



**v CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 02 - in effect as of: 1 July 2004)**

CONTENTS

- A. General description of project activity
- B. Application of a baseline methodology.
- C. Duration of the project activity / Crediting period
- D. Application of a monitoring methodology and plan
- E. Estimation of GHG emissions by sources
- F. Environmental impacts
- G. Stakeholders' comments

Annexes

- Annex 1: Contact information on participants in the project activity
- Annex 2: Information regarding public funding
- Annex 3: Baseline information
- Annex 4: Monitoring plan

**SECTION A. General description of project activity****A.1 Title of the project activity:**

Unialco Bagasse Cogeneration Project

A.2. Description of the project activity:

The project attempts to overhaul the existing electricity / heat generation facilities at Unialco alcohol distillery in Sao Paulo State, Brazil, in order to enable electricity supply to the grid.

Currently, the distillery is isolated from the grid, and uses a low-efficiency boiler/generator system to generate electricity and heat for its in-house consumption. The project activity includes replacement of boilers and electricity generators to more efficient models, as well as construction of transmission facility (station and transmission line). The capacity will be increased from 4*1.5MW to 2*15MW+8MW, of which 23.7MW of capacity (expected generation 104,299MWh) is expected to be constructed for electricity supply to the grid.

The conditions for the approval for CDM project activities in Brazil is highlighted in the Annex III of “Resolution # 1 of September 11, 2003: The Interministerial Commission on Global Climate Change, created by Decree of July 7, 1999, in the exercise of its powers under Article 3, paragraphs III and IV” Conformity with the conditions are described as below.

a) Contribution to local environmental sustainability

Environmental impact of the project was rigorously analyzed, and the report is submitted to the State of Sao Paulo for consideration. The project will comply with all local regulations (including solid, liquid and atmospheric pollutants). Renovation of boiler facilities will ensure more complete combustion of bagasse without entailing further consumption. Therefore, it can be said that the adverse local environmental impacts caused by the project activity will be insignificant.

b) Contribution to development of working conditions and net job creation

The project activity will increase the number of employment requiring a high degree of skill, such as operators / maintenance personnel of cogeneration devices and electricity substation / transmission lines, which will not exist in the absence of the project activity. All required regulation on labour condition will be met.

c) Contribution to the distribution of income

The project activity will help bring additional income from the industry, commercial and residential sectors to the rural agricultural sector. Furthermore, by strengthening the economical basis of the sugar industry, the project activity serves to strengthen the financial standing of Unialco S.A., which enables the company to maintain its employees.

d) Contribution to training and technological development

The project activity is a considerable venture for the proponent, since Unialco S.A. has to install and maintain more advanced equipments (including substations and transmission facilities, which requires an



entirely different technological expertise), engage in a new field of business (electricity transmission, CER transaction). The project activity opens way for sugar mills without access to transmission facilities.

e) Contribution to regional integration and linkages with other sectors

Sugar industry, especially those like the project activity which are remote from urban areas, affects all aspects of residents in the region; their welfare is dependent on the sugar industry. The project activity attempts to enlarge the of the sugar industry of the region through diversification of business. Therefore, it goes without saying that the project activity serves to integrate other socio-economic activities in the region.

In conclusion, all criteria of the Annex III of the Resolution are met, and it is assured that the project activity contributes to the sustainable development of the host country Brazil..

A.3. Project participants:

Unialco Alcool e Acucar S.A.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

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A.4.1.1. Host Party(ies):

Federative Republic of Brazil

A.4.1.2. Region/State/Province etc.:

Sao Paulo State

A.4.1.3. City/Town/Community etc:

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- *Industrial Unit Address: Estrada Vicinal Ângelo Zancaner, Km 30 – Fazenda Bálsamo*
- *PO BOX: 101*
- *CEP and Municipality (city): 16.700-000 – Guararapes – S.P*



Map of Brazil, and location of Project
(Map : Government of Brazil)



Map of Sao Paulo State, and location of project
(Map: Municipality of Aracatuba)



Aerial view of the sugar plant
(source: Unialco)



View of the current boiler / generation facilities



(source: Unialco)

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

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The project is located in the western region of Sao Paulo state, far from the traditional centre for sugar cane production. Unialco S.A. utilizes sugarcane from over 25,000 hectares (250 sq.km) of its own plantation, which surrounds the plant. The location of the plant (Guararapes) is characterized by its lack of transmission facilities to the grid; contrary to the sugarcane processing plant in the central region of Sao Paulo State (e.g. Vale do Rosario) it is necessary for this project to construct a transmission facility in addition to overhauling its cogeneration facilities.

A.4.2. Category(ies) of project activity:

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Renewable energy (biomass) connected to the grid.

A.4.3. Technology to be employed by the project activity:

The technologies to be employed by the project activity include the following:

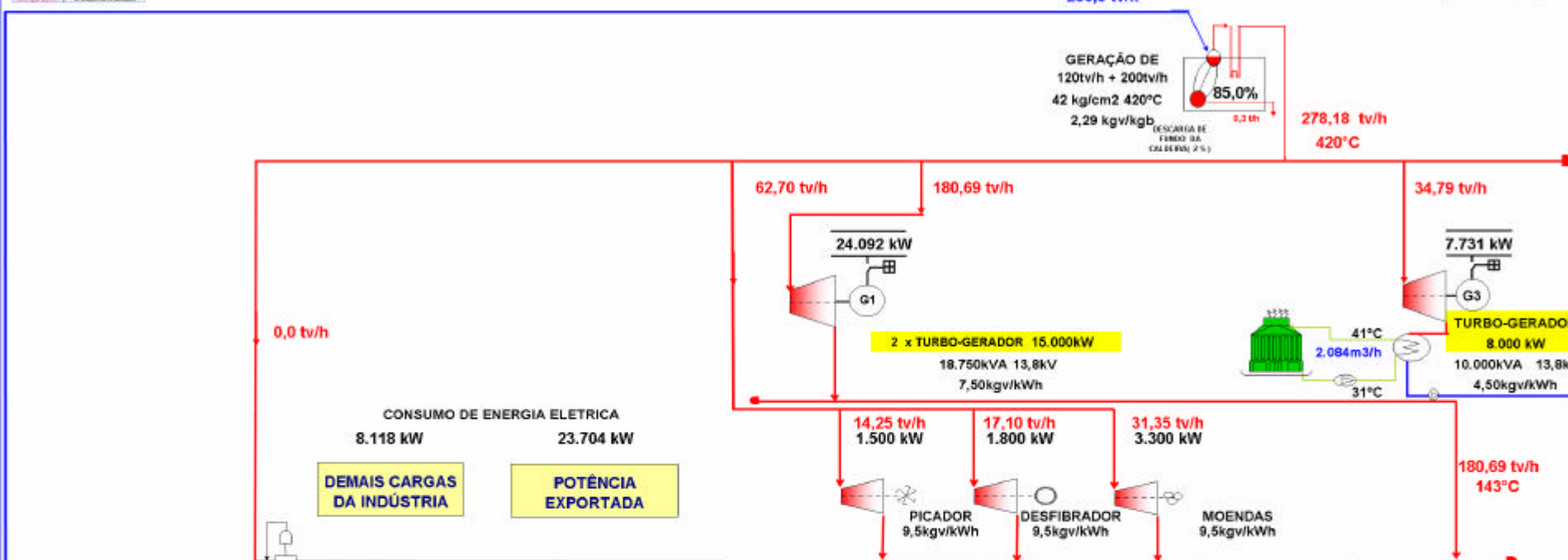
Category	Type
Boiler	1) Current: - CALDEMA AUP-40 boiler 120t-vapour/hr at 380C with a pressure of 21kgf/cm² (installation 2000) - CALDEMA AZ-380 boiler 110t-vapour/hr at 330C with a pressure of 21kgf/cm²(installation 1982) 2) Project - Installation of CALDEMA boiler AUP-67 200t-vapour at 420C with a pressure of 42kgf/cm² - Augmentation of AUP-40 boiler to 120t-vapour/hr at 420C with a pressure of 42kgf/cm² - Scrapping of AZ-380 boiler
Generator	1) Current - Four 1.5MW turbine / generators (installation 1982) 2) Project - Two counter-pressure turbo-generators, of 18,750kVA/15,000kW - 13,8kV (42kgf/cm² (Manufacturer: TGM and WEG); - One condensation turbo-generator of 10.000kVA/8.000kW - 13,8kV (42kgf/cm²) (Manufacturer: TGM and WEG); - Scrapping of four 1.5MW turbine / generators.
Transmission facilities	1) Current None



	2) Project • 138kV high-tension line for 32km, from the plant to the Guararapes substation • Substation within the premises, to increase voltage from 13.8kV to 138kV.
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For a detailed diagram, please refer to the following page.





RESUMO DE DADOS					
DADOS	CONTRAPRESSÃO	CONDENSAÇÃO	MOAGEM NA SAFRA		2.200.000 tc/safra
POTÊNCIA PRODUZIDA	24.092 kW	7.731 kW	MOAGEM HORÁRIA		500 tc/h
FÁBRICA / PARASITAS	7.500 kW	618 kW	FIBRA		12,00%
POTÊNCIA EXCEDENTE	16.592 kW	7.113 kW	BAGAÇO		25,81%
TEMPO DE OPERAÇÃO	4.400 h	4.400 h	DISPONIBILIDADE DE BAGAÇO		567.742 tb/safra
ENERGIA EXCEDENTE	73.003 MWh/ano	31.296 MWh/ano	CONSUMO BAGAÇO	CONTRAPRESSÃO 42 kgf/cm²	467.890 tb/safra
				CONDENSAÇÃO	66.882 tb/safra
				DESCARGA DE FUNDO	3.584 tb/safra
ENERGIA EXCEDENTE	73.003 MWh/ano	31.296 MWh/ano	RESERVA DE BAGAÇO PRÓXIMA SAFRA		1.000 tb/safra
			RESERVA TÉCNICA DE BAGAÇO [5,0%]		28.387 tb/safra
ENERGIA EXCEDENTE TOTAL P/ VENDA		104.299 MWh/ano	SOBRA FINAL DE BAGAÇO		0 tb/safra
			CONSUMO DE VAPOR		480 kgv/tc
RECEITA (Tarifa R\$ 93,77 MWh):	R\$ 9.780.126,47		GERAÇÃO DE VAPOR	CONTRAPRESSÃO	180,69 tv/h
				CONDENSAÇÃO	34,79 tv/h
INVESTIMENTO TOTAL ESTIMADO				R\$ 54.165.000,00	
CRÉDITO MÉDIO DE ICMS INCLUSO - [6,6%]				R\$ 3.574.890,00	
INVESTIMENTO TOTAL LÍQUIDO ESTIMADO				R\$ 50.590.110,00	R\$ 1.331,32/kW

Nota: neste valor estão inclusos os custos estimativos de conexão com a concessionária de energia local.



A.4.4. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed CDM project activity, including why the emission reductions would not occur in the absence of the proposed project activity, taking into account national and/or sectoral policies and circumstances:

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The project attempts to increase the production of biomass-generated electricity and export it to the Brazilian grid, thereby substituting electricity from other sources (estimated to be mainly fossil fuel based power plant). Since the current facilities use bagasse completely, increase of electricity generation does not result in increase of bagasse combustion.

As will be outlined in section B, the practice of exporting electricity to the grid is still relatively rare (though increasing slowly) in Brazilian sugar mills and alcohol distilleries, since such investment entails considerable business risk to the project developer in terms of financial return. The situation is all the more difficult in the case of this project since there is a need to construct a major transmission facility (30km). This is the first of its kind.

A.4.4.1. Estimated amount of emission reductions over the chosen crediting period:

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The expected annual sales of electricity to the grid is 104,299MWh. Since the baseline GHG emissions rate can be calculated at 0.453t-CO₂/MWh, The estimated amount of emission reductions over the course of the crediting period of ten years is calculated at 622,997t-CO₂.

A.4.5. Public funding of the project activity:

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None.

**SECTION B. Application of a baseline methodology****B.1. Title and reference of the approved baseline methodology applied to the project activity:**

>> "Bagasse-based cogeneration connected to an electricity grid" (AM0015)

B.1.1. Justification of the choice of the methodology and why it is applicable to the project activity:

>> The methodology is applicable since this project is also bagasse-based cogeneration, which attempts to sell electricity to the same grid as the project to which this methodology was based on (Vale do Rosario).

Checkpoint 1: The bagasse to be used as the feedstock for cogeneration shall be supplied from the same facility where the project is implemented;

Bagasse will be supplied from Unialco's alcohol distillery facilities.

Checkpoint 2: Documentation is available supporting that the project activity would not be implemented by the public sector, project participants or other relevant potential developers, notwithstanding of the governmental policies/programs to promote renewables if any, in the absence of the clean development mechanism (CDM);

The project will be implemented by Unialco Acucar e Alcool, a 100% private company. The financing scheme is not finalized, but it is intended that Unialco will rely on financing from the Brazilian Development Bank (BNDES) at an interest rate of above 9%. As is shown later, this poses a considerable business risk for the project activity.

Checkpoint 3: The implementation of the project shall not increase the bagasse production in the facility;

The project itself is an attempt to best utilize sugarcane bagasse which is a byproduct of alcohol and sugar produced in the premises. Bagasse production is directly proportional to the amount of sugar processed (c. 280kg-bagasse / ton-cane), and the production of bagasse contingent upon processed amount of sugar cane, and its crushing capacity.

Since this project entails modification of energy facilities and does not affect crushing and other facility, it can be said that the implementation of the project does not serve to increase the bagasse production in the facility.

Checkpoint 4: The bagasse at the project facility should not be stored for more than one year.

Though theoretically possible, it is inconceivable that bagasse will be stored for more than one year. The plant is scheduled to operate for 4,400 hours (approx. 6 months) during the dry season of the year from May to November, providing electricity when hydropower is relatively scarce. During the wet season,



however, the entire plant shuts down for overhaul. A few days' amount of bagasse will be stored for 6 months to be used as start-up fuel for the next season. This is the current practice of the Brazilian sugar industry, and this will not be changed with the new facility.

Prolonged storage and use of bagasse is not considered since this would mean an extremely large storage space for a million tonnes or more, creating considerable management difficulties as well as risks of spontaneous combustion, or health hazard (dust dispersion / inhalation when dry, and microbial contamination when wet). It is also expected that generation of electricity during the wet season may lead to substitution of electricity generated hydropower, which does not result in greenhouse gas reduction.

Therefore, it can be explained that all of the applicability criteria of "Bagasse-based cogeneration connected to an electricity grid" (AM0015) is met.

B.2. Description of how the methodology is applied in the context of the project activity:

The "Bagasse-based cogeneration connected to an electricity grid" (AM0015) delineates the baseline by calculating the operating and build margins in a manner consistent with Approved consolidated baseline methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". The two methodologies stipulate identical options for estimating the effect of grid electricity substitution, in that one MWh of electricity generated by a renewable energy project activity serve to reduce greenhouse gas as determined by the "Combined Margin", which is determined as follows;

Operating margin (t-CO ₂ /MWh)	- Simple operating margin - Ex ante estimation based on 3-year average - Ex post monitoring - Simple adjusted operating margin - Ex ante estimation based on 3-year average - Ex post monitoring - Dispatch data analysis - Average operating margin
Build margin (t-CO ₂ /MWh)	- Generation-weighted average emission factor of five most recent power plants or power plants which comprise 20% of the system generation. - Ex ante determination - Ex post determination
Combined margin (t-CO ₂ /MWh)	Weighted average of operating and build margins (default = 50%)

1. Operating margin

Of the four options, on estimating the operating margin, Simple operating margin (option 1) cannot be taken since Brazil is a country where low-cost / must-run sources such as hydropower constitute more than 50% of total electricity generation.



Dispatch data analysis (option 3) also cannot be pursued since it is expected that it will not be possible for the project proponent to obtain the grid dispatch data every year, since Brazilian electricity sector is both regionally and vertically disintegrated, and in such cases dispatch data lies at the core of confidential information from the viewpoint of the grid operator. The project proponent neither has the capacity to analyze the grid dispatch data, and obtain supporting data from individual power plants which feed into the grid.

Average operating margin (option 4) is not preferred since, by assuming that the project activity displaces hydropower, this method greatly underestimates greenhouse reduction by bagasse-based generation, which generates electricity during the dry period where the hydropower capacity is low.

This leaves the Simple adjusted operating margin method (option 2), where the time when low-cost / must-run plants are on the margins. Again, it is expected that ex-post monitoring and analysis of the margin would not be feasible due to constraints in data gathering as well as capacity of the project proponent.

In line with numerous Brazilian bagasse-based generation projects (sharing the same grid) which have been validated to date, the parameters are hereby denoted.

Parameter	Data type	Value	Referene
$EM_{OM,y}$	Simple operating margin (South-Southeast grid)	0.719t-CO ₂ /MWh	IEA, <i>Road-Testing Baselines for Greenhouse Gas Mitigation Projects in the Electric Power Sector</i> .
λ	Fraction of the time which low-cost/must-run plants are on the margins	0.457 for 2001 0.550 for 2002 0.582 for 2003 Average: 0.530	ONS (Operador Nacional do Sistema, as quoted in the Vale do Rosario Bagasse Cogeneration Project
R	Share of low-cost/must-run generation	64%	Data for South-southeastern grid, as indicated in the IEA literature above.
$EF_{OMA,y}$	Adjusted operating margin	0.338 t-CO ₂ /MWh	$=0.719 * (1-0.530) = 0.338$
$EF_{BM,y}$	Build margin	0.569 t-CO ₂ /MWh	Data for South-southeastern grid, as indicated in the IEA literature above.
$EF_{CM,y}$	Combined margin	0.453 t-CO ₂ /MWh	$(0.338 + 0.569) / 2$

From the above, a combined margin of 0.453 t-CO₂/MWh is yielded. This is identical to other bagasse-based cogeneration projects validated to date.

It has to be stressed that this leads to a considerable underestimation of greenhouse gas reduction anticipated to be achieved from the project activity, since bagasse-based generation occurs during the dry period (typically from May to October), when hydropower is least expected to be on the margins.

The Interministerial Commission on Climate Change of the Brazilian Government (lead by the Ministry of Science and Technology: MCT) is working towards annual publication of operating and build margins, based on dispatch data analysis. In view of “over-conservativeness” of the combined margin based on adjusted operating margin method, it is proposed here that the resulting combined margin is superseded if the figures for operating and build margins (or the resulting combined margins) are published by the Brazilian government and is externally verified to be applicable for the project activity..

**B.3. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity:**

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Here, “Tool for the demonstration and assessment of additionality” as developed by the CDM Executive Board is applied. Both steps 2 (investment analysis) and 3 (barrier analysis) are carried out. Step 2 (investment analysis) is done by comparing project IRR to typical corporate benchmarks. Step 3 (barrier analysis) is done by comparing the project activity to plausible alternatives.

Step 0. Preliminary screening based on the starting date of the project activity

The project participants do not wish to have the crediting period starting prior to the registration of their project activity, therefore no examination is necessary.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations***Sub-step 1a. Define alternatives to the project activity:***

The alternatives of the project are as follows.

1) “No-action” option (ongoing use of current facilities)

“No-action” scenario is the most inexpensive option, since no investment takes place. However, taking no action gradually increases the risk of equipment failure over time. Such risk is expected to be low, but the lifetime of existing generator (installed in 1982) is approaching. Therefore, another option is also conceivable.

2) “Self-sufficiency” option (expansion of the current facilities for the purpose of self-sufficiency)

“Self-sufficiency” scenario presupposes that the facility will reinstall its electricity generation facilities, but does not include construction of a hugely costly transmission line to export it. In this case, it follows to assume that the current facilities will not be dismantled but serve as a backup, to ensure against equipment failure. In this scenario, installation of a generator with a capacity of 15MW is expected to cater only for in-house needs. The steam output of the existing boiler (AUP-40) may be augmented to 42kgf/cm², or remain at 21kgf/cm². In the former case, the maximum output will be 15MW; in the latter case the output will remain at 7MW.

Sub-step 1b. Enforcement of applicable laws and regulations:

There is no law to mandate use of bagasse for the purpose of electricity export. Both the project and the continuation of current activities comply with current laws and regulations.

Step 2. Investment analysis***Sub-step 2a. Determine appropriate analysis method***

Option III (Investment comparison analysis) is undertaken since comparison of IRR is the commonest approach taken to date in preparing a project design document.

Sub-step 2b – Option III. Apply benchmark analysis

***Sub-step 2c. Calculation and comparison of financial indicators***

Anticipated IRR for the project activity is calculated, and is contrasted against typical industry benchmark for investment.

Project scenario

Assuming a 20-year lifetime, the IRR without CER is calculated to be about 9.6%. Assuming that the CER price (yet to be determined) is set at an indicative price of 12 reais / t-CO₂, the IRR over 20 years jumps to 10.6%, passing the crucial barrier 10%¹. Moreover, without CER, the project is not expected to turn out a profit in the first year (on the basis of earning before tax). Therefore, it is concluded that CER can make a considerable difference. It is also worth mentioning that the NovaGerar landfill gas utilization project (the first registered CDM project) claim additionality on the basis that alternative investment such as the Brazilian government bonds, whose rate of return at 22% is well above this project, can be a far more attractive source of investment.

Alternative scenarios

It is not possible to analyze the investment indicators of alternative scenarios, since they do not anticipate return through electricity sales.

Sub-step 2d. Sensitivity analysis

If the time horizon is set at ten years (payback period). IRR without CER is about 2.7%, and IRR with CER is about 4.4%. Either case is not high, which demonstrates how this project is difficult for the developers.

Step 3. Barrier Analysis***Sub-step 3a. Identify barriers that would prevent the implementation of type of the proposed project activity:***

The barrier is twofold: 1) Investment barrier, and 2) Technical barrier

1) Investment barrier

The total estimated cost of the project is expected to be at 54 million Reais. This is more than the Unialco S.A.'s total investment in the industrial facilities for the past nine years (1995 to 2003, at 52 million Reais). Therefore, it can be easily understood that investment in the project is a formidable undertaking. The expected equity (17 million Reais or 30% of the total project cost) is larger than the industrial investment of any year to date.

2) Technical barrier

The barrier lies not in the technology (hardware) itself, but the management skill in mitigating risks of project failure and underperformance. Unialco is a locally run sugar and alcohol production company, and know-how on power management is not state-of-the-art. By venturing into this business, Unialco will have to take on the risk of electricity delivery, project completion, and price fluctuation. Electricity earnings will be made on Brazilian reais, which is currently deemed as unreliable.

¹ The parameters are as follows: amortization 10 years, electricity price 93.77 reais / MWh, corporate income tax 25% of EBIT.



Sub-step 3 b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

1) Investment barrier

The “no-action” option does not entail any investment. The “self-sufficiency” option does, but at a much lower degree since there is no need for construction of generation facilities dedicated to electricity export, as well as transmission facilities. It is estimated that the construction cost of a boiler and generator sufficient for a 15MW generation facility is 20 million Reais at most, which is a more comfortable range for Unialco. A 30% equity, or an investment of 6 million Reais, is within the range of Unialco’s investment capabilities.

2) Technical barrier

Technical barrier for the “no-action” and “self-sufficiency” options are either nonexistent or minimal, since in both cases there will be no electricity export, associated with contractual obligation of guaranteeing delivery of electricity. The project risk of “self-sufficiency” scenario will also be low, since older facilities can act as backup, and alcohol / sugar production will be sustained even when completion of the new plant is delayed.

In conclusion, there is significant barrier with respect to investment and technicalities pertaining to the project, and possible alternatives to the project is largely devoid of such barriers.

It is thus shown from Step 2 that the proposed project activity is not a very profitable one, and that its commercial viability can be significantly improved by CER. It is also shown from Step 3 that the proposed project activity is a considerably higher risk compared with other plausible alternative scenarios. Therefore, the proposed project activity is deemed as additional.

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

The generation potential of bagasse in Brazil is thought to be several thousand megawatts. Atlas Energia Eletrica do Brasil by Agencia Nacional de Energia Eletrica (ANEEL; 2002) calculates the potential throughout Brazil at 3,851MW. Of these, 1,540MW has been realized. However, only 123MW (about 8%) of the capacity is exported to the grid. Therefore, the practice of exporting electricity generated by bagasse to the grid can be said to be an uncommon activity.

The reasons are manifold, as follows.

- Relatively ample hydropower supply in Brazil offsets incentives to generate electricity since hydropower is inexpensive to operate once the considerable cost of capital is amortized (as is the case with most large-scale hydropower in Brazil).
- Electricity export is an activity necessitating considerable business skill, in negotiating purchase power agreements and insuring against risk related to construction and operation. Such skill is rare in sugar



and alcohol production facilities, much of which is family-run business involving few external experts on matters outside their core business.

Sub-step 4b. Discuss any similar options that are occurring:

Pioneering activities to export electricity generated from bagasse are occurring, thanks in part of the CDM incentive. Vale do Rosario and Catanduva are examples. However, these plants are relatively minor compared to the considerable potential which is just simply not realized for the reasons above. Few other non-CDM facilities are constructed in the wake of electricity crisis in Brazil when a drought struck in 2001 reduced generation by hydropower. Some generators were lured by the then high sales purchase price, but subsequent recovery of hydropower generation served to discourage further development. Much of the plans conceived during the power crises were later aborted.

Moreover, almost all of the facilities exporting electricity to the grid are located in proximity to the grid. Some connect to the nearby city substation by a low-voltage transmission line (e.g 13.8kV), and others own a substation which elevates the voltage to 138kV. In either examples, the transmission line is a few kilometres at most. To the contrary, the Unialco plant is located in the Western region of Sao Paulo State, far from any transmission lines. A high-tension transmission line of 32km at 138kV must be constructed to transport electricity to the grid. It is expected that construction of a high-tension line would cost 250,000 Reais / km, and a substation would add a further 4 million Reais. Therefore, the total cost of transmission facilities is expected to be 12 million Reais, nearly a quarter of the total project cost. This is a marked difference with other similar projects in Brazil (which themselves are uncommon). To date, only one facility (Pioneiros of Rio de Janeiro State) has a longer transmission line.

Step 5. Impact of CDM registration

Impact of registration can be manifold, as follows

- Anthropogenic greenhouse gas emission reductions;
- The financial benefit of the revenue obtained by selling CERs

The second point is significant since the main product of Unialco is alcohol (hydrated and anhydrous) which is consumed domestically. Same can be said of electricity. Brazilian Real is a volatile currency, having been devalued to about half during the past five years. CER revenues, on the other hand, will be gained

Registration as a CDM project will put Unialco “on the world map”, potentially luring overseas clients such as Japan, where mixture of anhydrous ethanol to motor fuel is debated.

B.4. Description of how the definition of the project boundary related to the baseline methodology selected is applied to the project activity:

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Following AM0015, the project boundary is the site of the project (i.e. Unialco S.A). Any consumption of fossil fuel (for start-up purposes) in the boilers and generators will be taken into account.

B.5. Details of baseline information, including the date of completion of the baseline study and the name of person (s)/entity (ies) determining the baseline:

>>



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**SECTION C. Duration of the project activity / Crediting period****C.1 Duration of the project activity:**

>>20 years

C.1.1. Starting date of the project activity:

>>July 1, 2006

C.1.2. Expected operational lifetime of the project activity:

>>20 years

C.2 Choice of the crediting period and related information:**C.2.1. Renewable crediting period****C.2.1.1. Starting date of the first crediting period:**

>>>>July, 1, 2006

C.2.1.2. Length of the first crediting period:

>>7 years renewable crediting period.

C.2.2. Fixed crediting period:

Not taken

C.2.2.1. Starting date:

>>

C.2.2.2. Length:

>>



SECTION D. Application of a monitoring methodology and plan

D.1. Name and reference of approved monitoring methodology applied to the project activity:

>>Bagasse-based cogeneration connected to an electricity grid”

D.2. Justification of the choice of the methodology and why it is applicable to the project activity:

>> The methodology is applicable since the this project is also bagasse-based cogeneration, which attempts to sell electricity to the same grid as the project to which this methodology was based on (Vale do Rosario).

**D.2. 1. Option 1: Monitoring of the emissions in the project scenario and the baseline scenario**

The monitoring parameters are hereby defined according to the approved methodology AM0015. For the purpose of determining the operating margin, the “Dispatch Analysis” method will be taken, in the anticipation that such margins will be made public by the Government of Brazil. Items 12 to 14 are omitted since the project activity does not intend to export thermal energy.

D.2.1.1. Data to be collected in order to monitor emissions from the project activity, and how this data will be archived:

ID number (Please use numbers to ease cross-referencing to D.3)	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
1. FF_i	Physical quantity	Quantity of fossil fuel i used at the project site due to the project activity	litre / yr	m	yearly	100%	electronic	During the crediting period and two years thereafter
2. NCV_i	Calorific enthalpy	Net calorific value of the fossil fuel i	GJ per litre	c	Once at the beginning of a crediting period	100%	electronic	During the crediting period and two years thereafter (note, for conventional fossil fuel such as diesel, a default factor is used)
3. $COEF_i$	CO ₂ emission coefficient	CO ₂ emission factor of the fossil fuel i	tCO ₂ /mass or volume unit	c	upon validation and baseline renewal	0%	electronic	Typical default parameters will be used, as cited in the Brazilian national inventory or IPCC guidelines.

D.2.1.2. Description of formulae used to estimate project emissions (for each gas, source, formulae/algorithm, emissions units of CO₂ equ.)

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D.2.1.3. Relevant data necessary for determining the <u>baseline</u> of anthropogenic emissions by sources of GHGs within the project boundary and how such data will be collected and archived :								
ID number (Please use numbers to ease cross-referencing to table D.3)	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e),	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
4. EG _y	Electricity supplied to the grid by the project	The electricity purchaser	MWh	m	hourly measurement and monthly recording	100%	electronic	Double checked by receipt of sales
5. EF _y	Emission factor	CO ₂ emission factor of the grid	tCO ₂ /MWh	c	upon validation and baseline renewal	0%	electronic	See section B.2
6. EF _{OMA,y}	Emission factor	Simple adjusted CO ₂ operating margin factor of the grid	tCO ₂ /MWh	c	upon validation and baseline renewal	0%	electronic	Simple adjusted operating margin method (ex ante estimation) is employed. See section B.2



7. $EF_{BM,y}$	Emission factor	CO ₂ build margin factor of the grid	tCO ₂ /MWh	c	upon validation and baseline renewal	0%	electronic	Simple adjusted operating margin method (ex ante estimation) is employed. See section B.2
8. λ	Fraction of time during which low-cost/must-run sources are on the margin	Data based on Operador Nacional do sistema	no dimension	c	upon validation and baseline renewal	0%	electronic	
9. $EF_{dispatch}$	Emission factors from dispatch data analysis	Publication by the Brazilian government	tCO ₂ /MWh	c	upon validation and baseline renewal	0%	electronic	This will be used in place of EF_y , if a) such data is made public by the Brazilian government, and b) such data are externally verified to be applicable for the project activity.



D.2.1.4. Description of formulae used to estimate baseline emissions (for each gas, source, formulae/algorithm, emissions units of CO₂ equ.)

>>

Greenhouse gas emission coefficient from all low-cost / must-run sources are assumed to be zero. Therefore, the simplified version of equation (3) cited in AM0015 (page 5) reads as follows:

$$\begin{aligned} EF_{OMA,y} &= (1 - \lambda) EF_{OM,y} \\ &= (1 - 0.530) * 0.719 \\ &= 0.338 \end{aligned}$$

$$\begin{aligned} EF_{BM,y} &= 0.569 \\ EF_y &= (0.338 + 0.569) / 2 = 0.453 \text{ (t-CO}_2\text{/MWh)} \end{aligned}$$

Baseline greenhouse gas emissions ($BE_{\text{electricity}}$) can be calculated as follows

$$\begin{aligned} BE_{\text{electricity}} &= EF_y * EG_y \\ &= 0.453 * EG_y \end{aligned}$$

If an emission factor based on dispatch data analysis (EF_{dispatch}) is made public by the Brazilian government and is externally validated to be applicable for the purpose of the project activity, then $BE_{\text{electricity}}$ will be obtained through the following equation;

$$BE_{\text{electricity}} = EF_{\text{dispatch}} * EG_y$$



D. 2.2. Option 2: Direct monitoring of emission reductions from the project activity (values should be consistent with those in section E).

Not taken

**D.2.2.1. Data to be collected in order to monitor emissions from the project activity, and how this data will be archived:**

ID number (Please use numbers to ease cross-referencing to table D.3)	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e),	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	Comment

D.2.2.2. Description of formulae used to calculate project emissions (for each gas, source, formulae/algorithm, emissions units of CO₂ equ.):

>>

D.2.3. Treatment of leakage in the monitoring plan**D.2.3.1. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project activity**

ID number (Please use numbers to ease cross-referencing to table D.3)	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	Comment

**D.2.3.2. Description of formulae used to estimate leakage (for each gas, source, formulae/algorithm, emissions units of CO₂ equ.)**

>>

Leakage is not expected to occur (see section E).

D.2.4. Description of formulae used to estimate emission reductions for the project activity (for each gas, source, formulae/algorithm, emissions units of CO₂ equ.)

>>

D.3. Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored

Data (Indicate table and ID number e.g. 3.-1.; 3.2.)	Uncertainty level of data (High/Medium/Low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
1	Low	Use of fuel can be recorded and checked under internal management system of the facility
2,3	Low	For most fuels (including diesel, the anticipated fuel of choice in such circumstances), a reliable and accurate default data can be obtained.
4	Low	Sales of electricity can be double checked through electricity sales and purchase receipts.

D.4 Please describe the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects, generated by the project activity

>>

D.5 Name of person/entity determining the monitoring methodology:

>>

Kenichiro Yamaguchi
Senior Consultant, Mitsubishi Research Institute Inc.
Tokyo-to Chiyoda-ku Otemachi 2-3-6

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Japan, 100-8141

**SECTION E. Estimation of GHG emissions by sources****E.1. Estimate of GHG emissions by sources:**

>>

It is expected that the project uses bagasse set aside from the previous season for start-up fuel. However, a small amount of diesel oil may be used for the purpose when the bagasse cannot be used due to excessive moisture caused by rainfall, etc. Such use of fossil fuel will be monitored, and will constitute GHG emissions from the project. As shown above, the equation below will be used.

$$Epj = FFi_t * NCVi * COEFi$$

Where Epj is the GHG emissions from the project, FFi_t , $NCVi$, and $COEFi$ are quantity of fossil fuel i used at the project site due to the project activity in the year t (litres), net calorific value of the fossil fuel i (GJ/litre), and CO_2 emission factor of the fossil fuel i (t- CO_2 /TJ), respectively. The most likely fuel will be diesel; according to the “*First Brazilian Inventory Of Anthropogenic Greenhouse Gas Emissions*”, $NCVi$ for diesel is set at 42.96TJ/toe, and $COEFi$ is 20.2t-C/TJ or 74.1t- CO_2 / TJ (standard value for the fuel).

The amount of fossil fuel consumption for start-up and other purposes is expected to be much smaller than the consumption of bagasse in terms of calorific value. Furthermore, the amount of fossil fuel consumption cannot be determined a priori since fossil fuel will be consumed only when bagasse could not be used. Therefore, for the purpose of this section, GHG emissions by sources is estimated to be zero for the project activity.

E.2. Estimated leakage:

>>

Following the AM0015 methodology, leakage is deemed to be zero.

- Prior to project, bagasse was not sold to other generation facilities. Therefore, the project does not deprive of other facilities generating from bagasse.
- Sugar cane is currently transported to the facility as an integral process of alcohol production and bagasse is combusted on site, so emissions from transport trucks do not constitute as leakage since they are assumed to be identical for project and alternative cases.

There is a “positive leakage” resulting from the project. In the current practice, irrigation of the premises is carried out by electricity generated by on-site diesel engines, since current facilities lack the capacity to generate electricity for irrigation, and transmission facilities do not exist. However, with the project, it is expected that electricity for irrigation can be supplied through expanded output and installation of transmission facilities. This will lead to a reduction of 50,000 litres of diesel oil per year, corresponding to a reduction of about 140t- CO_2 .

Such “positive leakage” will not be taken into account in the interest of conservativeness and simplicity, and also since replacement of irrigation fuel may happen under the “self-sufficiency” scenario (but not the “no-action” scenario).

**E.3. The sum of E.1 and E.2 representing the project activity emissions:**

>>

Assuming that fossil fuel is not used for start-up purposes, it is concluded here that $E1 + E2 = 0$

E.4. Estimated anthropogenic emissions by sources of greenhouse gases of the baseline:

>>

The baseline emissions of greenhouse gases are that emitted from generation of electricity substituted by the electricity generated from this project.

$$BE_{electricity} = EG_y * EF_t$$

where $BE_{electricity}$, EG_y and EF_t are baseline emissions of the year t , electricity supplied to the grid by the project in the year t and the baseline GHG (CO₂) emission factor of the grid, respectively.

From the discussion above, EF_t is assumed to be constant at 0.453t-CO₂/MWh and is assumed to be constant at 2,252,000ton-bagasse..

EG_y will be monitored, but it is expected to be: 23.7MW * 4,400hrs = 104,299MWh. Therefore the resultant figure for estimated anthropogenic emissions by sources of greenhouse gases of the baseline is: 104,299MWh * 0.453t-CO₂/MWh = 47,247t-CO₂/yr

If an emission factor based on dispatch data analysis ($EF_{dispatch}$) is made public by the Brazilian government and is externally validated to be applicable for the purpose of the project activity, then $BE_{electricity}$ will be obtained through the following equation;

$$BE_{electricity} = EF_{dispatch} * EG_y$$

E.5. Difference between E.4 and E.3 representing the emission reductions of the project activity:

>>

$$47,247t-CO_2/yr - 0 = 47,247t-CO_2/yr$$

E.6. Table providing values obtained when applying formulae above:

>>

Notation	Description	Value
Epj	Greenhouse gas emissions from the project activity (t-CO ₂)	Not estimated (will be calculated)
FFi_t	Quantity of fossil fuel i used at the project site due to the project activity in the year t (litres)	Not estimated (will be monitored)
$NCVi$	Net calorific value of the fossil fuel i (TJ/kl)	Depends on fuel (42.96TJ/kl for diesel)
$COEFi$	CO ₂ emission factor of the fossil fuel i (t-CO ₂ /TJ)	Depends on fuel (74.1t-CO ₂ / TJ e for diesel)



$BE_{electricity}$	Baseline greenhouse gas emissions of the year t	Not estimated
EG_y	Electricity supplied to the grid by the project in the year t	Not estimated (will be monitored)
EF_y	Baseline GHG (CO ₂) emission factor of the grid	0.453t-CO ₂ /MWh

**SECTION F. Environmental impacts****F.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:**

>>

Environmental impact assessment was carried out according to the law of Sao Paulo State (RESOLUÇÃO SMA 42/94 DE 29-12-94). The plan for the project was submitted in June, 2004 to the Department of Environment of Sao Paulo State, and it was decided that a preliminary environmental impact assessment (Relatório Ambiental Preliminar: RAP) would suffice for the project. The RAP was conducted by the engineering company PROJECA, and will be submitted to the State Department for Natural Resources Protection - DEPRN regarding the aspects related to the forestry legislation. Another copy is sent to Companhia de Tecnologia de Saneamento Ambiental - CETESB that will analyze the Project regarding the atmospheric dispersion studies.

The completed RAP has recommended that precipitation scrubbers be installed to the new boilers with a temperature sufficiently high to prevent NOx formation, and the stack height be above the regulation of Sao Paulo State (37 metres). Upon approval of RAP by the Department of Environment, these measures will be duly carried out. In addition, water discharge, waste, noise and vibration were studied, but found no significant adverse impacts.

It is expected that the environmental impact of the project activity will be minimal if any. The project activity will not result in combustion of more bagasse; and atmospheric emission will have to comply with the strict regulation of the Sao Paulo State. Therefore, the project activity will not result in increased production of atmospheric pollutants. Ash will be recycled for fertilizer use following the custom of the sugar industry. The project activity is located at approx. 400km from the coastline and more than 500km from the nearest border (Paraguay). Therefore, transboundary effect is inconceivable. It should also be noted that the RAP for Vale do Rosario, a much larger project, has been accepted, it is expected that the RAP for this project will pose little problem.

Furthermore, the RAP has concluded the following:

- ? The enlargement of the systems cogeneration operations on the entrepreneurship will not demand additional use of local natural resources;
- ? The impacts on the physical and biological environments will not have enough intensity to change the present conditions, either in the implementation or operation stage;
- ? The socioeconomic impacts on the communities of direct influence area will be positive;
- ? The atmospheric impacts will be minor, as soon as the operation of two modern boiler units of great efficiency will result on lower emissions, mainly because of the deactivation of a existing unity of lower efficiency.

These conclusions clearly point out the environmental soundness of the project activity.

F.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:



>>

As stated above, it is expected that the environmental impacts are not considered significant.

**SECTION G. Stakeholders' comments**

>>

G.1. Brief description how comments by local stakeholders have been invited and compiled:

>>

During the RAP procedure (see section F), consultation with the municipality of Guararapes was conducted on October, 10. The municipality has announced its support for the project.

Upon submission of the RAP to the Sao Paulo state Department of Environment, it will be announced in the official journal and public comments will be invited for the period of 30 days.

G.2. Summary of the comments received:

>>

To be completed pending completion and publication of the RAP.

G.3. Report on how due account was taken of any comments received:

>>

To be completed pending completion and publication of the RAP.

Annex 1**CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY**

Organization:	
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	



Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING PLAN



Approved baseline methodology AM0015

“Bagasse-based cogeneration connected to an electricity grid”

Source

This methodology is based on the Vale do Rosário Bagasse Cogeneration, Brazil, whose baseline study, monitoring and verification plan and project design document were prepared by Econergy International Corporation on behalf of Vale do Rosário. For more information regarding the proposal and its consideration by the Executive Board please refer to case NM0001-rev: “Vale do Rosário Bagasse Cogeneration” on <http://cdm.unfccc.int/methodologies/approved>.

Selected approach from paragraph 48 of the CDM modalities and procedures

“Existing actual or historical emissions, as applicable.”

Applicability

This methodology is applicable to bagasse-based cogeneration power plants displacing grid electricity with the following conditions:

- The bagasse to be used as the feedstock for cogeneration shall be supplied from the same facility where the project is implemented;
- Documentation is available supporting that the project activity would not be implemented by the public sector, project participants or other relevant potential developers, notwithstanding of the governmental policies/programs to promote renewables if any, in the absence of the clean development mechanism (CDM);
- The implementation of the project shall not increase the bagasse production in the facility;
- The bagasse at the project facility should not be stored for more than one year.

This baseline methodology shall be used in conjunction with the approved monitoring methodology AM0015 (“Bagasse-based cogeneration connected to an electricity grid”).

Additionality

Note: Once approved, the consolidated tools for demonstration of additionality being developed by the Executive Board, these shall apply. This methodology will therefore only become valid as of the approval by the Board of consolidated tools for demonstration of additionality.

Project boundary

Project participants shall account for any net changes in CO₂ emissions from fossil fuels due to the project activity. This includes changes in fossil fuel consumption at the project site and, in the baseline, changes in CO₂ emissions from displaced electricity generation in fossil fuel fired power plants in the electricity grid. Project participants do not need to account potential methane emissions from the storage of bagasse or CO₂ emissions from transport of bagasse, as these are assumed to be very small if bagasse is stored in open piles not longer than one year and if bagasse is only used from the site of the project activity. Other emissions sources (such as methane or nitrous oxide emissions from combustion of fuels) shall not be accounted by project participants.

The **spatial extent** of the project boundary includes the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to.



For the purpose of determining the build margin (BM) and operating margin (OM) emission factor, as described below, a (regional) **project electricity system** is defined by the spatial extent of the power plants that can be dispatched without significant transmission constraints. Similarly, a **connected electricity system**, e.g. national or international, is defined as a (regional) electricity system that is connected by transmission lines to the project electricity system and in which power plants can be dispatched without significant transmission constraints. In determining the project electricity system, project participants should justify their assumptions.

Electricity transfers from connected electricity systems to the project electricity system are defined as **electricity imports** and electricity transfers to connected electricity systems are defined as **electricity exports**.

For the purpose of determining the Build Margin (BM) emission factor, as described below, the spatial extent is limited to the project electricity system, except where recent or likely future additions to transmission capacity enable significant increases in imported electricity. In such cases, the transmission capacity may be considered a build margin source, with the emission factor determined as for the OM imports below.

For the purpose of determining the Operating Margin (OM) emission factor, as described below, use one of the following options to determine the CO₂ emission factor(s) for net electricity imports ($COEF_{i,j,imports}$) from a connected electricity system within the same host country(ies):

- (a) 0 tCO₂/MWh, or
- (b) The emission factor(s) of the specific power plant(s) from which electricity is imported, if and only if the specific plants are clearly known, or
- (c) The average emission rate of the exporting grid, if and only if net imports do not exceed 20% of total generation in the project electricity system, or
- (d) The emission factor of the exporting grid, determined as described in steps 1,2 and 3 below, if net imports exceed 20% of the total generation in the project electricity system.

For imports from connected electricity system located in another country, the emission factor is 0 tons CO₂ per MWh.

Electricity exports should not be subtracted from electricity generation data used for calculating and monitoring the baseline emission rate.

Baseline

The baseline scenario is that the current practice continues, *i.e.*, the bagasse is not utilized to generate thermal and/or electric energy. Emission reductions may result from the displacement of thermal and/or electric energy generated with fossil fuels.

For project activities that modify or retrofit an existing electricity generation facility, the guidance provided by EB08 shall be taken into account.¹

¹ "If a proposed CDM project activity seeks to retrofit or otherwise modify an existing facility, the baseline may refer to the characteristics (i.e. emissions) of the existing facility only to the extent that the project activity does not increase the output or lifetime of the existing facility. For any increase of output or lifetime of the facility which is due to the project activity, a different baseline shall apply." (EB08, Annex 1, <http://cdm.unfccc.int/EB/Meetings/>).

**Baseline emissions due to displacement of electricity**

For the displacement of electricity, the baseline scenario is that electricity would in the absence of the project activity have been generated by the operation of grid-connected power plants and by the addition of new generation sources.

Calculation of electricity baseline emission factor

An electricity baseline emission factor ($EF_{electricity,y}$) is calculated as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factors according to the following three steps. Calculations for this combined margin must be based on data from an official source (where available)² and made publicly available.

STEP 1. Calculate the Operating Margin emission factor(s) ($EF_{OM,y}$) based on one of the four following methods:

- (a) Simple OM, or
- (b) Simple adjusted OM, or
- (c) Dispatch Data Analysis OM, or
- (d) Average OM.

Each method is described below.

Dispatch data analysis should be the first methodological choice. Where this option is not selected project participants shall justify why and may use the simple OM, the simple adjusted OM or the average emission rate method taking into account the provisions outlined hereafter.

The Simple OM method (a) can only be used where low-cost/must run resources³ constitute less than 50% of total grid generation in:

² Plant emission factors used for the calculation of operating and build margin emission factors should be obtained in the following priority:

1. *acquired directly* from the dispatch center or power producers, if available; or
2. *calculated*, if data on fuel type, fuel emission factor, fuel input and power output can be obtained for each plant; if confidential data available from the relevant host Party authority are used the calculation carried out by the project participants shall be verified by the DOE and the CDM-PDD may only show the resultant carbon emission factor and the corresponding list of plants.
3. *calculated*, as above, but using estimates such as
 - default IPCC values from the *IPCC 1996 Revised Guidelines* and the *IPCC Good Practice Guidance* for net calorific values and carbon emission factors for fuels instead of plant-specific values (note that the *IPCC Good Practice Guidance* includes some updates from the *IPCC 1996 Revised Guidelines*);
 - technology provider's name plate power plant efficiency or the anticipated energy efficiency documented in official sources (instead of calculating it from fuel consumption and power output). This is likely to be a conservative estimate, because under actual operating conditions plants usually have lower efficiencies and higher emissions than name plate performance would imply;
 - conservative estimates of power plant efficiencies, based on expert judgments on the basis of the plant's technology, size and commissioning date; or
4. *calculated*, for the simple OM and the average OM, using aggregated generation and fuel consumption data, in cases where more disaggregated data is not available.

³ Low operating cost and must run resources typically include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation. If coal is obviously used as must-run, it should also be included in this list, i.e. excluded from the set of plants.



- 1) Average of the five most recent years, or
- 2) Based on long-term normals for hydroelectricity production.

The average emission rate method (d) can only be used

- Where low-cost/must run resources constitute more than 50% of total grid generation and detailed data to apply option (b) is not available, and
- Where detailed data to apply option (c) above is unavailable.

(a) *Simple OM*. The Simple OM emission factor ($EF_{OM,simple,y}$) is calculated as the generation-weighted average emissions per electricity unit (tCO₂/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants:

$$EF_{OM,simple,y} = \frac{\sum_{i,j} F_{i,j,y} \cdot COEF_{i,j}}{\sum_j GEN_{j,y}} \quad (1)$$

where

$F_{i,j,y}$	Is the amount of fuel i (in a mass or volume unit) consumed by relevant power sources j in year(s) y
j	Refers to the power sources delivering electricity to the grid, not including low-operating cost and must-run power plants, and including imports ⁴ from the grid
$COEF_{i,j,y}$	Is the CO ₂ emission coefficient of fuel i (tCO ₂ / mass or volume unit of the fuel), taking into account the carbon content of the fuels used by relevant power sources j and the percent oxidation of the fuel in year(s) y , and
$GEN_{j,y}$	Is the electricity (MWh) delivered to the grid by source j

The CO₂ emission coefficient $COEF_i$ is obtained as

$$COEF_i = NCV_i \cdot EF_{CO2,i} \cdot OXID_i \quad (2)$$

where

NCV_i	Is the net calorific value (energy content) per mass or volume unit of a fuel i
$EF_{CO2,i}$	Is the CO ₂ emission factor per unit of energy of the fuel i
$OXID_i$	Is the oxidation factor of the fuel (see page 1.29 in the 1996 Revised IPCC Guidelines for default values)

Where available, local values of NCV_i and $EF_{CO2,i}$ should be used. If no such values are available, country-specific values (see e.g. IPCC Good Practice Guidance) are preferable to IPCC world-wide default values.

The Simple OM emission factor can be calculated using either of the two following data vintages for years(s) y :

- A 3-year average, based on the most recent statistics available at the time of PDD submission, or
- The year in which project generation occurs, if $EF_{OM,y}$ is updated based on ex post monitoring.

⁴ As described above, an import from a connected electricity system should be considered as one power source j .



- (b) *Simple Adjusted OM*. This emission factor ($EF_{OM, simple\ adjusted, y}$) is a variation on the previous method, where the power sources (including imports) are separated in low-cost/must-run power sources (k) and other power sources (j):

$$EF_{OM, simple\ adjusted, y} = (1 - \lambda_y) \cdot \frac{\sum_j F_{i,j,y} \cdot COEF_{i,j}}{\sum_j GEN_{j,y}} + \lambda_y \cdot \frac{\sum_{i,k} F_{i,k,y} \cdot COEF_{i,k}}{\sum_k GEN_{k,y}} \quad (3)$$

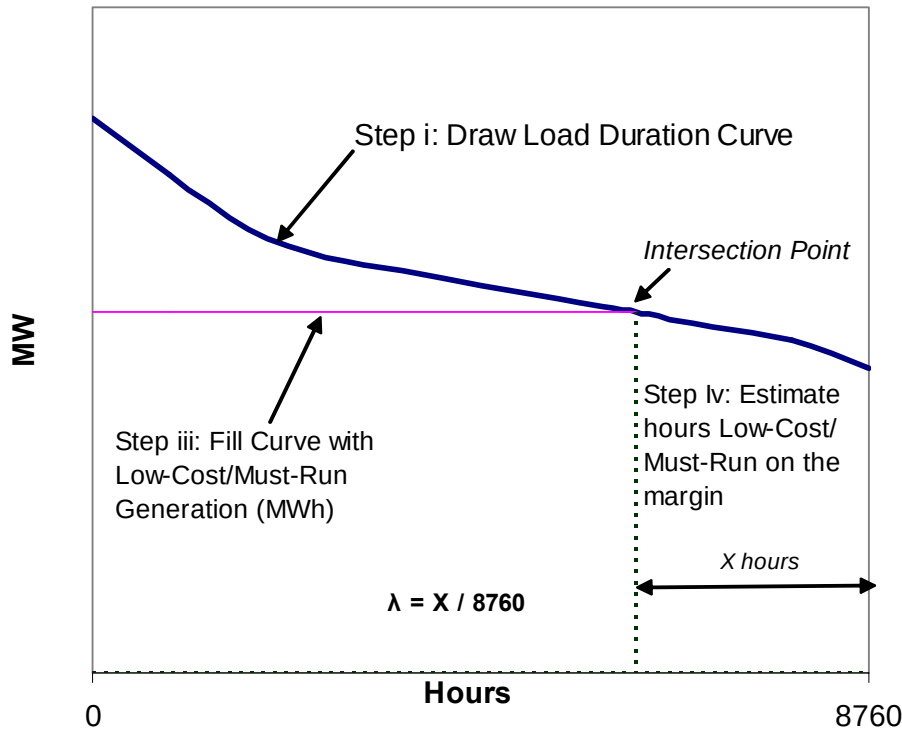
where

$F_{i,k,y}$, $COEF_{i,k}$ and GEN_k Are analogous to the variables described for the simple OM method above for plants k ; the years(s) y can reflect either of the two vintages noted for simple OM above, and

$$\lambda_y (\%) = \frac{\text{Number of hours per year for which low - cost/must - run sources are on the margin}}{8760 \text{ hours per year}} \quad (4)$$

where lambda (λ_y) should be calculated as follows (see figure below):

- Step i) Plot a Load Duration Curve. Collect chronological load data (typically in MW) for each hour of a year, and sort load data from highest to lowest MW level. Plot MW against 8760 hours in the year, in descending order.
- Step ii) Organize Data by Generating Sources. Collect data for, and calculate total annual generation (in MWh) from low-cost/must-run resources (i.e. $\sum_k GEN_{k,y}$).
- Step iii) Fill Load Duration Curve. Plot a horizontal line across load duration curve such that the area under the curve (MW times hours) equals the total generation (in MWh) from low-cost/must-run resources (i.e. $\sum_k GEN_{k,y}$).
- Step iv) Determine the “Number of hours per year for which low-cost/must-run sources are on the margin”. First, locate the intersection of the horizontal line plotted in step (iii) and the load duration curve plotted in step (i). The number of hours (out of the total of 8760 hours) to the right of the intersection is the number of hours for which low-cost/must-run sources are on the margin. If the lines do not intersect, then one may conclude that low-cost/must-run sources do not appear on the margin and λ_y is equal to zero. Lambda (λ_y) is the calculated number of hours divided by 8760.

Figure 1: Illustration of Lambda Calculation for Simple Adjusted OM Method


Note: Step (ii) is not shown in the figure, it deals with organizing data by source.

(c) *Dispatch Data Analysis OM.* The Dispatch Data OM emission factor ($EF_{OM, Dispatch Data, y}$) is summarized as follows:

$$EF_{OM, Dispatch Data, y} = \frac{E_{OM, y}}{EG_y} \quad (5)$$

where

EG_y Is the generation of the project (in MWh) in year y , and $E_{OM, y}$ are the emissions (tCO₂) associated with the operating margin calculated as

$$E_{OM, y} = \sum_h EG_h \cdot EF_{DD, h} \quad (6)$$

where

EG_h Is the generation of the project (in MWh) in each hour h and
 $EF_{DD, h}$ Is the hourly generation-weighted average emissions per electricity unit (tCO₂/MWh) of the set of power plants (n) in the top 10% of grid system dispatch order during hour h :



$$EF_{DD,h} = \frac{\sum_{i,n} F_{i,n,h} \cdot COEF_{i,n}}{\sum_n GEN_{n,h}} \quad (7)$$

where

F , $COEF$ and GEN Are analogous to the variables described for the simple OM method above, but calculated on an hourly basis for the set of plants (n) falling within the top 10% of the system dispatch

To determine the set of plants (n), obtain from a national dispatch center: a) The grid system dispatch order of operation for each power plant of the system; and b) the amount of power (MWh) that is dispatched from all plants in the system during each hour that the project activity is operating (GEN_h). At each hour h , stack each plant's generation (GEN_h) using the merit order. The set of plants (n) consists of those plants at the top of the stack (i.e., having the least merit), whose combined generation ($\sum GEN_h$) comprises 10% of total generation from all plants during that hour (including imports to the extent they are dispatched).

(d) *Average OM*. The average Operating Margin (OM) emission factor ($EF_{OM,average,y}$) is calculated as the average emission rate of all power plants, using equation (1) above, but including low-operating cost and must-run power plants [except fossil fuel fired power plants if these are a must-run resource]. Either of the two data vintages described for the simple OM (a) may be used.

STEP 2. Calculate the Build Margin emission factor ($EF_{BM,y}$) as the generation-weighted average emission factor (tCO₂/MWh) of a sample of power plants m , as follows:

$$EF_{BM,y} = \frac{\sum_{i,m} F_{i,m,y} \cdot COEF_{i,m}}{\sum_m GEN_{m,y}} \quad (8)$$

where

$F_{i,m,y}$, $COEF_{i,m}$ and $GEN_{m,y}$ Are analogous to the variables described for the simple OM method above for plants m .

Project participants shall choose between one of the following two options:

Option 1. Calculate the Build Margin emission factor $EF_{BM,y}$ *ex ante* based on the most recent information available on plants already built for sample group m at the time of PDD submission. The sample group m consists of either:

- The five power plants that have been built most recently, or
- The power plants capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

Project participants should use from these two options that sample group that comprises the larger annual generation.

Option 2. For the first crediting period, the Build Margin emission factor $EF_{BM,y}$ must be updated annually *ex post* for the year in which actual project generation and associated emissions reductions occur. For subsequent crediting periods, $EF_{BM,y}$ should be calculated *ex-ante*, as described in option 1 above. The sample group m consists of either



- The five power plants that have been built most recently, or
- The power plants capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

Project participants should use from these two options that sample group that comprises the larger annual generation.

Power plant capacity additions registered as CDM project activities should be excluded from the sample group *m*.

STEP 3. Calculate the electricity baseline emission factor $EF_{electricity,y}$ as the weighted average of the Operating Margin emission factor ($EF_{OM,y}$) and the Build Margin emission factor ($EF_{BM,y}$):

$$EF_{electricity,y} = w_{OM} \cdot EF_{OM,y} + w_{BM} \cdot EF_{BM,y} \quad (9)$$

where the weights w_{OM} and w_{BM} , by default, are 50% (i.e., $w_{OM} = w_{BM} = 0.5$), and $EF_{OM,y}$ and $EF_{BM,y}$ are calculated as described in Steps 1 and 2 above and are expressed in tCO₂/MWh. Alternative weights can be used, as long as $w_{OM} + w_{BM} = 1$, and appropriate evidence justifying the alternative weights is presented. These justifying elements are to be assessed by the Executive Board.⁵

The weighted average applied by project participants should be fixed for a crediting period and may be revised at the renewal of the crediting period.

Calculation of baseline emissions due to displacement of electricity

Baseline emissions due to displacement of electricity are calculated by multiplying the electricity baseline emissions factor ($EF_{electricity,y}$) with the electricity generation of the project activity.

$$BE_{electricity,y} = EF_{electricity,y} \cdot EG_y \quad (10)$$

where

$BE_{electricity,y}$	Are the baseline emissions due to displacement of electricity during the year <i>y</i> in tons of CO ₂
EG_y	Is the net quantity of electricity generated in the bagasse-based cogeneration plant due to the project activity during the year <i>y</i> in MWh, and
$EF_{electricity,y}$	Is the CO ₂ baseline emission factor for the electricity displaced due to the project activity in during the year <i>y</i> in tons CO ₂ /MWh.

Where the project activity involves a capacity addition, the net quantity of electricity generated due to the project activity (EG_y) should be determined as the difference of the electricity generated by the plant after project implementation and the quantity of electricity that has been generated prior to project implementation, based on the average electricity generation of the last three years before project implementation.

For this methodology, it is assumed that transmission and distribution losses in the electricity grid are not influenced significantly by the project activity. They are therefore neglected.

⁵ More analysis on other possible weightings may be necessary and this methodology could be revised based on this analysis. There might be a need to propose different weightings for different situations.

**Baseline emissions due to displacement of thermal energy**

The thermal energy generated by the bagasse cogeneration plant may displace thermal energy generation by fossil fuels in the absence of the project activity. In such cases, baseline emissions are calculated by multiplying the savings of fossil fuels with the emission factor of these fuels. Savings of fossil fuels are determined by dividing the generated thermal energy by the net calorific value of the fuel and the efficiency of the boiler that would be used in the absence of the project activity.

$$BE_{thermal,y} = \frac{Q_y}{\varepsilon \cdot NCV_i} \cdot COEF_i \quad (11)$$

where

$BE_{thermal,y}$	Are the baseline emissions due to displacement of thermal energy during the year y in tons of CO ₂
Q_y	Is the quantity of thermal energy generated in the bagasse-based cogeneration plant during the year y in GJ
ε_{boiler}	Is the energy efficiency of the boiler
NCV_i	Is the net calorific value of the fuel type i displaced due to the project activity in GJ per volume or mass unit
$COEF_i$	Is the CO ₂ emission factor of the fossil fuel type i fired in the boiler in the absence of the project activity in tons CO ₂ / mass or volume unit of the fuel.

To estimate boiler efficiency, the highest value among the following three values should be used as a conservative approach:

1. Measured efficiency prior to project implementation;
2. Measured efficiency during monitoring;
3. Manufacturer's information on the boiler efficiency.

In determining the CO₂ emission factors (COEF) of fuels, reliable local or national data should be used if available. Where such data is not available, IPCC default emission factors (country-specific, if available) should be chosen in a conservative manner.

Where the project activity involves a capacity addition, the net quantity of thermal energy generated due to the project activity (Q_y) should be determined as the difference of the thermal energy generated by the plant after project implementation and the quantity of thermal energy that has been generated prior to project implementation, based on the average thermal energy generation of the last three years before project implementation.

Project Activity

As part of project emissions, project participants shall account CO₂ emissions from the combustion of any fossil fuels due to the project activity. Where applicable, such emissions are calculated by multiplying the fuel quantities (mass or volume) with the appropriate net calorific values and CO₂ emission factors:

$$PE_y = \sum_i FF_{i,y} \cdot COEF_i \quad (12)$$

where



PE_y	Are the project emissions during the year y in tons of CO ₂ ,
$FF_{i,y}$	Is the quantity of fuel type i combusted due to the project activity during the year y in a volume or mass unit,
$COEF_i$	Is the CO ₂ emission factor of the fossil fuel type i fired in the boiler in the absence of the project activity in tons CO ₂ / mass or volume unit of the fuel.

The net increase of CO₂ emissions associated with the transport of bagasse fuel is regarded as negligible because of its short distance (within the area).

Leakage

Project participants should account for any increase of fossil fuels outside the project boundary which may result from the project activity. Any decrease of bagasse availability outside of the boundary due to implementation of the project may result in fossil fuel usage at the point where bagasse was originally used. In such cases, such leakage effects are given by

$$L_y = BG_{sold\ before} \cdot \frac{\varepsilon_{i,before}}{\varepsilon_{i,after}} \cdot \frac{NCV_{bagasse}}{NCV_i} \cdot COEF_i \quad (13)$$

where

L_y	Are the leakage emissions during the year y in tons of CO ₂
$BG_{sold\ before}$	Is the quantity of bagasse sold to former bagasse buyer(s), measured as the latest three-year average before implementation of the project, in mass unit
$\varepsilon_{i,before}$	Is the energy efficiency of the plant which switches from bagasse to fossil fuel i before implementation of the project activity
$\varepsilon_{i,after}$	Is the energy efficiency of the plant which switches from bagasse to fossil fuel i after implementation of the project activity
$NCV_{bagasse}$	Is the net calorific value of bagasse in GJ per volume or mass unit
NCV_i	Is the net calorific value of the fuel type i in GJ per volume or mass unit
$COEF_i$	Is the CO ₂ emission factor of the fossil fuel type i fired in the plant after the implementation of the project activity in tons CO ₂ /mass or volume unit of the fuel.

If former buyers are plural, summation over such buyers is needed.

Emission Reductions

The total net emission reductions due to the project activity result during a given year y as

$$ER_y = BE_{thermal,y} + BE_{electricity,y} - PE_y - L_y \quad (14)$$

where

ER_y	Are the emissions reductions of the project activity during the year y in tons of CO ₂
$BE_{electricity,y}$	Are the baseline emissions due to displacement of electricity during the year y in tons of CO ₂
$BE_{thermal,y}$	Are the baseline emissions due to displacement of thermal energy during the year y in tons of CO ₂
PE_y	Are the project emissions during the year y in tons of CO ₂
L_y	Are the leakage emissions during the year y in tons of CO ₂ .

**Approved monitoring methodology AM0015****“Bagasse-based cogeneration connected to an electricity grid”****Source**

This methodology is based on the Vale do Rosário Bagasse Cogeneration, Brazil whose baseline study, monitoring and verification plan and project design document were prepared by Econergy International Corporation on behalf of Vale do Rosário. For more information regarding the proposal and its consideration by the Executive Board please refer to case NM0001-rev: “Vale do Rosário Bagasse Cogeneration” on <http://cdm.unfccc.int/methodologies/approved>.

Applicability

This methodology is applicable to bagasse-based cogeneration power plants displacing grid electricity with the following conditions:

- The bagasse to be used as the feedstock for cogeneration shall be supplied from the same facility where the project is implemented;
- Documentation is available supporting that the project activity would not be implemented by the public sector, project participants or other relevant potential developers, notwithstanding of the governmental policies/programs to promote renewables if any, in the absence of the clean development mechanism (CDM);
- The implementation of the project shall not increase the bagasse production in the facility;
- The bagasse at the project facility should not be stored for more than one year;

This monitoring methodology shall be used in conjunction with the approved baseline methodology AM0015 (“Bagasse-based cogeneration connected to an electricity grid”).

Monitoring Methodology

The monitoring methodology involves monitoring of the following:

- Electricity generation from the proposed project activity;
- Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with the “Bagasse-based cogeneration connected to an electricity grid” (AM0015) baseline methodology;
- Data needed to recalculate the build margin emission factor, if needed, consistent with the “Bagasse-based cogeneration connected to an electricity grid” (AM0015) baseline methodology;
- Data needed to calculate baseline emissions due to the displacement of thermal energy at the project site (where relevant);
- Data required to calculate CO₂ emissions from fossil fuels combusted due to the project activity at the project site (where relevant);
- Data required to calculate leakage effects due to fuel switch from bagasse to other fuels outside the project boundary.

**Baseline Emission Parameters**

The 6th column indicates which monitoring elements are required depending on which method is used to determine the operating margin (OM) in step 1 of the baseline methodology AM0015 “Simple OM” is defined in step 1a; “Simple Adjusted OM” in 1b; “Dispatch Data OM” in 1c; and “Average OM” in step 1d. Items required for “BM” are for the Build Margin defined in step 2. Note that for the “Simple OM”, “Simple Adjusted OM” and the “Average OM” as well as the “BM, where project participants choose, consistent with baseline methodology AM0015, a data vintage based on ex ante monitoring, at least EG_y shall be monitored, and all parameters will be required to recalculate the combined margin at any renewal of a crediting period, using steps 1-3 in the baseline methodology.

ID number	Data type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	For which baseline method(s) must this element be included	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/ paper)	For how long is archived data kept?	Comment
1. EG _y (EG _h if dispatch data OM is used)	Electricity quantity	Electricity supplied to the grid by the project	MWh	Directly measured	Simple OM Simple Adjusted OM Dispatch Data OM Average OM BM	hourly measurement and monthly recording	100%	electronic	During the crediting period and two years after	Electricity supplied by the project activity to the grid. In case of retrofit projects, only the net increase in electricity supplied shall be accounted. Double check by receipt of sales.
2. EF _y	Emission factor	CO ₂ emission factor of the grid	tCO ₂ /MWh	c	Simple OM Simple Adjusted OM Dispatch Data OM Average OM BM	yearly	100%	electronic	During the crediting period and two years after	Calculated as a weighted sum of the OM and BM emission factors
3. EF _{OM,y}	Emission factor	CO ₂ Operating Margin emission factor of the	tCO ₂ /MWh	c	Simple OM Simple Adjusted OM Dispatch Data OM Average OM	yearly	100%	electronic	During the crediting period and two years after	Calculated as indicated in the relevant OM baseline method above



ID number	Data type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	For which baseline method(s) must this element be included	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/paper)	For how long is archived data kept?	Comment
		grid								
4. $EF_{BM,y}$	Emission factor	CO ₂ Build Margin emission factor of the grid	tCO ₂ /MWh	c	BM	yearly	100%	electronic	During the crediting period and two years after	Calculated as $[\sum_i F_{i,y} * COEF_i] / [\sum_m GEN_{m,y}]$ over recently built power plants defined in the baseline methodology
5. $F_{i,y}$	Fuel quantity	Amount of each fossil fuel consumed by each power source / plant	Mass or volume	m	Simple OM Simple Adjusted OM Dispatch Data OM Average OM BM	yearly	100%	electronic	During the crediting period and two years after	Obtained from the power producers, dispatch centers or latest local statistics.
6. $COEF_i$	Emission factor coefficient	CO ₂ emission coefficient of each fuel type i	tCO ₂ /mass or volume unit	m	Simple OM Simple Adjusted OM Dispatch Data OM Average OM BM Baseline emissions due to the displacement of thermal energy	yearly	100%	electronic	During the crediting period and two years after	Plant or country-specific values to calculate COEF are preferred to IPCC default values.
7. $GEN_{j/k/n,,y}$	Electricity quantity	Electricity generation of each power source / plant	MWh/a	m	Simple OM Simple Adjusted OM Dispatch Data OM Average OM BM	yearly	100%	electronic	During the crediting period and two years after	Obtained from the power producers, dispatch centers or latest local statistics.



ID number	Data type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	For which baseline method(s) must this element be included	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/ paper)	For how long is archived data kept?	Comment
		j, k or n								
8.	Plant name	Identification of power source / plant for the OM	Text	e	Simple OM Simple Adjusted OM Dispatch Data OM Average OM	yearly	100% of set of plants	electronic	During the crediting period and two years after	Identification of plants (j, k, or n) to calculate Operating Margin emission factors
9.	Plant name	Identification of power source / plant for the BM	Text	e	BM	yearly	100% of set of plants	electronic	During the crediting period and two years after	Identification of plants (m) to calculate Build Margin emission factors
10. λ_y	Parameter	Fraction of time during which low-cost/must-run sources are on the margin	Number	c	Simple Adjusted OM	yearly	100%	electronic	During the crediting period and two years after	Factor accounting for number of hours per year during which low-cost/must-run sources are on the margin
11.	Merit order	The merit order in which power plants are dispatched by documented evidence	Text	m	Dispatch Data OM	yearly	100%	paper for original documents, else electronic	During the crediting period and two years after	Required to stack the plants in the dispatch data analysis.



ID number	Data type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	For which baseline method(s) must this element be included	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/paper)	For how long is archived data kept?	Comment
11a. $GEN_{j/k/ll,y}$ IMPORTS	Electricity quantity	Electricity imports to the project electricity system	kWh	c	Simple OM Simple Adjusted OM Dispatch Data OM Average OM BM	yearly	100%	electronic	During the crediting period and two years after	Obtained from the latest local statistics. If local statistics are not available, IEA statistics are used to determine imports.
11b. $COEF_{i,j,y}$ IMPORTS	Emission factor coefficient	CO ₂ emission coefficient of fuels used in connected electricity systems (if imports occur)	tCO ₂ /mass or volume unit	c	Simple OM Simple Adjusted OM Dispatch Data OM Average OM BM	yearly	100%	electronic	During the crediting period and two years after	Obtained from the latest local statistics. If local statistics are not available, IPCC default values are used to calculate.
12. Q_y	Energy quantity	Quantity of thermal energy generated by the cogeneration plant of the project activity	GJ/year	m	Baseline emissions due to the displacement of thermal energy	continuous measurement and monthly recording	100%	electronic	During the crediting period and two years thereafter	Thermal energy supplied by the project activity to the grid. In case of retrofit projects, only the net increase in thermal energy supplied shall be accounted.



ID number	Data type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	For which baseline method(s) must this element be included	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/paper)	For how long is archived data kept?	Comment
13. ϵ	Efficiency	Efficiency of boilers where thermal energy is generated in the absence of the project by combustion of fossil fuels	%	m or e	Baseline emissions due to the displacement of thermal energy	Once at the beginning of the crediting period (if estimated) or regularly (if measured)	100%	electronic	During the crediting period and two years thereafter	Efficiency may be measured or estimated conservatively (e.g. using manufacturers information on maximum efficiency). Measurements are to be conducted according to internationally recognised standards such as BS 845, ASME PTC, etc
14. NCV_i	Calorific enthalpy	Net calorific value of the fossil fuel i	GJ per mass or volume unit	c	Baseline emissions due to the displacement of thermal energy	Once at the beginning of a crediting period	100%	electronic	During the crediting period and two years thereafter	Local data are preferable than default value applied to wider area. IPCC Guidelines/Good Practice Guidance provide for default values where local data is not available.

*Project Emission Parameters*

ID number	Data Type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/ paper)	For how long is archived data kept?	Comment
15. FF _{i,y}	Physical quantity	Quantity of fossil fuel i used at the project site due to the project activity	(mass unit)/yr or (volume unit)/yr	m	yearly	100%	electronic	During the crediting period and two years thereafter	Fossil fuel used in the boundary measured in mass or volume unit.
16. NCV _i	Calorific enthalpy	Net calorific value of the fossil fuel i	GJ per mass or volume unit	c	Once at the beginning of a crediting period	100%	electronic	During the crediting period and two years thereafter	Local data are preferable than default value applied to wider area. IPCC Guidelines/Good Practice Guidance provide for default values where local data is not available.
17. COEF _i	CO ₂ emission coefficient	CO ₂ emission factor of the fossil fuel i	tCO ₂ / mass or volume unit	c	Once at the beginning of a crediting period	100%	electronic	During the crediting period and two years thereafter	Local data are preferable than default value applied to wider area. IPCC Guidelines/Good Practice Guidance provide for default values where local data is not available.

*Leakage*

ID number	Data Type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/paper)	For how long is archived data kept?	Comment
18. $BG_{\text{sold before}}$	Physical quantity (e.g., mass)	Quantity of bagasse sold before project implementation	(mass unit)/yr or (volume unit)/yr	m	Once before implementation of the project	100%	electronic	During the crediting period and two years thereafter	Quantity of bagasse sold to the former bagasse buyer(s), measured as the latest 3-year average before implementation of the project, backed by business receipt.
19. $\epsilon_{i,\text{before}}$	Energy efficiency	Energy efficiency of the plant which switched fuel from bagasse to fossil fuel before implementation of the project	%	m	Once before implementation of the project	100%	electronic	During the crediting period and two years thereafter	Energy efficiency of the plant which switched the fuel from bagasse to fossil fuel i before implementation of the project. The data is to be provided by the former bagasse buyer. The data is that of typical load factor.



ID number	Data Type	Data variable	Data unit	Measured (m) calculated (c) estimated (e)	Recording frequency	Proportion of data monitored	How will data be archived? (electronic/ paper)	For how long is archived data kept?	Comment
20. $\epsilon_{i,after}$	Energy efficiency	Energy efficiency of the plant which switched fuel from bagasse to fossil fuel after implementation of the project	%	m	Once after implementation of the project	100%	electronic	During the crediting period and two years thereafter	Energy efficiency of the plant which switched the fuel from bagasse to fossil fuel i after implementation of the project. The data is to be provided by the former bagasse buyer. The efficiency may be measured or estimated conservatively.

***Quality Control (QC) and Quality Assurance (QA) Procedures***

All variables used to calculate project and baseline emissions are directly measured or are publicly available official data. To ensure the quality of the data, in particular those that are measured, the data are double-checked against commercial data. The quality control and quality assurance measures planned for the Project are outlined in the following table.

Data	Uncertainty Level of Data (High/Medium/Low)	Are QA/QC procedures planned for these data?	Outline explanation how QA/QC procedures are planned
1, 12, 13, 15	Low	Yes	These data will be directly used for calculation of emission reductions. Sales record and other records are used to ensure the consistency.
others	Low	Yes	Default data (for emission factors) and IEA statistics (for energy data) are used to check the local data.

**Baseline Data**

Load Duration Curve Data is to be provided by the grid operator. The load duration curve provides data of the aggregated operating hours by type of power plant annually. The calculation method is provided in the baseline methodology.

For default emission factors, IPCC 1996 Guidelines on GHG Inventory (The Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, IPCC) and Good Practice Guidance Report (Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, IPCC) are to be referred not only for their default values but also for their monitoring methodology as well as uncertainty management to ensure data credibility. These documents are downloadable from <http://www.ipcc-nggip.iges.or.jp/>. The latter document is a new supplementary document of the former.

1996 Guidelines:

- Vol. 2, Module 1 (Energy) for methodology,
- Vol. 3, Module 1 (Energy) for application (including default values)

2000 Good Practice Guidance on GHG Inventory and Uncertainty Management

- Chapter 2: Energy
- Chapter 6: Uncertainty

IEA (Yearly Statistics)

- CO₂ Emissions from Fuel Combustion
- Energy Statistics of Non-OECD Countries

Resolution # 1 of September 11, 2003

The Interministerial Commission on Global Climate Change, created by Decree of July 7, 1999, in the exercise of its powers under Article 3, paragraphs III and IV,

Considering the ultimate objective of the United Nations Framework Convention on Climate Change of achieving the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system,

Considering also that this level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner,

Considering the principles of the United Nations Framework Convention on Climate Change, especially Article 3, according to which Parties to this Convention have a right to, and should promote sustainable development, and that the policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programs, taking into account that economic development is essential for adopting measures to address climate change,

Considering also Article 12.2 of the Kyoto Protocol which establishes that the objective of the Clean Development Mechanism should be to assist developing countries in achieving sustainable development and in contributing to the ultimate objective of the Convention,

Considering the Delhi Ministerial Declaration on Climate Change and Sustainable Development, adopted at the eighth Conference of the Parties to the United Nations Framework Convention on Climate Change,

Considering the need for strict compliance with Brazilian legislation, which calls for a process of public consultation with those actors directly and indirectly affected by project activities,

Considering also the need for strict compliance with Brazilian labour legislation, in keeping with Convention 182 of the International Labour Organization about Prohibition of the Worst Forms of Child Labour and Immediate Action to eliminate it,

Determines:

Art. 1. For the purposes of approval of project activities by the Commission, the modalities and procedures for a clean development mechanism are those approved at the seventh Conference of the Parties to the United Nations Framework Convention on Climate Change, as presented in Annex I.

Art. 2. The consideration and approval of project activities under the clean development mechanisms is the responsibility of the Interministerial Commission on Global Climate Change, which is the Designated National Authority for the clean

development mechanism, in accordance with Article 3, paragraph IV, of the Decree of July 7, 1999.

Art. 3. For the purposes of obtaining approval for project activities under the Clean Development Mechanism, project proponents shall submit to the Executive Secretariat of the Interministerial Commission on Global Climate Change, in electronic and printed format:

I - the project design document in the format determined by Annex II (of the original resolution in Portuguese) and in the format established by the Executive Board of the Clean Development Mechanism under the United Nations Framework Convention on Climate Change. Additionally, as information for the Interministerial Commission on Global Climate Change, the project design document should provide a description of the contribution of the project activity to sustainable development in accordance with Annex III of this resolution, and in accordance with Article 12.2 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change;

II - copies of the invitations for comments sent by the project proponents to the following agents involved in and affected by project activities, in accordance with clause (b) of paragraph 37 of the Annex I referred to in Article 1, identifying the recipients:

- Municipal governments and City Councils;
- State and Municipal Environmental Agencies;
- Brazilian Forum of NGOs and Social Movements for Environment and Development;
- Community associations;
- Ministério Público (State Attorney for the Public Interest);

III - the project activity validation report prepared by the Designated Operational Entity authorized to operate in the country pursuant to Article 4 below in a form appropriate for submission to the Executive Board of the Clean Development Mechanism under the United Nations Framework Convention on Climate Change, and in Portuguese;

IV - a declaration signed by all project participants identifying the responsible person and the form of communication with the Executive Secretariat of the Interministerial Commission on Global Climate Change and a letter of commitment to send the documents of distribution of any certified emission reduction units issued at each verification of project activities for certification;

V - documents attesting to compliance of the project activity with the environmental and labor legislation in effect, where appropriate.

Art. 4. The validation and verification/certification of projects under the Clean Development Mechanism shall be carried out by a Designated Operational Entity that:

I - has been accredited by the Executive Board of the Clean Development Mechanism under the United Nations Framework Convention on Climate Change; and

II - is fully established on Brazilian territory and has the capacity to ensure compliance with the relevant requirements of Brazilian legislation.

Art. 5. The Executive Secretariat of the Interministerial Commission on Global Climate Change will make public in electronic format the document described in paragraph I of Article 3.

Art. 6. The Interministerial Commission on Global Climate Change shall issue a final decision on the approval of project activities proposed under the Clean Development Mechanism within 60 (sixty) days after the date of the first ordinary meeting of the Commission subsequent to the receipt of the documents mentioned in Article 3 above by the Executive Secretariat of the Commission.

Art. 7. The Executive Secretariat of the Interministerial Commission shall develop and maintain a publicly accessible database of all project activities proposed under the Clean Development Mechanism, containing information about the project design documents and the report that served as the basis for the final decision of the Commission, as well as the validation and verification reports of emission reductions from approved project activities.

Art. 8. The information obtained from participants in project activities under the Clean Development Mechanism that is identified as proprietary or confidential and that is protected by legislation shall not be made public without the written consent of the provider of the information, except for information required by law or in accordance with paragraph 27 (h) of the Annex I referred to in Article 1.

Art. 9. Until the Kyoto Protocol enters into force, the final decision addressed by Article 6 will provide the basis for issuing a letter of approval pursuant to paragraph 40 (a) of the Annex I referred to in Article 1, and the letter will note this conditional status.

ROBERTO AMARAL
Chair of the Commission

ANNEX I

Modalities and procedures for a clean development mechanism

A. Definitions

1. For the purposes of the present annex the definitions contained in Article 1¹ and the provisions of Article 14 shall apply. Furthermore:

(a) An “emission reduction unit” or “ERU” is a unit issued pursuant to the relevant provisions in the annex to decision -/CMP.1 (*Modalities for the accounting of assigned amounts*) and is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5;

(b) A “certified emission reduction” or “CER” is a unit issued pursuant to Article 12 and requirements thereunder, as well as the relevant provisions in these modalities and procedures, and is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5;

(c) An “assigned amount unit” or “AAU” is a unit issued pursuant to the relevant provisions in the annex to decision -/CMP.1 (*Modalities for the accounting of assigned amounts*) and is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5;

(d) A “removal unit” or “RMU” is a unit issued pursuant to the relevant provisions in the annex to decision -/CMP.1 (*Modalities for the accounting of assigned amounts*) and is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5;

(e) “Stakeholders” means the public, including individuals, groups or communities affected, or likely to be affected, by the proposed clean development mechanism project activity.

B. Role of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol

2. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) shall have authority over and provide guidance to the clean development mechanism (CDM).

3. The COP/MOP shall provide guidance to the executive board by taking decisions on:

(a) The recommendations made by the executive board on its rules of procedure;

(b) The recommendations made by the executive board, in accordance with provisions of decision 17/CP.7, the present annex and relevant decisions of the COP/MOP;

¹ In the context of this annex, “Article” refers to an Article of the Kyoto Protocol, unless otherwise specified.

(c) The designation of operational entities accredited by the executive board in accordance with Article 12, paragraph 5, and accreditation standards contained in Appendix A below.

4. The COP/MOP shall further:

(a) Review annual reports of the executive board;

(b) Review the regional and subregional distribution of designated operational entities and take appropriate decisions to promote accreditation of such entities from developing country Parties².

(c) Review the regional and subregional distribution of CDM project activities with a view to identifying systematic or systemic barriers to their equitable distribution and take appropriate decisions, based, *inter alia*, on a report by the executive board;

(d) Assist in arranging funding of CDM project activities, as necessary.

C. Executive board

5. The executive board shall supervise the CDM, under the authority and guidance of the COP/MOP, and be fully accountable to the COP/MOP. In this context, the executive board shall:

(a) Make recommendations to the COP/MOP on further modalities and procedures for the CDM, as appropriate;

(b) Make recommendations to the COP/MOP on any amendments or additions to rules of procedure for the executive board contained in the present annex, as appropriate;

(c) Report on its activities to each session of the COP/MOP;

(d) Approve new methodologies related to, *inter alia*, baselines, monitoring plans and project boundaries in accordance with the provisions of Appendix C below;

(e) Review provisions with regard to simplified modalities, procedures and the definitions of small scale project activities and make recommendations to the COP/MOP;

(f) Be responsible for the accreditation of operational entities, in accordance with accreditation standards contained in Appendix A below, and make recommendations to the COP/MOP for the designation of operational entities, in accordance with Article 12, paragraph 5. This responsibility includes:

(i) Decisions on re-accreditation, suspension and withdrawal of accreditation;

(ii) Operationalization of accreditation procedures and standards;

(g) Review the accreditation standards in Appendix A below and make recommendations to the COP/MOP for consideration, as appropriate;

² In the context of this annex, "Party" refers to a Party to the Kyoto Protocol, unless otherwise specified.

- (h) Report to the COP/MOP on the regional and subregional distribution of CDM project activities with a view to identifying systematic or systemic barriers to their equitable distribution;
- (i) Make publicly available relevant information, submitted to it for this purpose, on proposed CDM project activities in need of funding and on investors seeking opportunities, in order to assist in arranging funding of CDM project activities, as necessary;
- (j) Make any technical reports commissioned available to the public and provide a period of at least eight weeks for public comments on draft methodologies and guidance before documents are finalized and any recommendations are submitted to the COP/MOP for their consideration;
- (k) Develop, maintain and make publicly available a repository of approved rules, procedures, methodologies and standards;
- (l) Develop and maintain the CDM registry as defined in Appendix D below;
- (m) Develop and maintain a publicly available database of CDM project activities containing information on registered project design documents, comments received, verification reports, its decisions as well as information on all CERs issued;
- (n) Address issues relating to observance of modalities and procedures for the CDM by project participants and/or operational entities, and report on them to the COP/MOP;
- (o) Elaborate and recommend to the COP/MOP for adoption at its next session procedures for conducting the reviews referred to in paragraphs 41 and 65 below including, *inter alia*, procedures to facilitate consideration of information from Parties, stakeholders and UNFCCC accredited observers. Until their adoption by the COP/MOP, the procedures shall be applied provisionally;
- (p) Carry out any other functions ascribed to it in decision 17/CP.7, the present annex and relevant decisions of the COP/MOP.

6. Information obtained from CDM project participants marked as proprietary or confidential shall not be disclosed without the written consent of the provider of the information, except as required by national law. Information used to determine additionality as defined in paragraph 43 below, to describe the baseline methodology and its application, and to support an environmental impact assessment referred to in paragraph 37(c) below, shall not be considered as proprietary or confidential.

7. The executive board shall comprise ten members from Parties to the Kyoto Protocol, as follows: one member from each of the five United Nations regional groups, two other members from the Parties included in Annex I, two other members from the Parties not included in Annex I, and one representative of the small island developing States, taking into account the current practice in the Bureau of the Conference of the Parties.

8. Members, including alternate members, of the executive board shall:

(a) Be nominated by the relevant constituencies referred to in paragraph 7 above and be elected by the COP/MOP. Vacancies shall be filled in the same way;

(b) Be elected for a period of two years and be eligible to serve a maximum of two consecutive terms. Terms as alternate members do not count. Five members and five alternate members shall be elected initially for a term of three years and five members and five alternate members for a term of two years. Thereafter, the COP/MOP shall elect, every year, five new members, and five new alternate members, for a term of two years. Appointment pursuant to paragraph 11 below shall count as one term. The members, and alternate members, shall remain in office until their successors are elected;

(c) Possess appropriate technical and/or policy expertise and shall act in their personal capacity. The cost of participation of members, and of alternate members, from developing country Parties and other Parties eligible under UNFCCC practice shall be covered by the budget for the executive board;

(d) Be bound by the rules of procedure of the executive board;

(e) Take a written oath of service witnessed by the Executive Secretary of the UNFCCC or his/her authorized representative before assuming his or her duties;

(f) Have no pecuniary or financial interest in any aspect of a CDM project activity or any designated operational entity;

(g) Subject to their responsibilities to the executive board, not disclose any confidential or proprietary information coming to their knowledge by reason of their duties for the executive board. The duty of the member, including alternate member, not to disclose confidential information constitutes an obligation in respect of that member, and alternate member, and shall remain an obligation after the expiration or termination of that member's function for the executive board.

9. The COP/MOP shall elect an alternate for each member of the executive board based on the criteria in paragraphs 7 and 8 above. The nomination by a constituency of a candidate member shall be accompanied by a nomination for a candidate alternate member from the same constituency.

10. The executive board may suspend and recommend to the COP/MOP the termination of the membership of a particular member, including an alternate member, for cause including, *inter alia*, breach of the conflict of interest provisions, breach of the confidentiality provisions, or failure to attend two consecutive meetings of the executive board without proper justification.

11. If a member, or an alternate member, of the executive board resigns or is otherwise unable to complete the assigned term of office or to perform the functions of that office, the executive board may decide, bearing in mind the proximity of the next session of the COP/MOP, to appoint another member, or an alternate member, from the same constituency to replace the said member for the remainder of that member's mandate.

12. The executive board shall elect its own chairperson and vice-chairperson, with one being a member from a Party included in Annex I and the other being from a Party not included in Annex I. The positions of chairperson and vice-chairperson shall alternate annually between a member from a Party included in Annex I and a member from a Party not included in Annex I.
13. The executive board shall meet as necessary but no less than three times a year, bearing in mind the provisions of paragraph 41 below. All documentation for executive board meetings shall be made available to alternate members.
14. At least two thirds of the members of the executive board, representing a majority of members from Parties included in Annex I and a majority of members from Parties not included in Annex I, must be present to constitute a quorum.
15. Decisions by the executive board shall be taken by consensus, whenever possible. If all efforts at reaching a consensus have been exhausted and no agreement has been reached, decisions shall be taken by a three-fourths majority of the members present and voting at the meeting. Members abstaining from voting shall be considered as not voting.
16. Meetings of the executive board shall be open to attendance, as observers, by all Parties and by all UNFCCC accredited observers and stakeholders, except where otherwise decided by the executive board.
17. The full text of all decisions of the executive board shall be made publicly available. The working language of the executive board shall be English. Decisions shall be made available in all six official languages of the United Nations.
18. The executive board may establish committees, panels or working groups to assist it in the performance of its functions. The executive board shall draw on the expertise necessary to perform its functions, including from the UNFCCC roster of experts. In this context, it shall take fully into account the consideration of regional balance.
19. The secretariat shall service the executive board.

D. Accreditation and designation of operational entities

20. The executive board shall:
 - (a) Accredite operational entities which meet the accreditation standards contained in Appendix A below;
 - (b) Recommend the designation of operational entities to the COP/MOP;
 - (c) Maintain a publicly available list of all designated operational entities;
 - (d) Review whether each designated operational entity continues to comply with the accreditation standards contained in Appendix A below and on this basis confirm whether to reaccredit each operational entity every three years;
 - (e) Conduct spot-checking at any time and, on the basis of the results, decide to conduct the above-mentioned review, if warranted.

21. The executive board may recommend to the COP/MOP to suspend or withdraw the designation of a designated operational entity if it has carried out a review and found that the entity no longer meets the accreditation standards or applicable provisions in decisions of the COP/MOP. The executive board may recommend the suspension or withdrawal of designation only after the designated operational entity has had the possibility of a hearing. The suspension or withdrawal is with immediate effect, on a provisional basis, once the executive board has made a recommendation, and remains in effect pending a final decision by the COP/MOP. The affected entity shall be notified, immediately and in writing, once the executive board has recommended its suspension or withdrawal. The recommendation by the executive board and the decision by the COP/MOP on such a case shall be made public.

22. Registered project activities shall not be affected by the suspension or withdrawal of designation of a designated operational entity unless significant deficiencies are identified in the relevant validation, verification or certification report for which the entity was responsible. In this case, the executive board shall decide whether a different designated operational entity shall be appointed to review, and where appropriate correct, such deficiencies. If such a review reveals that excess CERs were issued, the designated operational entity whose accreditation has been withdrawn or suspended shall acquire and transfer, within 30 days of the end of review, an amount of reduced tonnes of carbon dioxide equivalent equal to the excess CERs issued, as determined by the executive board, to a cancellation account maintained in the CDM registry by the executive board.

23. Any suspension or withdrawal of a designated operational entity that adversely affects registered project activities shall be recommended by the executive board only after the affected project participants have had the possibility of a hearing.

24. Any costs related to the review referred to in paragraph 22 above shall be borne by the designated operational entity whose designation has been withdrawn or suspended.

25. The executive board may seek assistance in performing the functions in paragraph 20 above, in accordance with the provisions of paragraph 18 above.

E. Designated operational entities

26. Designated operational entities shall be accountable to the COP/MOP through the executive board and shall comply with the modalities and procedures in decision 17/CP.7, the present annex and relevant decisions of the COP/MOP and the executive board.

27. A designated operational entity shall:

- (a) Validate proposed CDM project activities;
- (b) Verify and certify reductions in anthropogenic emissions by sources of greenhouse gases;
- (c) Comply with applicable laws of the Parties hosting CDM project activities when carrying out its functions referred to in subparagraph (e) below;

(d) Demonstrate that it, and its subcontractors, have no real or potential conflict of interest with the participants in the CDM project activities for which it has been selected to carry out validation or verification and certification functions;

(e) Perform one of the following functions related to a given CDM project activity: validation or verification and certification. Upon request, the executive board may, however, allow a single designated operational entity to perform all these functions within a single CDM project activity;

(f) Maintain a publicly available list of all CDM project activities for which it has carried out validation, verification and certification;

(g) Submit an annual activity report to the executive board;

(h) Make information obtained from CDM project participants publicly available, as required by the executive board. Information marked as proprietary or confidential shall not be disclosed without the written consent of the provider of the information, except as required by national law. Information used to determine additionality as defined in paragraph 43 below, to describe the baseline methodology and its application, and to support an environmental impact assessment referred to in paragraph 37(c) below, shall not be considered as proprietary or confidential.

F. Participation requirements

28. Participation in a CDM project activity is voluntary.

29. Parties participating in the CDM shall designate a national authority for the CDM.

30. A Party not included in Annex I may participate in a CDM project activity if it is a Party to the Kyoto Protocol.

31. Subject to the provisions of paragraph 32 below, a Party included in Annex I with a commitment inscribed in Annex B is eligible to use CERs, issued in accordance with the relevant provisions, to contribute to compliance with part of its commitment under Article 3, paragraph 1, if it is in compliance with the following eligibility requirements:

(a) It is a Party to the Kyoto Protocol;

(b) Its assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated and recorded in accordance with decision -/CMP.1 (*Modalities for the accounting of assigned amounts*);

(c) It has in place a national system for the estimation of anthropogenic emissions by sources and anthropogenic removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, in accordance with Article 5, paragraph 1, and the requirements in the guidelines decided thereunder;

(d) It has in place a national registry in accordance with Article 7, paragraph 4, and the requirements in the guidelines decided thereunder;

(e) It has submitted annually the most recent required inventory, in accordance with Article 5, paragraph 2, and Article 7, paragraph 1, and the requirements in the guidelines decided thereunder, including the national inventory report and the common reporting format. For the first commitment period, the quality assessment needed for the purpose of determining eligibility to use the mechanisms shall be limited to the parts of the inventory pertaining to emissions of greenhouse gases from sources/sector categories from Annex A to the Kyoto Protocol and the submission of the annual inventory on sinks;

(f) It submits the supplementary information on assigned amount in accordance with Article 7, paragraph 1, and the requirements in the guidelines decided thereunder and makes any additions to, and subtractions from, assigned amount pursuant to Article 3, paragraphs 7 and 8, including for the activities under Article 3, paragraphs 3 and 4, in accordance with Article 7, paragraph 4, and the requirements in the guidelines decided thereunder.

32. A Party included in Annex I with a commitment inscribed in Annex B shall be considered:

(a) To meet the eligibility requirements referred to in paragraph 31 above after 16 months have elapsed since the submission of its report to facilitate the calculation of its assigned amount pursuant to Article 3, paragraphs 7 and 8, and to demonstrate its capacity to account for its emissions and assigned amount, in accordance with the modalities adopted for the accounting of assigned amount under Article 7, paragraph 4, unless the enforcement branch of the compliance committee finds in accordance with decision 24/CP.7 that the Party does not meet these requirements, or, at an earlier date, if the enforcement branch of the compliance committee has decided that it is not proceeding with any questions of implementation relating to these requirements indicated in reports of the expert review teams under Article 8 of the Kyoto Protocol, and has transmitted this information to the secretariat;

(b) To continue to meet the eligibility requirements referred to in paragraph 31 above unless and until the enforcement branch of the compliance committee decides that the Party does not meet one or more of the eligibility requirements, has suspended the Party's eligibility, and has transmitted this information to the secretariat.

33. A Party that authorizes private and/or public entities to participate in Article 12 project activities shall remain responsible for the fulfilment of its obligations under the Kyoto Protocol and shall ensure that such participation is consistent with the present annex. Private and/or public entities may only transfer and acquire CERs if the authorizing Party is eligible to do so at that time.

34. The secretariat shall maintain publicly accessible lists of:

(a) Parties not included in Annex I which are Parties to the Kyoto Protocol;

(b) Parties included in Annex I that do not meet the requirements in paragraph 31 above or have been suspended.

G. Validation and registration

35. Validation is the process of independent evaluation of a project activity by a designated operational entity against the requirements of the CDM as set out in decision 17/CP.7, the present annex and relevant decisions of the COP/MOP, on the basis of the project design document, as outlined in Appendix B below.

36. Registration is the formal acceptance by the executive board of a validated project as a CDM project activity. Registration is the prerequisite for the verification, certification and issuance of CERs related to that project activity.

37. The designated operational entity selected by project participants to validate a project activity, being under a contractual arrangement with them, shall review the project design document and any supporting documentation to confirm that the following requirements have been met:

- (a) The participation requirements as set out in paragraphs 28 to 30 above are satisfied;
- (b) Comments by local stakeholders have been invited, a summary of the comments received has been provided, and a report to the designated operational entity on how due account was taken of any comments has been received;
- (c) Project participants have submitted to the designated operational entity documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts and, if those impacts are considered significant by the project participants or the host Party, have undertaken an environmental impact assessment in accordance with procedures as required by the host Party;
- (d) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity, in accordance with paragraphs 43 to 52 below;
- (e) The baseline and monitoring methodologies comply with requirements pertaining to:
 - (i) Methodologies previously approved by the executive board; or
 - (ii) Modalities and procedures for establishing a new methodology, as set out in paragraph 38 below;
- (f) Provisions for monitoring, verification and reporting are in accordance with decision 17/CP.7, the present annex and relevant decisions of the COP/MOP;
- (g) The project activity conforms to all other requirements for CDM project activities in decision 17/CP.7, the present annex and relevant decisions by the COP/MOP and the executive board.

38. If the designated operational entity determines that the project activity intends to use a new baseline or monitoring methodology, as referred to in paragraph 37(e) (ii) above, it shall, prior to a submission for registration of this project activity, forward the proposed methodology, together with the draft project design document, including a description of the project and identification of the project participants, to the executive board for review. The executive board shall expeditiously, if possible at its next meeting but not later than four months, review the proposed new methodology in accordance with the modalities and procedures of the present annex. Once approved by the executive board it shall make the approved methodology publicly available along with any relevant guidance and the designated operational entity may proceed with the validation of the project activity and submit the project design document for registration. In the event that the COP/MOP requests the revision of an approved methodology, no CDM project activity may use this methodology. The project participants shall revise the methodology, as appropriate, taking into consideration any guidance received.

39. A revision of a methodology shall be carried out in accordance with the modalities and procedures for establishing new methodologies as set out in paragraph 38 above. Any revision to an approved methodology shall only be applicable to project activities registered subsequent to the date of revision and shall not affect existing registered project activities during their crediting periods.

40. The designated operational entity shall:

(a) Prior to the submission of the validation report to the executive board, have received from the project participants written approval of voluntary participation from the designated national authority of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development;

(b) In accordance with provisions on confidentiality contained in paragraph 27(h) above, make publicly available the project design document;

(c) Receive, within 30 days, comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available;

(d) After the deadline for receipt of comments, make a determination as to whether, on the basis of the information provided and taking into account the comments received, the project activity should be validated;

(e) Inform project participants of its determination on the validation of the project activity. Notification to the project participants will include:

- (i) Confirmation of validation and date of submission of the validation report to the executive board; or
- (ii) An explanation of reasons for non-acceptance if the project activity, as documented, is judged not to fulfil the requirements for validation;

(f) Submit to the executive board, if it determines the proposed project activity to be valid, a request for registration in the form of a validation report including the project design document, the written approval of the host Party as referred to in subparagraph (a) above, and an explanation of how it has taken due account of comments received;

(g) Make this validation report publicly available upon transmission to the executive board.

41. The registration by the executive board shall be deemed final eight weeks after the date of receipt by the executive board of the request for registration, unless a Party involved in the project activity or at least three members of the executive board request a review of the proposed CDM project activity. The review by the executive board shall be made in accordance with the following provisions:

(a) It shall be related to issues associated with the validation requirements;

(b) It shall be finalized no later than at the second meeting following the request for review, with the decision and the reasons for it being communicated to the project participants and the public.

42. A proposed project activity that is not accepted may be reconsidered for validation and subsequent registration, after appropriate revisions, provided that it follows the procedures and meets the requirements for validation and registration, including those related to public comments.

43. A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.

44. The baseline for a CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity. A baseline shall cover emissions from all gases, sectors and source categories listed in Annex A within the project boundary. A baseline shall be deemed to reasonably represent the anthropogenic emissions by sources that would occur in the absence of the proposed project activity if it is derived using a baseline methodology referred to in paragraphs 37 and 38 above.

45. A baseline shall be established:

(a) By project participants in accordance with provisions for the use of approved and new methodologies, contained in decision 17/CP.7, the present annex and relevant decisions of the COP/MOP;

(b) In a transparent and conservative manner regarding the choice of approaches, assumptions, methodologies, parameters, data sources, key factors and additionality, and taking into account uncertainty;

(c) On a project-specific basis;

(d) In the case of small-scale CDM project activities which meet the criteria specified in decision 17/CP.7 and relevant decisions by the COP/MOP, in accordance with simplified procedures developed for such activities;

(e) Taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.

46. The baseline may include a scenario where future anthropogenic emissions by sources are projected to rise above current levels, due to the specific circumstances of the host Party.

47. The baseline shall be defined in a way that CERs cannot be earned for decreases in activity levels outside the project activity or due to *force majeure*.

48. In choosing a baseline methodology for a project activity, project participants shall select from among the following approaches the one deemed most appropriate for the project activity, taking into account any guidance by the executive board, and justify the appropriateness of their choice:

(a) Existing actual or historical emissions, as applicable; or

(b) Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment; or

(c) The average emissions of similar project activities undertaken in the previous five years, in similar social, economic, environmental and technological circumstances, and whose performance is among the top 20 per cent of their category.

49. Project participants shall select a crediting period for a proposed project activity from one of the following alternative approaches:

(a) A maximum of seven years which may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the executive board that the original project baseline is still valid or has been updated taking account of new data where applicable; or

(b) A maximum of ten years with no option of renewal.

50. Reductions in anthropogenic emissions by sources shall be adjusted for leakage in accordance with the monitoring and verification provisions in paragraphs 59 and 62(f) below, respectively.

51. Leakage is defined as the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the project boundary, and which is measurable and attributable to the CDM project activity.

52. The project boundary shall encompass all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the CDM project activity.

H. Monitoring

53. Project participants shall include, as part of the project design document, a monitoring plan that provides for:

- (a) The collection and archiving of all relevant data necessary for estimating or measuring anthropogenic emissions by sources of greenhouse gases occurring within the project boundary during the crediting period;
- (b) The collection and archiving of all relevant data necessary for determining the baseline of anthropogenic emissions by sources of greenhouse gases within the project boundary during the crediting period;
- (c) The identification of all potential sources of, and the collection and archiving of data on, increased anthropogenic emissions by sources of greenhouse gases outside the project boundary that are significant and reasonably attributable to the project activity during the crediting period;
- (d) The collection and archiving of information relevant to the provisions in paragraph 37(c) above;
- (e) Quality assurance and control procedures for the monitoring process;
- (f) Procedures for the periodic calculation of the reductions of anthropogenic emissions by sources by the proposed CDM project activity, and for leakage effects;
- (g) Documentation of all steps involved in the calculations referred to in paragraph 53(c) and (f) above.

54. A monitoring plan for a proposed project activity shall be based on a previously approved monitoring methodology or a new methodology, in accordance with paragraphs 37 and 38 above, that:

- (a) Is determined by the designated operational entity as appropriate to the circumstances of the proposed project activity and has been successfully applied elsewhere;
- (b) Reflects good monitoring practice appropriate to the type of project activity.

55. For small-scale CDM project activities meeting the criteria specified in decision 17/CP.7 and relevant decisions by the COP/MOP, project participants may use simplified modalities and procedures for small-scale projects.

56. Project participants shall implement the monitoring plan contained in the registered project design document.

57. Revisions, if any, to the monitoring plan to improve its accuracy and/or completeness of information shall be justified by project participants and shall be submitted for validation to a designated operational entity.

58. The implementation of the registered monitoring plan and its revisions, as applicable, shall be a condition for verification, certification and the issuance of CERs.

59. Subsequent to the monitoring and reporting of reductions in anthropogenic emissions, CERs resulting from a CDM project activity during a specified time period shall be calculated, applying the registered methodology, by subtracting the actual anthropogenic emissions by sources from baseline emissions and adjusting for leakage.

60. The project participants shall provide to the designated operational entity, contracted by the project participants to perform the verification, a monitoring report in accordance with the registered monitoring plan set out in paragraph 53 above for the purpose of verification and certification.

I. Verification and certification

61. Verification is the periodic independent review and *ex post* determination by the designated operational entity of the monitored reductions in anthropogenic emissions by sources of greenhouse gases that have occurred as a result of a registered CDM project activity during the verification period. Certification is the written assurance by the designated operational entity that, during a specified time period, a project activity achieved the reductions in anthropogenic emissions by sources of greenhouse gases as verified.

62. In accordance with the provisions on confidentiality in paragraph 27(h) above, the designated operational entity contracted by the project participants to perform the verification shall make the monitoring report publicly available, and shall:

(a) Determine whether the project documentation provided is in accordance with the requirements of the registered project design document and relevant provisions of decision 17/CP.7, the present annex and relevant decisions of the COP/MOP;

(b) Conduct on-site inspections, as appropriate, that may comprise, *inter alia*, a review of performance records, interviews with project participants and local stakeholders, collection of measurements, observation of established practices and testing of the accuracy of monitoring equipment;

(c) If appropriate, use additional data from other sources;

(d) Review monitoring results and verify that the monitoring methodologies for the estimation of reductions in anthropogenic emissions by sources have been applied correctly and their documentation is complete and transparent;

(e) Recommend to the project participants appropriate changes to the monitoring methodology for any future crediting period, if necessary;

(f) Determine the reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity, based on the data and information derived under subparagraph (a) above and obtained under subparagraph (b) and/or (c) above, as appropriate, using calculation procedures consistent with those contained in the registered project design document and in the monitoring plan;

(g) Identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project design document. Project participants shall address the concerns and supply relevant additional information;

(h) Provide a verification report to the project participants, the Parties involved and the executive board. The report shall be made publicly available.

63. The designated operational entity shall, based on its verification report, certify in writing that, during the specified time period, the project activity achieved the verified amount of reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity. It shall inform the project participants, Parties involved and the executive board of its certification decision in writing immediately upon completion of the certification process and make the certification report publicly available.

J. Issuance of certified emission reductions

64. The certification report shall constitute a request for issuance to the executive board of CERs equal to the verified amount of reductions of anthropogenic emissions by sources of greenhouse gases.

65. The issuance shall be considered final 15 days after the date of receipt of the request for issuance, unless a Party involved in the project activity or at least three members of the executive board request a review of the proposed issuance of CERs. Such a review shall be limited to issues of fraud, malfeasance or incompetence of the designated operational entities and be conducted as follows:

(a) Upon receipt of a request for such a review, the executive board, at its next meeting, shall decide on its course of action. If it decides that the request has merit it shall perform a review and decide whether the proposed issuance of CERs should be approved;

(b) The executive board shall complete its review within 30 days following its decision to perform the review;

(c) The executive board shall inform the project participants of the outcome of the review, and make public its decision regarding the approval of the proposed issuance of CERs and the reasons for it.

66. Upon being instructed by the executive board to issue CERs for a CDM project activity, the CDM registry administrator, working under the authority of the executive board, shall, promptly, issue the specified quantity of CERs into the pending account of the executive board in the CDM registry, in accordance with Appendix D below. Upon such issuance, the CDM registry administrator shall promptly:

(a) Forward the quantity of CERs corresponding to the share of proceeds to cover administrative expenses and to assist in meeting costs of adaptation, respectively, in accordance with Article 12, paragraph 8, to the appropriate accounts in the CDM registry for the management of the share of proceeds;

(b) Forward the remaining CERs to the registry accounts of Parties and project participants involved, in accordance with their request.

APPENDIX A

Standards for the accreditation of operational entities

1. An operational entity shall:

(a) Be a legal entity (either a domestic legal entity or an international organization) and provide documentation of this status;

(b) Employ a sufficient number of persons having the necessary competence to perform validation, verification and certification functions relating to the type, range and volume of work performed, under a responsible senior executive;

(c) Have the financial stability, insurance coverage and resources required for its activities;

(d) Have sufficient arrangements to cover legal and financial liabilities arising from its activities;

(e) Have documented internal procedures for carrying out its functions including, among others, procedures for the allocation of responsibility within the organization and for handling complaints. These procedures shall be made publicly available;

(f) Have, or have access to, the necessary expertise to carry out the functions specified in modalities and procedures of the CDM and relevant decisions by the COP/MOP, in particular knowledge and understanding of:

(i) The modalities and procedures and guidelines for the operation of the CDM, relevant decisions of the COP/MOP and of the executive board;

(ii) Issues, in particular environmental, relevant to validation, verification and certification of CDM project activities, as appropriate;

(iii) The technical aspects of CDM project activities relevant to environmental issues, including expertise in the setting of baselines and monitoring of emissions;

(iv) Relevant environmental auditing requirements and methodologies;

(v) Methodologies for accounting of anthropogenic emissions by sources;

(vi) Regional and sectoral aspects;

(g) Have a management structure that has overall responsibility for performance and implementation of the entity's functions, including quality assurance procedures, and all relevant decisions relating to validation, verification and certification. The applicant operational entity shall make available:

- (i) The names, qualifications, experience and terms of reference of senior management personnel such as the senior executive, board members, senior officers and other relevant personnel;
- (ii) An organizational chart showing lines of authority, responsibility and allocation of functions stemming from senior management;
- (iii) Its quality assurance policy and procedures;
- (iv) Administrative procedures, including document control;
- (v) Its policy and procedures for the recruitment and training of operational entity personnel, for ensuring their competence for all necessary functions for validation, verification and certification functions, and for monitoring their performance;
- (vi) Its procedures for handling complaints, appeals and disputes;
- (h) Not have pending any judicial process for malpractice, fraud and/or other activity incompatible with its functions as a designated operational entity.

2. An applicant operational entity shall meet the following operational requirements:

- (a) Work in a credible, independent, non-discriminatory and transparent manner, complying with applicable national law and meeting, in particular, the following requirements:
 - (i) An applicant operational entity shall have a documented structure, which safeguards impartiality, including provisions to ensure impartiality of its operations;
 - (ii) If it is part of a larger organization, and where parts of that organization are, or may become, involved in the identification, development or financing of any CDM project activity, the applicant operational entity shall:
 - Make a declaration of all the organization's actual and planned involvement in CDM project activities, if any, indicating which part of the organization is involved and in which particular CDM project activities;
 - Clearly define the links with other parts of the organization, demonstrating that no conflicts of interest exist;
 - Demonstrate that no conflict of interest exists between its functions as an operational entity and any other functions that it may have, and demonstrate how business is managed to minimize any identified risk to impartiality. The demonstration shall cover all sources of conflict of interest, whether they arise from within the applicant operational entity or from the activities of related bodies;

- Demonstrate that it, together with its senior management and staff, is not involved in any commercial, financial or other processes which might influence its judgement or endanger trust in its independence of judgement and integrity in relation to its activities, and that it complies with any rules applicable in this respect;
- (b) Have adequate arrangements to safeguard confidentiality of the information obtained from CDM project participants in accordance with provisions contained in the present annex.

APPENDIX B

Project design document

1. The provisions of this appendix shall be interpreted in accordance with the annex above on modalities and procedures for a CDM.
2. The purpose of this appendix is to outline the information required in the project design document. A project activity shall be described in detail taking into account the provisions of the annex on modalities and procedures for a CDM, in particular, section G on validation and registration and section H on monitoring, in a project design document which shall include the following:
 - (a) A description of the project comprising the project purpose, a technical description of the project, including how technology will be transferred, if any, and a description and justification of the project boundary;
 - (b) A proposed baseline methodology in accordance with the annex on modalities and procedures for a CDM including, in the case of the:
 - (i) Application of an approved methodology:
 - Statement of which approved methodology has been selected;
 - Description of how the approved methodology will be applied in the context of the project;
 - (ii) Application of a new methodology:
 - Description of the baseline methodology and justification of choice, including an assessment of strengths and weaknesses of the methodology;
 - Description of key parameters, data sources and assumptions used in the baseline estimate, and assessment of uncertainties;
 - Projections of baseline emissions;
 - Description of how the baseline methodology addresses potential leakage;

- (iii) Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account and an explanation of how the baseline was established in a transparent and conservative manner;
- (c) Statement of the estimated operational lifetime of the project and which crediting period was selected;
- (d) Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity;
- (e) Environmental impacts:
 - (i) Documentation on the analysis of the environmental impacts, including transboundary impacts;
 - (ii) If impacts are considered significant by the project participants or the host Party: conclusions and all references to support documentation of an environmental impact assessment that has been undertaken in accordance with the procedures as required by the host Party;
- (f) Information on sources of public funding for the project activity from Parties included in Annex I which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties;
- (g) Stakeholder comments, including a brief description of the process, a summary of the comments received, and a report on how due account was taken of any comments received;
- (h) Monitoring plan:
 - (i) Identification of data needs and data quality with regard to accuracy, comparability, completeness and validity;
 - (ii) Methodologies to be used for data collection and monitoring including quality assurance and quality control provisions for monitoring, collecting and reporting;
 - (iii) In the case of a new monitoring methodology, provide a description of the methodology, including an assessment of strengths and weaknesses of the methodology and whether or not it has been applied successfully elsewhere;
- (i) Calculations:
 - (i) Description of formulae used to calculate and estimate anthropogenic emissions by sources of greenhouse gases of the CDM project activity within the project boundary;

- (ii) Description of formulae used to calculate and to project leakage, defined as: the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the CDM project activity boundary, and that is measurable and attributable to the CDM project activity;
- (iii) The sum of (i) and (ii) above representing the CDM project activity emissions;
- (iv) Description of formulae used to calculate and to project the anthropogenic emissions by sources of greenhouse gases of the baseline;
- (v) Description of formulae used to calculate and to project leakage;
- (vi) The sum of (iv) and (v) above representing the baseline emissions;
- (vii) Difference between (vi) and (iii) above representing the emission reductions of the CDM project activity;
- (j) References to support the above, if any.

APPENDIX C

Terms of reference for establishing guidelines on baselines and monitoring methodologies

The executive board, drawing on experts in accordance with the modalities and procedures for a CDM, shall develop and recommend to the COP/MOP, *inter alia*:

- (a) General guidance on methodologies relating to baselines and monitoring consistent with the principles set out in those modalities and procedures in order to:
 - (i) Elaborate the provisions relating to baseline and monitoring methodologies contained in decision 17/CP.7, the annex above and relevant decisions of the COP/MOP;
 - (ii) Promote consistency, transparency and predictability;
 - (iii) Provide rigour to ensure that net reductions in anthropogenic emissions are real and measurable, and an accurate reflection of what has occurred within the project boundary;
 - (iv) Ensure applicability in different geographical regions and to those project categories which are eligible in accordance with decision 17/CP.7 and relevant decisions of the COP/MOP;
 - (v) Address the additionality requirement of Article 12, paragraph 5(c), and paragraph 43 of the above annex;

(b) Specific guidance in the following areas:

- (i) Definition of project categories (e.g. based on sector, subsector, project type, technology, geographic area) that show common methodological characteristics for baseline setting, and/or monitoring, including guidance on the level of geographic aggregation, taking into account data availability;
- (ii) Baseline methodologies deemed to reasonably represent what would have occurred in the absence of a project activity;
- (iii) Monitoring methodologies that provide an accurate measure of actual reductions in anthropogenic emissions as a result of the project activity, taking into account the need for consistency and cost-effectiveness;
- (iv) Decision trees and other methodological tools, where appropriate, to guide choices in order to ensure that the most appropriate methodologies are selected, taking into account relevant circumstances;
- (v) The appropriate level of standardization of methodologies to allow a reasonable estimation of what would have occurred in the absence of a project activity wherever possible and appropriate. Standardization should be conservative in order to prevent any overestimation of reductions in anthropogenic emissions;
- (vi) Determination of project boundaries including accounting for all greenhouse gases that should be included as a part of the baseline, and monitoring. Relevance of leakage and recommendations for establishing appropriate project boundaries and methods for the *ex post* evaluation of the level of leakage;
- (vii) Accounting for applicable national policies and specific national or regional circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the sector relevant to the project activity;
- (viii) The breadth of the baseline, e.g. how the baseline makes comparisons between the technology/fuel used and other technologies/fuels in the sector;

(c) In developing the guidance in (a) and (b) above, the executive board shall take into account:

- (i) Current practices in the host country or an appropriate region, and observed trends;
- (ii) Least cost technology for the activity or project category.

APPENDIX D

Clean development mechanism registry requirements

1. The executive board shall establish and maintain a CDM registry to ensure the accurate accounting of the issuance, holding, transfer and acquisition of CERs by Parties not included in Annex I. The executive board shall identify a registry administrator to maintain the registry under its authority.
2. The CDM registry shall be in the form of a standardized electronic database which contains, *inter alia*, common data elements relevant to the issuance, holding, transfer and acquisition of CERs. The structure and data formats of the CDM registry shall conform to technical standards to be adopted by the COP/MOP for the purpose of ensuring the accurate, transparent and efficient exchange of data between national registries, the CDM registry and the independent transaction log.
3. The CDM registry shall have the following accounts:
 - (a) One pending account for the executive board, into which CERs are issued before being transferred to other accounts;
 - (b) At least one holding account for each Party not included in Annex I hosting a CDM project activity or requesting an account;
 - (c) At least one account for the purpose of cancelling ERUs, CERs, AAUs and RMUs equal to excess CERs issued, as determined by the executive board, where the accreditation of a designated operational entity has been withdrawn or suspended;
 - (d) At least one account for the purpose of holding and transferring CERs corresponding to the share of proceeds to cover administrative expenses and to assist in meeting costs of adaptation in accordance with Article 12, paragraph 8. Such an account may not otherwise acquire CERs.
4. Each CER shall be held in only one account in one registry at a given time.
5. Each account within the CDM registry shall have a unique account number comprising the following elements:
 - (a) Party/organization identifier: the Party for which the account is maintained, using the two-letter country code defined by the International Organization for Standardization (ISO 3166), or, in the cases of the pending account and an account for managing the CERs corresponding to the share of proceeds, the executive board or another appropriate organization;
 - (b) A unique number: a number unique to that account for the Party or organization for which the account is maintained.
6. Upon being instructed by the executive board to issue CERs for a CDM project activity, the registry administrator shall, in accordance with the transaction procedures set out in decision -/CMP.1 (*Modalities for the accounting of assigned amounts*):

(a) Issue the specified quantity of CERs into a pending account of the executive board;

(b) Forward the quantity of CERs corresponding to the share of proceeds to cover administrative expenses and to assist in meeting costs of adaptation, in accordance with Article 12, paragraph 8, to the appropriate accounts in the CDM registry for holding and transferring such CERs;

(c) Forward the remaining CERs to the registry accounts of project participants and Parties involved, in accordance with their request.

7. Each CER shall have a unique serial number comprising the following elements:

(a) Commitment period: the commitment period for which the CER is issued;

(b) Party of origin: the Party which hosted the CDM project activity, using the two-letter country code defined by ISO 3166;

(c) Type: this shall identify the unit as a CER;

(d) Unit: a number unique to the CER for the identified commitment period and Party of origin;

(e) Project identifier: a number unique to the CDM project activity for the Party of origin.

8. Where the accreditation of a designated operational entity has been withdrawn or suspended, ERUs, CERs, AAUs and/or RMUs equal to the excess CERs issued, as determined by the executive board, shall be transferred to a cancellation account in the CDM registry. Such ERUs, CERs, AAUs and RMUs may not be further transferred or used for the purpose of demonstrating the compliance of a Party with its commitment under Article 3, paragraph 1.

9. The CDM registry shall make non-confidential information publicly available and provide a publicly accessible user interface through the Internet that allows interested persons to query and view it.

10. The information referred to in paragraph 9 above shall include up-to-date information, for each account number in the registry, on the following:

(a) Account name: the holder of the account;

(b) Representative identifier: the representative of the account holder, using the Party/organization identifier (the two-letter country code defined by ISO 3166) and a number unique to that representative for that Party or organization;

(c) Representative name and contact information: the full name, mailing address, telephone number, facsimile number and e-mail address of the representative of the account holder.

11. The information referred to in paragraph 9 above shall include the following CDM project activity information, for each project identifier against which the CERs have been issued:

- (a) Project name: a unique name for the CDM project activity;
- (b) Project location: the Party and town or region in which the CDM project activity is located;
- (c) Years of CER issuance: the years in which CERs have been issued as a result of the CDM project activity;
- (d) Operational entities: the operational entities involved in the validation, verification and certification of the CDM project activity;
- (e) Reports: downloadable electronic versions of documentation to be made publicly available in accordance with the provisions of the present annex.

12. The information referred to in paragraph 9 above shall include the following holding and transaction information relevant to the CDM registry, by serial number, for each calendar year (defined according to Greenwich Mean Time):

- (a) The total quantity of CERs in each account at the beginning of the year;
- (b) The total quantity of CERs issued;
- (c) The total quantity of CERs transferred and the identity of the acquiring accounts and registries;
- (d) The total quantity of ERUs, CERs, AAUs and RMUs cancelled in accordance with paragraph 8 above;
- (e) Current holdings of CERs in each account.

**CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT (CDM-PDD)
Version 01 (in effect as of: 29 August 2002)**

Introductory Note

1. This document contains the clean development mechanism project design document (CDM-PDD). It elaborates on the outline of information in Appendix B "Project Design Document" to the Modalities and Procedures (decision 17/CP.7 contained in document FCCC/CP/2001/13/Add.2).
2. The CDM-PDD can be obtained electronically through the UNFCCC CDM web site (<http://unfccc.int/cdm>), by e-mail (cdm-info@unfccc.int) or in printed form from the UNFCCC secretariat (Fax: +49-228-8151999).
3. *Explanations* for project participants are in italicized font.
4. The Executive Board may revise the project design document (CDM-PDD), if necessary. Revisions shall not affect CDM project activities validated at and prior to the date at which a revised version of the CDM-PDD enters into effect. Versions of the CDM-PDD shall be consecutively numbered and dated.
5. In accordance with the CDM M&P, the working language of the Board is English. The CDM-PDD shall therefore be submitted to the Executive Board filled in English. The CDM-PDD format will be available on the UNFCCC CDM web site in all six official languages of the United Nations.
6. The Executive Board recommends to the COP (COP/MOP) to determine, in the context of its decision on modalities and procedures for the inclusion of afforestation and reforestation activities in the CDM (see also paragraph 8-11 of decision 17/CP.7), whether the CDM-PDD shall be applicable to this type of activities or whether modifications are required.
7. A glossary of terms may be found on the UNFCCC CDM web site or from the UNFCCC secretariat by e-mail (cdm-info@unfccc.int) or in print (Fax: +49-228-815 1999).

CONTENTS

- A. General description of project activity
- B. Baseline methodology
- C. Duration of the project activity / Crediting period
- D. Monitoring methodology and plan
- E. Calculations of GHG emissions by sources
- F. Environmental impacts
- G. Stakeholders comments

Annexes

- Annex 1: Information on participants in the project activity
- Annex 2: Information regarding public funding
- Annex 3: New baseline methodology
- Annex 4: New monitoring methodology
- Annex 5: Table: Baseline data

A. General description of project activity

A.1 Title of the project activity:

A.2 Description of the project activity:

(Please include in the description

- the purpose of the project activity

- the view of the project participants of the contribution of the project activity to sustainable development (max. one page).)

A.3 Project participants:

(Please list Party(ies) and private and/or public entities involved in the project activity and provide contact information in Annex 1.)

(Please indicate at least one of the above as the contact for the CDM project activity.)

A.4 Technical description of the project activity:

A.4.1 Location of the project activity:

A.4.1.1 Host country Party(ies):

A.4.1.2 Region/State/Province etc.:

A.4.1.3 City/Town/Community etc:

A.4.1.4 Detail on physical location, including information allowing the unique identification of this project activity *(max one page)*:

A.4.2 Category(ies) of project activity

(Using the list of categories of project activities and of registered CDM project activities by category

available on the UNFCCC CDM web site, please specify the category(ies) of project activities into which this project activity falls. If no suitable category(ies) of project activities can be identified, please suggest a new category(ies) descriptor and its definition, being guided by relevant information on the UNFCCC CDM web site.)

A.4.3. Technology to be employed by the project activity:

(This section should include a description on how environmentally safe and sound technology and know-how to be used is transferred to the host Party, if any.)



A.4.4. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed CDM project activity, including why the emission reductions would not occur in the absence of the proposed project activity, taking into account national and/or sectoral policies and circumstances:

(Please explain briefly how anthropogenic greenhouse gas (GHG) emission reductions are to be achieved (detail to be provided in section B.) and provide the total estimate of anticipated reductions in tonnes of CO₂ equivalent as determined in section E. below.)

A.4.5. Public funding of the project activity:

(In case public funding from Parties included in Annex I is involved, please provide in Annex 2 information on sources of public funding for the project activity, including an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties.)

B. Baseline methodology

B.1 Title and reference of the methodology applied to the project activity:

(Please refer to the UNFCCC CDM web site for the title and reference list as well as the details of approved methodologies. If a new baseline methodology is proposed, please fill out Annex 3. Please note that the table “Baseline data” contained in Annex 5 is to be prepared parallel to completing the remainder of this section.)

B.2 Justification of the choice of the methodology and why it is applicable to the project activity

B.3 Description of how the methodology is applied in the context of the project activity:

B.4 Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (*i.e. explanation of how and why this project is additional and therefore not the baseline scenario*)

B.5 Description of how the definition of the project boundary related to the baseline methodology is applied to the project activity:

B.6 Details of baseline development

B.6.1 Date of completing the final draft of this baseline section (*DD/MM/YYYY*):

B.6.2 Name of person/entity determining the baseline:

(Please provide contact information and indicate if the person/entity is also a project participant listed in Annex 1.)

C. Duration of the project activity / Crediting period

C.1 Duration of the project activity:**C.1.1.** Starting date of the project activity:

(For a definition by the Executive Board of the term “starting date”, please refer to UNFCCC CDM web site. Any such guidance shall be incorporated in subsequent versions of the CDM-PDD. Pending guidance, please indicate how the “starting date” has been defined and applied in the context of this project activity.)

C.1.2. Expected operational lifetime of the project activity: *(in years and months, e.g. two years and four months would be shown as: 2y-4m)*

C.2 Choice of the crediting period and related information: *(Please underline the appropriate option (C.2.1 or C.2.2.) and fill accordingly)*

(Note that the crediting period may only start after the date of registration of the proposed activity as a CDM project activity. In exceptional cases, the starting date of the crediting period can be prior to the date of registration of the project activity as provided for in paras. 12 and 13 of decision 17/CP.7 and through any guidance by the Executive Board, available on the UNFCCC CDM web site)

C.2.1. Renewable crediting period (at most seven (7) years per period)

C.2.1.1. Starting date of the first crediting period *(DD/MM/YYYY)*:

C.2.1.2. Length of the first crediting period *(in years and months, e.g. two years and four months would be shown as: 2y-4m)*:

C.2.2. Fixed crediting period (at most ten (10) years):

C.2.2.1. Starting date *(DD/MM/YYYY)*:

C.2.2.2. Length (max 10 years): *(in years and months, e.g. two years and four months would be shown as: 2y-4m)*

D. Monitoring methodology and plan

(The monitoring plan needs to provide detailed information related to the collection and archiving of all relevant data needed to

- estimate or measure emissions occurring within the project boundary;*
- determine the baseline; and;*
- identify increased emissions outside the project boundary.*

The monitoring plan should reflect good monitoring practice appropriate to the type of project activity. Project participants shall implement the registered monitoring plan and provide data, in accordance with the plan, through their monitoring report.

Operational entities will verify that the monitoring methodology and plan have been implemented correctly and check the information in accordance with the provisions on verification. This section shall provide a detailed description of the monitoring plan, including an identification of the data and its quality with regard to accuracy, comparability, completeness and validity, taking into consideration any guidance contained in the methodology.

Please note that data monitored and required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whatever occurs later.)

D.1. Name and reference of approved methodology applied to the project activity:

(Please refer to the UNFCCC CDM web site for the name and reference as well as details of approved methodologies. If a new methodology is proposed, please fill out Annex 4.)

(If a national or international monitoring standard has to be applied to monitor certain aspects of the project activity, please identify this standard and provide a reference to the source where a detailed description of the standard can be found.)

D.2. Justification of the choice of the methodology and why it is applicable to the project activity:

D.3. Data to be collected in order to monitor emissions from the project activity, and how this data will be archived

(Please add rows to the table below, as needed)

[illegible]

D.4. Potential sources of emissions which are significant and reasonably attributable to the project activity, but which are not included in the project boundary, and identification if and how data will be collected and archived on these emission sources.

(Please add rows to the table below, as needed.)

[illegible]

D.5. Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHG within the project boundary and identification if and how such data will be collected and archived

(Depending on the methodology used to determine the baseline this table may need to be filled. Please add rows to the table below, as needed.)

ID number <i>(Please use numbers to ease cross-referencing to table D.6)</i>	Data type	Data variable	Data unit	Will data be collected on this item? (If no, explain).	How is data archived? (electronic/paper)	For how long is data archived to be kept?	Comment

D.6. Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored. *(data items in tables contained in section D.3., D.4. and D.5 above, as applicable)*

Data <i>(Indicate table and ID number e.g. D.4-1; D.4-2.)</i>	Uncertainty level of data (High/Medium/Low)	Are QA/QC procedures planned for these data?	Outline explanation why QA/QC procedures are or are not being planned.

D.7 Name of person/entity determining the monitoring methodology:

(Please provide contact information and indicate if the person/entity is also a project participant listed in Annex 1 of this document.)

E. Calculation of GHG emissions by sources

E.1 Description of formulae used to estimate anthropogenic emissions by sources of greenhouse gases of the project activity within the project boundary: *(for each gas, source, formulae/algorithm, emissions in units of CO₂ equivalent)*

E.2 Description of formulae used to estimate leakage, defined as: the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the project boundary, and that is measurable and attributable to the project activity: *(for each gas, source, formulae/algorithm, emissions in units of CO₂ equivalent)*

E.3 The sum of E.1 and E.2 representing the project activity emissions:

E.4 Description of formulae used to estimate the anthropogenic emissions by sources of greenhouse gases of the baseline: *(for each gas, source, formulae/algorithm, emissions in units of CO₂ equivalent)*

E.5 Difference between E.4 and E.3 representing the emission reductions of the project activity:

E.6 Table providing values obtained when applying formulae above:

F. Environmental impacts

F.1. Documentation on the analysis of the environmental impacts, including transboundary impacts *(Please attach the documentation to the CDM-PDD.)*

F.2. If impacts are considered significant by the project participants or the host Party: *please provide conclusions and all references to support documentation of an environmental impact assessment that has been undertaken in accordance with the procedures as required by the host Party.*

G. Stakeholders comments

G.1. Brief description of the process on how comments by local stakeholders have been invited and compiled:

G.2. Summary of the comments received:

G.3. Report on how due account was taken of any comments received:

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

(Please copy and paste table as needed)

Organization:	
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

NEW BASELINE METHODOLOGY

(The baseline for a CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity. A baseline shall cover emissions from all gases, sectors and source categories listed in Annex A of the Kyoto Protocol within the project boundary. The general characteristics of a baseline are contained in para. 45 of the CDM M&P.

For guidance on aspects to be covered in the description of a new methodology, please refer to the UNFCCC CDM web site.

Please note that the table “Baseline data” contained in Annex 5 is to be prepared parallel to completing the remainder of this section.)

1. Title of the proposed methodology:

2. Description of the methodology:

2.1. General approach *(Please check the appropriate option(s))*

? Existing actual or historical emissions, as applicable;

? Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment;

? The average emissions of similar project activities undertaken in the previous five years, in similar social, economic, environmental and technological circumstances, and whose performance is among the top 20 per cent of their category.

2.2. Overall description (other characteristics of the approach):

3. Key parameters/assumptions (including emission factors and activity levels), and data sources considered and used:

4. Definition of the project boundary related to the baseline methodology:

(Please describe and justify the project boundary bearing in mind that it shall encompass all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the project activity. Please describe

and justify which gases and sources included in Annex A of the Kyoto Protocol are included in the boundary and outside the boundary.)

5. Assessment of uncertainties:

(Please indicate uncertainty factors and how those uncertainties are to be addressed)

6. Description of how the baseline methodology addresses the calculation of baseline emissions and the determination of project additionality:

(Formulae and algorithms used in section E)

7. Description of how the baseline methodology addresses any potential leakage of the project activity:

(Please note: Leakage is defined as the net change of anthropogenic emissions by sources of greenhouse gases which occurs outside the project boundary and which is measurable and attributable to the CDM project activity.)

(Formulae and algorithms used in section E.5)

8. Criteria used in developing the proposed baseline methodology, including an explanation of how the baseline methodology was developed in a transparent and conservative manner:

9. Assessment of strengths and weaknesses of the baseline methodology:

10. Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account:

Annex 4

NEW MONITORING METHODOLOGY

Proposed new monitoring methodology

(Please provide a detailed description of the monitoring plan, including the identification of data and its quality with regard to accuracy, comparability, completeness and validity)

1. Brief description of new methodology

(Please outline the main points and give a reference to a detailed description of the monitoring methodology).

2. Data to be collected or used in order to monitor emissions from the project activity, and how this data will be archived

(Please add rows to the table below, as needed)

[illegible]

3. Potential sources of emissions which are significant and reasonably attributable to the project activity, but which are not included in the project boundary, and identification if and how data will be collected and archived on these emission sources
(Please add rows to the table below, as needed.)

ID number <i>(Please use numbers to ease cross-referencing to table 5)</i>	Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	For how long is archived data kept?	Comment

4. Assumptions used in elaborating the new methodology:

(Please list information used in the calculation of emissions which is not measured or calculated, e.g. use of any default emission factors)

5. Please indicate whether quality control (QC) and quality assurance (QA) procedures are being undertaken for the items monitored *(see tables in sections 2 and 3 above)*

Data <i>(Indicate table and ID number e.g. 3.-1; 3.-2.)</i>	Uncertainty level of data (High/Medium/Low)	Are QA/QC procedures planned for these data?	Outline explanation why QA/QC procedures are or are not being planned.

6. What are the potential strengths and weaknesses of this methodology? *(please outline how the accuracy and completeness of the new methodology compares to that of approved methodologies).*

7. Has the methodology been applied successfully elsewhere and, if so, in which circumstances?

After completing above, please continue filling sub-sections D.2. and following.

Annex 5

TABLE: BASELINE DATA

(Please provide a table containing the key elements used to determine the baseline (variables, parameters, data sources etc.). For approved methodologies you may find a draft table on the UNFCCC CDM web site. For new methodologies, no predefined table structure is provided.)

Annex III

The project participants will state whether and how the project activity will contribute to sustainable development, in regards to the following aspects:

a) Contribution to local environmental sustainability

Assess the mitigation of local environmental impacts (solid wastes, liquid effluents, atmospheric pollutants, etc.) caused by the project in comparison with the estimated local environmental impacts for the reference scenario.

b) Contribution to development of working conditions and net job creation

Assess the commitment of the project to social and workplace responsibilities, health and education programs and defense of civil rights. Also assess the improvement in the qualitative and quantitative level of employment (direct and indirect) comparing the project scenario with the reference scenario.

c) Contribution to the distribution of income

Assess the direct and indirect effects of the quality of life of low-income populations, noting the socio-economic benefits provided by the project in relation to the reference scenario.

d) Contribution to training and technological development

Assess the degree of technological innovation of the project in relation to the reference scenario and the technologies used in activities comparable to those called for in the project. Also assess the possibility of reproduction of the technologies used, taking account of their demonstration effect, and evaluating the origin of the equipment, the existence of royalties and technology licenses and the need for international technical assistance.

e) Contribution to regional integration and linkages with other sectors

The contribution to regional development can be measured in terms of the integration of the project with other socio-economic activities in the region where it is implanted.

MANUAL FOR SUBMITTING A CDM PROJECT TO THE INTERMINISTERIAL COMMISSION ON GLOBAL CLIMATE CHANGE

Every document listed below should be presented **both in print and in electronic media** for an equal print.

1 – **PDD** (in English) – *the project design document as determined by the Clean Development Mechanism Executive Board, established under the United Nations Framework Convention on Climate Change. (Art. 3.I)*

It is the main document to be presented to the Clean Development Mechanism Executive Board when requesting a project registry. The document should be presented **in the original English version, exactly as it was presented to the Designated Operational Entity for validation**. Other versions will not be accepted.

The form for this document can be found in appendix B of Decision 17/CP.7 contained in document FCCC/CP/2001/13/Add.2. Please observe PDD updates in the CDM Executive Board homepage. The version 02 of July 01, 2004 is currently available. Also available at the CDM Executive Board homepage are the Guidelines for Completing the CDM-PDD. Should the project fall into the category of Small Scale Project, the project design document to be presented is a simplified version found in annex II of Decision 21/CP.8 contained in document FCCC/CP/2002/7/Add.3.

The models for the documents mentioned above can be found at the CDM Executive Board homepage: <http://cdm.unfccc.int/Reference/Documents>
In any case, the document should state the date clearly.

2 – **DCP** – *the project design document (previous item) translated into Portuguese according to Annex II of Resolution no. 1 of the Interministerial Commission on Global Climate Change. (Art. 3.I)*

The document to be presented is the translation into Portuguese of the document that will be forwarded to the Clean Development Mechanism Executive Board when requesting a project registry, referred to in the previous item. The Portuguese version of the abovementioned Appendix B can be found in Annex II of Resolution no. 1 of the Interministerial Commission of Global Climate Change, and it can be accessed at the homepage of the Brazilian Ministry of Science and Technology, <http://www.mct.gov.br/clima/comunic/pdf/Resolucao01p.pdf>.

Updates in the PDD form, as well as the Guidelines for Completing the PDD and the specific forms for small-scale projects will be translated and located at the webpage mentioned above. <http://www.mct.gov.br/clima/quioto/pdf/DCP>.

3 – **Annex III** – *Description of the project activity contribution to sustainable development in the form of Annex III of Resolution no. 1 of the Interministerial Commission of Global Climate Change and in conformity with Article 12.2 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. (Art. 3.I)*

Guidelines to complete Annex III of Resolution no. 1 of the Interministerial Commission on Global Climate Change can be found in the last page of the Resolution: (<http://www.mct.gov.br/clima/comunic/pdf/Resolucao01p.pdf>) and should be presented according to the following model:

ANNEX III
Project Contribution ...(state the name of the project)...for Sustainable Development
• (The five aspects of the project's contribution, listed in Annex III, should be developed separately, in five items, described below) • a) Contribution to the local environmental sustainability • b) Contribution to the development of work conditions and net job generation • c) Contribution to income distribution • d) Contribution to technological development and capacity-building • e) Contribution to regional integration and interaction with other sectors
• The justification of how the project contributes to each aspect of sustainable development can be summed up in a few paragraphs, but it must be based either on the PDD or in other relevant works. References to the works on which the justification is based should be clear in the text.

4 – Invitation Letters – *Copies of the invitations for comments sent by the project proponents to the following stakeholders involved and affected by the project activities, identifying the recipients: (Art. 3.II)*

- Prefeitura (City Hall)
- Câmara dos vereadores (city council)
- State Environmental Agencies
- Municipal Environmental Agencies
- Brazilian Forum of NGOs and Social Movements for the Environment and Development
- Community Associations
- Public Prosecution Office

The invitation letter should be addressed to each of the stakeholders listed above. The letter should state the name of the project, location and its main principle. It should also state all the information necessary for the stakeholders to have access to the project's technical, social and environmental reports, as well as all relevant information so that actors can give their opinions regarding the project.

It should be clearly stated to which stakeholder the invitation letter is addressed. If there are any, please annex comments by the parts.

5 – Validation Report - *Report by the Designated Operational Entity in charge of validating the project activity in the form to be submitted to the Clean Development*

Mechanism Executive Board under the United Nations Framework Convention on Climate Change (Art. 3.III)

It is the validation report drafted by the Designated Operational Entity which will be presented to the Clean Development Mechanism Executive Board when requesting the project registry. The document should be presented in the original English version, which should make reference to the PDD presented to this Secretariat (in item 1) and **it should not present any restriction to the project activity validation**

The form F-CDM-REG should also be presented as established by the Clean Development Mechanism Executive Board; the form can be found in its homepage (<http://cdm.unfccc.int/Reference/Forms/Registration>), and it will be forwarded to the Executive Board for registry of the project activity.

The PDD version under analysis and the reference to the methodology used, which must be approved and published by the CDM Executive Board as AM or AMS class methodology in the case of the methodology for small-scale projects, should be presented in a clear and unequivocal manner.

6 – Validation Report – *translation into Portuguese of the Designated Operational Entity validation report mentioned in the previous item. (3.III)*

The document to be presented is the translation into Portuguese of the validation report drafted by the Designated Operational Entity and the F-CDM-REG form which will be forwarded to the Clean Development Mechanism Executive Board when requesting the project registry, as mentioned in the previous item.

7 – Declaration of the Project Participants – *A declaration signed by all project participants stipulating who is in charge and the means of communication with the Interministerial Commission on Global Climate Change Executive Secretariat, in addition to a term of commitment in respect to sending the distribution document of the certified reduction units which might be issued at every verification of the project activities for certification; (Art.3.IV)*

The declaration and the term of commitment of the company in charge of the project, on headed notepaper, should be addressed to the Executive Secretariat of the Interministerial Commission on Global Climate Change according to the following models:

DECLARATION

(Company in charge of the Project), in conformity with Article 3 – IV of Resolution no. 1 of the Interministerial Commission of Global Climate Change, hereby declares that:

- 1) The company in charge of project (name of the project and location), is (name of the Company), represented by (partner, proxy,..) (name, nationality, marital status, profession, address, e-mail)
- 2) The means of communication with the Executive Secretariat of the Interministerial Commission on Global Climate Change will be: (name; address; telephones; fax; e-mail...)

Date

Signature by those in charge of the project

TERM OF COMMITMENT

(Company in Charge of the Project), in conformity with Article 3 – IV of Resolution no. 1 of the Interministerial Commission of Global Climate Change, reaffirms its commitment to send the distribution documents of the certified emission reduction units that might be issued at every verification of the project (name of the project) to the Interministerial Commission on Global Climate Change for certification.

Date

Signature by those in Charge of the Project

8 – Conformity with the Environmental and Labor Legislation - *Documents ensuring conformity of the project activity with the environmental and labor legislation in force, where it applies. (Art. 3.V)*

The declaration of the company in charge of the project, on headed notepaper, shall be addressed to the Executive Secretariat of the Interministerial Commission on Global Climate Change according to the following model:

(Company in Charge of the Project), in conformity with Article 3 – V of Resolution no. 1 of the Interministerial Commission on Global Climate Change, hereby declares that:

- 1) It is aware of the environmental legislation in force relevant to the project (project name and location) in its various stages of (study, implementation, operation, deactivation).
- 2) Copies of the environmental licenses and documents attesting conformity with the environmental legislation up to the present moment are annexed to this declaration.

Date

Signature by those in Charge of the Project

(Company in Charge of the Project), in conformity with Article 3 – V of Resolution no. 1 of the Interministerial Commission on Global Climate Change, hereby declares that:

- 1) It is aware of the labor legislation relevant to the project (project name and location) and it is in conformity with the labor legislation in force.

Date

Signature by those in Charge of the Project

9 – Situation of the DOE– Declaration (in Portuguese) of the Designated Operational Entity which validates the project stating that it is accredited by the Clean Development Mechanism Executive Board under the United Nations Framework Convention on Climate Change, that it is fully established in national territory and that it is capable of ensuring compliance with the relevant requirements of the Brazilian legislation. (Art. 4.1)

The declaration of the Designated Operational Entity, on headed notepaper, shall be addressed to the Executive Secretariat of the Interministerial Commission on Global Climate Change according to the following model:

(Designated Operational Entity), in conformity with Article 4 of Resolution no. 1 of the Interministerial Commission on Global Climate Change, hereby declares that:

- 1) It was accredited by the Clean Development Mechanism Executive Board on (date) and that its accreditation is in force in the present date.
- 2) It is fully established in Brazil, since (date), at the address (address and telephone number).
- 3) It is capable of ensuring compliance with the relevant requirements of the Brazilian Legislation.

Date

Signature of those in charge of the Designated Operational Entity

10 – Additional Documents

Please include the additional documents on which the project contributions to the sustainable development are based, reported in Annex III. Any other document that those in charge of the project wish to include for a better understanding of the previous items should be included as an additional document.

CHECK LIST

The table below is a summary of the documents to be presented and it serves as a check list. The numbers between parentheses in the first column are related to the numbers used in this Manual to detail every document. The last column is a reference to the article of Resolution no. 1 related to the document in point. The last lines, regarding the additional documents, should be filled in with the names of the additional documents, each using a line.

Documents	Printed Version	Electronic Version	Art. Resol. 1
Project Cover Letter			
(1) Project Design Document – original in English – PDD			3.I
(2) Project Design Document (DCP) – Annex II			3.I
(3) Annex III			3.I
(4) Invitation for comments			
. City Hall (<i>Prefeitura</i>)			3.II
. City Council (<i>Câmara de Vereadores</i>)			3.II
.State Environmental Agency			3.II
. Municipal Environmental Agency			3.II
. Brazilian Forum of NGOs and Social Movements for the Environment and Development			3.II
. Community Associations			3.II
. Public Prosecution Office			3.II
(5) Validation Report of the DOE (English)			3.III
.F-CDM-REG			3.III
(6) Validation Report of the DOE (Portuguese)			3.III
.F-MDL-REG			3.III
(7) Declaration by the participants			
.Responsibility			3.IV
.Means of communication			3.IV
.Term of commitment			3.IV
(8) Conformity of the PA with the labor and environmental legislation			
.Labor Legislation			3.V
.Environmental Legislation			3.V
(9) Situation of the DOE			
.Accredited by the EB/CDM			4.I
.Fully established in Brazil			4.I
.Capable of complying with the legislation requirements			4.I
(10) Additional Documents			