

“Common but differentiated responsibilities”: behind this vague term, the Kyoto Protocol means to compel developed countries to make the greatest efforts in combating climate change, while encouraging emission reduction policies in developing countries. But the main tool of its implementation – the Clean Development Mechanism, is not sufficient to fuel the structural action needed in the South. Creating this momentum, which lies at the heart of sustainable development, is one of the major challenges facing climate negotiations.

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From Rio to Marrakech: development in climate negotiations

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The creation of a global regime for reducing greenhouse gas (GHG) emissions is dependent on reaching an agreement on the role of developing countries. However, although the Rio convention – the cornerstone of international climate negotiations – laid down the principle of “common but differentiated responsibilities”, this rapidly became the object of differing interpretations. While Brazil wished to determine countries’ commitments on the basis of their historical responsibility since the industrial revolution, the Indian Anil Agarwal proposed an egalitarian allocation of emission allowances for all the inhabitants of the world. The United States, stressing the need for global action, indicated the unacceptable risk to the American economy of a unilateral commitment by developed countries. The international climate commitments regime must reconcile the interests of all parties and, above all, assist Southern countries in achieving sustainable development.

FINANCIAL AGREEMENTS AND MECHANISMS

How can developing countries (DCs) contribute to the fight against climate change through domestic GHG emission reduction policies under international climate agreements? During the Kyoto conference, DCs declined to make any quantified or binding commitments for the first commitment period ([Box 1](#)). But even before the conference, the United States had made it known that it could not commit to reducing its GHG emissions without a similar commitment from DCs^a. And by the close of the Third Conference of the Parties (COP3), it was clear that this exemption for DCs was only provisional, and that the negotiation of future commitments would only be possible if the issue of their participation was addressed. The years following Kyoto were in fact marked, in both the North and the South, by a number of initiatives aimed at developing suitable methods for integrating DCs into the Kyoto model: differentiated allocation systems as a means of distributing emission allowances according to often irreconcilable rules of equity; non-binding commitment schemes; or even multistage approaches, with progressive and differentiated participation according to the level of development reached in the countries concerned.

Since then the negotiating climate has seen considerable developments. *The withdrawal of the United States has weakened the political weight of the Protocol and created an imbalance in the conditions for its implementation.* The United States, which was nevertheless at the origin of the Protocol's key concept of quantified commitments coupled with an international emissions trading system (which Europe came over to reluctantly), is now criticizing the inadequacy of short-term action on emissions, which would harm economic momentum without achieving the environmental efficiency sought. It proposes action "based on science" that "encourages technological innovation". This model appeals: in June 2005 the United States signed the Asia-Pacific Partnership agreement with Australia, Japan, China, India and Korea, thus covering 50% of global GHG emissions. The agreement rules out any form of binding commitment and focuses on technological cooperation and private sector involvement. Although several ASEAN countries, Canada and Mexico have since shown their interest in this approach, the partnership has been widely criticized not only by the European Union and major environmental organizations, which condemn its worthlessness given the absence of any target outcome, but also within the United States itself where the Republican Senator John McCain described it as "nothing more than a nice little public relations ploy".

This venture in which innovation and technology transfer would make it possible to control emissions without questioning the energy paradigm, is attractive, especially for emerging countries. Its success, and the danger it represents as an alternative to the international coordination model, have successfully revealed the weakness of the discourse and the prolonged absence of action by supporters of the Kyoto Protocol on this issue. Today, Europe is fleshing out its domestic research and development strategy and is in turn striving to build a dialogue on energy policies and technological cooperation with the major emerging countries. But for Europe and its partners that supported the position of DCs in Kyoto, the priority for dialogue on future initiatives (post-2012) instigated in Montreal is to ensure more active participation, at least for middle-income countries.

^a A resolution adopted by the American Senate set this as a precondition for the United States' entry into a binding mechanism.

The United Nations Framework Convention on Climate Change

The climate change alarm raised by the scientific community was gradually echoed by the international authorities, leading to the United Nations Framework Convention on Climate Change (UNFCCC), which was opened for signature by States in 1992, during the Rio Summit on environment and development. This Convention sets the objective of stabilizing “greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”, while ensuring that such a level is “achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner” (article 2). To accomplish this, the parties to the Convention are requested to act “for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof” (article 3).

The Kyoto Protocol

After the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 1995) declared that the commitments made under the Convention were insufficient to prevent the negative effects of human activities on the climate, the party States decided to negotiate a protocol with a view to consolidating the Convention. Adopted in December 1997, the Kyoto Protocol includes *binding provisions* according to which by 2012, *industrialized countries must reduce their emissions of six GHGs by at least 5%. Developing countries have no emissions targets under the Protocol, but are involved in the international effort through voluntary initiatives* and especially an ad hoc system, the Clean Development Mechanism (CDM).

The Marrakech Accords

The rules specifying the arrangements for implementing the Kyoto Protocol were drawn up during the Seventh Conference of the Parties and are known as the Marrakech Accords. These agreements set out the means of calculating emissions and their reduction, the rules for integrating carbon sinks into reduction targets, the way in which the observance system works and its goals, and the rules and eligibility criteria for the Protocol’s flexibility mechanisms. The Marrakech Accords also provide for the creation of financial and technical assistance to DCs.

Reconciling development and emission reductions

Beyond negotiation postures and rhetorical speeches on responsibility and equity, the reluctance of DCs to commit further is based on a legitimate concern: limiting the growth in emissions – which are currently very low given the low level of energy consumption – could restrict their access to energy, and thereby threaten their development. In the absence of an explicit vision of the future emissions trajectories that an international regime

could impose on Southern countries, *some feared ratifying a 'de facto' division with this agreement*, where developed countries today represent half of all emissions for only a sixth of the population. These ideas have been refined since: projections generated by modeling exercises to meet the objective of stabilizing GHG concentrations in the atmosphere describe medium-term growth in emissions for DCs. In order to limit climate change to reasonable levels, middle-income countries must return to their 1990 level of emissions by 2050, while the others could double or even triple this baseline level. At the same time, a fourfold reduction in developed countries' emissions is required¹ ([Figure 1](#)).

v **Figure 1: Emissions targets for 2050 by group of countries**

Stabilization target for CO ₂ concentrations	Temperature increase (IPCC average 2001)	Targets for 2050 compared to 1990 emissions	
		Developed and transition countries (Annex I)	Developing countries (non-Annex I)
550 ppm	+2.5°C compared to the pre-industrial era +1.9°C since 1990	A factor 2 reduction	x 2 (Lat. America, Middle East, South East Asia) x 5 (Africa, South Asia: no effort)
450 ppm	+1.6°C compared to the pre-industrial era +1.0°C since 1990	A factor 4 reduction	x 1 (Lat. America, Middle East, South East Asia) x 3 (Africa, South Asia: no effort)

Source: LEPII-EPE, 2003.

In this way, an ambitious target for GHG concentration stabilization can be pursued by granting the different regions of the world varying development margins that are adapted to suit their initial situations. However, achieving such targets depends on short-term control of growth in emissions in DCs. Two arguments are nevertheless put forward to postpone such action:

1) *Environmental action is a luxury that only rich countries can afford*, and DCs would only have the means to control their emissions once they reach a development level comparable to that of Northern countries. This argument is based on an 'end-of-pipe' approach to environmental policies, and is valid for certain issues (catalytic converters, sulfur capture in power plants, etc.), but not for climate change: developed countries in fact have the highest emission rates in relation to their population because of their energy-greedy economic model. Above all, it underestimates a major economic opportunity: in DCs, the energy, industrial and urban infrastructure that will determine their energy consumption in the decades to come has not yet been built.

2) *The fear that any investment aimed at reducing emissions enters into competition with the financial requirements needed to sustain the development process*. This argument is clearly justified for certain measures, such as CO₂ sequestration, which mobilizes capital by doubling investment costs. But where urban planning, transport and energy efficiency are concerned, a wide range of initiatives exist that are climate-friendly and also

sustain the development process. The resurgence of concerns about the security of energy supply provides another important opportunity for synergy with climate policies ([cf. chap. 11, Desanker](#)).

At first highly focused on ‘top-down’ approaches dealing with the costs of implementing climate policies and the potential benefits of market mechanisms, academic research and informal negotiations now have a far greater understanding of the operational content of these policies and the conditions of their application. Paradoxically, by revealing the wide range of initiatives required, sectors of the economy affected, technologies to be put into use and levels of decision-making concerned, this corpus also weakens the argument of the Asia-Pacific agreement, based on the support of a limited number of key technologies. It also endorses the supporters of an international coordination regime, which is the only kind capable of providing a sufficiently predictable signal for economic agents and supporting the emergence of solid domestic policies and private initiatives. But in the dialogue phase that has begun in preparation for the post-2012 period, two factors will also play a decisive role in the ability of parties to the Kyoto Protocol to convince their partners: the outcome of policies implemented by these countries in order to meet their commitments; and the assessment of participation mechanisms the Convention and the Kyoto Protocol currently offer to DCs.

Tools for combating climate change in developing countries

Important financial mechanisms, whether specific to the Climate Convention and the Kyoto Protocol, or broader in scope, play a part in financing the fight against climate change in DCs ([Box 2](#)). The Global Environment Facility (GEF) created in 1992 has certainly contributed to the emergence of interesting projects in terms of energy efficiency and renewable energies, and has encouraged training in these fields in host countries. However, it has focused on initiatives with high environmental content, which are often out of touch with real development dynamics. This approach has been further consolidated by the recent adoption of a system for allocating aid according to the contribution of beneficiary countries to the global environment – to the detriment of the ‘development’ approach, even if part of the contributions donors make to the GEF can be counted as official development assistance (ODA). On the other hand, DCs are reluctant to commit to reforming their national or sectoral policies, arguing that insufficient resources would be available to assist them.

While making the GEF the operational multilateral financial instrument of the Convention, the Marrakech Accords ratified the creation of several funds resulting from compromises reached during negotiations. *These instruments*, which are not yet fully operational, *mobilize scant resources*, and in fact represent little in view of the overlapping challenges for energy and the climate in Southern countries. Furthermore, they are not directed at the energy sector, with the exception of the “adaptation” and “capacity-building” elements of the Special Climate Change Fund (SCCF). All things considered, these funds are not therefore expected to play a significant role in the energy sector – even though technology transfer is one of the objectives of the SCCF – owing especially to donor countries’ lack of enthusiasm for this fund.

Although the Marrakech Accords put no specific figures to commitments, a series of developed countries agreed under the Bonn Declaration to increase their financial efforts. Despite its lack of success in mobilizing resources for the funds it created, the Convention has on the other hand clearly won the battle of ideas: all international funding agencies have acknowledged the importance of the issue of the fight against the greenhouse effect and

its connection with development assistance. Today, initiatives aimed at reducing GHG emissions in the energy sector represent far greater amounts than those of the Convention's specific funds. This aspect is, however, neglected or even completely ignored in international negotiations, especially due to the fact that DCs are endeavoring to demand 'additional' financing to ODA and are wary of the rhetoric of donors, who urge them to integrate 'climate' activities into their development strategy.

v Box 2: Financial mechanisms in the fight against climate change

The *Global Environment Facility (GEF)*. Even before the Rio summit, donor countries had agreed to create a financial fund dedicated to the major global environmental concerns (the greenhouse effect, biodiversity, the ozone and international waters). In 1992 the GEF became the financial mechanism of the Climate Convention, mobilizing almost five billion dollars in 10 years, all fields taken together. Managed by the World Bank and implemented by this organization, along with the United Nations Environment Programme (UNEP) and its Development Programme (UNDP), the GEF suffers from excessive red tape and a limited budget, meaning it is not able to play a quantitatively significant role, but instead backs exemplary and reproducible technical or institutional innovations.

The Marrakech Accords endorsed the creation of three funds: the *Special Climate Change Fund (SCCF)*, the *Least Developed Countries Fund* under the aegis of the Climate Convention and the *Adaptation Fund* under the Kyoto Protocol. The first is the result of a compromise between the European Union and oil-producing countries, concerning the effects on their economies of loss of revenue caused by the projected decrease in fossil fuel consumption in developed countries. The second constitutes a response to the fears of DCs, especially least developed countries (LDCs) concerning the fact that the GEF does not apply to activities concerning adaptation to climate change. The third, based on a more equitable redistribution of levies on CDM carbon credits (share of proceeds), may be seen as compensation for accepting market mechanisms. In total, these three funds currently represent less than 200 million dollars per year.

In addition to these specific funds, the fight against climate change in DCs is also financed by classical ODA sources. In the *Bonn Declaration*, the European Union, Canada, Iceland, New Zealand, Norway and Switzerland committed themselves – while urging other developed countries to do likewise – to providing additional financial support to DCs of up to 450 million dollars per year from 2005 onwards (compared to 2001). This commitment includes contributions to the GEF and to the Marrakech funds, as well as additional bilateral funding for projects connected to climate change. *All the various international, multilateral or bilateral financial institutions have considerably developed energy efficiency and renewable energy projects.* Thus, in April 2006, the World Bank presented its Investment Framework on Clean Energy, aimed at backing this kind of project, to which it committed 750 million dollars in 2005. In France, the French Development Agency (AFD) made energy intensity reduction its core area of activity in emerging countries.

The Clean Development Mechanism

The principle of the agreement reached in Kyoto can be summed up in two terms: quantified commitments and flexibility mechanisms. In the first stage, *developed countries* make a commitment, for a given period (2008-2012), to *keep their GHG emissions* below an established threshold. These countries, known as Annex B countries (the part of the Protocol that sets these limits), consequently have quotas (or emission allowances) corresponding to their commitment. In the second stage, in recognition of the global nature of the greenhouse effect and in the context of the joint implementation of action, *a country that keeps its emissions below its quota may sell its surplus of quotas* to a country whose emissions are too high: this carbon market should make it possible to create a price signal and to reduce the total cost of climate policies by encouraging the least expensive reduction initiatives, regardless of their location. This mechanism is accompanied by two ‘project-based mechanisms’: JI (Joint Implementation) for Annex B countries and the CDM (Clean Development Mechanism) for DCs. In both cases, investment made in a host country leading to a reduction in GHG emissions in comparison with a baseline level generates carbon credits^b that Annex B countries (or private entities in these countries) may acquire in order to increase their emission quota and thereby meet their own commitments.

Article 12, which defines the CDM, gives it two objectives: contributing to sustainable development in host countries (DCs) and helping Annex B countries to meet their Kyoto commitments. The CDM, which appeared in the ‘final package’ on the very last night in Kyoto, contains the ambiguity that made it possible to reconcile hitherto irreducible positions. The Americans and their partners are convinced that DCs host significant opportunities for low-cost emission reductions. DCs see this as an opportunity for additional resources to ODA to finance quality development projects and encourage technology transfer^c. But many fear seeing developed countries using this as a means of meeting their commitments at low cost, without making the necessary changes at home, especially in terms of energy. DCs also fear selling off their most attractive reduction opportunities and thereby increasing the cost of their future commitments.

Environmental circles and NGOs are also divided over the issue of the CDM. It is firstly feared that the sustainable development focus of projects, which is left to the judgment of host countries (but could it be otherwise?), may direct the CDM towards the ‘lowest bidder’ in environmental or social terms. Some are especially concerned about the environmental integrity of the Protocol: the CDM does not create additional emission reductions, but moves emission reductions to developing countries in exchange for carbon credits that increase the emission quotas agreed in Kyoto for Annex B countries. To avoid the Kyoto agreement losing its effectiveness if these new credits do not correspond to real reductions, the validation of CDM projects depends on an additionality criteria aimed at guaranteeing that credits reward real emission reductions, in relation to a baseline where the projects had not been implemented.

Despite these initial doubts, today everybody is playing the game. Private investors rapidly showed their interest in this mechanism. Some DCs that were long highly reluctant, such as India, have now developed their capacities

^b This generic term describes the units of measurement for GHG quotas, reduction or sequestration controlled by the Kyoto Protocol.

^c On this point, DCs benefit from a rule concerning the non-diversion of ODA, to ensure that the CDM is not used as a means of financing the achievement of binding targets to which Northern countries have committed.

for proposing and assessing projects. Several Annex B countries have declared their intention to purchase, and bilateral and multilateral purchase funds have been set up. In November 2004, the European Union decided to authorize the importation of CDM credits in the industrial emission trading system (EU-ETS) it created. Finally, NGOs have set up monitoring networks, quality labels (the WWF Gold Standard) and are involved in projects with high development content.

By the end of March 2006, only 4 million tons of CO₂ (MtCO₂) of credits had actually been emitted. This figure is nevertheless revealing. The 740 potential CDM projects registered in mid-2006 represent around 200 MtCO₂ of credits per year^d, a figure that should not increase much for this first Kyoto period. Volume projections for the carbon market indicate an annual demand of 200 to 640 MtCO₂ of credits for the CDM for the 2008-2012 period, estimations that were reduced following the non-participation of the United States^e and the resulting abundance of quotas for transition countries (known as the 'hot air'^f effect).

The evolution of the market beyond this point will depend on the outcome of discussions on future commitment periods, which will condition the value of credits after 2012. This price currently remains low, at around 10 dollars per ton of CO₂. This limits the appeal of the mechanism, since in addition to transaction costs that cannot be reduced, projects must deal with the costs inherent in the learning and start-up phase of such a mechanism.

THE CDM, A TOOL FOR SUSTAINABLE DEVELOPMENT?

In view of the conditions in which the mechanism was created, the reality of its dual objective in the effective implementation of projects may be questioned. Is it not simply a rhetorical figure? In theory, the appeal of the mechanism is that it makes it possible for the goal of reducing emissions in Northern countries to contribute to the sustainable development of DCs.

The *first argument* is that the CDM creates a price signal that any private entrepreneur may take advantage of: it thus constitutes an incentive for foreign investors to increase their level of action in DCs and to transfer the most modern technologies to these countries. The *second argument* is that carbon value may sometimes merely give an environmental tinge to an investor's initial project (with a limited impact on the local area), but may also, in certain cases, improve the overall economic results of the investment project. In this virtuous case, the CDM would act as a means of consolidating the financing of the development project itself. For example, when a service company takes over the exploitation of a concession (urban heating, electricity, public transport) in a DC, this often implies modernizing equipment in order to guarantee medium-term profitability. Improving the energy efficiency of equipment is thus a central part of the takeover project. The contribution of the CDM to the financial balance sheet increases the chances of the project being carried out, thereby making it possible to improve the service (development) and reduce emissions (environment).

^d This is for declared projects. Projects registered in April 2006 represented 53 MtCO₂ per year, and projects representing 27 MtCO₂ more were being registered.

^e Recent research forecasts an annual demand for carbon credits, for all mechanisms (quotas, JI or CDM), of around 870 to 1 000 MtCO₂ – or half of initial estimations, which included the United States.

^f The surplus quotas linked to over-allotment of emissions in the targets set for Russia and central and eastern European countries in Kyoto, which did not include the impact of their economic collapse.

In this first phase, analyzing the real impact of the CDM in terms of development implies distinguishing two legitimate issues, which if merged into one, may lead to unsuitable conclusions: it is essential to not only assess the contribution of activities covered by the CDM to the sustainable development of DCs and to combating the greenhouse effect, but also the ability of the CDM to cover all the elements of development that must be transformed as part of the fight against the greenhouse effect. Next, when examining the current portfolio and the development of proposals for future regulations, it is important to make a distinction between the fundamental qualities and limits of a market mechanism and those specific to the CDM institutional agreement. From this perspective, the performance of the CDM in terms of sustainable development is based on three parameters: the macroeconomic influence of the mechanism on host countries; the geographical distribution of projects; and the sectoral breakdown of projects implemented.

The macroeconomic influence of the CDM

The projects currently declared to the CDM executive board correspond to a total amount of projected credits by 2012 of around 835 MtCO₂². The estimated amount of associated financial transfers is therefore 10 billion euros accumulated since 2000. These figures are low compared to those for foreign direct investment (FDI) in DCs – which exceeds 175 billion dollars per year – including FDI to the African continent alone, which receives on average 16 billion dollars per year (of which 11 billion go to sub-Saharan Africa, excluding South Africa). They are also low in comparison with flows of official development assistance, on average 27 billion dollars per year for low-income countries alone³. The CDM can therefore only marginally influence development dynamics in DCs: expectations concerning the CDM must be put into perspective, especially as regards the second objective of contributing to sustainable development in host countries.

The CDM may nevertheless play a role in investment in the infrastructure that conditions the future emissions of DCs. In the 1990s, FDI in infrastructure reached on average 70 billion dollars per year, accompanied by 13 billion per year of official development assistance (ODA)⁴. The geographical distribution of these sums is highly varied: 123 countries share 30% of FDI while five countries alone receive 50%. In sub-Saharan Africa, over the same period, the amount of private capital was slightly lower than the amount of ODA invested in infrastructure, reaching around 2 billion euros per year. On this scale, the CDM could theoretically have a considerable impact on the dynamics of infrastructure investment. This would nevertheless imply moving beyond certain limits of the mechanism that act as a brake on both the development of the CDM in Africa and its use in infrastructure.

Africa shunned by the CDM

Of the first 165 projects validated and registered by the CDM executive board, only four were situated in Africa, compared to 61 in Asia and Oceania and 96 in Latin America and the Caribbean⁵. Furthermore, they concern two countries that are not representative of the rest of the continent: South Africa and Morocco. Of all the projects in the CDM institutional pipelines (around 650), only 2% represent sub-Saharan Africa (4% of credits), with 0.3% situated in Nigeria⁶ and 1% in South Africa (3% and 1% of credits respectively). The heart of the African continent therefore seems to have been largely forgotten by the CDM ([Figure 2](#)).

⁶ Related to the oil industry, these projects in Nigeria are not representative of the region's needs.

Several factors are to blame, the first of which is the lack of institutional capacities. The acceptance of CDM projects and their development cycle imply administrative procedures and prerequisites (such as the appointment of a designated national authority as the interlocutor for project developers) that have been established with varying degrees of efficiency depending on the country. Specific efforts to strengthen CDM capacities have been undertaken by international funding agencies or NGOs where their weakness presents an obstacle to the development of these projects. But only an active CDM development policy in host countries (identifying potential projects, awareness campaigns among local economic actors, etc.) can give the mechanism significant momentum. In this respect, India is a perfect example: its strong CDM development policy has enabled the country to host 39% of CDM projects declared to the executive board⁶, including a significant share of energy efficiency projects, which are among the most beneficial projects for the host country in terms of sustainable development.

However, there is no guarantee that such an approach is sufficient to stimulate CDM projects in Africa, and more specifically in LDCs. The mechanism's ability to consolidate private investment dynamics falls short in countries that receive only a limited flow of such investment. The African continent receives only 2.5% of world FDI, with 1.8% going to South Africa alone.

It is also evident that Africa's share in the CDM is comparable to that of its emissions: Africa produces 3% of global combustion-related CO₂, with South Africa accounting for over 40% of the total for the continent. Conversely, the 'first places' in the CDM, held by China, Brazil, India and South Korea, reflect the level of economic and investment dynamism in these countries, but also the fact that they are the four largest GHG emitters outside Northern countries. If the CDM is being significantly developed in China, despite the fact that the administrative framework there is not the most favorable^h, this is because the 'country risk' associated with investment is far lower in China than in the great majority of other DCs, where the impact of the 'country risk' on the return on investment is often higher than the benefits provided by the CDM.

This observation applies to all LDCs: the fact that the CDM is of such significance to private project developers makes it unsuited to the situation of these countries, where investment remains largely a public initiative (States, development agencies, etc.). In this respect, the CDM creates unreasonable expectations, which should be clarified by the dialogue on post-2012 international climate action. But the originality of the mechanism, based on the idea that project developers adopt it in order to complement, redirect or accelerate their investment in relation to the climate issue, must be preserved. The 'decentralized efficiency' of the CDM is where its strength lies, but also its difficulty in meeting the needs of LDCs.

It is therefore essential to refute abstract approaches to the mechanism, seen as a lifeline for sustainable development in LDCs, and the highly misleading associated proposals, such as those for administrative quotas per region for the CDM. On the other hand, the link between the CDM and ODA merits a fresh appraisal that moves away from the fears (shared by both the North and the South, although for different reasons) that the CDM will divert ODA, and, on the contrary, considers the possibility that the two mechanisms may be mutually beneficial.

^h In particular, China has created a specific tax on the carbon credits created by some CDM projects in the country.

v Figure 2: The CDM carbon market

Source: UNEP Risoe, 2006.

Is the CDM absent from infrastructure investment?

Analysis of the first 175 projects registered by the CDM executive board reveals a predominance of renewable energy activities, especially biomass (40.5% of projects), hydroelectricity (21.7%) and wind power (8%), as well as a considerable number of methane recovery projects (15.4%). However, the picture is very different when looking at the volume of emissions reductions generated: projects for reducing industrial gas emissions represent almost three quarters of carbon credits expectedⁱ, to which are added the 14.2% of credits from landfill methane capture projects. The share for biomass falls to 6%, with all other renewable energy projects representing less than 6% and energy efficiency projects less than 1% (Figure 2).

For this first period, 85% of the financial impact of the CDM is thus concentrated on a small number of projects that make no contribution to local development, or even to local environmental concerns. Conversely, energy efficiency and renewable energy projects, whose local economic and social repercussions are indisputable, receive only 18% of CDM revenue.

Many observers criticize the crowding out effect on other components of the CDM activity portfolio due to the appeal of projects concerning industrial gases. But in the absence of investment in these attractive projects, would there really be a significant increase in projects with high development content? It seems unlikely. In the first place, the supply of CDM credits is currently estimated at around 50 MtCO₂ equivalent, or approximately a quarter of the estimated demand according to the most pessimistic projections. There is not really, therefore, a case of supply saturation by major industrial projects. Although low, the price of credits on the carbon market is sufficient to have considerable appeal in areas such as biomass, wind power or small hydropower. Projects in these sectors are nevertheless of small unit size, meaning 3 000 to 12 000 projects of similar size would need to be validated by 2008 for the CDM to supply the estimated demand of Annex B countries: this is not realistic.

The success of large industrial projects is down to their favorable characteristics in terms of opportunities provided by the carbon market for Northern actors. Although the CDM has created a useful windfall effect, stimulating and simplifying these projects, the pool of projects likely to be implemented in the future is limited: total HFC, PFC and SF₆ emissions represent only 1% of global GHG emissions, and diffuse landfill methane emissions around 2%. This does not however solve the difficulties inherent in activities concerning energy efficiency improvement and the development of renewable energies. These projects require the involvement of

ⁱ The predominance of these projects is explained by the fact that the global warming potential (GWP) of these gases is very high (from 300 to 25 000 times higher than CO₂), which increases the associated carbon credits and facilitates their global implementation through technical 'end-of-pipe' solutions.

local actors capable of guaranteeing the development and implementation of projects on the ground. Their large-scale circulation comes up against the characteristic difficulties of development projects, where institutional capacities (public and private) are often more limiting factors than financial capacities.

This unilateral CDM model, requested by numerous countries at the Hague conference, is nevertheless the best hope of ensuring activities are developed that efficiently associate local development dynamics with impacts on GHG emissions. This kind of project, developed and managed by local actors in the host country without any input from Northern investors, already represents a growing share of the portfolio of countries such as India and Brazil. The emergence of projects with high development content is therefore largely dependent on the ability of DCs to draw up public policies that encourage the development of private domestic projects: this constitutes a cooperation channel that must be developed ([cf. chap. 11, Desanker](#)).

Is the CDM really capable of helping DCs to embark on the path of sustainable development, through its influence on energy choices across all sectors of the economy? More precisely, is it sufficiently influential to encourage all sectors of the economy to make energy choices that are compatible with the challenges highlighted here? The answer given by current projects is clearly no: only the large industry and energy production sectors are really affected. Conversely, there are no projects concerning infrastructure, urban development (construction, transport) or the production of efficient equipment, which are nevertheless essential issues in terms of both energy and climate objectives. Out of all the CDM projects declared, less than 4% contribute to these sectors, for negligible volumes of carbon credits. But does this fact reflect characteristic difficulties of the current learning phase, or does it reveal more fundamental difficulties?

By nature, the CDM can only influence investment decisions if it brings with it significant additional revenue or guarantees. *In the energy sector*, credits sold forward may cover up to 30% of investment for a wind power project and 25% for a typical energy saving project in industry. In a large number of projects underway, carbon credits ensure a 2 to 3% increase in the internal rate of return and an improvement in the risk profile associated with these projects. In these sectors the incentive effect of the carbon market is in full swing, and rewards for emissions avoided are sufficient to consider developing them on a large scale once the other barriers to the development of the mechanism are removed (especially the clarification of methodologies).

The economic and financial characteristics of investment *in infrastructure projects* are very different and do not inspire the same optimism. In China, for example, the value of potential carbon credits corresponding to the difference in energy efficiency between a standard building and an efficient one only correspond to around 3% of the construction cost – a value that is far from enough to motivate private promoters, who may make a profit of around 100% on this kind of operation. However, potential rewards are comparable to the extra cost of better insulating buildings: CDM revenue could be recycled by the public authorities in the form of premiums to promoters, for example as part of a labeling program that would make it easier to apply standards that are currently disregarded. A similar observation can be made *for public transport infrastructure*, since the potential contribution of the CDM to the construction of a tramway is around 1% of the total investment cost.

The CDM is clearly not enough to influence infrastructure choices, despite the fact that these investments have not only a considerable impact in terms of CO₂ emissions, but also significant socio-economic benefits. This

paradox is due to the fact that the amount of investment in infrastructure related to services provided (housing, transport) is very high in comparison with the energy content of these services. This reveals the limits of the carbon market as a mechanism for encouraging the energy adjustments needed in DCs: in addition to a higher carbon price than the current rate, the heavy involvement of the public authorities is needed if the lever effect is to function in these sectors.

PROSPECTS FOR CLIMATE POLICIES IN THE SOUTH

The assessment that can be made of the decade since the Kyoto agreement is in fact rather ambivalent. It is true that DCs remain somewhat reluctant about a negotiation that could lead them – at least the wealthier among them – to make binding action commitments. From this point of view, the difficulty developed countries are having agreeing on the implementation of the Kyoto Protocol and the plans for the next episode after 2012 do not create a favorable climate for their mobilization. The impact of the CDM, which varies significantly depending on the sector and the country, has also caused disappointment, even if this was largely anticipated.

But these difficulties should not overshadow a far more positive fundamental development: beyond the few emblematic industrial projects that have been criticized, a real attempt is being observed in certain DCs to adopt the CDM and to ensure it works in favor of domestic policies. Several of the projects recently submitted to the executive board fit into this approach: improving lighting efficiency or implementing an energy efficiency standard for individual air-conditioning units in Ghana; reducing electricity consumption for urban lighting in Shijiazhuang (China); and reducing emissions linked to the development of public transport corridors in Mexico (a project submitted by a public company under the responsibility of the Mexican ministry of transport)⁷. In both Mexico and Ghana, the CDM is thus clearly supporting the implementation of local initiative policies. In turn, these activities affect the international debate, and this is where the true development lies: emission quotas and commitments are no longer discussed solely *in abstracto*, but also in more specific terms of energy policies, urban development or rural planning, and consideration is now given to the coordination tools capable of encouraging and supporting these internal dynamics.

New opportunities after the Montreal conference

Within this movement, proposals are being made for ways to move beyond the limited framework of the CDM and develop incentive mechanisms that provide possibilities for crediting more global initiatives: they could, for example, cover the whole of an industrial sector or the implementation of sectoral policies and measures⁸. The common philosophy of these proposals is to conserve the incentive aspect of the CDM by allowing DCs to capitalize on emissions avoided by these domestic activities on the international carbon market, without first obliging them to make quantitative results commitments, and therefore without penalties in case of failure. The eighth decision⁹ of the Meeting of the Parties to the Kyoto Protocol, which took place in Montreal, thus extended the CDM to include the notion of “a programme of activities [...] registered as a single clean development mechanism project”. This is a key decision in allowing access to the CDM for activities that were hitherto excluded: in particular, if developing countries’ public policies will not be eligible, as they stand, under the CDM, the executive board may accept that activities or programs of activities undertaken for the implementation of these policies comply with the mechanism and may therefore be credited.

By opening the way for broader and more diversified sectoral initiatives than the CDM, these different incentive mechanisms could have a significant impact in terms of emissions, while contributing favorably and sustainably to development in host countries. But like the CDM, they do not reduce global GHG emissions and work simply by moving emissions from developed countries to developing countries, accompanied by a financial transfer in the opposite direction. Their existence and their appeal are therefore directly linked to the constraints accepted by Annex I countries (the part of the Climate Convention that sets out the list of countries committed to binding targets). Today the demand for CDM carbon credits is thus largely dependent on the connection between this mechanism and the internal European market for CO₂ emission permits. The total volume of credits generated by project mechanisms cannot exceed the emission reductions to be achieved in Annex I countries. It is in fact vital that they remain well below this level, as the contrary would mean that developed countries have not truly implemented domestic climate policies.

The estimations mentioned earlier concerning projected demand for CDM credits in Annex I countries represent between 5 and 50% of the current commitments of these countries. With global GHG emissions reaching 33 000 MtCO₂, the annual flow of CDM credits during the 2008-2012 period will therefore be around 0.3% of global emissions and 0.6% of developing countries' emissions, which falls far short of the emission reduction targets mentioned earlier: growth in developing countries' emissions must be limited to 50% by 2050, which, in relation to an estimated trend growth of 2.5% per year, means that credit purchases in the future must cover over 1 000 MtCO₂ of annual reductions. It is highly unlikely that developed countries will simultaneously achieve significant reductions in their domestic emissions and make CO₂ credit purchases on this scale – corresponding to a twofold increase in their domestic efforts – when their initial aim was to reduce commitment costs. On the contrary, this situation could cause significant distortions of competition liable to ensure rejection by manufacturers in Annex I countries if, for example their credit purchases contribute to financing investment in rival industries situated in emerging countries; industries that would not only be assisted in modernizing, but would remain free from any carbon restrictions.

What is the future for climate regimes?

The challenge posed by the climate issue is not reaching an agreement on symbolic indicators or rights, but rather defining a framework capable of directing and stimulating long-term dynamics (investment, technological innovation, infrastructure development, etc.), beginning with short-term projects that will nevertheless help outline emissions trajectories for DCs over several decades. An international cooperation framework of this kind should thus guarantee the transition from the current socio-economic model to 'low-carbon' societies. The very existence of such a framework is conditioned by its ability to manage the inherent constraints of this transition, especially in terms of its redistributive effects and its potential impact on the most vulnerable countries or populations.

The modalities for involving DCs in the fight against climate change must therefore be more diverse than they are today. Given the dynamics of international negotiations, it is particularly unlikely that developed countries will commit to ambitious action targets if emerging countries do not accept to progressively submit their energy and industrial sectors to similar discipline. This would consequently limit the scope of incentive mechanisms to the sectors or countries in which they are the most valid. The implementation of energy efficiency policies in

emerging countries, which does not pose the same problems as investment in industrial sectors open to international competition, could become a key focal area. This movement would also benefit LDCs, provided it is associated with more active support from cooperation policies for the organization of projects.

However, market mechanisms will not be sufficient to redirect heavy investment in major infrastructure in the long term. But as illustrated by the difficulty European countries have in reorienting their transport policies and adjusting the energy efficiency of their buildings, neglecting these sectors today may rapidly lead DCs, and especially those with high growth, towards highly irreversible and unsustainable energy models. China, and also certain large Latin American countries, are gradually becoming aware that the development of more energy efficient infrastructure can also contribute to more balanced economic and social development in the short term. These sectors nevertheless remain strikingly absent from major international initiatives, which currently focus on supply technologies (clean coal, sequestration and hydrogen). It is therefore vital to restore balance to international community efforts and to grant these key areas a similar level of attention.

¹ LEPII-EPE *et al.*, *Greenhouse Reduction Pathways in the UNFCCC Process up to 2025*, Brussels, EU-DG Environment, 2003.

² UNEP Risoe Centre, CDM Pipeline, March 2006.

³ Statistics on FDI: World Bank, *World Development Indicators*, 2006. Averages are calculated for 2000-2004.

⁴ KLEICHE (M.), « Aide au développement et marché carbone », *Revue financière*, « La finance carbone », 83, 2006, p. 55-76.

⁵ According to the UNFCCC website, May 2006.

⁶ UNEP Risoe Centre, *op. cit.*

⁷ UNFCCC new methodology 150, 157 and 158.

⁸ See example: BOSSI (M.) and ELLIS (J.), *Exploring Options for "Sectoral Crediting Mechanisms"*, OECD-IEA, 2005.

⁹ FCCC/KP/CMP/2005/8/Add.1.