a policing role to a large delegated to the private verification companies that play a crucial role in the mechanism. Thus, the shadow of hierarchy is not necessarily present since the state may or may not adopt the role of a procedural component or stakeholder to CDM projects (Benecke et al., 2007).

Internationally, project developers and DOEs are in regular contact with the CDM Executive Board over how to interpret/improve methodologies, either directly or via their branch organisation *IETA – International Emission Trading Association*. Besides meeting at the margins of the UNFCCC COPs one of the reoccurring forms of interaction is the *Carbon Expo* that IETA co-hosts in a form of public private partnership with the World Bank, it is the largest annual industry fair for the emerging carbon market. From humble beginnings in 2004 the *Carbon Expo* has rapidly grown, in 2007 it had more than 2.400 participants from 106 countries in Cologne. On the national level in Brazil and in the other main CDM host countries project developers, technical service providers and DOEs are growing a distinct niche market; often with close connection to the international level given that many of the actors are from daughter companies to international companies mainly based in Western Europe.

I believe it is possible to describe the various participants in the emerging carbon market as members of a new global epistemic community and that in Brazil the creation of this subgroup is one of the unintended consequences of the Kyoto protocol.

According to Haas **"***An epistemic community is a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area***"**

The professionals may be from a variety of disciplines and backgrounds but must according to Haas have:

> 1) a shared set of normative and principled beliefs, which provide a value-based rationale for the social action of community members.
>
> 2) shared causal beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiple linkages between possible policy action and desired outcomes
>
> 3) shared notions of validity-that is, intersubjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise
>
> 4) a common policy enterprise- that is, a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence (Haas, 1992).

The idea of epistemic community was originally created to describe the interaction of scientists and the users of their knowledge but I believe that it is fair to argue that the members of the emerging global carbon market also fulfil these criteria. Members of the carbon market share: a common belief that climate change is a problem that needs to be addressed; a belief that reduced GHG emissions in one county can be quantified and allow more emissions to take place in another country through a regulated process such as the CDM; that market based mechanism are a valid approach if done in accordance to the developed methods to address the problem; and that they share a common policy enterprise in the successful development of a global market where certified emission reductions can be freely traded.

Despite the fact that Brazil has only limited obligations under the Kyoto Protocol through the CDM a growing pool of expertise is created in the country, both in the public and in the private sector. This national chapter of the global epistemic community is a great resource of knowledge and practice. In line with Peter Drucker old adage *"What gets measured gets managed"*, with a growing community of experts specialised in managing and making money from greenhouse gas reductions it is likely that this approach will influence the position of the Brazilian government in the Post 2012 climate negotiations, including its openness to take on own reduction targets.

Bibliography

ACNIELSEN (2007) Global Warming: A Self-Inflicted, Very Serious Problem, According to More Than Half the World's Online Population. ACNielsen.

ANDONOVA, L. (2005a) International Institutions, Inc: The Rise of Public Private Partnerships in Global Governance. *"International Organizations and Global Environmental Governance.* Berlin, 2-3 December 2005.

ANDONOVA, L. B. (2005b) Multi-Level Governance: The Case of Climate Change. *Conference on the Human Dimensions of Global Environmental Change.* Berlin, 2-3 December 2005.

BENECKE, G., FRIBERG, L., LEDERER, M. & SCHRÖDER, M. (2007) From Public Private Partnership to market: The Clean Development Mechanism (CDM) as a new mode of governance in climate protection. *Conference on the Human Dimensions of Global Environmental Change.* Amsterdam.

BIERMANN, F. & DINGWERTH, K. (2004) Global Environmental Change and the Nation State. *Global Environmental Politics,* 4**,** 1-22.

CASHORE, B. (2002) Legitimacy and the Privatization of Environmental Governance: How Non-State Market-Driven (NSMD) Governance Systems Gain Rule-Making Authority. *Governance,* 15**,** 503-529.

CHAVES, P. C. B. P. (2007) The Clean Development Mechanism and the Promotion of Renewable Energy in Brazil. *Department of Physics*

Faculty of Mathematics & Sciences. Oldenburg, Carl von Ossietzky University.

CIA (2007) CIA World Factbook. Central Intelligence Agency.

CIMGC (2007) Current status of the project activities under the Clean Development Mechanism (CDM) in Brazil and the world. IN CHANGE, I.-M. C. O. G. C. (Ed.), Brazilian Ministry of Science and Technology.

DIETZ, T., OSTROM, E. & STERN, P. C. (2003) The Struggle to Govern the Commons. *Science,* 302**,** 1907-1912.

ECONOMIST, T. (2007) Will you read about it, or do something about it? *Economist.*

ELLIS, J. & KAMEL, S. (2007) OVERCOMING BARRIERS TO CLEAN DEVELOPMENT MECHANISM PROJECTS. Paris, OECD/IEA

UNEP Risø Centre.

FALKNER, R. (2003) Private Environmental Governance and International Relations: Exploring the Links. *Global Environmental Politics,* 3**,** 72-87.

FENHANN, J. (August 2007) UNEP Risoe CDM/JI Pipeline Analysis and Database. UNEP Risoe.

GULBRANDSEN, L.-H. & ANDRESEN, S. (2004) NGO Influence in the Implementation of the Kyoto Protocol: Compliance Flexibility Mechanisms, Sinks. *Global Environmental Politics,* 4**,** 54-75.

HAAS, P. (1992) Introduction: Epistemic Communities and International Policy Coordination. *International Organization,* 46**,** 1-36.

HAAS, P. (2002) UN Conferences and Constructivist Governance of the Environment. *Gloabl Governance,* 8.

ICTSD (2006) Linking Trade, Climate Change and Energy. Geneva, International Centre for Trade and Sustainable Development.

JAGERS, S. & STRIPPLE, J. (2003) Climate Governance Beyond the State. *Global Governance,* 9.

JOHNSON, K. (2001) Brazil and the Politics of the Climate Change Negotiations. *Journal of Environment & Development,* 10**,** 178-206.

LEVY, D. N., PETER EDS. (2005) *The business of Global Environmental Governance,* MIT press.

LOHMANN, L. (Ed.) (2006) *Carbon Trading: A Critical Conversation on Climate Change, Privatisation and Power,* Uppsala, Dag Hammarskjöld Foundation.
MCT, M. O. S. A. T. (2004) Brazil's Initial National Communication to the UNFCCC. Ministry of Science and Technology.
MICHAELOWA, A. & DUTSCHKE, M. (2000) *Climate Policy and Development: Flexible Instruments and Developing Countries*, Edward Elgar.
MINTZER, I. & LEONHARD, J. A. (1994) *Negotiating Climate Change: The Inside Story of the Rio Convention,* Cambridge, Cambridge University Press.
OBERTHÜR, S. & OTT, H. E. (1999) *The Kyoto Protocol: International Climate Policy for the 21st Century,* New York, Springer Verlag.
PATTBERG, P. (2005) The Institutionalization of Private Governance: How Business and Nonprofit Organizations Agree on Transantional Rules. *Governance,* 18.
POINT CARBON (2007) Carbon 2007 - A new climate for carbon trading. IN RØINE, K. & HASSELKNIPPE, H. E. (Eds.).
PORTER, T. & RONIT, K. (2006) Self-Regulation as Policy Process: The Multiple and Criss-Crossing Stages of Private Rule-Making. *Policy Sciences,* 39**,** 41.
PWC (2006) Clean Development Mechanism Projects in Brazil - A Survey of Perspectives in the Productive Sector. Sao Paulo, PricewaterhouseCoopers - Brazil.
REINICKE, W. H. (1998) *Global Public Policy Governing without Government?* Washington, D.C., Brookings Institution Press.
ROSENAU, J. N. & CZEMPIEL, E. O. (1992) *Governance without government: order and change in world politics,* Cambridge; New York, Cambridge University Press.
SLAUGHTER, A.-M. (2004) *A new world order,* Princeton, N.J., Princeton University Press.
SMITH, A., STIRLING, A. & BERKHOUT, F. (2005) The governance of sustainable socio-technical transitions. *Research Policy,* 34**,** 1491–1510.
UNFCCC (1992) United Nations Framework Convention on Climate Change. United Nations.
YAMIN, F. & DEPLEDGE, J. (2004) *The International Climate Change Regime A Guide to Rules, Institutions and Procedures*, Cambridge University Press.
YOUNG, O. (1997) *Global Governance - Drawing Insights from the Environmental Experience,* Cambridge, MA, MIT Press.
ZIBAS, R. & CAVASIN, E. (2007) Interview at PricewaterhouseCoopers - Brazil. Sao Paulo.