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**Linking CDM & JI with
EU Emission Allowance Trading**

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SUMMARY

Analysis

- 1 The Clean Development Mechanism (CDM) and Joint Implementation (JI) are two of the so-called flexible mechanisms of the Kyoto Protocol designed to allow its parties flexibility in achieving their quantified emission limitation and reduction commitments. Under these mechanisms projects that reduce emissions or remove carbon dioxide from the atmosphere generate emission certificates: Certified Emission Reductions (CERs) in the case of the CDM, Emission Reduction Units (ERUs) in the case of JI.
- 2 On 23 July 2003 the Commission of the European Communities put its proposal for a 'Directive of the European Parliament and of the Council amending the Directive 2003/.../EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms' on the table. The proposed Directive is thus to amend Directive 2003/87/EC (ET Directive).
- 3 The new Article 11(bis) that is proposed for the ET Directive establishes a link between CDM & JI on the one side and EU emission allowance trading on the other. According to this proposed article, the actual flow of emission certificates from a CDM/JI project developer to one of the EU Member States will be as follows: the CDM/JI project developer receives CERs/ERUs after the project has successfully undergone the project cycle for CDM/JI projects respectively. He then sells these CERs/ERUs to an operator (ie a company that operates an installation that must participate in the EU emission allowance trading). The operator can then request the conversion of the CERs/ERUs into the corresponding amount of Allowances. These Allowances can then be used in order to achieve compliance with obligations to surrender Allowances equal to the total emissions of the installation in each calendar year (see Article 6(2), ET Directive). After the conversion the Member State holds the CERs/ERUs in its account and can use them for compliance with obligations under the Kyoto Protocol.
- 4 Almost all EU 15 Member States currently face a significant compliance gap, ie their projected emissions are higher than allowed under the EU burden-sharing agreement. Annex II of this policy brief provides a first estimation of the *status quo* in term of the compliance gap, in absolute terms.
- 5 According to projections by the European Environment Agency, it is still possible that the EU will achieve compliance with the Kyoto Protocol through action at the Community level - as identified in the European Climate Change Programme (ECCP) - and at the national level. The necessary measures should be given priority. However, there remains a risk of non-compliance with the Kyoto Protocol even if Member States implement these additional measures. Therefore, the use of at least one of the following options might become necessary: International Emissions Trading between parties to the Kyoto Protocol; the use of CDM/JI; or the use of sinks on the territory of the Member States.
- 6 The use of International Emissions Trading, CDM and JI is constrained by the 'supplementarity' requirement. The EU was behind this requirement being included in the Marrakech Accords, although it was only weakly formulated. The credibility of the EU's climate policy therefore depends on achieving compliance with the Kyoto

Protocol in line with the supplementarity requirement, ie that at least 50 per cent of emission reductions should be achieved by domestic action and at most 50 per cent of emissions achieved through the use of the flexible mechanisms.

- 7 The supplementarity requirement necessitates significant further action in addition to what is already being implemented, both at the Member State and Community levels.
- 8 The supply side of the CDM is already developing rapidly, albeit on a provisional basis. The CDM Executive Board is actively implementing the prompt start of CDM and it can be expected that the registration of CDM projects and the issuance of emission certificates will start in 2004. The situation for JI is very different from that of the CDM. Its implementation is dependent on the entry into force of the Kyoto Protocol and therefore has not started yet.
- 9 The demand side of the market for emission certificates from CDM and JI projects is also developing rapidly. Various EU Member States have initiated programmes for the acquisition of these certificates and private companies are also starting to purchase emission certificates for a variety of purposes.
- 10 Among the EU Member States, only Austria and the Netherlands have started programmes that will lead to the direct acquisition of significant amounts of emission certificates. Most other initiatives by EU Member States (eg Germany, Italy, Spain) are rather limited in scope or anticipate the link between CDM/JI and the EU emission allowance trading scheme.
- 11 The proposed Directive will establish a new segment of demand for emission certificates from CDM/JI projects by linking CDM & JI and EU emission allowance trading.
- 12 Linking CDM & JI and EU emissions allowance trading gives rise to various issues that are being hotly debated. In this debate there is a straightforward division between business interests on the one hand and environmental organisations on the other. The latter are against linking CDM/JI and the EU emissions allowance trading scheme and in favour of substantial limitations if the link does go ahead. The former are in favour of linking and in favour of maximum 'flexibility'.
- 13 Four issues are most important with regard to the proposed Directive: a) linking as such, b) the eligibility of project activities and quality criteria for CDM/JI projects, c) the implementation of the supplementarity requirement and d) the issue of JI projects within EU Member States and national project activities.

Policy Recommendations

- 14 Implementation of additional domestic action both on the Community level as well as on the EU Member State level is a prerequisite for achieving compliance with the Kyoto Protocol. It should therefore be the first priority. According to the ECCP, policies to increase the energy efficiency in industry, buildings, appliances and transport alone may be sufficient to achieve compliance, while bringing net economic benefits.

- 15 However, forecasts suggest a certain risk of non-compliance even with strong additional domestic action. It is therefore advisable to prepare for the use of the flexible mechanisms. Among them CDM and JI provide the biggest environmental benefits and are therefore politically most acceptable.
- 16 As currently only two EU 15 Member States seem to be preparing substantial schemes for acquiring emission certificates from CDM/JI projects, action at the Community level seems appropriate. Therefore, the link between CDM/JI and EU emission allowance trading is a useful step to ensure that sufficient quantities of CERs and ERUs are available in case their use becomes necessary in order to comply with the Kyoto Protocol.
- 17 Certificates from CDM sink projects should be excluded since their accounting rules are markedly different from those of the usual CERs. Moreover, the potential ecological and social impacts of sink projects are not yet sufficiently understood.
- 18 Policy makers should also consider the adoption of criteria for project evaluation developed by non-governmental organisations, such as the guidelines of the World Commission on Dams or the Gold Standard for CDM/JI projects.
- 19 A sound implementation of the supplementarity requirement would increase the credibility of the EU's climate policy. Capping the amount of emission certificates that can be converted into Allowances is certainly helpful in meeting the supplementarity requirement. However, the findings of this policy brief suggest that even a strong formulation of such a cap does not result in a comprehensive implementation of the supplementarity requirement. Therefore, other options should be explored.
- 20 One option might be to resolve the supplementarity question in the National Allocation Plans (NAP). These do not only contain the allocation of Allowances to the installations covered by EU emission allowance trading, they also contain a plan for meeting the respective State's overall Kyoto target. The NAPs could include information on the overall extent to which a State intends to use the flexible mechanisms as well as the amount of CERs/ERUs its companies will be allowed to use. As part of the NAPs, these targets would be notified with the EU Commission, which would then have to ensure that the sums notified by the EU 15 Member States do not exceed the supplementarity requirement for the EU 15 as a whole.
- 21 Another, though weaker, option might be to amend Council Decision 93/389/EEC (as amended by Council Decision 1999/296/EC), which establishes a mechanism for monitoring the EU's greenhouse gas emissions and evaluating progress towards meeting its international commitments. The amendment could be such that the Member States would have to report and the Commission would have to assess how far Member States' climate policy and thus the EU's climate policy as a whole is in line with the supplementarity requirement. While this option would not regulate the Member States' use of the flexible mechanisms, it would subject it to EU, and thus worldwide scrutiny.

**POLICY BRIEF FOR THE EP ENVIRONMENT COMMITTEE
EP/IV/A/2003/09/01**

LINKING CDM & JI WITH EU EMISSIONS ALLOWANCE TRADING

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1 Scope of the Policy Brief

This policy brief is an assessment of the Commission's proposal for a directive 'amending the Directive 2003/.../EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms' (henceforward called Proposed Directive and ET Directive respectively). The brief was produced within the framework of the IEEP/Ecologic contract 'External expertise on emerging regulatory and policy issues within the responsibility of the EP Environment Committee' (project EP/IV/A/2003/09/01). The focus of this policy brief follows the specifications provided by the Committee.

The first part outlines the situation in the EU with respect to compliance with the Kyoto Protocol. Part two details the limits put on using the Kyoto Protocol's flexible mechanisms for coming into compliance. Part three is an introduction to the basic concept of the Clean Development Mechanism (CDM) and Joint Implementation (JI) and the state of their implementation. The fifth part outlines the proposal for linking CDM and JI to EU emissions trading. It is followed by an overview of the controversial issues and the respective positions of various interest groups. Finally, the authors analyse the issues and formulate policy recommendations.¹

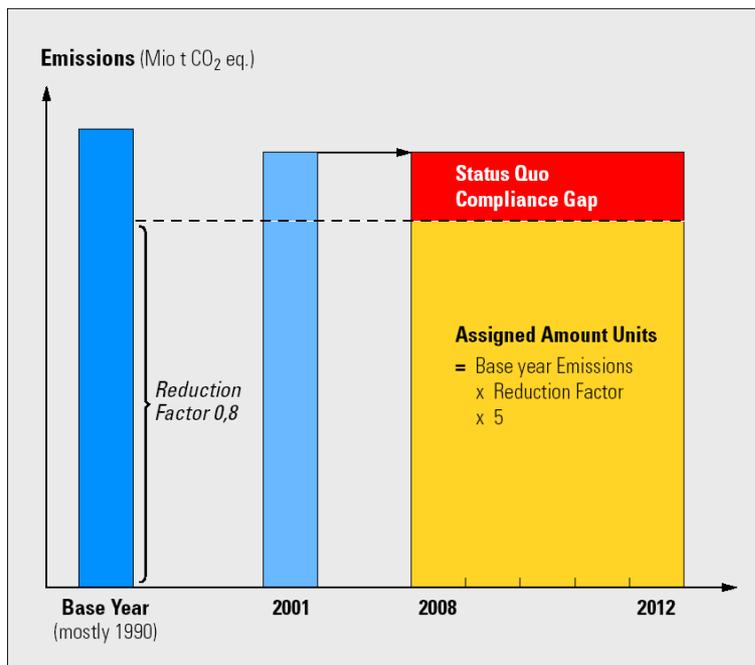
2 Situation in the EU with Respect to Compliance with the Kyoto Protocol

According to Article 3(1) of the Kyoto Protocol, every Annex B Party (mostly OECD countries and countries with economies in transition) must surrender one of the accepted internationally emission certificates (Assigned Amount Units, Certified Emission Reductions, Emission Reduction Units, Removal Units) for every tonne of carbon dioxide equivalent that it emits from its territory during the commitment period. Prior to the commitment period, every Annex B Party to the Kyoto Protocol receives an amount of Assigned Amount Units (AAUs) that is derived from its past emissions. Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) are generated by CDM and JI projects respectively, Removal Units (RMUs) are generated by the use of 'sinks' on a Party's territory (see below).

Table 2.1 contains information regarding the situation in the EU. The second row lists the status quo compliance gap of the EU Member States, which is defined as the difference between the number of Assigned Amount Units and the projected emissions during the first commitment period (2008-2012) if the status quo is maintained (see further Annex II and Chart 1). Every State with a positive compliance gap must reduce its emissions. If these emission reductions do not bring the compliance gap down to zero, the State must purchase an amount of emission certificates equivalent to the remaining compliance gap. A negative compliance gap means that the State can sell emission certificates and still remain in compliance. The third column of Table 2.1 indicates which Member States have already adopted measures that are sufficient to reduce the compliance gap to zero. The judgements have been taken from a recent European Environment Agency report (EEA 2003). Evidently, almost all EU 15 Member States must either adopt further measures to reduce their emissions or purchase emission certificates from abroad.

¹ Both authors work with the Research Group Energy, Transport and Climate Policy of the Wuppertal Institute for Climate, Energy and Environment. Their work greatly benefited from the comments and suggestions of internal and external reviewers. This policy brief has been written on the sole responsibility of the Wuppertal Institute for Climate, Energy, and Environment. Contact: Thomas.Langrock@wupperinst.org

Chart 1 Calculation of the Status Quo Compliance Gap



Two very important caveats of the calculation in Table 2.1 must be mentioned, as follows.

- Firstly, the compliance gap of the EU can be reduced significantly through the use of sinks within the territory of the EU. According to Article 3(3) and 3(4) of the Kyoto Protocol, Parties can request the issuance of Removal Units (RMUs) for the sequestration of carbon from the atmosphere due to Land Use, Land Use Change and Forestry activities. So far the EU Member States have not yet announced officially whether they intend to use Article 3(3) and 3(4) as a means of coming into compliance.
- Secondly, the status quo compliance gap only paints a picture of the situation at the moment. By virtue of its definition it cannot illustrate the dynamics of emission trends. This caveat can lead to both an underestimation and overestimation of the severity of the actual situation. For example, the status quo compliance gap of Greece suggests that Greece is on track with its climate policy. This is despite almost all projections of Greece's emissions showing a strong upward trend.

Despite these caveats, the status quo compliance gap was chosen as the best means of illustrating the situation in the EU. All projections naturally have to struggle with inherent uncertainties.

Table 2.1 Status Quo Compliance Gap and Sufficiency of Domestic Action by EU Member States

	Status Quo Compliance Gap 2008–2012	EEA Assessment of Emission Trends in BAU Scenario		Status Quo Compliance Gap 2008 – 2012	EEA Assessment of Emission Trends in BAU Scenario
	Mio t CO ₂ eq.			Mio t CO ₂ eq.	
EU 15 Member States			Acceding States		
Austria	88.7	Insufficient	Czech Republic	-9.1	Sufficient
Belgium	97.8	Insufficient	Estonia	-76.0	Sufficient
Denmark	72.5	Insufficient	Hungary	-85.0	Sufficient
Finland	18.3	Insufficient	Latvia	-43.6	Sufficient
<i>France</i>	<i>11.8</i>	<i>Insufficient</i>	<i>Lithuania</i>	<i>-58.2</i>	<i>Sufficient</i>
Germany	164.9	Almost Suff.	Poland	-742.8	Sufficient
Greece	-8.5	Insufficient	Slovakia	-8.6	Sufficient
Ireland	48.3	Insufficient	Slovenia	7.0	Insufficient
Italy	353.3	Insufficient	Sum	-1,016.2	
<i>Luxembourg</i>	<i>-23.4</i>	<i>Insufficient</i>	Candidate Countries		
Netherlands	106.2	Insufficient	Bulgaria	-335.5	Sufficient
Portugal	28.9	Insufficient	Romania	-476.8	Sufficient
Spain	247.3	Insufficient	Sum	-812.3	
Sweden	-26.5	Sufficient	Sum EU 25 +		
<i>United Kingdom</i>	<i>17.2</i>	<i>Sufficient</i>		-622.7	
Sum EU 15	1,205.8	Insufficient			

Source: Annex II and EEA (2003)

Table 2.1 highlights the special situation that will exist in the EU 25+. While the EU 15 Member States will severely struggle in order to achieve compliance, most Acceding Countries as well as the candidate countries will dispose of significant amounts of AAUs that they do not need for their own compliance. One, though highly controversial, option among many for using these is their transfer by International Emissions Trading and this includes the transfer to the EU 15 Member States. Moreover, these countries are assumed to possess many low-cost options for emission reductions. This potential for low-cost emission reductions will hopefully be tapped through domestic action, the EU emission allowance trading scheme (which will be established in these countries as the ET Directive is part of the *acquis communautaire*) or JI-projects.

The EU 15 faces a huge status quo compliance gap and it is not clear whether it will be possible to close this gap through domestic action alone. According to the emission trends that the EEA recently published, this compliance gap will not disappear with the measures that have already been adopted. Even if the additional domestic measures that are planned were adopted, this would not lead to the complete closure of the EU's compliance gap. The EEA itself seems to doubt the likelihood of this happening as it would depend on *over-compliance* by several Member States – a fact that cannot be taken for granted (EEA 2003: p. 17). This contrasts with figures that are contained in the European Climate Change Programme's report of June 2001 (ECCP 2001). This identified measures to bring the EU into compliance with the Kyoto Protocol. One of these measures was a Directive on energy end-use efficiency and energy services, which was expected to tap a huge potential for emission reductions, at low cost or even net economic benefits. The Commission has recently put its proposal for such a Directive on the table (Proposed Directive Energy Efficiency).

In any case the EU and its Member States will have to adopt more ambitious domestic measures if they want to achieve compliance through domestic action only. Certainly, achieving this aim cannot be taken for granted. It might therefore become necessary for the EU to use its rights for flexibility in achieving compliance, ie to acquire emission certificates through the use of International Emissions Trading, CDM/JI or the option provided by Article 3(3) and 3(4). The same holds for most of the individual Member States. There are, however, several strings attached to using these options.

3 Limits to ‘Flexible’ Compliance with the Kyoto Protocol: The Supplementarity Requirement

According to the Kyoto Protocol, the exertion of the right for flexibility in achieving compliance is on the condition that the so-called ‘supplementarity requirement’ is met. In the wording of the Marrakech Accords, this requirement stipulates that:

‘the use of the mechanisms [International Emissions Trading, JI, CDM] shall be supplemental to domestic action and that domestic action shall thus constitute a significant effort made by each Party included in Annex I to meet its quantified emission limitation and reduction commitments under Article 3, Paragraph 1.’ (Article 1 Draft Decision -/CMP.1 (Mechanisms) contained in Decision 15/CP.7, Marrakech Accords).

It was in fact the EU that insisted on the inclusion of the supplementarity requirement, though parties decided not to include a numerical definition of it. Due to its past negotiation position, the credibility of the EU crucially depends on meeting the supplementarity requirement.

The wording in the Marrakech Accords is far from precise. Unfortunately, even the formulation proposed by the EU during the negotiations is imprecise. In essence, the EU formulation stated that each party should acquire and surrender no more emission certificates than the equivalent of 50 per cent of the difference between five times the emissions in one of the years between 1994 and 2002, on the one hand, and its number of AAUs, on the other (Para 8, Draft Set of Guidelines for Joint Implementation, EU Submission (1999a), Para 9, Draft Modalities and Procedures for Clean Development Mechanism, EU Submission (1999b)). This cap on the amount of emission certificates acquired (through International Emissions Trading, CDM and JI) and surrendered was to ensure that, starting from the level in any of the years between 1994 and 2002, at least half of the emission reductions that were necessary in order to achieve compliance with the Kyoto Protocol would be realised domestically.

It is important to note that the supplementarity requirement must in principle hold for each Party to the Kyoto Protocol, ie the EU Member States individually, as well as the EU as a whole (ie the EU 25+ in the years 2008 to 2012). Moreover, it could be argued that the EU 15 as a whole must also meet the supplementarity requirement since it has reached an agreement (the burden-sharing agreement) to fulfil its commitments jointly.

The corresponding calculation for the EU Member States is set out in Annex II to this brief. If the EU 15 is taken as a whole, the supplementarity requirement stipulates that at a maximum, 729 Mio t CO₂ eq. of the status quo compliance gap can be closed through the acquisition of emission certificates from abroad. The cases of Greece and the Accessing Countries show that

the supplementarity requirement is not always well defined. The numerical computation for these states results in negative figures and therefore cannot be reasonably interpreted. This shortcoming is probably due to the fact that the parties gave up on the formulation of a precise definition before there was a watertight proposal.

The figures contained in Annex II further underline the need for domestic action in the EU 15. In many EU 15 Member States the status quo compliance gap is larger than the maximum amount of emission certificates that can be acquired and surrendered in line with the supplementarity requirement. This means that the status quo compliance gap cannot be closed through the use of CDM, JI or International Emissions Trading alone; there must be more domestic action.

4 Joint Implementation and Clean Development Mechanism: State of Play

As has already been mentioned, CDM and JI are two of the so-called ‘flexible mechanisms’ of the Kyoto Protocol. Due to the way they function, they are also called the ‘project-based mechanisms’.

The supply side of the CDM and JI is based on one basic concept: private entities (the project developers) are allowed to register emission reduction or carbon sequestration projects as CDM/JI projects (see Annex I for an example). After the project has undergone a cycle that is laid out mainly in the Marrakech Accords (and defined in detail through the work of the CDM Executive Board / the Article 6 Supervisory Committee for most JI projects), emission certificates (CERs in the case of the CDM and ERUs in the case of JI) equivalent to the amount of reduced emissions/sequestered carbon are issued to the project developer.

Table 4.1 Main Features of CDM and JI

	Clean Development Mechanism	Joint Implementation
Supplied Commodity	Certified Emission Reductions (CERs)	Emission Reduction Units (ERUs)
Potential Host Countries	Non-Annex B Parties	Annex B Parties
Start of Crediting Period	2000	2008
Legal Status	‘Modalities and procedures for a clean development mechanism’ exist (Decision 17/CP.7, Marrakech Accords). The Annex to this decision has been adopted provisionally by the parties to the UN Convention on Climate Change, subject to confirmation by the parties to the Kyoto Protocol after its entry into force, in order to facilitate a prompt start for the CDM.	‘Draft Guidelines for the Implementation of Article 6’ exist (Decision 16/CP.7, Marrakech Accords), but they must be adopted after the entry into force of the Kyoto Protocol.
Implementation	Ongoing, as if Kyoto Protocol were in force, CDM Executive Board very active.	Dependent upon entry into force of the Kyoto Protocol.
Important Milestones	2004: Probable registration of first CDM project and first issuance of CERs.	2008?: Entry into force of the Kyoto Protocol 2008+: First Issuance of ERUs.

Although the basic concept is similar, it is important to bear in mind that CDM and JI are completely independent from each other and that there are significant differences between the

two, particularly with respect to the status of implementation and their scope. To summarise the information set out in Table 4.1, CERs are very likely to be supplied from 2004 onwards, independent of when the Kyoto Protocol enters into force, whereas ERUs will be supplied only after 2008 and depending on the entry into force of the Kyoto Protocol. The suppliers of these emission certificates will be private entities (the project developers). Demand for emission certificates from CDM/JI projects is already developing. As these emission certificates are among the internationally accepted emission certificates that Parties to the Kyoto Protocol must surrender at the end of each commitment period, it is on the one hand the nation States, which have an interest in acquiring them. As described in the following section, EU Member States will establish various segments of demand through which they ultimately acquire CERs and ERUs.

On the other hand, various companies as well as other non-public entities intend to purchase emission certificates from CDM/JI projects on a voluntary basis. For example, BP has announced that it wishes to use CDM and JI in order to compensate significant amounts of its own emissions (BP 2002). Another example is the provision of carbon neutral products, particularly flights. Here companies purchase emission certificates from CDM/JI projects in order to offer the neutralisation of emissions that occur during the production or use of their products. It is important to note that this segment of demand is emerging without any government action and it might therefore become a matter of policy making to make sure that these certificates will not be used as a means of complying with the Kyoto Protocol.

5 Acquisition of Emission Certificates from CDM/JI Projects: Action at the Member State Level

As has already been concluded, in order to achieve compliance the EU 15 as well as various EU Member States will need to use at least one of the various options for flexibility. It is therefore not surprising that several EU Member States have already initiated programmes that will lead to the acquisition of emission certificates from CDM/JI projects.

Table 5.1 sets out the programmes that EU Member States have already initiated or are planning to initiate. Simplifying slightly, these programmes can be grouped into two categories. Firstly, there are tenders that are exclusively financed by governments - the most prominent example is the Dutch tenders ERUPT (Emission Reduction Unit Procurement Tender) and CERUPT (Certified Emission Reduction Procurement Tender). Second are tenders in which both public and private entities invest. The information that is accessible at the moment does not allow for an accurate forecast of the amount of emission certificates that EU Member States will acquire through the activities listed in Table 5.1. However, dividing the government financing by 5 Euros (a reasonable price estimate for CERs/ERUs) gives a good estimate.

Table 5.1 Member State Programmes Leading to the Acquisition of Emission Certificates

Programme: Government Financing	Description of the Programme Activities	Further Programme Participants / Financial Contribution
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Austria	Austrian CDM/JI-Programme: 2003 –2010: up to 217 Mio. Euro	Tenders for CDM and JI Projects, Participation in Funds (eg Community Development Fund), Financing transaction costs and capacity building	
Denmark	Reserve for JI Projects: 17.5 Mio Euro	Support for a number of already initiated JI projects, Initiation of a market for CDM and JI projects	
Finland	Finnish CDM/JI Pilot Programme: 20 Mio Euro	Building institutional capacity within the government for selection and implementation of projects	
France	No information available		
Germany	KfW Klimaschutzfonds: 15 Mio Euro	Funding for CDM and JI Projects	Public and private companies / 50 Mio Euro
Italy	Italian Carbon Fund: 15 Mio US Dollar	Funding for CDM and JI Projects, Income using for project identification and preparation	Regions, Municipalities, private Companies / approx. 65 Mio US Dollar
Netherlands	ERUPT and CERUPT	Tenders for CDM (CERUPT) and JI projects (ERUPT) in Central and Eastern European countries	
Spain	Spanish Carbon Fund	Focus on CDM and JI projects and investments in emission reducing technologies	Public and private companies

5 Acquisition of Emission Certificates from CDM/JI Projects: Linking European Emission Allowance Trading with CDM and JI

On 23 July 2003 the European Commission put forward its proposal for a ‘Directive of the European Parliament and of the Council amending the Directive 2003/.../EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol’s project mechanisms’. The new Article 11(bis) that is proposed for the ET Directive establishes the link between CDM & JI on the one side and EU emission allowance trading on the other. It states the following:

‘Conversion of CERS and ERUs from project activities for the use in the Community Scheme

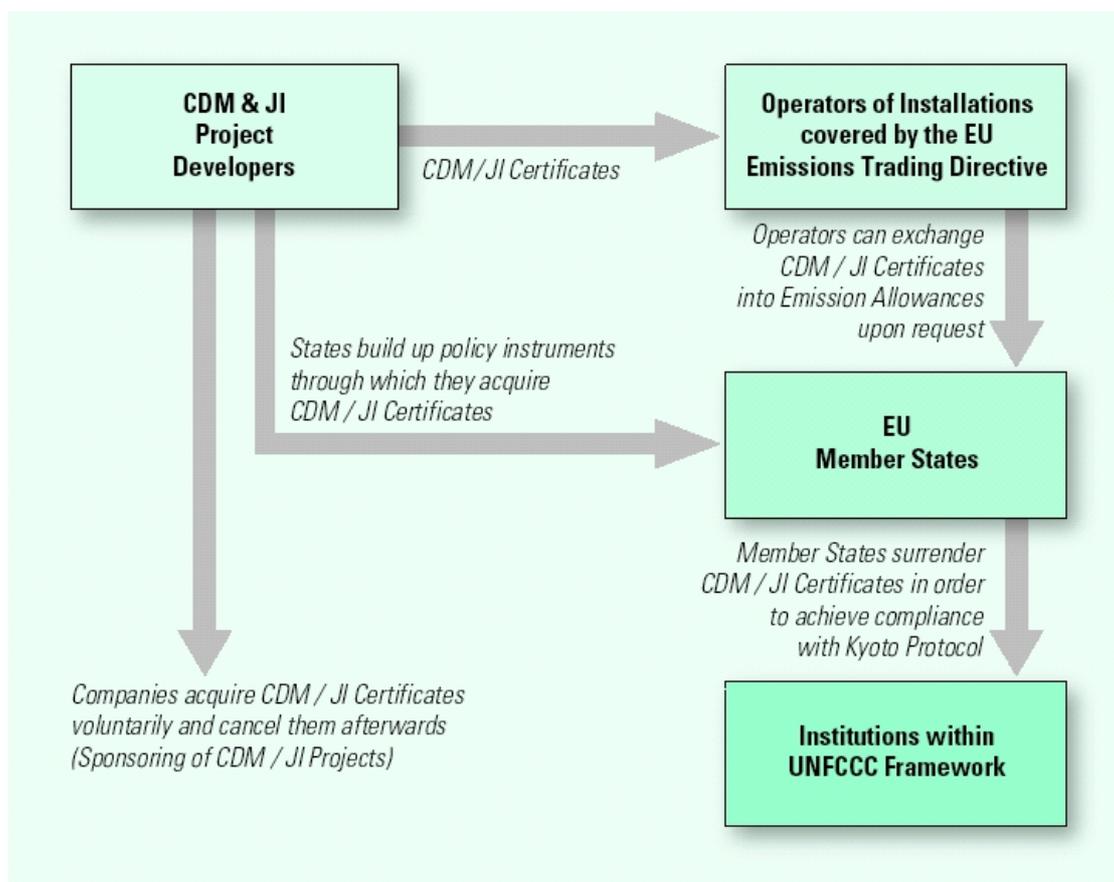
- i. *Following the entry into force of the Kyoto Protocol and subject to paragraphs 2 and 3 of this Article, Member States may convert CERs and ERUs from project activities into allowances for use in the Community scheme during each period referred to in Article 11(2) of this directive, at the request of an operator. This shall take place through the issue of one allowance by the Member State in exchange for one CER or ERU held by that operator in its national registry.*
- ii. *At such time as the number of CERs and ERUs from project activities converted for use in the Community scheme reaches 6% of the total quantity of allowances allocated by the Member States for the period, the Commission shall undertake a immediate review. In the light of this review, the Commission may consider whether a maximum of for example 8% of the total quantity of allowances allocated by the Member States for the period should be introduced in accordance with the procedure in Article 23(2).*

- iii. *All CERs and ERUs may be converted for use in the Community Scheme except from the following project activities:*
- a) *In accordance with the Kyoto Protocol and subsequent decisions adopted thereunder, nuclear facilities; and*
 - b) *Land use, land-use change and forestry'*

As envisioned in this article, the actual flow of emission certificates from a CDM/JI project developer to one of the EU Member States will be as follows (see also Chart 2).

- 1) The CDM/JI project developer receives CERs/ERUs after the project has successfully undergone the project cycle for CDM/JI projects respectively.
- 2) The developed sells these CERs/ERUs to an operator (ie a company that operates an installation that must participate in the EU emission allowance trading).
- 3) The operator can then request the conversion of the CERs/ERUs into the corresponding amount of Allowances, ie surrendering the CERs/ERUs to the Member State in which the operator is located and receiving the equivalent in Allowances.
- 4) The operator can either use these Allowances in order to achieve compliance with the obligation to surrender Allowances equal to the total emissions of the installation in each calendar year (see Article 6(2), ET Directive) or sell them to another participant in the market.
- 5) It is important to note that after the conversion, the Member State holds the CERs/ERUs on account and can use them for compliance with obligations under the Kyoto Protocol.

Chart 2 The Demand for CDM/JI certificates



6 Controversial Issues and Relevant Positions of Various Interest Groups

Linking CDM and JI to EU emission allowance trading gives rise to various issues that are being hotly debated. In this debate there is a straightforward division between business interests, on the one hand, and environmental organisations, on the other. The latter are against linking CDM/JI and the EU emission allowance trading scheme and in favour of substantial limitations if the link does go ahead. The former are in favour of linking and a maximum of ‘flexibility’. The following section gives a brief account of the controversial issues and the arguments put forward by both sides.

6.1 Linking as such

Business organisations have come out emphatically in favour of linking EU emissions allowance trading with CDM and JI. In their view, linking will provide flexibility and cost-effectiveness in efforts to reduce emissions and at the same time contribute to the broader policy objectives of the EU and the United Nations Framework Convention on Climate Change (UNFCCC). CDM and JI can facilitate technology transfer, help engage Non-Annex B Parties and provide incentives for Russia’s ratification of the Kyoto Protocol and thus its entry into force (Cembureau et al. 2003, p. 1; IETA 2003, p. 1; UNICE 2003, p. 1). They acknowledge that there are concerns about the environmental integrity of the project-based mechanisms but consider that the rigour so far shown by the CDM Executive Board in

evaluating projects should lay to rest all fears about their the environmental integrity (europia/OGP 2003, p. 2; IETA 2003, p. 2).

The environmental organisations on the other hand are of the opinion that effective climate policy must focus on domestic action, especially in terms of promoting renewable energies and energy efficiency, and the EU emission allowance trading has been designed as a means to this end. Achieving significant domestic emission reductions is a prerequisite for maintaining the EU's international credibility and also promotes other benefits such as the security of energy supply and the reduction of air pollution. Linking EU emissions allowance trading with CDM/JI would, however, decrease the pressure to implement effective domestic action (BUND 2003, p. 15; CAN Europe 2003, p. 1f; CAN Europe / Greenpeace / WWF 2003, p. 1f; CAN Europe / FOEE / WWF 2003, p. 1f; Greenpeace 2003, p. 1).

Moreover, the environmental organisations consider CDM/JI to be untested mechanisms whose environmental integrity cannot yet be determined. There is a danger that projects might get certificates without actually providing emission reductions, so that EU emissions would be offset by 'fake' credits. Especially hydropower and sink projects are criticised for their potentially negative environmental and social impacts (see below). Linking the EU emission allowance trading to CDM/JI therefore puts the environmental integrity of the whole scheme, and ultimately the EU's international credibility, at risk. (BUND 2003, p. 15; CAN Europe 2003, p. 1f; CAN Europe / Greenpeace / WWF 2003, p. 1f; CAN Europe / FOEE / WWF 2003, p. 1f; Greenpeace 2003, pp. 1f; Greenpeace/IRN 2003, p. 1).

6.2 Capping the amount of CERs/ERUs converted into allowances

The business organisations maintain that the international negotiations did not include a concrete definition of the term 'supplemental'; it would therefore be inappropriate to introduce one in the EU. A restrictive interpretation would put the Protocol itself into question, and inhibit its entry into force, the attraction of new parties and the full support of existing parties (europia/OGP 2003, pp. 1, 3). A cap would also be contradictory to the objective of flexibility and cost-effectiveness, which is the whole point of emissions trading. It would therefore raise the costs of companies within the EU emission allowance trading and thus put them at a disadvantage to those outside of it (Cembureau et al. 2003, p. 1; UNICE 2003, p. 1).

Moreover, the uncertainty about the convertibility of credits would discourage the implementation of CDM/JI projects and therewith the transfer of technology and the contribution to sustainable development (Cembureau et al, 2003, p. 1; europia/OGP 2003, S. 1; IETA 2003, p. 2; UNICE 2003, p. 1). In fact, the already existing uncertainty due to doubts about the entry into force of the Kyoto Protocol, as well as the transaction costs, the lack of capacity in many developing countries and the complex procedures, are already having a detrimental effect on the development of CDM/JI projects. As a result, up to 2012 there will be a very limited supply of CERs/ERUs, so that concerns about their impact on domestic action are unjustified (IETA 2003, p. 2; UNICE 2003, p. 1).

The environmental organisations are in favour of a cap. Their position is based on general scepticism concerning the link as outlined above. In their view the link is bad policy and, therefore, if linking goes ahead there should at least be a strict cap to ensure that significant domestic action does take place nevertheless. The fact that the EU was unsuccessful in having a concrete definition of the supplementarity requirement agreed at the international

level does by no means prevent it from adopting one for its own use (CAN Europe / Greenpeace / WWF 2003, p. 1f; CAN Europe / FOEE / WWF 2003, p. 1f).

6.3 Eligibility of project activities and quality criteria for CDM/JI projects

The proposed new Paragraph 3, Article 11(bis), stipulates that CERs/ERUs from sink and nuclear projects may not be converted into Allowances. The exclusion of nuclear projects has already been agreed in the Marrakech Accords; the exclusion of sinks would be an EU-specific provision. The environmental organisations are in favour of restrictions that exclude projects that are accepted on the international level; whereas the business organisations oppose regulation that excludes internationally accepted CDM/JI projects.

The reasons put forward by the business organisations have mainly already been laid out above. They argue that adopting rules that are stricter than those adopted internationally would indicate that the EU has been negotiating in bad faith; the work of the CDM Executive Board should allay fears about the environmental integrity of the projects (europia / OGP 2003, p. 2; IETA 2003, p. 2; UNICE 2003, p. 2). Moreover, limiting the possible types of projects would limit the opportunities for developing countries as well as the flexibility needed by the EU Member States and by the companies participating in EU emissions trading. They also argue that sink projects are the most positive concerning long-term economic, social and environmental benefits (Europia / OGP 2003, p. 2, 4).

Conversely, the environmental organisations argue that sinks do not have any real climate benefit since the carbon stored in forests may at any time be re-released into the atmosphere. Moreover, sink projects are less costly than energy projects. Allowing the former would therefore inhibit investment in the latter and thus undermine technology transfer to developing countries. Sink and large hydroelectric power projects also have potentially significant negative ecological and socio-economic impacts, such as the use of large monoculture plantations, displacement of local and indigenous communities, or the destruction of whole ecosystems. Large dams might also become a source of carbon dioxide and methane emissions due to rotting vegetation. The environmental organisations therefore are strongly in favour of the exclusion of sinks and also demand that hydropower projects have to comply with the guidelines developed by the World Commission on Dams and that those with a capacity of more than 10 MW are excluded (BUND 2003, p. 15; CAN Europe 2003, p. 1f; CAN Europe / Greenpeace / WWF 2003, p. 1f; CAN Europe / FOEE / WWF 2003, p. 1f; Greenpeace 2003, pp. 1f; Greenpeace/IRN 2003, p. 1).

6.3 Entry into force of the Kyoto Protocol

As pointed out above, entry into force of the Kyoto Protocol is a necessary condition for the implementation of JI, whereas for the CDM the situation is more complicated. It could be argued that the prompt start CDM can be implemented completely independently from the entry into force of the Kyoto Protocol and thus entry into force is not necessarily a precondition for linking the CDM and EU emission allowance trading.

The business organisations argue that CDM and JI should be linked to EU emission allowance trading irrespective of the entry into force of the Kyoto Protocol. In support of this argument, they reiterate that uncertainty as to Kyoto's entry into force is severely inhibiting investment in CDM/JI. Together with the other inhibiting factors mentioned above this could mean that European businesses will have to meet their Kyoto obligations without recourse to

the flexibility afforded by the Protocol, which would damage their global competitiveness. They therefore propose that the Directive should allow the conversion of certificates from projects taking place in countries that have ratified the Kyoto Protocol even if it does not enter into force (Cembureau et al. 2003, p. 2; europa / OGP 2003, pp. 2, 5f; IATP 2003, p. 1; UNICE 2003, p. 2).

6.4 Inclusion of CERs from 2005

Paragraph 1 of the proposed new Article 11(bis) refers to Article 11(2), ET Directive, ie it allows conversion of CERs/ERUs from 2008 onwards. As shown above the supply of CERs will develop from 2004 onwards. The business organisations therefore argue that the conversion of CERs into Allowances should already start in the first commitment period of the EU emission allowance trading, whereas the environmental organisations do not seem to have a clear position.

The business organisations argue that allowing CERs to be converted from 2005 onward would send a strong signal to the developing countries and help engage them in the climate process during this critical period when the negotiations on the implementation of the Kyoto Protocol are completed and negotiations about the second commitment period are supposed to start (IETA 2003, p. 1f). Moreover, due to the newness of the carbon market there is a risk that there might be a lack of liquidity in the EU emission allowance trading market. Even in small quantities, including CERs could help to alleviate this problem (IETA 2003, p. 2; UNICE 2003, p. 2). An early inclusion would also send a positive signal that could promote the development of more projects (UNICE 2003, p. 2).

The environmental organisations do not seem to have an official position on this issue. Discussions with some of their representatives suggest that due to their general scepticism about the link, some of them are against an early inclusion. Others do not seem to see a problem, provided that CERs used in this way are ‘cancelled’ so as to prevent them from being used twice.

6.5 Other issues

There are also other issues that have to be resolved by the proposed directive but on which the various interest groups do not seem to have voiced specific positions. One such issue is the treatment of JI projects within EU Member States. Another issue is the inclusion of so-called national project activities, ie projects that are similar to CDM/JI projects but carried out without international partners, which some EU Member States are advocating. Yet another issue is the problem of tracking project certificates: CERs and ERUs have serial numbers indicating which project they come from. Converting them into Allowances would erase this distinction.

7 Analysis and Derivation of Policy Recommendations

From the authors’ point of view, four issues are most important with regard to the proposed Directive: a) linking as such, b) the eligibility of project activities and quality criteria for CDM/JI projects, c) the implementation of the supplementarity requirement and d) the issue of JI projects within EU Member States and national project activities.

7.1 *Linking as such*

As shown above, current forecasts suggest that the EU 15 may not be able to come into compliance through domestic action only. This is also the case for a number of EU 15 Member States. Therefore, the use of at least one of the following options might become necessary: the use of International Emissions Trading between the parties to the Kyoto Protocol, the use of CDM/JI, or the use of sinks on the territory of the Member States. It would perhaps be appropriate to prepare the mechanisms for their use in case it does indeed become indispensable. Of the options, CDM and JI seem politically the most acceptable.

The use of International Emissions Trading is extremely controversial due to the 'generous' allocation of AAUs to the Eastern European States in the Kyoto Protocol. Due to the collapse of these states' industries during the 1990s they dispose of amounts of AAUs that are significantly higher than their current and projected emissions (as shown in Table 2.1 for the Accession Countries). Transferring this so-called 'hot air' to the Western States via International Emissions Trading would therefore offset emission reductions in these countries without a corresponding additional emission reduction in the country of origin.

Reviewing the action currently being taken at the Member State level shows that only two EU 15 Member States seem to be preparing substantial schemes for acquiring emission certificates from CDM/JI projects, whereas most other programmes seem to anticipate the proposed directive or are rather small in size. Action at the Community level therefore seems appropriate. The authors consider the link between CDM/JI and EU emission allowance trading a useful step to ensure that sufficient quantities of CERs and ERUs are available in case their use becomes necessary in order to come into compliance with the Kyoto Protocol.

7.2 *Eligibility of project types and quality criteria for CDM/JI projects*

The discussion about eligible project activities often focuses on the inclusion of Land Use, Land Use Change and Forestry Projects. At the ninth Conference of the Parties in December 2003 in Milan, the Parties to the UNFCCC adopted guidelines for the inclusion of afforestation and reforestation project activities in the CDM. Therefore, a supply of emission certificates from CDM sink projects will develop in the near future.

The authors have organised / acted as moderators of the actor-oriented discussion process 'Sinks and CDM/JI', which focussed on the many issues surrounding Land Use, Land Use Change and Forestry Projects. In the final report (Langrock / Sterk / Wiehler 2003) they concluded, 'the sinks controversy is taking place on various levels. Firstly, there is some fear that sink projects would draw attention away from the real cause of climate change, ie rising emissions. Secondly, opponents of sink projects argue that the sequestration of carbon dioxide is not equivalent to the reduction of emissions. They also point to the problem of quantifying carbon sequestration. The proponents of sink projects reply that these problems can be solved by the TCER approach. Thirdly, there is a debate about the ecological and socio-economic effects of sink projects'.

The authors would like to add three arguments that justify the exclusion of sink projects from EU emission allowance trading, as follows.

- First, the accounting rules for the two emission certificates, 'temporary CERs' (tCERs) and 'Long-term CERs' (lCERs), that will be issued after the successful

sequestration of carbon differ significantly from those of CERs and ERUs. A tCER expires at the end of the commitment period following the one during which it was issued and will have to be replaced by an AAU, CER, ERU, RMU or another tCER. A ICER expires at the end of the crediting period of the CDM project for which it was issued or if the carbon sequestration has been reversed, and will have to be replaced by an AAU, CER, ERU, RMU or another tCER. Thus, tCERs and ICERs have a value that is markedly lower than that of a CER. The one-for-one conversion that is foreseen in Article 11(bis) of the proposed Directive would therefore not be appropriate.

- Second, the discussion process clearly showed that a multitude of thinkable sink project types is not yet being discussed publicly. Plantations are hotly debated, whereas other project types, eg agro-forestry or bio-energy projects, are rarely mentioned.
- Third, it has become obvious that the treatment of negative side effects and the realisation of positive side effects are the key to the acceptance of sink projects. It was the impression of the authors during the discussion process that these side effects are not yet completely understood.

For these reasons the authors consider that emission certificates from CDM/JI sink projects should not be converted into allowances. There should, however, be action that stimulates learning about Land Use, Land Use Change and Forestry Project activities.

The other big issue regarding the quality of projects is the inclusion of emission certificates from hydropower projects. It has been proposed that only certificates from projects complying with the guidelines laid down by the World Commission on Dams should be exchanged into Allowances and that projects with a capacity of more than 10 MW should be excluded altogether. There are in fact many quality criteria for CDM/JI projects that have been discussed during the negotiations at the international level, yet it is too early to judge which of these are viable. The Executive Board is in charge of setting guidelines for CDM projects and as such for the quality of CDM projects. In addition to this public quality steering, there are various non-governmental initiatives (eg the International Organisation for Standardisation ISO) that seek to develop quality standards for CDM/JI projects. The most important of these initiatives is the establishment, by environmental organisations, of the Gold Standard for CDM/JI projects. The authors have analysed the genesis of this set of criteria and indicators and tried to judge its quality (Langrock / Sterk 2003b). The authors conclude in their policy paper that the Gold Standard is a good and viable set of criteria and indicators, which has been derived from a multitude of sources and benefited from the work of many distinguished researchers and significant parts of which have already been tested in practice.

The authors therefore recommend that Member States and the EU Parliament consider the inclusion of these and other quality criteria that have been developed outside the UNFCCC framework.

7.3 *Implementation of the complementarity requirement*

The proposed Directive acknowledges the importance of the complementarity requirement in the 6th recital. This highlights the importance of the 'complementarity under the Kyoto

Protocol’ as well as the importance of preserving ‘the overall objective of the Community scheme to achieve emission reductions thereunder’. The concrete implementation of the supplementarity requirement is stipulated in the proposed new Paragraph 2, Article 11(bis).

Although rather weakly formulated, this paragraph proposes to establish a review procedure, which may result in limiting the quantity of emission certificates from CDM/JI projects that can be converted into Allowances. While the formulation intends to make sure that the ‘overall objective of the Community scheme’ is preserved, it does not represent a comprehensive implementation of the supplementarity requirement the EU had put forward during the negotiations, for the following reasons.

- the ‘linking proposal’ clearly does not regulate all channels through which EU Member States can acquire emission certificates from abroad. Most important among these are a) the CERs/ERUs projects that EU Member States acquire through the activities described above and b) the AAUs that EU Member States can acquire through International Emissions Trading.
- the Linking Proposal only regulates the amount of emissions certificates that the EU Member States acquire through the conversion of CERs/ERUs into Allowances. It does not deal with all issues surrounding the actual compliance of the EU Member States with the Kyoto Protocol, ie the act of surrendering the emission certificates to the international authorities that assess compliance with the Kyoto Protocol. This distinction may be relevant, as there are a variety of other options (eg banking and selling of these emission certificates).
- the mathematical calculation for the maximum amount of emission certificates from CDM/JI projects that can be converted into Allowances differs significantly from the originally proposed supplementarity requirement. For example, if Italy allocates an amount of Allowances to operators taking part in EU emission allowance trading that is equivalent to half of its amount of assigned amount units (ie 1186,75 Mio t CO₂ eq.), then with a cap of 8 per cent, the maximum emission certificates that could be converted into Allowances equals 94,94 Mio t CO₂ eq. This is significantly lower than the amount of emission certificates from abroad that can be acquired and surrendered in line with the supplementarity requirement (176,6 Mio t CO₂ eq.) as formulated by the EU (see Annex II). Similar estimates for the other EU Member States lead to similar results. In sum, most likely there is no risk that a Member States would violate the supplementarity requirement simply by converting the 8 per cent maximum amount of emission certificates from CDM/JI projects into Allowances.

From the authors’ point of view, a sound implementation of the supplementarity requirement is crucial for the credibility of the EU’s climate policy. In this regard policy makers will have to take a decision as to whether they wish to adopt a formulation of the cap on the amount of emission certificates that can be converted into Allowances that is more explicit than the text in the proposed Directive. But while a cap would certainly be helpful in meeting the supplementarity requirement, the findings of this policy brief suggest that efforts would be better invested in a comprehensive implementation of the supplementarity requirement.

One option for doing so might be to amend Council Decision 93/389/EEC of 24 June 1993 (as amended by Council Decision 1999/296/EC), which establishes a mechanism for monitoring the EU’s greenhouse gas emissions and evaluating progress towards meeting its

international commitments. Under this decision, the Member States annually report their greenhouse gas inventories to the Commission. The Commission assesses, in consultation with the Member States, whether their actual and projected progress is sufficient to meet the commitments made by them and the EU under the UNFCCC and the Kyoto Protocol, and reports to the European Parliament and the Council. Since the supplementarity requirement is also a commitment undertaken by the EU and its Member States, the said decision could be amended such that the Member States would have to report and the Commission would have to assess how far Member States' climate policy and thus the EU's climate policy as a whole is in line with the supplementarity requirement. While this option would not regulate EU Member States' use of the flexible mechanisms, it would subject it to EU-wide and thus worldwide scrutiny.

Another and stronger option might be to resolve the supplementarity question in the National Allocation Plans (NAP). These do not only contain the allocation of Allowances to the installations covered by EU emission allowance trading, they also contain a plan for meeting the respective Member State's overall Kyoto target. The NAPs could therefore be made to stipulate the overall extent to which a State intends to use the flexible mechanisms, as well as the amount of CERs/ERUs its companies will be allowed to use. As part of the NAPs these targets would be notified to the EU Commission, which would then have to ensure that the sums notified by the EU 15 Member States do not exceed the supplementarity requirement for the EU 15 as a whole. This issue does actually warrant political attention since adding up the respective figures shows that the sum of what would be supplemental for each individual Member State would not be supplemental for the EU 15 as a whole.

7.4 JI projects in EU Member States and National Project Activities

The proposed Directive explicitly foresees the implementation of JI projects within EU Member States. Such projects raise a series of very technical questions that are beyond the scope of this policy brief, however. For further information, see Langrock / Sterk 2003a and Langrock / Sterk / Wiehler 2003 (both in German).

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Annex I The Landfill Gas to Electricity Project in Durban, South Africa

The CDM Project Cycle

A CDM project has to undergo a project cycle consisting of the following steps:

1. Preparation of the Project Design Document (PDD) by the project developer. For the purpose of calculating the emission reduction achieved by the project, the PDD has to establish a so-called baseline, ie a scenario of what would most likely have happened in the absence of the project. The PDD also has to contain a plan for monitoring the project's emissions. Baseline and Monitoring Plan need to be designed according to methodologies that have already been approved by the CDM Executive Board.
2. Validation of the PDD, ie an examination if the PDD meets all requirements, by a certification company accredited with the CDM Executive Board, a so-called Designated Operational Entity (DOE).
3. Registration of the project with the CDM Executive Board.
4. Implementation of the Project and Monitoring of all relevant emissions (the sequestration of carbon) by the project developer.
5. Verification of the emission reductions (carbon sequestration) by another DOE.
6. Certification of the emission reduction (carbon sequestration) by the DOE.
7. Issuance of the CERs (tCERs/ICERs) by the CDM Executive Board.

Design of the Durban Landfill Project

The starting date of the Durban landfill gas project was expected to be before 1 July 2003 and it has an expected operational lifetime of 21 years. The participants are Durban Solid Waste as project developer and technical advisor, the eThekweni Municipality as project sponsor, the Prototype Carbon Fund (PCF) and the Republic of South Africa represented by the Department of Environmental Affairs and Tourism.

According to the PDD (PCF 2003), the project consists of an enhanced collection of landfill gas at three landfill sites (Mariannahill, Bisasar Road and La Mercy) of the municipality of eThekweni, formerly known as Durban, and the use of the recovered gas to produce electricity. This electricity will be fed into the municipal grid and replace electricity which the municipal electric company is currently buying from other suppliers and which largely originates from the burning of coal. Currently, the Mariannahill and the Bisasar Road landfills collect and flare a portion of the methane generated for local, site-specific reasons. The third landfill site, La Mercy, which is located far away from residential areas, does not undertake methane recovery.

Baseline and Emission Reduction

For the purpose of establishing a project's baseline one may consider various scenarios and then select the most likely one. For this project, the business-as-usual scenario was

considered to be the appropriate baseline. The baseline therefore stipulates that the currently existing gas capturing wells would continue to operate as before and that the eThekweni Municipality would continue to meet its electricity needs on the national market. Relative to the baseline, the project will create two complementary emission reduction effects:

- First, the collection, flaring, and combustion of landfill gas, thus converting its methane content into CO₂ and reducing its greenhouse gas effect. As part of the project, additional wells will be installed which will control and limit methane emissions to the atmosphere. The wells will be spread throughout the whole landfill site and be located especially at the deepest parts of the landfill where the greatest amount of methane can be expected. Methane will be drawn from the wells through pipework to extraction equipment. In the business-as-usual scenario only about 7.4 per cent of the gas produced in the landfills would be collected and flared, whereas with the project the methane recovery system will be upgraded to 83 per cent in 2012.
- Second, the use of the collected gas for generating and supplying electricity to the regional grid will displace electricity generation from coal powered plants and thus reduce attendant emissions. At all three sites, gas-fired electricity generators in units of 1 MW will be installed, the total capacity of which will be about 10 MW. At a capacity factor of 85 per cent, a maximum of 67.8 GWh per year will be delivered to the grid.

It is estimated that through these two effects the project will reduce an estimated 3,204,032 tonnes of CO₂ in the first 7-year crediting period.

Status of the Project

The Durban landfill project has completed the first two steps outlined above. The project developer proposed new baseline and monitoring methodologies, therefore the CDM Executive Board first had to approve them. Once the methodologies were approved the DOE finalised the validation of the project, which is now ready to be submitted to the CDM Executive Board for registration.

Aggregate anthropogenic emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ - excluding CO₂ emissions/removals from land-use change and forestry

	I		II		III		IV		V		VI=V-IV		VII=+VI		VIII		IX = VIII*VII*5		X = III*5		XI = X-IX		XII=(I*5-IX)*2			
	Emissions in base year (mostly 1990)		Maximum Emissions 1995-2001		2001		Aggregate anthropogenic emissions of HFCs/PFCs and SF ₆ /baseline correction		1990		1995		Difference		base year emissions incl. baseline correction		Reduction factor		AAU		Appr. Emissions 2008 - 2012		Appr. Compliance Gap		Supplementarity Cap	
	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	Mio t CO ₂ eq.	
Austria	78,1	85,9	85,9	1,5	1,7	0,3	78,3	0,870	340,7	429,4	88,7	44,3														Austria
Belgium	141,1	154,5	150,5	0,0	0,4	0,4	141,6	0,925	654,7	752,6	97,8	58,9														Belgium
Denmark	69,2	90,8	69,4	0,0	0,3	0,3	69,5	0,790	274,6	347,1	72,5	89,6														Denmark
Finland	77,2	82,1	80,9	0,1	0,1	0,0	77,2	1,000	386,2	404,4	18,3	12,2														Finland
France	568,2	589,5	568,2	7,6	5,3	-2,3	565,8	1,000	2.829,0	2.840,8	11,8	59,2														France
Germany	1.213,5	1.079,5	995,3	10,1	14,8	4,6	1.218,2	0,790	4.811,8	4.976,7	164,9	292,8														Germany
Greece	104,9	132,2	132,2	1,2	3,5	2,3	107,2	1,250	669,7	661,2	-8,5	-4,3														Greece
Ireland	53,2	70,0	70,0	0,0	0,2	0,2	53,4	1,130	301,8	350,1	48,3	24,1														Ireland
Italy	508,6	545,4	545,4	0,9	0,0	-0,9	507,7	0,935	2.373,5	2.726,8	353,3	176,6														Italy
Luxembourg	13,4	10,2	5,0	0,0	0,0	0,0	13,4	0,720	48,4	25,0	-23,4	1,4														Luxembourg
Netherlands	210,0	232,9	219,7	7,1	8,2	1,1	211,1	0,940	992,2	1.098,5	106,2	86,1														Netherlands
Portugal	61,4	83,8	83,8	0,0	0,0	0,0	61,4	1,270	390,2	419,1	28,9	14,5														Portugal
Spain	287,6	387,1	382,8	3,3	5,5	2,2	289,9	1,150	1.666,6	1.913,9	247,3	134,4														Spain
Sweden	72,8	78,7	70,5	0,5	0,6	0,1	72,9	1,040	378,9	352,4	-26,5	7,3														Sweden
United Kingdom	744,1	709,1	657,2	14,4	17,4	3,1	747,2	0,875	3.269,0	3.286,2	17,2	138,2														United Kingdom
EU 15	4.199,6	4.166,5	4.116,1	47,4	59,6	12,3	4.211,9		0,0	20.580,4	20.580,4	10.416,4														EU 15

acceding countries	2001		2008-2012		Reduction factor	AAU	Appr. Emissions 2008 - 2012	Appr. Compliance Gap	Supplementarity Cap																	
	Mio t CO ₂ eq.																									
Czech Republic	162,7	158,9	148,1	0,0	0,2	0,2	162,9	0,920	749,4	740,3	-9,1	22,6														Czech Republic
Estonia	37,6	23,7	19,4	0,0	0,0	0,0	37,6	0,920	173,1	97,1	-76,0	-27,4														Estonia
Hungary	101,6	86,5	78,5	0,0	0,0	0,0	101,6	0,940	477,7	392,7	-85,0	-22,5														Hungary
Latvia	22,0	13,7	11,5	0,0	0,0	0,0	22,0	0,920	101,1	57,5	-43,6	-16,3														Latvia
Lithuania	37,1	22,5	22,5	0,0	0,0	0,0	37,1	0,920	170,8	112,6	-58,2	-29,1														Lithuania
Poland	564,4	437,4	382,8	0,0	0,8	0,8	565,3	0,940	2.656,7	1.914,0	-742,8	-234,9														Poland
Slovakia	56,3	53,4	50,1	0,3	0,1	0,0	56,3	0,920	259,2	250,6	-8,6	3,9														Slovakia
Slovenia	19,9	19,7	19,7	0,0	0,0	0,0	19,9	0,920	91,6	98,5	7,0	3,5														Slovenia
Sum	1.001,8	815,8	732,7	0,3	1,2	1,0	1.002,8		4.679,5	3.663,3	-1.016,2	-300,2														Sum

candidate countries	2001		2008-2012		Reduction factor	AAU	Appr. Emissions 2008 - 2012	Appr. Compliance Gap	Supplementarity Cap																	
	Mio t CO ₂ eq.																									
Bulgaria	144,4	87,1	65,8	0,0	0,1	0,1	144,4	0,920	664,5	329,0	-335,5	-114,4														Bulgaria
Romania	264,3	212,3	148,3	0,0	0,5	0,5	264,8	0,920	1.218,1	741,3	-476,8	-78,3														Romania
Sum	408,7	299,5	214,1	0,0	0,6	0,6	409,3		1.882,6	1.070,3	-812,3	-192,6														Sum

Source: FCC/ISBSTA/2003/14 and own calculation

Annex II Calculation of the Compliance Gap and the Supplementarity Requirement