Dietmar Mirkes

Clean Development?

How Luxembourg is reducing its greenhouse gas emissions abroad.

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Contents

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Preface

Dear Reader,

Each of us feels how the climate is changing. Everybody in the media seems to be monitoring how fast the polar ice cap is melting, almost on a daily basis. And we all are challenged to contribute more to solving this global problem.

For many years, ASTM has joined in the tug-of-war between environment and development - we are accredited observers at the UN Climate Secretariat and coordinate the North-South activities of the Luxembourg Climate Alliance (Klimabündnis Lëtzbuerg). With a 40 year track record, we also believe we have a degree of experience in project evaluation in developing countries.

The present study focuses on climate policy in Luxembourg on the occasion of national and European elections in June 2009, but it also serves as a case study for how EU member states are tackling their objectives at the national level.
Review international, European and national policy and you will soon notice the fact that Luxembourg has a very particular kind of climate change policy: our country is on its way to achieving its reduction target entirely through the purchase of so-called emission rights. The Kyoto Protocol explicitly provides such loopholes - but it should not be possible for a country to slip through them completely. And almost all of us contribute, because the Kyoto Cent tax we pay when we fill up our fuel tanks, in turn fills the Kyoto Fund, from which these rights can be paid.

For a country like Luxembourg, which is internationally renowned for its active development policy, it might seem likely it would be just as agile in international climate policy. And so it has aroused our curiosity to understand what „our“ real world-wide activities are and to what degree they are ultimately combating climate change.

As climate policy now involves heavy use of specialist jargon, the first part explains what emissions rights are and how the Clean Development Mechanism works, and all other important terms are used in context so that we as average citizens can better comprehend and classify and comment on Luxembourg's overall situation.

In the second and main part, we invite you on a small trip around the world, to a selection of the 79 projects, which in the meantime (supposedly) generate emission credits for us. Here we deal intensively with the general rules of emissions trading.

And finally in the third part, we try to clarify what „our“ world-wide projects really bring to the fight against climate change, and if this is a sustainable path, or is rather a dead end.

Dietmar Mirkes, ASTM

1. Clean Development Mechanism

1.1. What are emission rights?

If you want to understand international climate policy there is no getting around the term „emission rights“. Emission rights are a key element of the Kyoto Protocol. They allow their owners to burden the atmosphere with greenhouse gases, and they are counted in tonnes of carbon dioxide. So that all the different greenhouse gases can be compared and offset against one another, they are converted according to how harmful they are to the climate into so-called equivalent carbon dioxide (shortened to CO2e). For example, methane makes an approximately 23 times greater contribution to global warming than carbon dioxide, therefore a tonne of methane is equivalent to 23 tonnes of carbon dioxide. A tonne of carbon dioxide also occupies a physical space equivalent to the volume of an average 25-meter pool. If you have a car which emits CO2 at 125 g/km, after running for 8,000 kilometres it will have emitted a tonne of carbon dioxide.

The monetary value of one tonne of carbon dioxide varies - depending on where and when it is trade - between EUR 1 and EUR 30. Luxembourg has purchased emission rights at EUR 4 per tonne, but also others at around EUR 12 per tonne. Often such purchased emission rights or allowances are referred to as „credits“. This notion has been widely established - the Kyoto world speaks English - and so for the sake of simplicity when we speak of „credits“ in the remainder of the text, we mean “purchased emission rights over a tonne of carbon dioxide equivalent“.

So if you have acquired an emission credit in the value of one tonne of CO2 emissions, this country may blow one more tonne of CO2 bubbles into the air, for example, by driving a car a further 8000 km. The acquired right to emit a tonne is a purely arithmetical calculation, the net effect on the global climate balance sheet is equal to zero.

Illustration: CSE India

1.2. Kyoto: Aims and Means

In 1997 in Kyoto, Japan, 141 signatory countries to the Kyoto Protocol agreed to reduce global emissions of greenhouse gases. Industrialised countries committed to reduce their greenhouse gas emissions on average for the years 2008-2012 to at least 5.2 percent below 1990 levels. Developing countries have no such obligation because their per capita emissions are much lower and their contribution to climate change has been very small (about 15%).

1. Clean Development Mechanism

Within the industrialised countries the 15 then EU countries committed to a reduction target of minus 8%, which is called the „EU Bubble.“ Within this EU bubble, the 15 member states have different objectives. Luxembourg has the highest goal set at minus 28%. The Grand Duchy of Luxembourg has, however, by far the highest per capita emissions in the EU and all industrialised countries, emitting around 25 tonnes of CO2 per year. Within the EU bubble, the reduction is shared between a clearly defined number of large businesses and the member states. We focus hereafter only on the state share.

The Kyoto Protocol in 1997 only came about because the United States (under the Environment Minister of the day, Al Gore) imposed a condition that developed countries and businesses that did not achieve their climate change objectives could fall back on so-called „flexible mechanisms“. This system allows for ‘sponsoring’ climate protection projects in developing countries (Clean Development Mechanism projects, or: CDM) or in the former Eastern Bloc countries (Joint Implementation projects, or: JI) and counting the resulting greenhouse gas reductions as emission credits for their own reduction targets.

Proponents of flexible mechanisms argue that in climate terms it doesn’t matter where on the globe emissions savings come from. The system would, however, allow countries and companies to shop for and/or generate emission rights or credits where it was cheapest to do so. This was the birth of greenhouse gas emissions trading, which from the outset critics designated a „loophole“ in the Kyoto protocol.

Emission rights can only be used by countries and companies that are committed to reduction targets (the so-called Annex I countries). Developing countries cannot therefore acquire such rights, but serve instead as host countries for Clean Development Mechanism (CDM) projects, which generate such emission credits. Such CDM projects should not only initially help industrialised countries meet their reduction targets at the lowest possible cost, but also promote sustainable development in host developing countries (see box). What is „sustainable“ is defined by the host countries themselves.

The option of falling back on emission rights from CDM and JI projects is restricted from the outset in the Kyoto Protocol. Article 6 d) of the Protocol states as a condition that „The acquisition of emission reduction units shall be supplemental to domestic actions for the purposes of meeting commitments under Article 3.“ How much more „supplemental“ means, however, is not quantified anywhere, not even in the practical rules for CDM projects established in the autumn of 2001 at the 7th Climate Conference in Marrakech.

Article 12 of the Kyoto Protocol

1. A clean development mechanism is hereby defined.
2. 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 quantified emission limitation and reduction commitments under Article 3.

The UN Climate Conference in Bali, December 2007.

Illustration: Thomas Brose / Climate Alliance International

1.3. Kyoto: goals and actual emissions

Look now at real greenhouse gas emissions since 1990, then rub your eyes in astonishment: western industrial countries' emissions increased by 14.5% between 1990 and 2006 – just as they would have if there had been no Kyoto Protocol (of course, emissions by the United States have contributed significantly to this rise). All industrialised countries during this period achieved an overall decrease of 1.3%. However, this was simply because in the states of the former Soviet bloc, industry collapsed in the 90s and emissions reduced 38.3% (Down To Earth, 2008). The same picture emerges in the European Union, which is often portrayed as a global pioneer in climate protection. The emissions of its 25 member states (excluding the two new members Romania and Bulgaria) decreased between 1990 and 2005 by 1.5%, but only because emissions from the new member states from the former Eastern bloc fell drastically during the 90s. From 2000 to 2005 emissions by the EU-25 increased in total by 1.4%, because the economies of new members recovered (UNFCCC, 2007).

The atmosphere is filled with more and more greenhouse gases: current concentration is about 380 millionths by volume share (parts per million, ppm) and rising each year by 2 ppm, with developed and developing countries currently contributing in equal proportions to this increase (UNDP, 2007). The Intergovernmental Panel on Climate Change (IPCC) estimates that, from a concentration of 450ppm, the damage to the atmosphere will become irrevocable (IPCC, 2007). There is very little space left to reach this critical mark - about 70 ppm - and at the present rate of emissions it will be used up in 35 years. The core issue of international climate policy today is: who owns the remaining room in the atmosphere?

Currently, international negotiations seek a successor agreement in which precisely this question is central. Previous discussions at the climate summits of 2007 in Bali and 2008 in Poznan were a sobering failure, in the face of rising emissions and lack of agreement around industrialised country consumption levels. The outlook on the next climate summit in Copenhagen in December 2009, to lay the groundwork for a Kyoto follow up agreement, is consequently pessimistic.

1.4. The origins of emission credits

A company in a developing country that would like to initiate a CDM project - the project operator - usually tasks a consultancy firm that specialises in the CDM procedures with the project design, which involves putting together the Project Design Document (PDD) (This central document of each CDM project can be found on the CDM website http://cdm.unfccc.int/index.html and inputting the project name). Then the project operator requests the approval of the national CDM authority. This authority examines in particular the environmental and social benefits of the project (though they tend to rely on the information given by the consultancy firm) and approves it. The project operator then contracts another consulting firm (a so-called,Designated Operational Entity/DOE) to validate the project, i.e. to verify that the project complies with international CDM rules, and to submit the project for approval by the CDM Executive Board of the Secretariat of the United Nations Framework Convention on Climate Change.
These DOEs are a small number of mostly global consulting firms such as PricewaterhouseCoopers or Det Norske Veritas. They occupy the key position in the whole process. If the project is approved by the CDM Executive Board of the UN, it can go ahead. It is thus possible for the operating company to cut down on greenhouse gas emissions in comparison to using conventional methods in the region and in doing so generate emission rights. The emission rights are verified and certified (audited) by a consultant who reports to the CDM Executive Board. Once the certified emission rights have been accepted the project operator is able to sell these rights as certified emission credits (Certified Emission Reduction units / CER) - in Kyoto speak simply „credits“.

Consultancy firms play the main roles in this multi-stage process. They often operate in several of these functions and use their expertise in emissions trading. They are chosen and paid by the project operator, which in practice (as we shall see) often leads to misconceptions about the local population's acceptance of the project. There is nothing in the CDM procedures that amounts to „neutral“ external monitoring.

1.5. How is the value of an emission credit calculated?

The calculation of how much greenhouse gases a project saves provides the ecological and economic core of each project. For example, conventional electricity is composed of a mix of coal, nuclear, water and a little wind generated energy, and, on average, the production of 1 kilowatt-hour results in about 700 grams of carbon dioxide escaping into

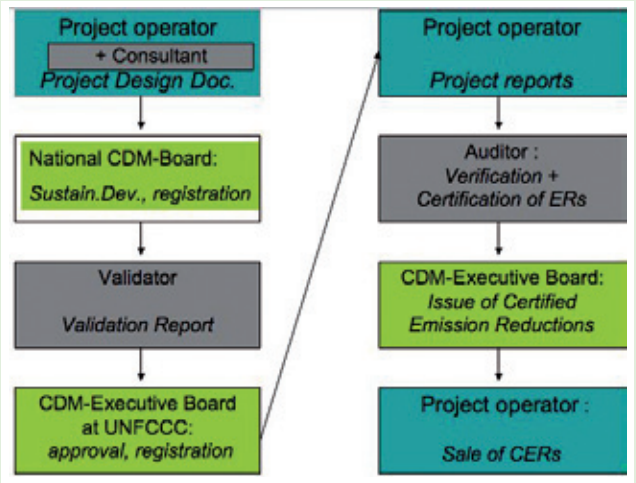

Illustration: ASTM

the air. Electricity, which originates exclusively from a new hydroelectric power plant, produces no carbon dioxide. If this electricity is fed into the grid, it replaces - the assumption - the same amount of conventional electricity, thus saving 700g carbon dioxide per kilowatt-hour. This is the „environmental additionality“ of this new dam, its contribution to the reduction of greenhouse gases.
Here one must also note that, of course, no coal-fired power plant is closed a result, therefore the power it produces is not really „replaced“. With globally rising energy demand, supply from renewable energy sources is only increasing for new electricity. Not a single CDM project has destroyed existing carbon dioxide in the atmosphere (this is true also of trees which only temporarily bind carbon dioxide, see section 2.3 Sinks). For each CDM project, the difference between its emissions and those of the usual energy source in the project region (e.g. electricity) is calculated using defined methodologies; this calculation yields the project's certified emission reduction units, the „credits“.
A second prerequisite for the recognition of the credits is that the project would not have gone ahead anyway (so-called „Anyway-projects“); the project must be feasible and profitable only as a result of the sale of credits. Later we will look in more detail at some concrete examples of dams and such „economic additionality“.

The Clean Development Mechanism has not brought about the closure of a single coal-fired power plant.

Illustration: flickr

1.6. The demand for emission credits in Europe and Luxembourg up to 2012 and 2020

In order to claim a global leadership role beyond the end of the Kyoto Treaty, in January 2008 and January 2009 the EU Commission published its proposals on how the European Union would reduce greenhouse gases by at least 20% compared to 1990 levels, and, by 2020, increase to 20% the share of renewable energies in the consumption mix. The proposals were based on member states' own forecasts in November 2007 and October 2008 (see p. 10, source: European Commission, 2008).
In the Kyoto Protocol, the 15 EU states as a group committed themselves to reducing emissions 8% below 1990 levels as an average for the years 2008 to 2012. In the 2008 forecast, the group assumed that, by 2010, 3% of the 8% reduction – or, more than a third – would be achieved through the „application of the Kyoto mechanisms“. Also, they estimated the existence of 1.4% CO2 storage capacity in their forests, a figure which the EU Commission publicly

doubts the validity of (see chapter 2.3 Sinks). The 2008 projections that their own existing climate change policies and measures would not deliver even half of the reduction target (only 3.6% of 8%) was silent acknowledgement that the EU was not leading anybody.

Luxembourg has conceded, however, that its target of a 28% emissions reduction would not be achieved; average emissions for the years 2008 - 2012 is even expected to be 3% above the 1990 base year level. This would mean the Grand Duchy missing its target by 31%. It has assumed however that it can compensate for missing its target by purchasing emission rights to attain the 30% reduction, leaving the remaining 1% to be accomplish with domestic efforts. The Luxembourgish strategy - like that of the Dutch – sees in the Kyoto Protocol an agreement to reduce emissions entirely through the purchase of emission rights. Behind this lies an economic calculation that these credits can be purchased abroad more cheaply than if we had to realise any actual reductions in this country. This is clearly contrary to the aforementioned article 6. d) of the Kyoto Protocol, which states the purchase of emission rights shall only be „supplemental“ to domestic measures. The government has been funding these purchases by doubling car tax from 1st January 2007 and gradually increasing taxes on fuels. This money feeds into the newly created Kyoto Fund for this purpose.

However, this is a stance that is neither applicable to all nor is it morally defensible. What would happen if all EU or developed countries instead of reducing domestic greenhouse gases bought emission rights? Firstly, the impact on the global climate would be zero, and secondly, developing countries would not sign any further contracts with the more industrialised countries, because it is quite clearly the climate inputs from the industrialised countries that contribute most to climate change. Luxembourg (and the Netherlands) failed to have this stance adopted, which goes against the general sense of the Kyoto Protocol and the Framework Convention on Climate Change, as these state that it is the duty of industrialised countries to start reducing their greenhouse gas emissions.

Illustration: ASTM

Private transport is a big contributor to Luxembourg's climate footprint.

The EU's proposal of January 2008 concerning the Kyoto follow-up period from 2013 to 2020 suggests that in order for EU member countries to attain their target they are entitled to buy credits equivalent to 3% of 2005 emissions ; some countries - including Luxembourg - may even buy up to 4%. At first glance this appears to be a small amount but, in fact, the EU's proposals enable two thirds of emissions reductions to be met through the acquisition of emission rights (use of emissions trading in the non-ETS sector - up

Projected emissions in 2010 compared with base year

			With existing policies and measures	Use of Kyoto mechanisms (Govt.)	Use of carbon sinks	Additional policies and measures	With all measures, Kyoto mechanisms and carbon sinks	
	- Base Year (BY) emissions	Kyoto targets	Projections for 2010	Effect in 2010	Effect in 2010	Effect in 2010	Projections for 2010	Gaps between projections and targets
	MtCO2	% of BY	% of BY	% of BY	% of BY	% of BY	% of BY	% of BY
Austria	79,0	-13,0%	17,4%	-11,4%	-0,9%	-18,4%	-13,3%	-0,3%
Belgium	145,7	-7,5%	-3,7%	-4,8%		0,0%	-8,5%	-1,0%
Bulgaria	132,6	-8,0%	-29,8%			-5,2%	-34,9%	-26,9%
Cyprus	6,0	na	44,3%			-2,9%	41,4%	na
Czech Republic	194,2	-8,0%	-25,1%		-0,6%	-3,1%	-28,8%	-20,8%
Denmark	69,3	-21,0%	-2,2%	-6,1%	-3,3%	0,0%	-11,6%	9,4%
Estonia	42,6	-8,0%	-62,8%			-3,0%	-65,7%	-57,7%
Finland	71,0	0,0%	19,7%	-2,0%	-0,8%	-17,4%	-0,6%	-0,6%
France	563,9	0,0%	0,8%		-0,7%	-4,3%	-4,2%	-4,2%
Germany	1232,4	-21,0%	-22,5%		-0,4%	-3,3%	-26,2%	-5,2%
Greece	107,0	25,0%	23,9%		-1,1%	-2,0%	20,8%	-4,2%
Hungary	115,4	-6,0%	-24,9%			-0,5%	-25,4%	-19,4%
Ireland	55,6	13,0%	22,8%	-6,5%	-3,7%	-0,2%	12,4%	-0,6%
Italy	516,9	-6,5%	7,5%	-4,0%	-4,9%	-3,2%	-4,6%	1,9%
Latvia	25,9	-8,0%	-46,1%			0,0%	-46,1%	-38,1%
Lithuania	49,4	-8,0%	-30,4%			0,0%	-30,4%	-22,4%
Luxembourg	13,2	-28.0%	3,1%	-29,9%		-1,1%	-28,0%	0,0%
Malta	2,2	na	61,8%			0,0%	61,8%	na
Netherlands	213.0	-6,0%	-2,2%	-6,1%	-0,1%	0,0%	-8,4%	-2,4%
Poland	563,4	-6,0%	-28,4%		-0,5%	0,0%	-29,0%	-23,0%
Portugal	60,1	27,0%	44,2%	-9,6%	-7,7%	-4,0%	22,7%	-4,3%
Romania	278,2	-8,0%	-31,4%			-3,9%	-35,3%	-27,3%
Slovakia	72,1	-8,0%	-18,4%			-3,2%	-21,6%	-13,6%
Slovenia	20,4	-8,0%	6,7%	-2,9%	-8,3%	-8,7%	-13,2%	-5,2%
Spain	289,8	15,0%	52,0%	-19,9%	-2,0%	-9,6%	20,5%	5,5%
Sweden	72,2	4,0%	-2,7%		-3,0%	0,0%	-5,7%	-9,7%
United Kingdom	776,3	-12,5%	-19,4%		-0,5%	0,0%	-20,0%	-7,5%
EU-15	4265,5	-8,0%	-3,6%	-3,0%	-1,4%	-3,3%	-11,3%	-3,3%
EU-27	5768,0	na	-10,1%	-2,2%	-1,1%	-3,0%	-16,3%	na

Source: European Commission Press Release 439-2008 (date: 16/10/2008)

to 3% of 2005 base emissions accumulated up to 2020).
In its press release "Climate change: Commission sets out proposals for global pact on climate change at Copenhagen" of 28th January 2009, the EU-Commission goes a step further and proposes: "The EU should seek to build, by 2015, an OECD-wide carbon market (...) The market should be expanded to include major emerging economies by 2020 with a view to building a global carbon market." (EU-Commission, 2009)

1.7. The current global CDM market

After defining the rules of the game in the autumn of 2001 at the UN conference in Marrakech projects were formally developed and national CDM authorities created. On 28th November 2004 the CDM Board officially approved its first project. From 2005 to date the world has experienced a veritable „Carbon Bonanza." In early March 2006 there were 654 projects registered or in the validation stage, totalling an expected 836 million CER units by 2012. Today there are already 1572 projects (April 2009), generating 281.2 million credits per year. By the end of 2012 1.5 billion of such emission reduction units are projected to be in circulation. At an assumed average price of EUR 8 per unit, currently this represents an annual total of EUR 2.3 billion.
UN Climate Change Secretariat data from 16.4.09 show that most CDM business is concentrated in the largest emerging economies: one third of projects are located in China, a good quarter in India. A look at the quantity of credits generated per country shows much more clearly the dominance of China, where 56% of all credits are generated, followed at some distance by India with 12%, Brazil - 7%, South Korea - 5% and Mexico - 3%.

Originally, the clean development mechanism was linked to two specific objectives:
- That money for renewable energy would flow to the poorest countries.
- That the projects would promote sustainable development in their regions.

1,500 CDM projects and five years later it can be said that neither aim was achieved - indeed they were completely missed. The fact is that the major emerging economies

Illustration: ASTM

At the Carbon Fair in Cologne, May 2008.

Biomass projects have led to over-exploitation of surrounding forests.

Illustration: ASTM

have the largest part of the cake, and the least developed countries and Africa as a continent only got a share of the crumbs of the cake. We will return to this matter in the last chapter.

1.8. How do CDM projects contribute to sustainable development?

In 2005, the Centre for Science and Environment in New Delhi (CSE) assessed Indian CDM projects for their contributions to sustainable development in the regions concerned and came to some very sobering conclusions – of which only two examples are:

1) For projects that use biomass to generate electricity, the surrounding forests have been overexploited, so that firewood for the poorer inhabitants of the region was scarce and expensive.

2) In project reports, testimonies of villager satisfaction were copied and re-used in other projects verbatim (including spelling errors).

The CSE concluded that CDM should actually be called "Cheap Development Mechanism". (CSE, 2005).

The broadest and best-known study was delivered to the German Öko-Institut in November, 2007 on behalf of the WWF from (Lambert Schneider / Öko-Institut, 2007). His conclusion in relation to sustainable development: „Promoting sustainable development through poverty alleviation or employment benefits and community seems to have been largely forgotten by project developers, the Verifier, and the CDM Executive Board."

Experts at the CDM do not now disputed that the objective of promoting sustainable development in the project regions has largely been neglected. This is mainly due to the fact that the sustainable development component is not caught in the sale price, that it usually costs time and money, rather than bringing money in. Well over half of all rights are based anyway on only three types of projects and involve the destruction of the greenhouse gases HCFC-23, nitrous oxide and methane produced in chemical factories and coal mines - without any lasting effect on the environment outside the factory gates (Mirkes, 2006). Many known sinks projects even lead to the impoverishment of the local population (see section 2.3 Sinks).

The so-called „Gold Standard" projects, which stand out for their stricter criteria of environmental and social compatibility compared to the mass of CDM projects, unfortu-

nately, constitute such a small „fair trade niche“ that they do not impact the overall CDM market. In the replies of the Luxembourg Government to Parliamentary questions not a single Gold Standard project is mentioned.

The whole question of what contribution CDM projects make to sustainable development can therefore be considered as no longer relevant for evaluating Luxembourg's CDM projects. We are much more interested now in knowing what the contribution is of projects which generate our emission rights - do they actually help combat climate change or not? This core issue can be divided into two sub-issues: are „our“ projects really „additional“? And, how much do our projects promote long-term structural change - away from fossil fuels towards renewable energies?

First, we provide an overview of all the projects that generate credits for Luxembourg.

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2. Luxembourg's CDM projects

2.1 The projects at a glance

All governments like advertising their achievements. Our expectation that the government would proudly let us access a website of a map covered in little flags giving an overview of our global climate projects has however been bitterly disappointed. On the contrary, the search for the projects is more akin to a game of hide-and-seek. Only when the government must respond - to Parliamentary questions - they are for disclosure and this single disclosure must be then be pieced together into an overall picture. Therefore, the following is based primarily on analysis of the responses of the government to three parliamentary questions from the year 2008, also of the 2nd Allocation Plan and of Luxembourg's projections on behalf of the EU. In answers to parliamentary questions, the government has sometimes been quite detailed, though the complexity of the emissions trading business by its nature imposes certain constraints. Emissions rights are acquired both through the direct purchase of rights from individual projects and, for the most part, through purchasing shares in funds. Luxembourg has participated in one single project, a landfill in El Salvador (and this was also reported in the press).
All other rights are taken from five large funds and individual funds in which Luxembourg has acquired different proportions:

1. ***The Multilateral Carbon Credit Fund*** of the EBRD has capital of EUR 150 million. Luxembourg has a EUR 10 million share (6.67% of the fund) and this generates 10% of Luxembourg's total credits.

2. ***The Carbon Fund for Europe*** of the European Investment Bank (EIB) and the World Bank has capital of EUR 50 million. Luxembourg has a EUR 10 million share (20% of the fund) and this generates 29% of Luxembourg's total credits.

3. ***The Asian Pacific Carbon Fund*** of the Asian Development Bank has capital of $ 151.8 million. Luxembourg has a $ 15 million share (9.88% of the fund) and this generates 4% of Luxembourg's total credits.

4. ***The BioCarbon Fund*** of the World Bank (first tranche) has capital of $ 53.8 million. Luxembourg has a $ 5 million share (9.3% of the fund) and this generates 8% of Luxembourg's total credits.

5. ***The Community Development Carbon Fund*** of the World Bank has capital of $ 126.6 million. Luxembourg has a $ 10 million share (7.77% of the fund) and this generates 12% of Luxembourg's total credits.

6. In addition, Luxembourg has a contract with Swiss Re Global Markets Limited to purchase 1.624 million CERs from two Chinese wind farms (no price available), which corresponds to 31% of Luxembourg's total credits.

(See the projects at a glance, from page 15)

The funds are constantly busy with purchasing rights from projects and communicating to their shareholders what stage the rights have reached. There are two important stages:

1. PIN (Project Idea Notes): There are still no concrete sales, but the fund provides the buyer (eg Luxembourg) with descriptions of the projects which it is negotiating purchases from (including, probable amount of emission rights).

2. Luxembourg's CDM projects

2. ERPAs (Emission Reduction Procurement Agreements): these cover the sale of specific quantities of emission rights from certain projects.

Often the projects themselves are not yet registered by the UNFCCC as CDM or JI projects, but only stuck somewhere in the queue of the rather lengthy approval process. Again, there is a risk that projects that were actually planned, are ultimately not granted, or of resistance from the local population and therefore fail to comply with the timetable.
Here it is assumed that all projects mentioned are granted and all project ideas are realised to their planned extent, such that concrete sales develop, since they represent the „shopping needs" of our government and are essential understanding government climate policy. (To classify certain PINs as „unrealistic" is not within our means, and so they cannot be excluded from our analysis.)
Since funds - with the exception of the World Bank's Bio-Carbon Fund, the only one exclusively concerned with sink projects - treat projects across various sectors together, the next step is to break the fund up into its component projects and determine each project's weight within the fund and what share Luxembourg has of each project – then the projects are regrouped according to the technologies involved (called „methodologies" in the UN-registration procedure). It is not possible to list all the projects here, many do not yet appear in the CDM pipeline, there are no descriptions of projects and the funds' websites are not particularly informative. Some project cycles also extend until, for example 2017, so that only an unspecified share falls in the period to 2012. With all these caveats, the following picture emerges:
Luxembourg has so far acquired (or agreed to acquire) shares from the funds and rights from individual projects totalling approximately 5.3 million tons of CO2. This breaks

A prospectus for the Carbon Fund for Europe.

down as follows:
- 94% come from Funds, only 6% from individual projects
- 87% from the CDM, 13% from AAUs and JI projects.

Joint Implementation projects are located in the states of the former Soviet bloc that do not belong to the EU, e.g. Russia and Ukraine. For simplicity's sake, we include their reduction units, called ERUs (Emission Reduction Units), in the concept of „credits".
AAU projects are projects in industrialised countries, which have signed the Kyoto Protocol and therefore have received a certain sum of emission rights, so-called Assigned Amount Units. They can trade these rights among them-

2. Luxembourg's CDM projects

The Luxembourg Environment Ministry is responsible for CDM purchases.

Illustration: ASTM

selves; the states of the former Soviet bloc, which are now EU members are currently selling AAU rights. Luxembourg has applied for such rights from projects in Bulgaria and Romania.

In the 2nd National Allocation Plan for Luxembourg, 23.5 million tons of emission rights could be purchased – which is adequately covered by the Kyoto Fund. The plan says the following mix should be aimed for: ± 50% CDM, 20-25% JI and 20-25% AAUs. Indeed, according to a statement in December 2008, 87% of Luxembourg's credits come from the CDM and only 13% come from AAU and JI projects together. This massive slippage is thought to be primarily because CDM projects are developed faster and their rights come to market faster - and are usually cheaper - and the funds were available.

Of the total of 79 projects, let us look more closely at eight projects, which cover the main technologies and funds. It is not - as we have said – the contribution of the projects towards sustainable development of the host country that concerns us anymore, but whether they are actually „additional" and whether they contribute to long-term structural change away from fossil fuels. After all, we want to know what Luxembourg's contribution is, in the final analysis, to fighting global climate change.

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2. Luxembourg's CDM projects

The Projects at a Glance

Individual project	Project Type	Total (tCO2e)	Lux. Share (tCO2e)
El Salvador: Nejapa Landfill Project in El Salvador	CDM	1 400 000	325 000
		1 400 000	**325 000**

Carbon Fund for Europe (EIB & WorldBank): €50m capital Luxembourg's share: €10m (20%)	Project Type	Total (tCO2e)	Lux. Share (tCO2e)
Egypt: Landfilling and processing services-Cairo	CDM	325 000	65 000
Jordanian: Amman Landfill Gas	CDM	900 000	180 000
Malaysian: Kota Kinabalu Composting Project	CDM	340 000	68 000
Russia: Associated Gas Recovery Project	JI	1 500 000	300 000
Uzbekistan: Uzbekneftegaz Associated Gas Project	CDM	325 000	65 000
China: Beijao Waste Heat Recovery Project	CDM	550 000	110 000
Columbia: Cartagena integrated mass transport system	CDM	275 000	55 000
Nigeria: Lagos Solid Waste Project	CDM	334 000	66 800
Nigeria: Kaji Hydra Rehabilitation	CDM	900 000	180 000
Thailand: Small Scale Livestock Waste Management Project	CDM	426 000	85 200
Uzbekistan: Tashkent Combined Cycle Power Plant	CDM	700 000	140 000
Russia: Ulyanovsk Landfill Gas Flaring and Treatment Project	JI	340 000	68 000
Russia: LPG flaring reduction project	JI	620 000	124 000
Philippines: EDSA Bus Dispatch and Tracking Project	CDM	184 000	36 800
		7 719 000	**1 543 800**

CDM: Clean Development Mechanism
JI: Joint Implementation
AAU: Assigned Amount Units

2. Luxembourg's CDM projects

EBRD Multilateral Carbon Credit Fund: €150m capital Luxembourg's share: 10 Mio € (6.67%)	Project Type	Total (tCO2e)	Lux. Share (tCO2e)
Azerbaijan: Power Plant Rehabilitation Project	CDM	4 500 000	300 150
Armenia: Small Scale Hydro Power Project	CDM	138 870	9 263
Georgia: Rehabilitation of Hydro Power Plant	CDM	432 000	28 814
Bulgaria: Kavama Wind Power Park	AAU	872 000	58 162
Romania: Baeau Solid Waste Management	AAU	177 000	11 806
Romania: Mireasa Wind Park	AAU	250 000	16 675
Romania: Methane Capture and Energy Production at Glina Waste Water Treatment	AAU	122 000	8 137
Russia: Reconstruction of Perm CHPP using combined Cycle Technology	JI	380 000	25 346
Ukraine: Turbine expansion power plants	JI	568 000	37 886
Ukraine: Ivano-Frankivsk Cement	JI	406 000	27 080
		7 845 870	**523 320**

Asian Pacific Carbon Fund of the Asian Development Bank: $151.8m Luxembourg's share: 15m (9.88 %)	Project Type	Total (tCO2e)	Lux. Share (tCO2e)
China: Erlongshan Hydropower	CDM	294 000	29 047
India: Tata Power Wind Energy	CDM	180 000	17 784
Indonesia: Gikoko Palemban - LFG Flaring	CDM	140 000	13 832
India: Timarpur-Okhla Waste Management	CDM	163 000	16 104
China: Agricultural Waste	CDM	150 000	14 820
China: Shandong Landtills	CDM	12 000	1 186
China: Baoding Geothermal Project	CDM	298 000	29 442
Thailand: Biomass Power Plant	CDM	367 000	36 260
China: Tangeun Hydropower Project	CDM	66 000	6 521
India: Mawana Sugars	CDM	308 000	30 430
Fiji: Kinoya Biogas Project	CDM	40 000	3 952
Pakistan: Wind Power Project in Sindh Province	CDM		3 952
		2 278 000	**225 066**

2. Luxembourg's CDM projects

Community Development Carbon Fund der WeltBank: Kapital: 126,6 Mio $. Davon Luxemburg: 10 Mio $ (7,77 %).	Project Type	Total (tCO2e)	Lux. Share (tCO2e)
Argentina: Olavarria Landfill Gas Recovery	CDM	131 000	10179
China: Guangrun Hydropower Project	CDM	485 000	37685
Guyana: Skeldon Bagasse Cogeneration	CDM	165 000	12821
Honduras: La Esperanza Hydro	CDM	310 000	24087
India: Vertical Shalf Brick Kihn Cluster	CDM	396 000	30769
India: FaL-G Brick and Block: Micro Industrial Plants	CDM	600 000	46620
Moldavia: Biomass Heating and Energy Conservation	CDM	348 000	27040
Nepal: Biogas Program	CDM	1 000 000	77700
Peru: Santa Rosa Bund1cd Small Hydro	CDM	88 000	6838
Philippines: Laguna De Bay Community Waste Management	CDM	344 000	26729
Argentina: Salta LandfillGas Capture Project[1]	CDM	60 000	4662
Bangladesh: Installation of Solar Home Systems[1]	CDM	192 000	14918
and	CDM	372 000	28904
Bolivia: Urban Wastewater Methane Gas Capture[1]	CDM	200 000	15540
China: Hubei Ecofarming Biogas[1]	CDM	370 000	28749
Columbia: Rio Frio Waste Management[1]	CDM	250 000	19425
China: Shandong Poultry Manure Biogas[1]	CDM	465 000	36131
Columbia: Furatena Energy Efficiency Project[1]	CDM	60 000	4662
Georgia: Small Hydro Rehabilitation[1]	CDM	114 000	8858
Kenya: Olkaira 1 Geothermal Expansion[1]	CDM	700 000	54390
Kenya: Redevelopement of Tana Power Station[1]	CDM	186 000	14452
Nepal: Micro Hydro Project[1]	CDM	191 000	14841
Nigeria: Aba Cogeneration[1]	CDM	732 000	56876
Uganda: Expand existing sugar crushing and cogen plant[1]	CDM	342 000	26573
		8 101 000	**629 448**

(1) Project which has not yet been officially registered

2. Luxembourg's CDM projects

BioCarbon Fund of the World Bank (1st Tranche): $53.8m capital Luxembourg's share: $5m (9.3%)	Project Type	Total (tCO2e)	Lux. Share (tCO2e)
China: Facilating Reforestation for Guangxi Watershed Management	CDM	462 000	42 966
Albania: Assisted Natural Regeneration	CDM	257 000	23 901
Columbia: San Nicolas Agroforestry	CDM	120 000	11 160
Columbia: Caribbean Savannah	CDM	246 000	22 878
Costa Rica: Coopeagri Forestry	CDM	557 940	51 888
Ethiopia: Humbo Assisted Regeneration	CDM	165 000	15 345
Honduras: Pico Bonito Forest Restoration	CDM	450 082	41 858
India: Improving Rural Livelihoods	CDM	276 000	25 668
Kenya: Green Belt Movement	CDM	375 000	34875
Madagascar: Andasibe-Mantadia Biodiversity Corridor	CDM	200 000	18 600
Mali: Senegal Plantation Project	CDM	190 000	17 670
Moldavia: Soil Conservation	CDM	600 000	55 800
Nicaragua: Precious Woods	CDM	174 796	16 256
Niger: Acacia Community Plantations	CDM	500 000	46 500
Philippines: Laguna de Bay Community Watershed Rehabilitation	CDM	32 323	3 006
Uganda: Nile Basin Reforestation	CDM	261 211	24 293
		4 867 352	**452 664**

Swiss Re Global Markets Limited	Project Type	Total (tCO2e)	Lux. Share (tCO2e)
China: Liaoning Changtu Windfarm with 66 Turbines, 750 kW each	CDM	k. A.	k. A.
China: Guohua Inner Mongolia with 39 Turbines, 1250 kW each	CDM	k. A.	k. A.
		98 250	**1 642 000**

79 projects in total: **32 778 222** CO2e (84% CDM, 16% JI und AAU)
Luxembourg's share: **5 341 297** CO2e

2. Luxembourg's CDM projects

2.2. Dams

Ten of the 79 projects, which generate emission rights for Luxembourg are dams. Together they account for four percent of all credits purchased by Luxembourg.
One of the main problems with dams as a producer of emission rights is usually their lack of „additionality". Greenhouse gas saving projects in developing countries can only be designated CDM projects, under the condition that they would not have been built without the money from emissions trading. The projects must involve „additional" efforts to those which would have been applied anyway. This rule is intended to ensure that the money from emissions trading really goes towards „new" CO2 savings.
For many dams there are serious doubts as to whether they comply with this rule. The scientist Barbara Haya, in her dissertation "Failed Mechanism", systematically investigated this issue (Haya, 2007). In reference to the „additionality" of these projects, she says that in November 2007 over a third of the dam projects registered by CDM Executive Board, had already been completed at the time of registration and almost all the remainder were already under construction. On 1 November 2007 there were 654 worldwide dam projects in the CDM-queue, one quarter of all CDM projects worldwide. 402 of them were Chinese projects.
Along side the „additionality" stipulation, CDM project must also ensure that the technology is not „common practice" in the target region. This rule is designed to ensure that CDM projects promote real technology transfers between industrialised and developing countries. For dams, however, the argument can hardly be based on technology transfer efforts. Hydroelectric power is not a new but rather an old, mature technology. There will be no transfer of new renewable technologies to a developing country, rather, hydropower has long been a large part of electricity production in many Third World countries and is often the norm. Maosheng Duan Ph.D. of Global Climate Change Institute at Tsinghua University notes that "Most of the CDM projects hosted by China utilise domestic technologies and do not involve an international technology transfer component." (Maosheng Duan, 2008)

„La Esperanza" - the hope

A project of the Community Development Carbon Fund, in which Luxembourg is also financially involved, is the dam

Illustration: flickr

Dams in China are increasingly financed through the CDM.

2. Luxembourg's CDM projects

„La Esperanza“, in the Central American republic of Honduras. The construction dammed the waters of the river Intibuca and supplies nearby villages with electricity. On 4th August 2001, the company Consorcio de Inversiones S.A. (CISA) and the power plant official representatives presented the La Esperanza dam project in the municipal town hall to the riparian communities. At this point there was no mention of „credits“ or the „Clean Development Mechanism“ - the definitive rules of the mechanism were only specified and adopted in October/November 2001 in Marrakech (although CDM projects have been underway since the year 2000). On 10 December 2001 the city of La Esperanza endorsed the project officially. Shortly thereafter, in February 2002, the construction work had already started. The first turbine with a capacity of 485 kW went into operation in June 2003, the second with 785 kW in June 2004. On 21 January 2003, the consulting firm 2E Carbon Access / Ecosecurities filed a CDM Project Design Document concerning La Esperanza dam, including both the already existing turbines along with those from the second phase of construction, which was to begin in June 2004 (2E Carbon Access, 2005). The validation company Det Norske Veritas was then hired to submit the project for certification by the CDM board at the UNFCCC secretariat (Det Norske Veritas, 2005).

A bird's eye view of La Esperanza dam.

Illustration: google earth

As for the criterion of „common practice“, there were serious doubts concerning La Esperanza dam. The validation company Det Norske Veritas wrote in their project report: “Privately financed, built and operated small hydro plants are not common practice in Honduras.“ The organisation International Rivers Network, noted, however, that in Honduras seven small privately owned hydropower plants were under construction or already in operation (CDM Watch, 2005). Despite these obvious shortcomings, after initial reluctance the UNFCCC-CDM board finally approved the project on 18.8.05. Yet many questions remain: for instance, how a hydroelectric plant, for which planning has already started and which has been presented in the project region, while the rules of the Clean Development Mechanism are not yet clear, be approved as “additional”.? How can the operator make anyone believe the power plant would not have been built without the CDM, when its first two turbines had already been delivering electricity for a year prior to being approved?

A similar picture emerges from the 50 MW Erlongshan hy-

droelectric plant in the Chinese province of Gansu, which generates credits for the Asian Pacific Carbon Fund. Its construction started in November 2004, it was registered with the Chinese CDM Authority in May 2005, then at the UN CDM Board in November 2006 and started operating in September 2007 (Det Norske Veritas, 2006, Gansu Zhangye Erlongshan, 2008). So, building had started half a year before being submitted to the CDM registry in China and two years before final recognition was attained from the UNFCCC CDM Executive Board.

The two examples of „La Esperanza" in Honduras and Erlongshan „in China, thus confirm the general statements of B. Haya on the dubious additionality of many CDM dams and suggest that a large portion of the circa 180,000 annual credits, the sum of all Luxembourg fund holdings from dams, are „fake" carbon credits which cannot offset Luxembourgs' emissions.

Illustration: ASTM

Local populations often see their traditional rights to resources taken away.

Two further comments on environmental and social acceptability

CDM projects, according to the provisions of the Marrakesh Accords, must also promote environmentally and socially sustainable development in the target region. On the subject of social acceptability, and specifically the CDM-dams David Reyes investigated in Ecuador. For him the main problem are opaque decisions passed down on the inhabitants of the water catchment area from on high, that the inhabitants then have to live with. Because agreements to sell CDM credits are often signed long before the credits have been generated, the pressure increases to realise a project within the planned period, and thus the willingness of operators to ignore possible protests by the local population against the project's implementation (Acción Ecológica, 2007).

Residents, who live above the dam, often have their traditional fishing rights or access to the dam's water to use for irrigation withdrawn because the operating companies as sole proprietors can have these transferred from the state to themselves. For the residents below the dam the water flow will be affected, periodically changing the quantity of available water and fish. As a result, for example, in Ecuador, a movement has grown of people concerned about CDM dams, who resist the withdrawal of their traditional rights to use water (Reyes, 2008).

Roberto Smeraldi, director of Friends of the Earth Brazil, moreover, pointed to a serious error in assessing the environmental impact of dams: the formation of methane from

Blasting for dam construction in China.

Illustration: flickr

biomass in the flooded lake, which affects the CO2 balance is usually neither recorded nor taken account of. This can be especially significant in rainforest areas, reversing the balance from positive to negative (Switke, 2009).

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2.3 Sinks

„Sinks“ are parts of the biosphere in which the carbon as carbon dioxide in the air, is temporarily or longer term „sunk“, i.e. it is bound, such as in oceans, soils and forests. Trees take in carbon dioxide and store carbon in their biomass, as long as they live. When they die and rot or when burnt, the stored carbon is wholly or mainly returned into the atmosphere as carbon dioxide or methane. So sinks bind carbon for a given period. But you cannot export the carbon we are “importing” into today‘s atmosphere through combusting petroleum, gas or coal back in geological time to the carbon age (300 million years ago).
The Luxembourg government is committed to spending a total of EUR 5 million in the first tranche of the World Bank BioCarbon Fund at a price of $ 4.18 per tonne of CO2. The tranche amounts to a total of $ 53.8 million, with Luxembourg's share equal to a 9.3% or roughly 1.2 million credits. According to the Government, as of 8th May 2008, the fund had completed specific purchasing agreements with promoters in the amount of $ 20.4 million, i.e. 38% of the first tranche (Lux, 2008).
Combined, these projects generate 4.87 million credits; the Luxembourg share of 9.3%, therefore, equals 452,664 credits. The government, however, speaks of 388,000 - the difference of 64,664 credits remains unclear. The BioCarbon fund consists entirely of sinks (www.carbonfinance.org).

Illustration: flickr

Fast growing eucalyptus trees are often used in sink projects.

Sinks - a dubious affair

In its special report in 1998 the German Advisory Council on Global Change (WBGU), called the sink offsets „one of the biggest weaknesses of the Kyoto Protocol“ (WBGU, 1998). This could create incentives which are harmful to biodiversity and ecosystems. The Advisory Council recommended that “the offsetting of commitments of industrialized countries [... using ...] projects aimed at enhancing sinks should be excluded for at least (...) as long as the existing uncertainties concerning verification of the impacts of sinks upon developing countries have not been clarified.“ The social acceptability of sinks has been refuted in many cases by numerous investigations. This is mainly due to the fact that it is mostly monocultures of fast growing trees such as eucalyptus with no or little benefit for the population living in the areas. Often people are driven off their (community) land, to create new areas for sinks. A well-known example is a CO2 plantation on Mount Elgon in eastern Uganda. David Wakikona, a Member of Parliament for

2. Luxembourg's CDM projects

Manjiya district told the Ugandan newspaper New Vision: „The new national park boundaries were unilaterally established and more than 10,000 people displaced. The park rangers are very militarized, and have shot dead about 50 people." (CO2NNED, 2006).
The background: The extension of the national park boundaries was related to a contract between the Dutch FACE Foundation (Forests Absorbing Carbon Dioxide Emission) and the Uganda Wildlife Authority (UWA), the National Park Authority, which is also responsible for law and order matters. The Dutch film „Het CO-Alibi," stocked by ASTM, documents this project and gives a voice to displaced farmers, „If your plants are emitting too many greenhouse gases, then close them, but do not push us from our land!", and shows how the carbon dioxide - rather than remaining sequestered in the trees - prematurely rises to the sky again in the shape of huge clouds of smoke, because the angry farmers have set the CO2 plantation on fire. (Zembla, 2008)
From the early mistakes sink operators have learned to integrate local residents, particularly through maintenance contracts for the plantations. Ecuadorian and Indian Studies show, however, that too often the charges for the up keep of the plantations are much too low (Acción Ecológica, 2005, Yadav, 2008).
The fundamental problems of the sinks have, however, remained the same. Ten years after the WBGU report, despite an immense production of knowledge, the uncertainty in the calculations has not been significantly lessened, so that the European Union in its climate proposal in January 2008 decided against the inclusion of sinks in the EU emissions trading system. On its website, „Questions and Answers on the Commission's proposal to revise the EU Emissions Trading System" of 23 January 2008 (European Commission, 2008) it says: „Insufficient solutions have been developed to deal with the uncertainties, non-permanence of carbon storage and potential emissions ‚leakage' problems arising from such projects. The temporary and reversible nature of such activities would pose considerable risks in a company-based trading system and impose great liability risks on Member States."
From these generally negative experiences, but above all for the fundamental reasons given, we believe it is unnecessary to take a further closer look at the BioCarbon Funds individual sink projects.

Tropical mountain forest - Mount Elgon, Uganda.

Illustration: flickr

Snapping up a „bargain"

The fact is that the Luxembourg Government, despite these serious uncertainties, has spent $ 5 million on sink projects. The likely low price - $ 4.18 per ton for these „emission rights" is not even half as expensive as other credits – is a bargain to some. But it has helped itself to too much. The Marrakech Accords to the Kyoto Protocol allow the use of sinks rights up to a level not exceeding 1% of 1990 emissions, which is 130,000 tonnes per year, or 650,000 tonnes over the five years between 2008 - 2012. Luxembourg's $ 5 million share of the BioCarbon Fund entitles it to 1.2 million credits, which is almost twice as much as permitted ...

Sources:

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2.4. Electricity for the village in Nigeria

The 700,000 credits per year from the second largest project in the World Bank's Community Development Carbon Fund, to which Luxembourg is a party, take us to Nigeria - precisely to Umuojimo Ogbu village, in Osisioma Ngwa district, near the city of Aba, in Abia state. The project involves constructing a 120 megawatt power plant that generates electricity from gas. The operator, Geometric Power Limited, sells electricity primarily to industrial establishments in the region around Aba and also to Aba's municipality-owned utilities. The Community Development Carbon Fund, as its name implies, has a community development remit and so the fund's website (www.carbonfinance.org), provides a description of the proposed projects agreed with the local administration on behalf of the community: among other things they include a school, a health post, a water borehole, and a 1-km long asphalt access road with street lighting, from a State Government property, via the power plant, to the local community road. The World Bank has poured out its cornucopia on this one village not because it is a model project for the electrification sub-Saharan villages, but because the power plant stands on former village common land. The project generates emission rights, because the plant generates electricity from gas and emits less CO2 than if the same amount of electricity – according to usual practice in oil rich Nigeria - would be produced from diesel (Aba Cogeneration, 2006). This difference provides the emission rights, which the operator is able to sell, for instance, to the Community Development Carbon Fund that Luxembourg is a party to. The project aims in this way to generate a total of over 1.1 million credits, about 300,000 of which after 2012 (Pinna, 2006). The location of Aba was chosen because of the existing gas pipeline and sufficient potential business customers who use electricity are available. Incidentally, the gas supplier is Shell Nigeria Gas Limited. Shell plays a leading role in the Niger Delta in one of the biggest environmental and social disasters in world oil production (www.foe.org.au). The „Shell" name is also back on the website of Geometric Power under „Investor Relations" (www.geometricpower.com). So much for carbon financed community development ...

Illustration: flickr

Sources:

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- www.foe.org.au (website of Friends of the Earth Australia with many details about Shell's role in the Niger delta region).

2.5. Landfills

22% of Luxembourg's emission rights come from landfills. In seven projects, methane, which otherwise would escape into the air is captured (so-called „Landfill Gas Capture") and in twelve projects, energy is generated from waste („Waste Management"). The only project Luxembourg is directly involved in (i.e. not via the detour of a fund), is a landfill in El Salvador.

Methane capture in El Salvador

Almost 20 km north of the Salvadorean capital, San Salvador, near the town of Nejapa, is located the capital's central landfill. It is run by the Salvadorian company, Mides. The Canadian company Biothermica, together with Mides, in phase one, is capturing the escaping methane; in phase two, a landfill gas to electricity plant is built to feed electricity into the public network. Luxembourg draws 325,000 credits from the project, 6% of all emission rights it has purchased to date; the Project Design Document gives a sale price of $ 6.2 per tonne (Landfill Gas, 2005). Mides receives 5% and Biothermica 95% from the proceeds of the sale of emission rights. The project at the national level, through technology transfer and bio-energy contributes to sustainable development. The ratio of 5% to 95% does not however contribute to climate justice: this generates effective emission credits for a Canadian company at a cheap location in the South, while little of the profit remains in El Salvador.

The large number of landfill projects is due to the fact that methane is worth around 23 times as much as carbon dioxide in climate terms. This multiplication factor makes for a fairly fast return on investment. Rubbish is also a huge problem in developing countries, and those projects tend to be located where methane can be captured and used most usefully and profitably. As the promoters are often public institutions such as city administrations, they can more easily involve local residents. C. Rothballer points to two CDM landfills in Brazil where he found that the CDM rules do not automatically improve residents' quality of life, but through greater participation of local people he sees an opportunity for social compatibility (Rothballer, 2008).

The fact that this opportunity is not necessarily used, we see in the following project, which is also co-funded by Luxembourg. It is one of the twelve projects of the Waste Management Projects methodologies group and takes us to New Delhi in India.

Illustration: google earth

The CDM project at the Nejapa landfill is co-financed by Luxembourg.

2. Luxembourg's CDM projects

The Timarpur-Okhla Waste Management Project

Incineration projects, not only in India, are the subject of much controversy and opposition by non-governmental organisations and residents. Not one of the existing projects in India has to date provided evidence that they work well.

Take, as an example, the Timarpur-Okhla project in northeast Delhi. As the first Indian project designed to burn rubbish for power generation, it was built in the mid-80s, operated for three weeks, and then stopped because of rubbish supply problems. Ever since the plant lay still. After many futile resuscitation attempts, finally the rubbish was to be burnt again to generate electricity and credits. The facility was signed on 10th November 2007 as a registered CDM project and from 1st April 2009 to 2019 will supply about 263,000 credits per year (http://cdm.unfccc.int/index.html).

Outraged local residents invade the Timanpur-Okhla facilities.

Illustration: CSE

The SGS validation report of September 2007 notes that no adverse environmental or social effects are expected to result from the project (SGS, 2007). The Project Design Document of September 2007 claims the project is founded on good neighbourly relations with local residents: „The local population will benefit from the project. There are direct and indirect employment opportunities. The project proposes no resettlement of local residents groups, so that no direct conflict with the local population is available." (The Timarpur-Okhla ..., 2007) This assessment would, however, soon be identified as mistaken.

In spring and summer of 2008 the residents of the Gaffar Manzil, Sukhdev Village and Hazi Colony organised protests against the construction of the incinerator in the densely populated residential area of Okhla. This was because the planned incinerator technology would emit toxic dioxins, furans and heavy metals such as mercury and lead. The carcinogenic dioxins are created during incineration of PVC or chlorinated plastic. The resistance of the population also lead to considerable delays in commissioning (Yadav, 2009).

The incinerator also flies in the face of the level of technical knowledge within India. The Indian Environment and Forest Ministry in a report came to the conclusion that the thermal treatment of solid urban waste is not feasible with low-energy value waste - which is typically the case of the rubbish of India's cities. The report therefore recommends that because of the environmental impact and high capital and maintenance costs, instead of burning municipal

2. Luxembourg's CDM projects

Illustration: CSE

The incinerator will be located in a densely populated area, discharging, among other toxins, heavy metals such as dioxin and furan.

waste, composting and recycling of waste are the preferred options.

The Timarpur-Okhla incinerator project is supposed to generate 163,000 credits for the Asian Pacific Carbon Fund from 1 April 2009 of which Luxembourg's share is around 16,000 tonnes of CO2e, at a price of EUR10-EUR13/t. Luxembourg is thus co-funding a dioxin catapult in a residential area of the Indian capital. Here, the environment minister, who is responsible in the final analysis for our emission rights purchases, must verify if we are acting responsibly by benefitting from such rights; and also the development aid minister, a member on the Board of Governors of the Asian Development Bank, that manages the fund, certainly has other courses of action open to it.

Incidentally, as of 22nd April 2009, as a result of opposition from the local population, the plant was still not on line.

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2.6 Power plant renewal in Azerbaijan

On the outskirts of the industrial city of Mingechaur, in Azerbaijan, the Caucasian oil and natural gas rich state, is AzDRES, a huge power plant of advancing years. It produces more than half the country's electricity, through the combustion of oil and gas. AzDRES is also a major supplier of emission rights for Luxembourg; the Government has a EUR 10 million share of the EBRD's Multilateral Carbon Credit Fund (European Bank for Reconstruction and Development), more than half of whose credits (57%) are generated by this project alone. AzDRES is operated by the state company, Azerenerij.

To modernise its 20-year-old plants in Mingechaur, it applied for a first loan of $ 115 million from the EBRD, then - because of rising costs – it requested a further $ 92 million, so that the long-term supply of energy in Azerbaijan might be profitable. In addition, the project aims to cut emissions - particularly of sulphur dioxide and nitrogen oxides - and to increase efficiency. The project contains an environmental action plan, including several other environmental components covering sewage, garbage, asbestos, etc. comprises (EBRD, 2005). A feasibility study was prepared for Azerenerij by USAid.

Azerbaijan is well known for its oil and gas wealth and is important to Europe for the transit of these commodities from Central Asia.

Illustration: flickr

2. Luxembourg's CDM projects

EBRD's role in Azerbaijan

The Bank has traditionally played a key role in the development of the oil and gas sectors in Azerbaijan, such as the construction of the Baku-Tbilisi-Ceyhan oil pipeline (BTC) and the development of oil and gas fields. Of the total volume of EBRD projects in Azerbaijan, costing EUR 3.9 billion, the energy sector alone accounts for EUR 3.5 billion, and the BTC pipeline at EUR 962 million is the largest single project; it began operating in July 2006.

„The economy has fundamentally changed since the increase in oil production and opening of the BTC pipeline. While the average economic growth was around 10 per cent during 2002-2005, the real GDP grew at more than 26 per cent in 2005 and reached an unprecedented 35 per cent in 2006, making Azerbaijan the fastest growing economy in the world. The dramatic growth has resulted in a more than two fold increase in GDP per capita over the last two years. Increased oil production and exports together with high prices, created an economic structure that is more than ever focused on oil. Currently the oil sector accounts for about 54 per cent of GDP and three quarters of industry."(EBRD, 2007)

The bank will lend more in the future to support diversification of the economy, without, however, renouncing further investment in the oil and gas sector, including its pipelines, as the country has huge geo-strategic importance as a transit country outside of Russia for fossil raw materials from the Caspian Sea and Central Asia.

The EBRD profits twice from the project: through interest income and through revenue earned on the sale of a total of 4.5 million credits. The EBRD therefore has every reason to build the Multilateral Carbon Credit Fund somewhat on the foundations of AzDres project. The other CDM projects in the fund together bring in only 3.3 million credits and

Illustration: google earth

The AzDres plant in Mingechaur is state owned.

are on average only one tenth as large as AzDres. Also risks associated with selling the rights are low, as the main customers are sitting on the Fund's Board of Governors, such as Luxembourg, which is represented through its Minister of State.

A number of questions arise in connection with this project. A CDM project should be in addition to and different from usual practice in the country. Current practice, however, is the aforementioned power plant itself – such that it produces more than half the country's electricity. A wind farm or a dam would constitute departing from current

practice, continuing the same practice, while improving it certainly isn't.

Nowhere to be found in the EBRD's strategy paper is a passage which states that reducing emissions the primary purpose of modernising – rather it emerges as a positive side effect of improved economic efficiency. Nowhere does one get the impression that the modernisation hinges on whether it is a CDM approved project – at the present time (March 2009) it has also not yet been registered as a CDM project at the UNFCCC (UNFCCC, 2009).

Luxembourg has already paid for rights from a fund whose main supplier of credits has not yet even been registered as a CDM project at the UNFCCC. We are paying for rights which come from a project in which more electricity will be produced from oil and gas - just more efficiently and with less emissions - and therefore this is not deferring from usual practice in the country, because the plant represents the usual practice for power generation in Azerbaijan. With such mental acrobatics, any power plant in the world can be legitimised and rehabilitated as a CDM project - neutralizing the CDM's offsetting effect. CDM projects must be free of any additional grants from development funds – doesn't this criterion apply here to USAid's feasibility study? And why is it that „the fastest growing economy in the world" (see above) can only rehabilitate its (own) biggest power station with funds obtained through the sale of emission rights?

Sources:

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2.7. Siberian gas

Worldwide natural gas rises up from underground as a result of the extraction of petroleum. Until a few years ago this gas was seen only as an inconvenience or a cost factor for the oil companies, as there didn't appear to be a commercial use for it. The cheapest answer was to let it vent or to burn it off.

With the gas harmful sulphur and nitrogen oxides, and carbon monoxide and various hydrocarbon compounds were released into the air. People living around gas flaring fields - whether in Siberia, Ecuador or Nigeria - have above average rates of cancer, respiratory problems, deformities, paralysis, headaches and other fatal diseases (Rosch, 2008).

Therefore physicians and environmental and human rights organisations have been urge a worldwide ban on gas venting and flaring. Across the world according to the Global Gas Flaring Reduction Partnership (GGFR), over 150 billion cubic meters of gas is flared annually. This puts about 400 million tons of CO2 into the air - 30 times Luxembourg's emissions (GGRF, 2006).

The GGFR is an umbrella organisation of the largest oil companies and producer countries of the world under the leadership the World Bank since 2002. It supports the preparation of new CDM and JI methodologies (GGFR, 2008) – and has done so with success: the UNFCCC recognised the avoidance of gas flaring as a methodology. Russia is the world's number one gas flaring country (about 38 billion m3) – burning twice as much as in second placed Nigeria (about 20 billion m3).

Every year more than 50 million tons of CO2 are released into the atmosphere from Russian soil. If this can be avoided by capturing the gas and using it in JI projects, Russia can generate potential revenue of about $ 250 million per year until 2012 (Shevchuk, 2008).

The gas that is released as the oil is pumped is usually simply burnt off.

Illustration: ASTM

2. Luxembourg's CDM projects

Using gas instead of flaring

In Kondisky District in the south of the Khanty-Mansisk Autonomous Region and in the middle of the western Siberian oil region, Yukon Gas runs a JI project in the Danilowski oilfield, in which the vented gas is liquefied primarily for heating in the region (Flare gas ..., 2006). Between 2008 and 2012, according to the Project Design Document 433,000 tonnes of CO2e saved. These savings are sold as credits to the European Investment Bank's and the World Bank's Carbon Fund for Europe. Luxembourg's share of this EUR 50 million fund is EUR 10 million, i.e. 86,000 credits (but the government claims they have rights on 124,000 credits).
A second, much larger JI gas recovery project is located on the northern bank of the Taiga, in the Urengoj oil and gas centre in the Yamal Nentzen Autonomous Region. Rosneft, the largest Russian oil company, is investing approximately $ 129 million in a compressor station to be used in the Komsomolskoje oilfield to capture, compress and pipe gas to Gazprom's national network (www.energy-enviro.fi). In 2008 Rosneft signed a contract with the World Bank to supply credits - the project is projected to save 2.4 million tonnes CO2e annually. It represents the largest project in the Carbon Fund for Europe and Luxembourg is entitled to 300,000 credits from this project alone.

The map gives a visual impression of the enormity of gas flaring in Western Siberia.

Illustration: flickr

„Hot air" from Russia

Why, however, is Russia allowed to sell credits at all - it is a developed country? Russia committed itself through the Kyoto Protocol to maintaining emissions at 1990 levels. However, Russian greenhouse gas emissions fell as a result of the collapse of the Soviet Union and the Russian economy from 1990 to 2005 – effectively, unaided - by nearly 29%. This 29% approximately, will likely form its „emission reserve" until 2012. A. Shevchuk notes that:" ... we have 29% in reserve which can be sold at a profit." (Shevchuk, 2008).
Russia can, according to Kyoto Protocol sell greenhouse gas reductions as credits, as long as their sum is not greater than this margin of 29%, and provided they are achieved and measured using recognised methodologies, and the same goes for the other Kyoto countries of the former Soviet bloc, that are not in the EU. In Kyoto jargon this margin is referred to as „hot air" – the candy to get the former Eastern Bloc countries into the boat.
We are not talking about peanuts, but of a volume of almost 800 million tons of CO2 per year for Russia (UNFCCC, 2007), enough „hot air" to neutralise double the 8% overall EU reduction target (making the reduction target a complete farce).

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The conversion of plants in order to utilise the escaping gas is being financed by emissions trading.

Illustration: flickr

Filling up for Gazprom?

These projects, which capture the gas instead of it being flared are all sensible and long overdue - in Russia and throughout the world. But instead of creating flexible mechanisms as economic incentives for using the natural gas, all that would be necessary to stop venting and flaring would be simply to prohibit them, like any other environmental pollution. Corporations make net annual profits amounting to many billions of dollars - such as Exxon, which made $ 36 billion in 2005; they are only able to achieve these dream results because they and others keep their production costs as low as possible - at the expense of humans and the environment in the region.
It makes a difference to the climate. A worldwide ban on flaring would mean a real reduction of greenhouse gases – but would also diminish the profits of oil companies. When an incentive is created through the sale of emission rights (and additional profits) only a part of the gas is not flared and it changes nothing in total levels of global greenhouse gases - only now, instead of the gases coming out of the Siberian soil, they come out of Danish chimneys or Luxembourgish exhausts. When refuelling, our Kyoto Cent goes into the Kyoto Fund via the Carbon Fund for Europe to Yukon Gas, Rosneft and Gazprom who garb themselves in green, while in climate terms absolutely no change has been achieved.

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2.8 A fresh south wind blows

About one third of Luxembourg credits come from wind projects - and this is positive. There are six wind farms in total - one each in Bulgaria and Romania, generating credits for the Multilateral Carbon Credit Fund, one in India and Pakistan, producing credits for the Asian Pacific Carbon Fund, and two large 49-megawatt parks in China,. These two Chinese wind farms, the Liaoning Changtu Wind Farm and Guohua Inner Mongolia Wind Farm, which together generate 1,642,000 credits, are backed by Swiss Re Global Markets Limited, a special fund, which Luxembourg has recently signed a purchase agreement with.
The Liaoning Changtu Wind Farm, which is located in the north of the northern Chinese industrial province of Liaoning, in the city of Tieling, was registered on 16th April 2007 and from that day until 15th April 2014 will generate 101,000 credits per year (Liaoning, 2007). The Guohua Wind Farm is located in the far north of China, near the city of Hulunbeier, and was registered on 3rd June 2007 and from then until 2nd June 2014 will produce 124,500 credits per year (Guohua, 2006).

Booming wind energy in China and India ...

In February 2009, Robert Poth sketched the Chinese wind energy market as follows: „China is already, as of 2008, the world's most important location for the industry, or it will attain this position in the current year (2009). (...) In general, the success of wind power in China is down to state support and the conditions awarded to wind power projects. „(Poth, 2009)
The situation is similar in India, according to the Indian magazine „Down To Earth", in its August 2008 article „Breezy Business". Of the 966 Indian CDM projects approximately 20% are wind energy projects. Up to 2012 they will generate about 18 million credits. There are only 54 projects registered with a total of 1.3 GW, about 15% of India's capacity. If all the projects currently in the queue are registered, the entire CDM capacity of 4.15 GW will equal roughly half of the installed capacity in India. The CDM-wind turbines could generate 20-25% returns. However, the Indian success story of wind power is based primarily

Illustration: flickr

In China and India wind energy is a booming industry.

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By end-2008, worldwide energy capacity from wind farms totalled 125 gigawatts.

Illustration: flickr

on a depreciation rate of 80% in the first year, making them competitive with diesel power plants. To become CDM-accredited, they are obliged to use creative accounting to show that their project could not be realized without the CDM. „Few are caught, most sail through." according to Down To Earth (CSE, 2008).

Not only in China and India, but globally wind energy is booming. At the end of 2008, the installed capacity of wind power plants had reached about 125 gigawatts worldwide, estimated the magazine Windpower Monthly in January 2009 (Poth, 2009). „Between 2005 and 2007 alone, the installed capacity of wind power plants doubled worldwide from 47 to 94 gigawatts, driven by new projects mainly in the US, Spain and China ... ... Meanwhile, it is a fact that when oil prices rise above $ 70 per barrel ... electricity from diesel power plants in many regions of the south is already more expensive than electricity generated from wind turbines."(Jensen, 2009)

Current CDM rules require proof of the „additionality" of each project. It is unlikely that in one of the biggest boom industries in the world so many projects would be economically unsustainable, without the proceeds from the credits. It is also difficult to understand, how CDM windmills deviate from normal business, when nearly half the national wind energy capacity is from CDM projects, as is the case in India.

Undoubtedly, despite all these reservations, one of the CDM's conditions has been met here: the transition from fossil to renewable energy sources is being promoted in the southern part of the world.

But for the two wind farms in China another problem emerges. According to their project documents both generate combined credits of 225,500 per year over the seven-year period from 2007 to 2014, making a total of 1.58 million credits. In his answer to a Parliamentary Question

on 8th May 2008, Minister Lux: „On the other hand, the state of Luxembourg has signed an agreement with Swiss Re Global Markets Limited to transfer a total of 1,642,000 CERs, with 30% of the emission credits guaranteed. Swiss Re will ensure these credits derive from wind power projects in China. The projects in question are Liaoning Changtu Windfarm, where 66 turbines will be installed, each generating 750kW, and "Guohua Inner Mongolia", where 39 turbines will be installed, each generating 1250 kW." (Lux, 2008)

How can we acquire 1.642 million credits from two wind farms, which together only produce 1.58 million credits? If anything, Luxembourg would have to be the sole buyer of all its credits... In the UNFCCC secretariat's lists only Great Britain appears as a participating country in the Liaoning project and only Japan in the Guohua project, but neither Swiss Re nor Luxembourg (UNFCCC, 2009). Did these two countries sell their rights within a year of acquiring them to Swiss Re, and did Swiss Re in turn sell them to Luxembourg? This seems quite unlikely. It is also striking that in neither of the ministerial responses about the price of credits from the two wind farms, was any mention ever made of the total cost of the purchase agreement, nor the projects' annual production. This is a pity - the statement that one third of Luxembourg's credits come from wind farms, will only stand upon further clarification.

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3. Conclusions

3.1 The real impact our emission rights have on the climate

After the journey through „our“ projects, we want to know what they are actually contributing as a whole in the fight against climate change. In the table „The reduction contributions of our projects“, projects which use the same methodologies as highlighted in the previous examples are grouped and sorted according to the Luxembourg fund's weighted share. The three groups in the table, all largely based on biomass (Landfill Gas Capture, Waste Management and biomass), are considered together in the text as the „biomass" group. The column „Share“ shows the weighting of each methodology as a percentage of Luxembourg's total credits. In the „Additionality“ column, the same standards are applied to „our“ groups as are used in international CDM analysis. This yields the real estimated reduction contribution, and - in the last column – each methodology's real weighting as a percentage of Luxembourg's total credits. The approach used here is an very approximate one based on figures taken from various international studies - an accurate assessment would require an external neutral on-site evaluation (i.e. one not paid for by the project operator) of each project.

1. Hydroelectric power:

„Our“ ten hydroelectric power plants in the fund altogether contribute 180,405 tonnes or 3% of Luxembourg's credits. The two that we looked at in Honduras and China, were being built long before being awarded CDM project status – so they cannot be included. Barbara Haya of International Rivers, in her dissertation on the additionality of CDM dams has come to the conclusion that: "Evidence strongly suggests that the great majority of the hydros in the CDM pipeline are non-additional.“ (Haya, 2007). We assume that „our“ ten dams overall do not differ significantly from all other CDM dams around the world. As Haya

Table 1: Our projects' contribution to reduction

	Emission rights	Luxembourg's share	Share	Additionality	Reduction	Share
1. Hydro energy projects	2 304 870	180 405	3%	50%	90202	3%
2. Wind energy projects	3 204 000	1 760 309	33%	80%	1408248	46%
3. Sinks	4867352	452664	8%	void	0	0%
4. Landfill gas capture	2 093 000	654 026	12%	80%	523221	17%
5. Waste management	3 196 000	456 394	9%	80%	365115	12%
6. Biomass	2 755 000	222 651	4%	80%	0	0%
7. Other projects	7 006 000	833 822	16%	80%	667058	22%
8. Fossil fuel projects	7 352 000	781 026	15%	no	0	
	32 778 222	5 341 297	100%		**3 053 843 (57%)**	**100%**

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has not quantified the description "the vast majority", we will attribute a 50% additionality factor to „our" dams. This means their contribution to the reduction of greenhouse gases amounts to 90,000 tonnes. Though they substitute fossil with renewable energy – dams have long been widely used to produce energy in the south - they do not amount to technology transfer.

2. Wind power:

According to government information wind power provides 1.76 million credits, a third of all Luxembourg's credits, and is the most widely applied methodology. It is hard to comprehend, however, why one of the biggest worldwide growth industries, needs additional revenue from the sale of credits. It would be appropriate here to take on board the Öko-Institut's assessment that, due to weak standards and inconsistent procedural rules, "20% of certified emission reductions under the initiative may have happened even without CDM financing" (Schneider, 2007). So, only 80% should probably be counted, i.e. 1.4 million credits. The biggest issue is, however, the questionable numbers, as it seems illogical that Luxembourg would be the sole buyer of all credits from the two Chinese wind farms. It is more likely that the total quantity of „our" wind credits is much lower than stated.
These quantitative problems aside, the wind power clearly contribute to emissions reduction and structural adjustment.

3. Sinks:

These only sequester carbon temporarily and are therefore a singular waste of time. They make no contribution in terms of reduction, and no technology is transferred.

4. + 5. + 6. The biomass group:

The majority of projects are landfill gas capture, waste management and biomass. They generated a total of 1.33 million tonnes, i.e. a quarter of „our" greenhouse gas reductions. Here too, the Öko-Institut's estimation that 20% of credits come from non-additional projects, could be a rather realistic approach, so in reality, we can count on just over 1 million tonnes of reduction. Many of the projects

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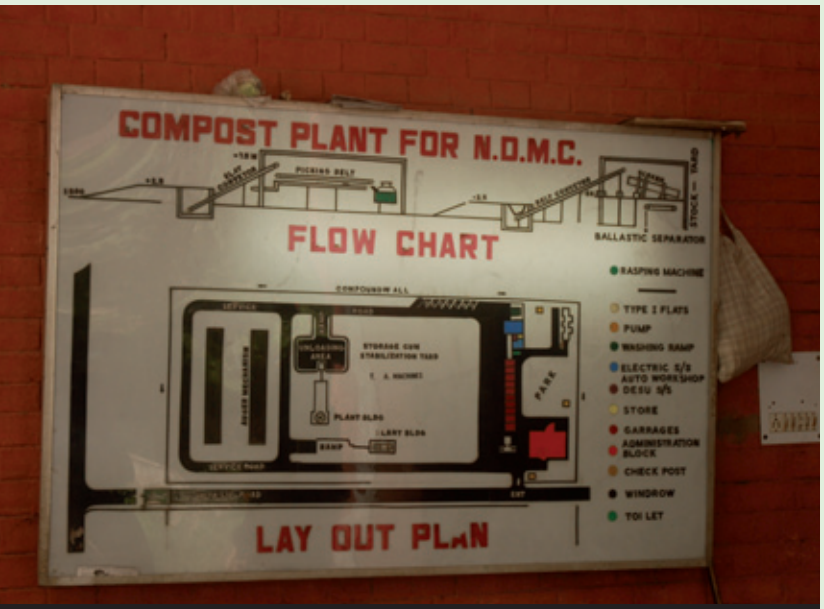

Floor plans of the Timarpur-Okhla incineration plant in New Delhi, India.

Illustration: CSE

contribute to a technology transfer towards the use of renewable energies. However, some also have a very negative impact on the local population. The high proportion of landfill gas capture projects is noteworthy. Since public institutions are often the contracting party, these projects also have greater potential to involve the local population.

7. The remaining group of „other projects"

This includes, for example, geothermal projects, geothermal energy use, energy-efficient Indian brickyards or the only solar energy project. They provide 834,000 (or, 16%) of Luxembourg's credits. Here too the 20% rule seems appropriate; 80% equals 667,000 credits. Many of them contribute to technology transfer in support of renewable energy. However, the fact that only one project uses solar energy (solar homes in Bangladesh) and is also not yet registered, is regrettable.

8. The group of „fossils" projects:

These are four projects, using oil and gas, at best more efficiently, which together generate 781,000 credits for Luxembourg. In themselves they may be positive, but their additionality must be questioned. Here, the global oil and gas industry players and their banks take advantage of the lack of environmental laws in the weak democracies of Nigeria, Azerbaijan and Russia. These credits cannot be counted. They do not finance a transition to renewable energies, on the contrary, they reinforce the existing fossil(ised) fuel structure.

According to present arrangements, the projects altogether generate only an estimated 3.2 million tonnes for Luxembourg emission rights to compensate for our domestic emissions, which are 60% of the 5.3 million purchased credits. The remaining 2.1 million credits, more than a third, may be considered "fake" carbon credits. If one takes the shares already purchased in the sink fund and the average price of EUR 9.5 per tonne in the rest of these funds, almost EUR 20 million have been spent just to fulfill commitments under an international treaty, but in reality nothing has been done to reduce greenhouse gases.

By the end of December 2008, 5.3 million credits had been acquired (or their purchase agreed), making up a good quarter of the required reductions by the end of 2012, of minus 28%. The government has in the 2nd Allocation Plan and the Kyoto Fund all the resources needed to purchase these rights. If we continue in this manner and purchase

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the remaining estimated 15 million credits from similarly distributed funds and individual projects, then by 2012 we will have spent a further EUR 120 million (assuming constant prices). If there are no fundamental reforms to the flexible mechanisms in the meantime, then around a third of the money (about EUR 40 million) will have been wasted with no impact on the climate.

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3.2. And the outlook?

Luxembourg does not contribute to combating climate change, commensurate with its responsibility and its ability to contribute - and it should. The real Luxembourgish climate footprint will continue to be business as usual by the end of 2012, although the target of -28% will have been formally reached (completely through „outsourcing"), the whole thing is in fact a whitewash: whoever attains their target exclusively through the purchase of credits is merely engaging in an accounting exercise, not one where physical emissions are actually reduced. Our actual emissions remain in the atmosphere, where no one who can remove them (sinks only sequester them temporarily).
However, since the emission rights are purchased with fake credits totalling about a third, then even this accounting offsetting is fake. This means that by 2012 we will have spent EUR 180 million, and our economic structure would still be the same - and then what? If all industrial countries – like us – rely entirely on the purchase of emission reductions rather than on their own reduction efforts, and ignore their contractual agreement in the Kyoto Protocol, that acquisitions may only be "supplemental", and in the Framework Convention on Climate Change, that developed countries must provide inputs, then we should not be surprised if the developing world will conclude no further contracts with such partners, since the costs of climate change are already much higher than the benefits from the sale of the credits. That is our moral and political and practical failure. And without a follow up agreement to the Kyoto Protocol, the future for the climate looks bleak.

Illustration: ASTM

Dhaka/Bangladesh: economic development in the South means transport generated C02 emissions will rise.

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The loopholes get tighter

Moreover, the question arises how Luxembourg will cope after 2013 with the EU allowing its members less room for manoeuvre. The 2008 EU climate and energy package for the period from 2013-2020, allows annual purchase rights equivalent to 3% of 2005 national emissions levels for the non-ETS sector (this includes all sectors outside the heavy industry covered by the ETS). In addition, each member country may acquire the emission rights of other EU countries and can save up unused margins for subsequent years (those, for example, that use only 2% in 2015 may buy 4% in 2016). For some member states - including Luxembourg - that maximum of 3% is actually 4%. Yet this clearly narrows the scope for Luxembourg to shop, as the country has assumed it would meet its 2012 reduction target of 100% coverage through acquisitions.

General weaknesses of the CDM

Before we address the possible options, it is necessary to take a look at the general discussion surrounding the CDM. It would not make a lot of sense now to simply look for other projects since all projects are created according to the same rules. There are two basic problems:

(1) Luxembourg buys far too many rights and has reduced far too little at home. Emission rights can only be purchased to „supplement“, which means that the vast majority of the reduction must be made domestically. This is the first and most important change needed.

(2) CDM is not working as it was originally intended. Hardly any of its goals have been achieved with the current set of rules:
- It makes almost no contributions to sustainable development in the project regions.
- It makes a wide arc around the poorest countries.
- It is as good as nothing in the area in which developing country emissions are increasing at the fastest rate: traffic.
- Its poor self-control mechanisms result in „fake credits“.
- Its contribution to technology transfer is essentially limited by the fact that the issue of patents is not affected.

CDM: Whoever has the most, gets the most

From a development perspective the very unequal distribution of CDM projects amongst host countries is most serious. The table below is based on figures from the UN‘s Hu-

man Development Handbook 2007/08 and the UNFCCC's website. To point out the differences between rich and poor developing countries vis-à-vis the Clean Development Mechanism eight countries were selected in this comparison:
- Qatar is - according to GNP per capita 2005 - the richest „developing country" (and fourth richest country in the world).
- South Korea is the „developing country" with the fourth largest market (after China, India and Brazil), measured in GNP in $.
- Bangladesh, Nigeria and Haiti are among the „least developed countries", with Bangladesh the most populous of the poorest countries in Asia and Nigeria the most populous of the poorest countries in Africa (and it has oil). Haiti is the poorest country in Central and South America.
- In addition, China, India and Brazil because they are the three major CDM host countries.

The table reveals the following: the CDM benefits those who are ahead, anyway, or, money attracts money. Qatar, the richest „developing country", exports by far the most credits per capita. Big rich „developing country" South Korea sold by far the most credits per capita (after Qatar) – along with China it is the big winner in the CDM game. The Korean projects generate the most credits per project in the world (apart from Qatar and Nigeria, with their industrial gas). The Clean Development Mechanism is uninterested in the world's poorest countries (unless they are oil and gas rich, such as Nigeria, as we have seen in Section 2.4).

That this is no coincidence, but a logical consequence of the high fixed costs and the calculation methods, Honorat Satoguina demonstrated when he pursued the question as to why there were so few CDM projects in the energy sector

Table 2: Who has made the most money out of CDM ?

Country	HDI ranking	Per capita GDP $ (2005)	Per capita CO2 emissions (2004)	CDM registered projects (08.04.09)	Estimated annual credits	Share of all credits	Credits per project	Credits per thousand inhabitants
South Korea	26	16443	9,7	25	14734467	5,26%	589379	308
Qatar	35	53125	79,3	1	2499649	0,89%	2499649	3125
Brazil	70	4262	1,8	157	20124443	7,18%	128181	108
China	81	1702	3,8	508	158599104	56,61%	312203	121
India	128	710	1,2	415	34178013	12,20%	82357	30
Bangladesh	140	391	0,3	2	169259	0,06%	84630	1
Haiti	146	500	0,2	0	0	0,00%	0	0
Nigeria	158	700	0,9	2	4123669	1,47%	2061835	29
		1939	**2,4**	**1559**	280153000	100%	179700	54

Source: Human Development Report 2007/08 and www.unfccc.int

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No CDM boom in the poorest countries.

Illustration: ASTM

in West Africa (Satoguina, 2007). He concludes his extensive book in resignation with the sentence: „As the studied countries' competitiveness is low in that CDM project sector, it would make sense to investigate CDM opportunities of non-electricity related project types, such as in LULUCF sector." (i.e. sinks projects).

The CDM has not helped the poorest countries to catch up, rather it has widened the gap within the group of developing countries. The CDM has ultimately no contribution to make to the developmental priority of poverty alleviation.

How will the CDM be reformed?

At the climate summit in Poznan in December 2008, the CDM Executive Board, the CDM registry supreme authority, was mandated to reform (UNFCCC, 2008). One can only hope that this brings about genuine structural reform. The CDM Executive Board, however, is constantly under pressure from many sides.

There is a new global caste of business consultants - project designers, validators, auditors and monitors play a key role in the CDM business and bring home the lion's share of the revenues. They argue in particular for a simplification of the recognition process. The largest among them - Det Norske Veritas – claims to have validated 50% of the first 1000 registered CDM projects. In November 2008 the CDM Executive Board suspended DNV's accreditation because too many rules had been infringed. Points 28 and 29 of the reform mandate include clarifying the procedural rules for such suspensions,... in February 2009 Det Norske Veritas was again admitted.

The influence of the large banks is huge - especially the US-dominated World Bank. It may well be the institution with the strongest influence over the rules of the game, particularly through the introduction of new methodologies. With the USA joining, for whom emissions trading is a priority, the Bank's influence will grow even further. It makes use of new methodologies primarily for its own interests and those of its major industrial customers, such as the major oil and gas companies – clearly illustrated by the example of gas flaring (see Chapter 2.4 and 2.7).

Joint Implementation projects, in the former Eastern Bloc industrial countries, outside the EU, are at a much earlier stage than the CDM, however, the omens are not good. All the credits Luxembourg has gained from JI projects are generated by large industrial projects. One gets

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the impression that the Russian and Ukrainian oligarchs are only interested in dividing up the lucrative mannah of „hot air“ between themselves, which resulted from the economic collapse of the Soviet Union in the 1990s. These JI projects stabilize the existing fossil(ised) fuel structure and - like CDM projects – perpetuate a zero-sum game for the world‘s climate.

We must therefore not put naive hope in a game whose rules are in large part influenced by the main instigators of climate change, who have no interest in a structural change in our country or around the world. Nevertheless, it would be wrong, to abandon the playing field in resignation. Climate change is a reality and we must not be railroaded by the jargon-spouting experts of the new international „Kyoto jet-set „, with English code words and abbreviations, who love to meet at climate summits, and allow ourselves as „laymen“ to no longer dare to interfere. The climate affects everyone - and we must get involved, even if we do not know all the ins and outs of Luxembourg’s 2nd Allocation Plan.

The current CDM structure of project-based, company to company dealings - this also applies to JI - has achieved little except transfer funds within the industrial and financial elites of the industrialised and emerging developing countries (the film, “Geschäfte mit heißer Luft (“Hot air transactions”) illustrates this with the example of Indian CDM projects, Uebel / Ugurlu 2009). The invisible hand of the market takes the money from the left pocket of the pinstripe suit and puts it back into the right pocket. As long as the issue of patents is not affected, the CDM often functions as an export subsidy for companies in the north, with their technologies and products wanting to gain a foothold in new markets in the south. (Morales, 2008). And the CDM has an added advantage for the oil and gas companies of the North: in spite of the cap on emissions through the

Illustration: CSE

Kyoto Protocol, the market for the remaining oil reserves has not gotten any smaller.

New global approaches

Developing countries need our help to forge another development trajectory using less fossil energy than we did. They have the potential to use renewable energies - and the 2 billion people whose main source of energy is biomass have a „right to development in the greenhouse“ (EcoEquity, 2007), using electricity and energy which is more convenient for cooking and heating. The Stockholm Institute and EcoEquity have produced in the „Greenhouse Development Rights Framework“ a model that points the way, in particular in defending the right of the poor of this world to develop and placing the burden of the fight against climate change on the global consuming class. The film

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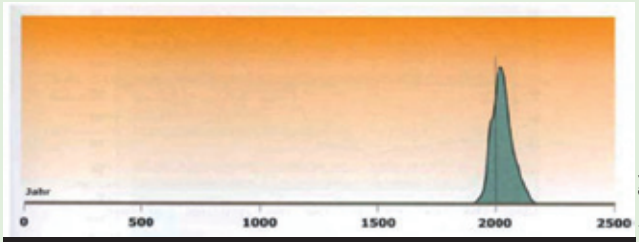
„Para nosotros no queda nada“ (There is nothing left for us), produced by the Bolivian think-tank, CEDIB, on behalf of ASTM, documents the example of the energy poverty of indigenous Bolivians and the urgent energy needs of the poorest third of humanity (CEDIB, 2009).
Alternative development paths are not achieved by free market forces alone – the CDM proves this. You need stronger government control. For the Chinese and Indians, it is not the CDM framework but rather by state intervention, such as high depreciation rates on the investments, that has managed to make wind energy a boom industry. The construction of urban subways and bus systems, and dense rail networks and bus routes in the country is not feasible without additional tax funds. Environmental laws should be adopted and enforced, where the protection of public health requires it. Such „programmatic CDM“, not based on individual projects, but whole sectors or policy areas, are currently being discussed by the whole panoply of CDM emission traders to climate scientists and activists. Actors range from those who differ in nuance over reform to the CDM to those who completely reject it. (APRODEV 2009, CAN-E 2009, Environmental Finance 2008, Eurosolar 2009, Greenpeace 2009, IETA 2008, Okereke / Schroeder 2009).



The Oil Age will be short.

Illustration: flickr

Approaches of this kind also surface within the current development policy debate under the title „budget support“. „Programmatic CDM“ or „budget support“ might offer developing countries funds, for instance, to cover high depreciation rates or a premium for feeding renewable energy into the conventional grid. Thus, for example, the Indian Centre for Science and Environment proposes a state-subsidised „wind program“ inspired by the positive experience with the „Renewable Energy Law“ in Germany. In this manner, parts of the public transport infrastructure costs could also be covered, or environmental laws could be given the required financial backing and subsidies could be given to companies for switching to alternative energies. It is just a matter of helping developing countries with the initial steps which are not considered worthwhile by private investors, at first glance.

What to do in Luxembourg?

We have seen that the unbridled use of the Clean Development Mechanism, as practiced by Luxembourg is in many respects counter-productive to the fight against climate change: it is purely an accounting method for offsetting our own real emissions against fictitious emissions saved in the host countries, which is contaminated by „fake credits“, it contributes very little to sustainable development in the project regions, and it reinforces our fossil(ised) fuel structures. What does this mean for us in Luxembourg?
The Kyoto Fund, which funds the purchase of the rights, can become a tool with which we in Luxembourg, in line with our share of responsibility for climate change and our economic capabilities, help countries of the South adapt to climate change and adopt less carbon-intensive development paths. The universally accepted polluter pays principle means that we as polluters must pay for the damage. It

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may no longer be misused to purchases further pollution rights. From the Kyoto Fund, we should find resources for developing countries, firstly, to enable them to better adapt to the consequences of climate change (this is not about charity but damage recovery), secondly, to give them the means to start on a less carbon-intensive development path – through reformed CDM rules or through budget support - and thirdly, to fund climate protection measures in Luxembourg itself.

The fact that, even with the best will in the world, no development policy criteria can be attributed to the rights acquired to date is also because the bulk of them come from funds over which we have hardly any influence.

Luxembourg's Interministerial Kyoto Committee, which is responsible for the use of the Kyoto Fund, and includes officials from the Environment, Development, Economics and Finance Ministries, has to date given priority to the acquisition of cheap and secure supplies of emission rights through recourse to the various funds. This committee should be reformed, its staff increased and its workings made more transparent, i.e. we need clear criteria for purchasing and political control to ensure these criteria are applied. It cannot be that public money, which by 2020 will have accumulated to the magnitude of the annual cooperation budget, is used for projects in the south of the world without any developmental criteria.

At the same time, funds which are used for the purchase of credits may not be counted as Official Development Assistance (see Schiltz, 2009, p. 54). There must be greater coherence between climate and development policy in the use of resources and a clear separation of the origin of funds.

But most importantly for us is: we need to do our climate homework and make real reductions in greenhouse gases here. We owe it to people in developing countries.

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Environmental activists demonstrate at UN climate change conference in Bali, December 2007.

Illustration: Thomas Brose / Climate Alliance International