

# Ensuring the good use of the Kyoto mechanisms: a key to progress in energy efficiency and sustainable development

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## 1. SYNOPSIS

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Kyoto Mechanisms may be used to promote energy efficiency and renewable energy if projects are required to fulfill criteria which also favour sustainable development.

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## 2. ABSTRACT

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Conditions of additionality may suffice to make energy efficiency projects eligible under JI and the CDM when they are non-competitive under normal conditions. They may even be accepted if they are competitive when it can be proven that barriers are preventing their implementation. However, this might not be the case in economies in transition who have important amounts of hot air to sell, or if sequestration projects (sinks) are accepted in the Kyoto Mechanisms (KM).

When projects are designed, it will therefore be important to be able to avail ourselves of a set of significant indicators to be able to measure their potential contribution to better carbon-free energy policies and to genuine long-term sustainable development.

HELIO International has developed indicators for the CDM, which were discussed at one of the side-events at COP 5. Now those indicators are currently being tested in projects in South Africa, Bangladesh, Indonesia and Brazil. A similar set of indicators will be used in a major EU research project on the selection of JI projects between West European and East European utilities.

This paper provides the criteria which meet the conditions under which Kyoto projects based on improvements in energy efficiency and on the promotion of renewable energy can contribute towards both meeting the Kyoto Protocol targets and sustainable development in host countries.

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## 3. INTRODUCTION

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No one realistically expected the negotiations to enact the flexible mechanisms under the Kyoto Protocol to be easy, and they have not been as seen last November with the collapse of discussions at the 6<sup>th</sup> Conference of the Parties to the Climate Convention (COP 6). While there is strong support for controlling greenhouse gas (GHG) emissions, various regions and countries of the world have special interests to protect that have made approval elusive to date.

It is important to step back and, not looking at the negotiations per se but at the efforts that are being made, to ensure that the flexible mechanisms, once approved, actually deliver reductions in greenhouse gas (GHG) emissions and are compatible with sustainable development. HELIO International, a global NGO based in France, monitors sustainable energy development through the work of experts throughout the world. After the Kyoto Conference of the Parties in 1997 (COP 3), HELIO started to look at how the flexibility mechanisms, or Kyoto Mechanisms (KM), that were outlined in the Kyoto Protocol, could and should be operationalised. It started the process by focussing on one of the mechanisms, the Clean Development Mechanism (CDM), mainly because it had been decided that its implementation could occur as early as 2000.

HELIO International developed criteria and indicators for the CDM, which were initially discussed during one of the side-events at COP 5 in Bonn. These indicators are currently being tested in the South-South-North project<sup>1</sup> in four countries: Bangladesh, Brazil, Indonesia and South Africa. A similar set of indicators is being developed in Europe for a second flexible mechanism, Joint Implementation.

This paper outlines under which terms KM could contribute to sustainable development in a cost-effective and equitable manner, and in the process, to promote energy efficiency improvements.

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#### 4. BACKGROUND TO THE KYOTO MECHANISMS (KM)

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At the Third Conference of the Parties (COP 3) to the United Nations Framework Climate Change Convention (UNFCCC) held in Kyoto in November 1997, it was agreed that three flexibility mechanisms would be created in order to increase the number of methods available to Annex 1 Parties<sup>2</sup> to reduce their GHG emissions. These mechanisms are familiar to most of us now: Emissions Trading (ET), Joint Implementation (JI) and the Clean Development Mechanism (CDM)<sup>3</sup>. They provide opportunities for countries to meet a portion of their GHG emissions commitments by implementing measures outside their national boundaries. Of the three mechanisms, the CDM attracts considerable interest because it also constitutes a practical link between the countries that are bound by reduction commitments (Annex 1 countries), and those that are not (non-Annex 1 countries), on the basis of 'common but differentiated responsibilities'.

Not only do the KM provide an opportunity for the realisation of real and measurable GHG emission reductions, they also elevate sustainable development to the same level. These dual objectives are regarded as symbiotic, and one may not occur without the other, as stated in Article 2 of the Kyoto Protocol:

"2.1. Each Party included in Annex 1, in achieving its quantified emission limitation and reduction commitments under article 3, in order to promote sustainable development, shall....".

This is repeated more precisely in Article 12 which is specific to the CDM. Since there is no specific article for JI, some have assumed that JI was not required to contribute to sustainable development in the host country. This exemption is contradicted by the above Article 2.1.

Although both goals are sound, caution must be exercised in the design and implementation of the KM. It must be recognised that a poorly constructed and badly managed KM process could seriously undermine the new commitment targets of developed countries that are contained in the Kyoto Protocol. It could also handicap the ability of developing countries to fulfill their own future climate commitments, as well as their sustainable development strategies, which are required by the 1992 Earth Summit Treaty. The respect of sustainable development plans within National Agenda 21, in potential host countries as well as in investor countries, is therefore a first order prerequisite if the KM are to benefit both categories.

Sustainable development is defined in diverse fashions. The best known definitions are issued from the Brundtland Report by the United Nations Commission on Environment and Development (1987). Given that the CDM is geared towards Southern countries, African principles<sup>4</sup> can be adopted here:

- Use no more than you need (sufficiency)
- Respect life and all relationships between species (spirituality)
- Nature cannot be owned, but man should take good care of it (stewardship)
- Without respect and attention to others there can be no peace, nor prosperity (social responsibility).

It was agreed at Kyoto that an Executive Board would supervise the CDM and would be subject to the authority and guidance of the COP/MOP (MOP: Meeting of the Parties). Also, both public and private entities can be involved in CDM activities. Again we have much less precision about JI in the text of the Protocol, but can assume that the process would be similar for both, for simplicity's sake, and if both mechanisms are to be given equal chances in the competition for limited funds.

Emissions reductions will be accounted for on a project-by-project basis and certified by "operational entities" before designation by the COP/MOP on the basis of:

- Voluntary participation approved by each party involved;

- Real, measurable, and long-term benefits related to the mitigation of climate change; and
- Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.

A share of the proceeds from certified project activities will be used to cover administrative expenses and to assist developing countries, which are particularly vulnerable to the adverse effects of climate change, to meet the costs of adaptation. The COP/MOP will elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of CDM project activities. As agreed at COP 4 in Buenos Aires in December 1998, the modalities for the implementation of the Kyoto Protocol would not be defined until at least December 2000. However, a unique feature of the CDM is that the Certified Emission Reductions (CERs) obtained between the years 2000 and 2008 can be used to assist in achieving compliance in the first commitment period from 2008 to 2012.

Establishing sustainable development as a complementary objective of the CDM was crucial in earning the support of developing countries. Prior to this shift, there had been some scepticism regarding the benefits of climate activities being enjoyed equally by high and low-income countries. Moreover, the outgrowth of the CDM from a Brazilian proposal gave developing countries a sense of ownership of the idea. Its workability will help ensure the effectiveness of the Kyoto Protocol in realising its objectives and should increase the willingness of developing countries to participate in a global emissions regime in the future.

Several key issues still need to be addressed in order to structure a KM financial regime in such a way that the benefits of sustainable development and the provision of cost-effective GHG emissions reductions are realised in practice. Indeed, to know if the KM have a chance to be useful, a number of questions have to be raised and answered:

1. Will the development of the KM compete with, or be influenced by, other forms of financing for international joint ventures?
2. Under which conditions might KM projects create attractive investment opportunities in countries with small markets?
3. How might the planning, development and finance of KM activities impact on incentives for domestic measures in Annex I countries?
4. How will the financing of KM projects differ in countries at various stages of market development or with different types of markets?
5. How will the CDM affect the amount, timing, or distribution of Official Development Aid (ODA)?
6. Can or should ODA be linked to capacity building or to the creation of enabling environments that are attractive to CDM investments?
7. Should ODA applied to CDM activities earn, for the "donor" country government, a share of the CERs produced by CDM projects?
8. Will investments dedicated to the creation of enabling environments be eligible to earn credits?
9. Can or should bilateral or multilateral development finance be linked to the creation of enabling environments that are attractive to KM investments?
10. How might mainstream operational lending of the regional and multilateral development banks be affected by the opportunities created through the KM?
11. Under what circumstances will mainstream lending projects of the regional and multilateral development banks be eligible to earn credits under the KM?
12. How will the availability of investments for KM activities affect the funding available for GEF projects?
13. Should bankable projects that are financed in part with funds from the Prototype Carbon Fund (or similar fund portfolios) be eligible to earn credits through the KM?

All these questions also deserve to be carefully addressed when checking the validity of projects under the KM.

To address the issues raised by the establishment of the KM, HELIO International has developed a set of project criteria designed to help identify projects which would both reduce GHG emissions and promote sustainable development.

The criteria apply to the following project activities:

- KM project selection
- KM project participation
- KM project verification and accreditation

- KM project financial issues.

The design of these indicators complies with the principles mentioned earlier and is adapted to the climate problematic (challenge). Sustainable development is the achievement of three main types of requirements: environmental, economic and social. To tackle the climate issue we need a fourth set of criteria: those related to energy technologies. To measure the contribution of KM to sustainable development, eight indicators were selected for these four pillars of sustainability. The environmental ones insure that GHG emissions reductions are real. The economic indicators check that the economy will not be handicapped by the project. The social indicator reflects the impacts on society and employment. Finally the technological indicators embody the preoccupations with sufficiency and security of supply via the diversity of sources of energy.

These criteria are listed below in Annex 1 and their comprehensive presentation is available on HELIO International's website <[www.helio-international.org](http://www.helio-international.org)>. A complementary set of sustainable development indicators issued from these criteria is given in Annex 2.

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## **5. CAN THE KYOTO MECHANISMS PROMOTE ENERGY EFFICIENCY?**

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The adoption of these criteria and indicators could ensure that energy efficiency projects, as well as renewable energy projects, will top the list of KM projects and will both promote sustainable development and reduce greenhouse gases (GHG) emissions. Energy efficiency and renewable energy projects constitute a natural positive list of KM projects and can fulfill the four forms of additionality<sup>5</sup> requirements.

1. The environmental additionality of energy efficiency and renewable energy projects is obvious, compared to the effects of any fossil fuel project. The decrease in GHG, however, must be quantifiable and measurable, which is not always easily done with energy efficiency projects. This is where the establishment of the baseline will be a determining factor. The project must indeed have an efficiency quotient quite superior to that which is expected to occur in a normal trend scenario. The introduction of such projects could, therefore, have a very positive impact on the rhythm of development of energy efficient equipment and practice.
2. To fulfill the investment additionality, KM projects must not be economically viable on their own. If they were profitable, they would have already been done or at least included in business-as-usual energy programmes. Of course, this is not necessarily the case, given all the obstacles which are still in the way of energy efficiency improvements for instance. Promoters of such projects would have to prove the existence of barriers which have so far hampered the realisation of these projects and probably would succeed in getting approval as KM projects.
3. KM projects must not be funded via official development aid money (ODA) to comply with financial additionality. This cannot affect energy efficiency projects more than the other types of projects. Energy efficiency projects have rarely been considered in aid for development as ODA monies go mostly to centralised energy supply projects.
4. KM projects have to introduce up-to-date technology in the host country to respect the technological additionality. There should be no dumping of obsolete technologies. One aspect of technological additionality could also mean that the technologies would be developed and manufactured in the host country itself, with attendant upstream and downstream impacts on the economy and employment. Again this requirement would not play against the adoption of energy efficiency projects.

None of the forms of additionality is easy to prove and methodologies still have to be developed and agreed upon by the COP.

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## **6. CONCLUSION**

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Therefore we can say objectively that the Kyoto Protocol itself and its flexibility mechanisms can promote energy efficiency and renewable energy. Where questions might arise is when the interpretation is being made by the negotiators as they set the rules and select a positive or negative generic list of projects. Kyoto projects should conform to agreed criteria of sustainable development if they are to promote energy efficiency and

renewable energy. HELIO International is proposing such criteria and indicators to assess if national efforts are conducive to sustainable development and is making every effort, including testing under real conditions, to have them adopted once the Kyoto Protocol is finally ratified. There is still room to modify the criteria but that will only be determined after the test projects are completed and analysed.

Undoubtedly, implementation of the KM is complex and there is no guarantee that, even using the criteria, the projects will be successful. But, the initial reaction to their testing in four countries is positive and they appear to provide assurance to the host countries, in particular, to ensure that their long-term objective of sustainable development is met. Sustainable development is a path for countries to seek and it is much more comprehensive than the Kyoto commitments. It might always be beyond our grasp but the importance is in the attempt. These criteria help move both the host and investor countries down the right path.

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## ANNEX 1 - CLEAN DEVELOPMENT MECHANISM (CDM) CRITERIA AND INDICATORS

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### Criteria for the selection of projects

#### **Criterion 1: *Energy project activities qualifying for the CDM / Technological additionality***

It is proposed that CDM projects in the energy sector be confined to those that employ up-to-date technologies and techniques which contribute to:

- End-use energy efficiency (leading to real energy conservation).
- Supply side energy efficiency in newly constructed facilities (such as co-generation).
- Renewable energy to supply energy services.
- The reduction of methane emissions from landfills and other waste-handling activities.
- The reduction of N<sub>2</sub>O emissions from chemical industries and PFC emissions from aluminium production.

#### **Criterion 2: *Qualifying sequestration projects***

The finalisation of this criterion is linked to the outcome of IPCC deliberations on the issue. In the forestry sector, projects that could qualify as much for carbon mitigation as for the maintenance of biodiversity and the halting of desertification, are those that result in sustainable management of primary or indigenous forests and suitably longer-term afforestation schemes. In any land-use changes, respect for traditional land-use rights must be maintained.

#### **Criterion 3: *Retrospective accreditation***

CDM projects may not be accredited retroactively. The clear exception is AIJ projects that have met the additionality and baseline criteria.

#### **Criterion 4: *Real and measurable benefits***

Only projects in which emissions are measurable should qualify for CDM.

#### **Criterion 5: *Emissions integrity and baselines / Environmental additionality***

CDM projects must result in lower emissions than the current business-as-usual scenario, credit being given for the difference between the alternative and the 'forward-looking bottom-up baselines'.

#### **Criterion 6: *Baseline 'drag' and perverse incentives***

The process of developing progressive regulatory instruments that have the effect of improving performance of energy consuming devices should be encouraged as domestic CDM projects in their own right, accredited accordingly and banked. A drag may occur if countries delay their domestic measures in the hope that they can get CDM credits.

#### **Criterion 7: *Sustainable Development***

CDM projects must contribute to sustainable development in host (non-Annex 1) countries. Sustainable development, including technical and institutional infrastructural needs, must be elevated to a high level in

assessing which projects qualify for CDM. All CDM projects must show improvements in environmental and social indicators.

***Criterion 8: CDM and national public policies***

Host countries, in appraising CDM projects, should stipulate how the project relates to national public policy and how it addresses sustainable development. Indicators to monitor sustainable energy development need to be applied on a project-by-project basis, reflecting trends within the project boundary and beyond if necessary.

***Criterion 9: Limits to supplementarity***

It is suggested that most emissions reductions need to come from domestic action with the remainder possibly being obtained through flexibility mechanisms.

***Criterion 10: 'Hot Air'***

Only emissions reduction units associated with the implementation of climate related policy will be accredited. 'Hot air' refers to fictitious emissions which would have occurred in the absence of an economic slowdown, in particular in Central and Eastern European countries.

**Criteria for the participation in projects**

***Criterion 11: Regional equity***

For sustainable development to be addressed in a regionally equitable way, barriers to the balanced distribution should be tackled where possible by the multilateral agencies or the Executive Board administering CDM.

***Criterion 12: Capacity to participate in the CDM***

Capacity building should be undertaken on an expedited basis to prepare both Annex 1 and non-Annex 1 country entities as well as direct project stakeholders for full and equitable participation in all phases of CDM projects.

***Criterion 13: Voluntary participation***

Participation in CDM projects must remain voluntary and independent of other international contracts other than those directly affecting the CDM project prospect.

***Criterion 14: National and local participation in CDM***

National CDM policy development and institutional capacity to participate in CDM projects needs to be undertaken prior to engagement in CDM projects. Where neither enabling policy nor effective institutions are in place, the CDM Executive Board should assist equitably in their development, giving priority to the countries with the least capacity.

***Criterion 15: CDM project acceptance***

The ratification process or other national policy steps could include:

- Commitments to national communications that include reports on indicators listed in this paper to facilitate the appraisal of CDM projects.
- Multi-lateral Memoranda of Understanding on CDM project development with other ratified Parties.
- Re-orientation towards an 'in parallel' rather than an 'in series' approach to a project development and endorsement process.
- Availability of accredited third party referees for project design and accounting.

***Criterion 16: Sovereignty***

The CDM must operate with due respect to the sovereignty of Parties. Should conflicts arise, the Executive Board should arbitrate and penalise parties that are in violation.

## **Criteria for the verification / accreditation of projects**

### ***Criterion 17: CDM project crediting and insurance***

CERs should either be banked, post-certified reductions or be insured against potential failure where this is deemed appropriate by the Executive Board.

### ***Criterion 18: Leakages***

Leakage inside and outside the project boundary must be identified, measured, reported and deducted from CERs. In the case of land-use change, projects should be scrutinised from a regional perspective to measure cross-border leakages.

### ***Criterion 19: Auditing of CDM projects***

Verification of CERs must be undertaken by institutions which are accredited by the Executive Board of the CDM and which have no conflicting interest in the results of CDM projects. Any potential conflict of interest should be publicly declared prior to accreditation.

### ***Criterion 20: Facilitation of CDM projects***

The facilitation of CDM projects must be undertaken by institutions that have a keen understanding of CDM criteria, the requirements for sustainable projects and the resources to implement them. The CDM Executive Board should accredit facilitators.

### ***Criterion 21: CDM project reporting***

Information pertaining to the progress of CDM projects should be included in national communications of Parties to the FCCC and should be made available in an accessible way to civil society in countries participating in the CDM. Reporting should be based on verified CERs and project process monitoring.

## **Financial Criteria for projects**

### ***Criterion 22: Emissions reduction benefits***

CDM projects should be offered to local public and/or private entities in non-Annex 1 countries before being offered to Annex 1 countries. Should the steps not be taken to realise the project within a given period, the project could then be auctioned on the international emissions market.

### ***Criterion 23: Investment additionality***

In order to receive CERs, CDM projects must be truly additional to those that would have been implemented anyway, according to a realistic baseline. This criterion can apply to interventions in business-as-usual projects that show both environmental and financial additionality.

### ***Criterion 24: Financial additionality***

The investments for CDM projects must be additional to existing finance and resource channels.

### ***Criterion 25: Transaction and administrative costs***

CDM project cost overheads should be capped on a sliding scale proportional to the full project costs and should reflect the performance of the CDM project rather than being imposed as flat rates.

### ***Criterion 26: Cost effectiveness***

In order to achieve emissions reductions that have associated non-economic barriers, costs associated with local environmental, cultural and other externalities must be factored into CDM project budgets.

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## ANNEX 2 - SUSTAINABLE DEVELOPMENT INDICATORS TO ASSESS THE VALIDITY OF PROJECTS

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A desirable approach to coping with unavoidable uncertainty resides in the definition of multiple baselines using at least two well-contrasted reference cases. Employing this approach, a range of values will result for each indicator, instead of a single value.

This will allow for a sensitivity analysis of results with respect to different baseline assumptions. This sensitivity analysis is very often crucial, given the high uncertainty levels associated with the wide spectrum of possible futures open to developing countries. In many cases, the impact of different baseline assumptions is much larger than the effects of the mitigation projects themselves.

The proposed indicators are grouped below according to the four pillars of sustainable development - namely environmental, social, economic and technological sustainability.

### **Environmental sustainability**

#### ***Indicator 1 - Contribution to the mitigation of Global Climate Change***

Global environmental benefits will be measured by the net reduction of GHG emissions measured in CO<sub>2</sub> equivalent according to the IPCC GWP for a one hundred-year horizon.

Vector:           0% = No change in GHG emission level compared with the baseline.  
                       100% = Total avoidance of the GHG emissions predicted.

The main difficulty with quantifying this indicator is estimating the leakage. Complete leakage accounting is required within the host country and sometimes abroad, for example, in those projects that aim to conserve indigenous forests.

#### ***Indicator 2 - Contribution to local environmental sustainability***

Local environmental impacts will be assessed by the percentage change in the emissions of the most significant local pollutant (oxides of sulphur, nitrogen, carbon and other atmospheric wastes; radioactive waste, VOC, DBO or any solid or liquid waste). A weighted average percentage change may be used when more than one pollutant is considered to be relevant.

Vector:           0% = No change in emission level of the selected pollutant.  
                       +100% = Total avoidance of emissions of the local pollutant.  
                       -100% = Emissions of the local pollutant are doubled.

Subjectivity is an unavoidable weakness of this indicator, given the necessary selection of sample pollutants for monitoring.

### **Social sustainability**

#### ***Indicator 3 - Contribution to net employment generation***

Net employment generation will be taken as an indicator of social sustainability, measured by the number of additional jobs created by the CDM project in comparison with the baseline.

Vector:           0% = No change in employment level compared with baseline.  
                       +100% = Doubled number of jobs.  
                       -100% = Elimination of all jobs predicted in the baseline.

This indicator is problematic in that it doesn't register a qualitative value for employment, such as whether the resultant jobs are highly or poorly qualified, temporary or permanent, secure or 'flexible'. Figures are also subject to inflation depending on whether direct and indirect jobs are counted.



## **Economic sustainability**

### ***Indicator 4 - Contribution to the sustainability of the balance of payments***

Net foreign currency savings may result through a reduction of, for example, fossil fuel imports as a result of CDM projects. Any impact this has on the balance of payments of the recipient country may be compared with the baseline.

Vector:       0% = No change in foreign currency expenditure compared with baseline.  
               +100% = Total avoidance of foreign currency expenditures.  
               -100% = Doubled net foreign currency expenditures.

A major difficulty here is that estimates of future prices of imported goods and services replaced by the project can be quite uncertain (e.g. international oil prices).

### ***Indicator 5 - Contribution to macroeconomic sustainability***

The alleviation of the burden on public funds will be measured by the reduction of direct government (national, provincial and local) investments (including budgets of state enterprises) made possible by the foreign private investment in the CDM project in comparison with the baseline.

Vector:       0% = No change in public investments compared to the baseline.  
               +100% = Total avoidance of public investments.  
               -100% = Doubled public investments compared to baseline.

The challenge here is to calculate the saving of public financial resources net of subsidies and to ascertain the additionality of the foreign private investment.

### ***Indicator 6 - Cost Effectiveness***

Cost reductions implied by the CDM project in comparison with the baseline will measure the contribution to increased microeconomic sustainability. The value of this indicator will only be positive in the case of "win-win" ("no-regrets") projects.

Vector:       0% = No change in costs compared to the baseline.  
               +100% = Total avoidance of costs compared to the baseline.  
               -100% = Doubled costs compared to baseline.

Accounting for full project life-cycle costs, including education, training, information dissemination, monitoring, verification and other transaction costs may be a huge task. This analysis strongly benefits from the contrast and comparison of two separate project performances, two time frameworks and two discount rates in order to check the sensitivity of the results to these key assumptions.

## **Technological sustainability**

### ***Indicator 7 - Contribution to technological self-reliance***

As the amount of expenditure on technology changes between the host and foreign investors, a decrease of foreign currency investment may indicate an increase of technological sustainability. When CDM projects lead to a reduction of foreign expenditure via a greater contribution of domestically produced equipment, royalty payments and license fees, imported technical assistance should decrease in comparison with the baseline.

Vector:   0% = No change in foreign currency expenditures on technology compared to the baseline.  
           +100% = Total avoidance of foreign currency expenditures.  
           -100% = Doubled foreign currency expenditures on technology.

Data collection on full technology costs can be difficult in some cases.

### ***Indicator 8 - Contribution to the sustainable use of natural energy resources***

CDM projects should lead to a reduction in the depletion of non-renewable natural resources either through the adoption of technologies with higher energy efficiency or through an increased deployment of renewable resources, such as the replacement of fossil fuels with solar or wind energy.

In both cases, CDM projects will contribute to a more sustainable use of natural resources.

Vector:       0% = No change in non-renewable natural resource use for energy production.  
               +100% = Avoidance of all non-renewable natural resources for energy production.  
               -100% = Doubled use of non-renewable natural resources for energy production.

Uncertainty regarding the performance of technological innovations must be accounted for. Again, two well-contrasted project performances can be used to provide a sensitivity analysis.

### Indicators of net GHG emissions reductions

A complementary way of defining indicators for the appraisal of CDM projects is to examine their impacts on the sustainability of national development in the recipient country and their benefits to the global climate. This allows the indicators of sustainable development to be compared with the project's contribution to the mitigation of global climate change. In other words, this measure would be equivalent to comparing Indicator 1 with Indicators 2 to 8. The former will always give a positive value, as CDM projects must reduce overall CDM emissions.

The other indicators may generate positive or negative values, depending on the performance of CDM projects compared with the baseline in each case. Positive values will denote a contribution to increased sustainable national development and negative values will denote a subtraction.

Seven new indicators can thus be defined, in different units according to each case:

**Indicator 9: Avoided emissions of local pollutant**

(Tons/tons of avoided GHG emissions in CO<sub>2</sub> equivalent)

**Indicator 10: Net employment generation**

(Number of jobs/tons of avoided GHG emissions in CO<sub>2</sub> equivalent)

**Indicator 11: Net foreign currency savings**

(\$/tons of avoided GHG emissions in CO<sub>2</sub> equivalent)

**Indicator 12: Reduction of direct government investments**

(\$/tons of avoided GHG emissions in CO<sub>2</sub> equivalent)

**Indicator 13: Project cost reduction**

(\$/tons of avoided GHG emissions in CO<sub>2</sub> equivalent)

**Indicator 14: Reduction of foreign currency expenditures with technology**

(\$/tons of avoided GHG emissions in CO<sub>2</sub> equivalent)

**Indicator 15: Reduction in the depletion of non-renewable natural energy resources**

(Tons/tons of avoided GHG emissions in CO<sub>2</sub> equivalent).

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## 8. GLOSSARY

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AIJ	Activities implemented Jointly	JI	Joint Implementation
CDM	Clean Development Mechanism	KM	Kyoto Mechanisms
CFD	Clean Development Fund	MOP	Meeting of the Parties
CER	Certified Emissions Reduction	NGO	Non-Governmental Organisation
CO <sub>2</sub>	Carbon dioxide	N <sub>2</sub> O	Nitroxide
COP 5	5 <sup>th</sup> Conference of the Parties	ODA	Official Development Aid
DBO	Demand in Biological Oxygen	OECD	Organisation for Economic Cooperation and Development
ET	Emissions Trading	PFC	Polyfluorocarbons
EU	European Union	UNFCCC	United Nations Framework Climate Convention
GHG	Greenhouse Gas	VOC	Volatile Organic Compounds
GWP	Global Warming Potential		
IPCC	Intergovernmental Panel on Climate Change		

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## 9. END NOTES

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<sup>1</sup> The South-South-North Project operates a new concept of technology transfer where Southern partners exchange technologies and Northern countries provide funding in return for carbon credits.

<sup>2</sup> Annex 1 of the Framework Climate Convention lists the countries which have commitments. They are countries of the OECD, plus countries from Central and Eastern Europe that are undergoing the process of transition to a market economy.

<sup>3</sup> Dubbed the "Kyoto surprise," the CDM was the product of last-minute negotiations at the close of COP-3, and it constitutes a crucial formal link between the Kyoto Protocol and developing countries. It evolved from the Brazilian proposal for a Clean Development Fund (CDF) in a meeting of the Ad Hoc Group on the Berlin Mandate in 1997, just prior to COP-3. In terms of the CDF proposal, Annex I Parties failing to comply with their assigned emissions reduction commitments in a given budget period would pay penalties, contributing to the establishment of the CDF. The proceeds accumulated in the CDF would be allocated to non-Annex I Parties according to a criterion based upon their historical responsibility for the global temperature increase. The CDF resources would fund mitigation projects in non-Annex I countries and up to 10 percent of the proceeds would be allocated to adaptation measures in vulnerable countries.

<sup>4</sup> 2001 Sustainable Building, issue 01-2001, p. 9, Aeneas Technical publishers 2001, The Netherlands.

<sup>5</sup> **Additionality:** The issue of whether greenhouse gas emissions reduction or sequestration in a Joint Implementation or Clean Development Mechanism project occurs over and above the baseline and constitutes a new reduction that would not have otherwise occurred without the existence of the project. There are several distinct forms of additionality:

- **Financial additionality:** a project does not use ODA (Official Development Aid) or GEF (Global Environmental Facility) funds.
- **Economic/investment additionality:** the project is not profitable taking into account risks and non-monetary barriers. There are differing views how to determine economic/investment additionality in quantitative terms
- **Environmental additionality:** the project reduces emissions (of GHG).

To the above definition by Axel Michaelowa must be added **Technological additionality** as required by the Secretariat of the United Nations Framework Climate Change Convention. Technological additionality ensures that the project represents a technological progress for the host country, and that there won't be any dumping of obsolete equipment by Annex 1 Countries.