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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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For the provision of services relating to the

Support for the Development and Uptake of CDM Project in the Industrial Sector: Pilot Project in Co-operation with the Austrian Industry

Third Progress Report

Organismo de Investigación del Consejo Coordinador Empresarial, A.C.
Lancaster 15, piso 4, Col. Juárez, C.P. 06600, México, D.F. Teléfono 5229 1130, Fax: 5229 1133, e-mail: cespedes@cce.org.mx

Development of PIN or PDD by companies participating in the ONUDI project
October 2007, Mexico City

Third Progress Report

This Third Progress Report refers to the draft submission of five (5) Project idea Notes (PINs) and one Project Design Document (PDD) for review by UNIDO with full text of project proposal in the PIN/PDD format.
During this period of PIN/PDD preparation, CESPEDES has provided information and supported companies in the development of the documentation, application of CDM methodologies and advice of additional CMD items required.

1. Participating companies in the preparation of PIN/PDD

From the 11 companies participating in the CDM workshop on April, only 5 companies undertook the preparation of the PIN or PDD.

The rest of the companies have reported that they do not have enough information for the development of the PIN/PDD, additionally that top management do not allow to deviate priorities from personnel responsibilities and do not give time for the preparation of the PIN/PDD. Some other companies, do not identify potential project as CDM.

The companies participating in the preparation of PIN/PDD:

	Name of company	Sector
1.	Colgate Palmolive	Chemical
2.	Envases Universales	Chemical
3.	Gas del Atlántico	Transportation of natural gas
4.	Grupo Modelo	Brewery
5.	Sicartsa	Iron and steel

There was another company interested in preparing their own document to receive feedback from international experts, and thus it is submitted in the present report.

2. Preparation of the PIN/PDD documents

The development of the PIN/PDD started May and during this process it was identified some steps:

1. To define in a detail manner the project identified.
2. Look for technical aspect to fulfill PIN/PDD format
3. Identify any approved methodology to be applied
4. Application of the additionality tool

During each step, companies face some difficulties and in some cases it was turn into a barrier to fulfil all the format of the PIN or PDD.

The difficulties expressed by companies were the follow:

- After the evaluation of the additionality, it was identified that the project idea identified was not additional.
- Companies that undertook the preparation of a PIN founded that the ONUDI PIN format was in more detail that the conventional PIN format, for more detail see Annex 1, and it result in time consuming learning about the additional aspects and lack of information.
- Most of the companies have difficulties in the cost analysis because of the lack of information regarding cost of the project. To have it, it is necessary a previous contact with technology provider.
- Some companies did not allow including specific information in the PIN or the PDD because of confidential aspects.
- A contract of confidentiality was asked to be part of the ONUDI project. Grupo Modelo asked for it and all the information of the PIN is confidential.
- For two project were not identified approved methodology to be applied.
- Understanding and application of the methodologies and the additionality tool.
- For the cost analysis using the COMFAR system, it was necessary a detailed cost analysis. And companies decided to not provide of it.
- For some projects there were no approval methodologies. However because of the interest of the company on getting a PIN of the project, one company decided finish the PIN.

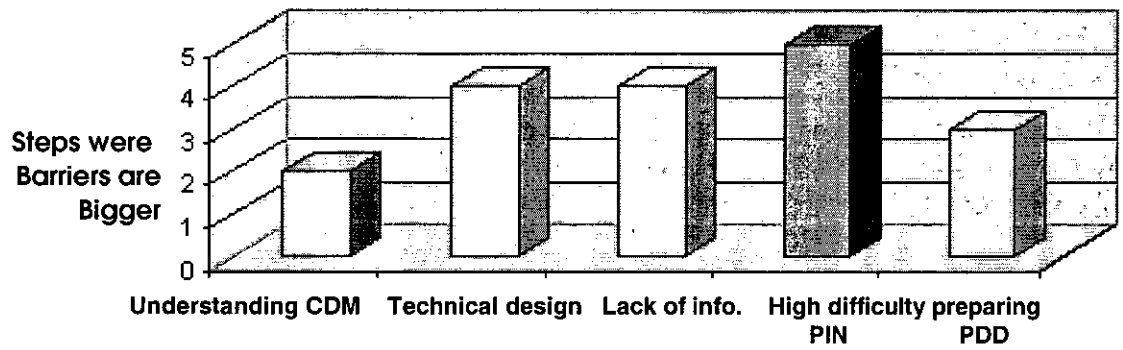
3. PIN/PDD Prepared

Company	Pin/PDD	Type of Project	Name of Project
Colgate Palmolive	PDD	Energy efficiency	Emission reduction through a cogeneration system
Gas del Atlántico	PIN	Energy efficiency in vehicles	Reducing GHG by increasing the Power train Efficiency from a Suburban Delivery Fleet operating on LP Gas, in Veracruz, Mexico
Grupo Modelo	PIN	Energy efficiency	Vapor and Electricity Generation from Bagasse Used as Fuel
SICARTSA Lázaro Cárdenas	PIN	Energy efficiency	Generation of electricity through the combustion of waste gases from the Blast Furnace (BF) and Basic Oxygen Furnace (BOF) at steel mill.
SICARTSA Lázaro Cárdenas	PIN	Energy efficiency	GHG emissions reductions by the installation of a Coke Dry Quenching System at Steel facility.
Envases Universales	PIN	Energy efficiency	GHG emission by energy efficiency improvement through the replacement of a Drying Oven in metal sheet lacquering operations

4. Company assessment in the experience of the own preparation of a PIN/PDD document

The experience of the own preparation of the PID/PDD was evaluated by companies, finding the follow:

A) Companies identify the main barriers on the own preparation of the PIN/PDD document. And most of the companies undertook the preparation of it with a broad lack of information.



B) Main Barriers identified

	Technological barriers
40%	New technology and not proved at large scale
20%	There was not founded the new technology searched
20%	Lack of local suppliers
20%	Lack of technical know-how

	Financial barriers
30%	It is difficult to asses intangible benefits for the approval of the project
27%	Difficult access to financial for projects
18%	Very high inversions
18%	Energy saving benefits sub estimated

	Human resources barriers
29%	Technical capacity for Management of CDM projects
21%	Lack of a climate change strategy to detonate mitigation actions
21%	Men-hours required for the project
14%	Top manage commitment
14%	Institutional barriers to change

5. Lessons learned

1. Capacity building for companies for preparing their own PIN/PDD it is the bigger output, it has allow more understanding for companies in the topic and even more, in the development of technical, cost and environmental analysis.
2. Getting experience on the identification of a CDM project, in the identification of the correct methodology and its application and the additionality assessment, id the other important output of the project.
3. The application of the methodology was an excellent opportunity for project evaluation.
4. The assistance for application of the methodology was necessary in some cases.
5. A bigger commitment from top management will decrease some barriers to get specific technical aspects and cost analysis.
6. In order to have better results, it is necessary to require time for the development of the PIN or PDD, additional to get more detailed information (technical data) regarding the actual situation, the activity or situation that would happened otherwise the project activity.

Name of Project	Lessons learned by individual projects
Emission reduction through a cogeneration system	Even it is a small project, energy efficiency is fundamental for companies to increase competitiveness and energy savings. Cogeneration system is a potential activity for CDM.
Reducing GHG by increasing the Power train Efficiency from a Suburban Delivery Fleet operating on LP Gas, in Veracruz, Mexico	Transport project has many barriers due to the lack of approved methodology. Due to the high global emission related to transport, should be promoted more methodologies to encourage the registration of this kind of activities.
Vapor and Electricity Generation from Bagasse Used as Fuel	Renewable energy project will have great potential for CDM.
Generation of electricity through the combustion of waste gases from the Blast Furnace (BF) and Basic Oxygen Furnace (BOF) at steel mill.	Even though the cost of the project is lack, it is known that the cost is very high and would not have happened in the absence of the CDM.
GHG emissions reductions by the installation of a Coke Dry Quenching System at Steel facility.	Even though the cost of the project is lack, it is known that the cost is very high and would not have happened in the absence of the CDM.
GHG emission by energy efficiency improvement through the replacement of a Drying Oven in metal sheet lacquering operations	It could be a potential project for CDM, but the lack of information limits the additionality analysis.

Annex 1

Main difference between Conventional PIN and ONUDI Format

Topic	*Conventional PIN*	*ONUDI Format*
D. General project Information: D3) Technical aspects	The description for the technology to be employed is asked in general terms. **Comment:** based on a general description of the technology it allows to technical experts identify whether the project activity reduce GHG emissions additional to business as usual without specific information regarding the equipment capacity. It can be use of thumb rules for the calculation of the emissions. Also a general description of the technology proposal may allow identifying leakages, baseline scenario and the identification of a specific approved methodology.	It is asked for detail technical description including associated risk, contract and permits, operational risks, etc. **Comment:** A general description of the technology means a previous contact with technology provider, for technical aspects such as capacity of the equipment, energy input and output; it could be time consuming until a technology proposal is presented to company.
E. Financial aspects	- Ask for general cost of the project, implementation cost, operational cost, revenues, for a simple finance analysis. And ask for a general planning lifetime of the project. **Comment:** for a PIN a simple const analysis of the cost of the projects and the revenues could give idea to identify whether the project is additional or not.	- Ask for figures and explanation of calculation of cost of project, implementation cost, operation al cost, revenues of the project. - The section E2 asks for detailed information about the schedule of the project, periods of preparation, construction and other important milestones. **Comment:** Some times companies have not contact the technology provider because the project it is still an idea, the technology provider is foreigner or it is still in early evaluation before top management have asked for evaluation.
F. Emission reduction estimations	As for the baseline scenario identified and an estimation of the emissions reductions. **Comment:** for a PIN it is not a requirement for the estimation of the emission using an approved methodology.	Ask for specific information and briefly explanations of: F2 Project boundary F3 Project emissions F4 Baseline emissions and scenarios using a methodology F5 Leakage emissions **Comment:** The application of an approved methodology is time consuming and require of expertise, thus requiring additional support for it. Even more, it is necessary the technical output description of the project to do it.
H. Additional and sustainable aspects	There is not a section for addicionality aspects it is focused only on the environmental, social and economic benefits.	Ask for the demonstration of the addicionality, it needs a briefly explanation of how and why the project is additional and therefore not considered as Baseline scenario. **Comment:** it is an interesting analysis of the project to confirm that it would not have happened with out the CDM mechanism, but the application of the additionality tool to define the additionality of the project is time consuming and require of expertise.

CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

SECTION A. General description of project activity

A.1 Title of the project activity:

Emission reduction through a cogeneration system
Version 1
October, 2007

A.2. Description of the project activity:

Colgate-Palmolive is a health care company. The company offers a wide range of products for bucal and personal care like toothpaste and shampoo and products focused on facilitate the house and cloth cleaning. The plant is located in metropolitan DF and purchases electricity from the grid.

Colgate Palmolive has been operating in Mexico for more than 80 years having the leadership in the field. The proposed project activity consists of the installation of a cogeneration system that would consume natural gas and generate heat and electricity for own consumption and to supply heat demand of their plant.

The project activity will avoid the consumption of fossil fuel for heat generation; instead it will be produce in site the entire power requirement of the facility by a cogeneration system and the heat demand required by the plant. To support the power demand during maintenance period, it is considered to contract with CFE for supporting service – that is, to consume electricity from the grid.

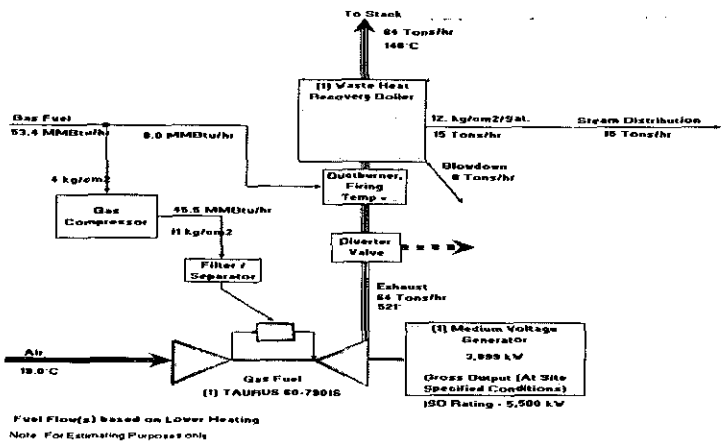
Energy efficiency and cogeneration lead to environment, economic and the social benefits. The project will encourage energy efficiency in the industrial sector and as consequence improve the air of the city.

A.3. Project participants:

Colgate Palmolive México
Manufacturing organization
Presa La Angostura 225
Col. Irrigación
C.P. 11500
México D.F.
Tel: 5626-7443
Joaquin_Cardoso@colpal.com

A.4. Technical description of the project activity:

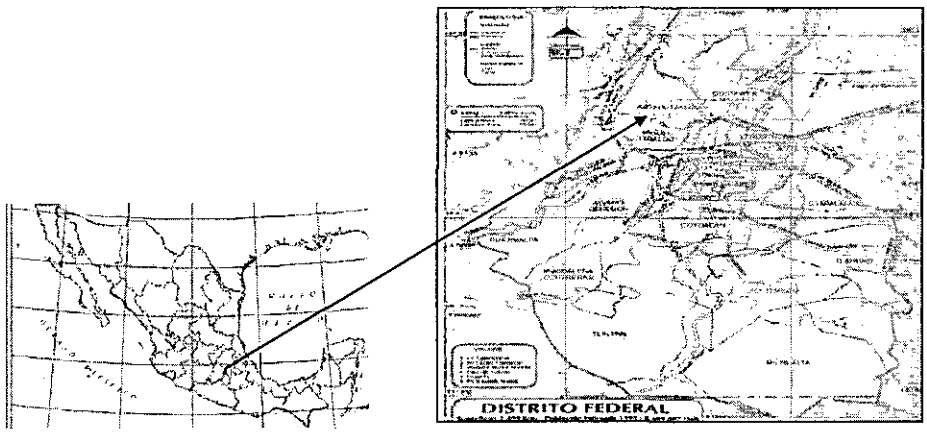
The project involves the installation of a cogeneration system which includes a compressor and a turbine produced by Caterpillar Company. The system use natural gas as a fuel to produce power for on-site use and steam generation. Additionally, it includes a boiler to add the characteristics of the steam required by the process. It consumes additional natural gas



for it. The follow figure illustrates the design of the system:

A.4.1. Location of the project activity:

The cogeneration system will be located in the COLGATE´s plant, located in the western side of the metropolitan area, the following picture shows the area in Mexico City.



A.4.1.1. Host Party(ies):

Mexico

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

Federal District

A.4.1.3. City/Town/Community etc:

Miguel Hidalgo Zone

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

The plant is located in the capital of the country; Mexico City has been described as the "biggest" city in the world. In reality, with over 20 million population and an area covering approximately 600 square miles it is probably one of the most densely populated.

The city is the most important economic, industrial and cultural center in the country, the metropolitan zone incorporates 58 adjacent surrounding municipalities and its economic importance is reflected since in 2005 was ranked as the eighth richest urban agglomeration GDP in the world.

Because of the industrial activity the pollution indicators has raised to a dangerously level. Thus, by introducing the cogeneration system, the total amount of fossil fuels and the electricity displaced resulting in a reduction in CO2 emissions will contributes to sustainable development objectives focused on air benefits.

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

Sectoral Scope 4. Manufacturing industries
Demand side energy efficiency improvement through cogeneration

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

Inc. Solar and Taurus Turbines. It is a cogeneration system based on a set of combined-cycle gas turbine generators that generates electricity using a gas engine while recovering waste heat for reuse.

A.4.4 Estimated amount of emission reductions over the chosen crediting period:

The ex-ante emissions reductions are estimated to be 178, 000 tonnes CO2-equivalent over 10 years. Note that actual emissions reductions will be based on monitored data and may differ from this estimate.

Year	Annual estimation of emission reductions (tonnes of CO_{2e})
2009	17,800
2010	17,800
20110	17,800
2012	17,800
2013	17,800
2014	17,800
2015	17,800
2016	17,800
2016	17,800
2018	17,800
Total estimated reductions (tonnes of CO_{2e})	**178,000**
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO_{2e})	17,800

A.4.5. Public funding of the project activity:

No funds from public national or international sources are involved in any aspect of the proposed project.

SECTION B. Application of a baseline and monitoring methodology

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

AM0014 Natural gas-based package cogeneration --- Version 4 is applied in order to construct the baseline scenario, to demonstrate project addicionality and to estimate the corresponding emission reductions.

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

The methodology applicable is AM0014 "Natural gas-based package cogeneration". This methodology was selected since the project activity meets the required conditions:

- The electricity and heat in the baseline cannot be generated in another cogeneration facilitate in the absence of the project activity
- The cogeneration system is owned by the industrial user that consumes the heat and electricity from project cogeneration systems
- The cogeneration system provides all or a part of the electricity and or heat demand of the consuming facility and no excess electricity is supplied to the power grid

B.3. Description of the sources and gases included in the project boundary

The project emissions depend entirely on gas input to the cogeneration system, while emissions avoided can be determined from heat and electricity produced by the factory and the power stations respectively. Thus we need only to estimate emissions associated with natural gas consumption of the cogeneration system, and the emissions avoided at the industrial plant. Additional electricity used at the industrial plant is irrelevant.

	Source	Gas	Included	Justification/Explanation
Baseline	Natural gas combustion in boilers	CO2	Yes	As in AM0014
		CH4		
		N2O		
	Leakage emissions from the natural gas production, transport and distribution	CH4	No	There is no leakage since there is not fuel change.
	Grid Electricity generation	CO2	Yes	The electricity generated by the project activity will replace the electricity generated by the grid.
Project Activity	Natural gas combustion in the cogeneration system	CO2	Yes	As in AM0014, due to the project activity
		CH4		
		N2O		
	Leakage emissions from the natural gas production, transport and distribution	CH4	No	There is no leakage since there is not fuel change.

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

According to the AM0014 methodology, the procedure to estimate baseline emissions needs the heat and electricity output rates of the cogeneration system in order to multiply them by an estimate of annual operating hours. These emissions estimates also require the efficiency of the specific boiler whose heat output is to be substituted by the cogeneration system.

Estimation of baseline emissions:
According to the methodology used, baseline emissions include the following components:

a) CO2, CH4 and N2O from combustion of fuel which provides the heat to the plant
b) CH4 leaks during production, transport and distribution of natural gas
c) CO2 from electricity generation that is purchased from the power grid

The emissions corresponding to items (a) and (b) are proportional to the amount of fuel used.

The cogeneration system is sized to meet all the electricity requirements of the plant and part of the heat demand, thus it is implied a continuous operation of the cogeneration system over most of the hours in the year, corresponding to plant operation (8000 hr).

The methodology applicable is AM0014 "Natural gas-based package cogeneration". This methodology was selected since the project activity is a system which provides all the electricity of the consuming facility and part of the heat demand and no excess is supplied to the power grid.

The consumption of the fuel avoided in the baseline for supply of heat is determined as follow:

Annual energy consumption for heat supply at baseline plant, ABEC$_{BF}$

$$ABEC_{BF} = \frac{CHOR * AOH}{eb} = \frac{5{,}5E+01 * 8.000{,}0}{0{,}9} = 490.488{,}9 \text{ GJ/year}$$

CHOR	cogeneration system heat output rate (GJ/h)
AOH	Annual operating hours (h/year)
eb	industrial boiler efficiency (fraction, lower heating value)
	In order to be conservative, a high value is chosen. The methodology proposes a default value of .90

Emissions from combustion of baseline fuel for heat supply are determined as follows:

CO2 emissions

$$BEth = ABEC_{BF} * EF_{BF} = 490488{,}889 * 0{,}05606 = 27.496{,}81 \text{ ton } CO_2$$

Where:

ABEC$_{BF}$	annual energy consumption for heat supply GJ/year
EF$_{BF}$	CO2 emission factor of the fuel used to generate heat (56.06 kgCO2/GJ)

CH4 emissions

$$BEeq = \frac{ABEC_{BF} * MEF}{1,E+06} = \frac{490488,9 * 1}{1,E+06} = 5,E-01 = 10 \text{ tonCO2e}$$

Where:

$ABEC_{BF}$	annual energy consumption for heat supply GJ/year
MEF	methane emission factor (1kg CH4/TJ, Source IPCC,2006.)
GWP(CH4)	global warming potencial = 21

N2O emissions

$$BEeq = \frac{ABEC_{BF} * NEF}{1,E+06} = \frac{490488,9 * 0,1}{1,E+06} = 5,E-02 = 15 \text{ tonCO2e}$$

Where:

$ABEC_{BF}$	annual energy consumption for heat supply GJ/year
NEF	nitruos oxide emission factor (0.1 kg CN2O/TJ, Source: IPCC,2006.)
GWP(N2O)	global warming potencial = 310

According to the procedures prescribed in the approved methodology ACM0002, to calculate the CO_2 from electricity generation that is purchased from the power grid, the Simple OM procedure was chosen. This method could be used because the condition regarding low cost resources is met. The methodology requires that "Low cost resources constitute less than 50% of total grid generation". In Mexico the percentage of low cost (hydro electric + wind + geothermal + nuclear) is 39.89% of the total generation. The Combined Margin calculated for the project is :

CM emission factor (tCO_2/MWh)	**0,5010**

For more information of the emission factor calculation, see Annex 1.

CO2 emissions from electricity supply

$$BEelec = \frac{CEO * BEFelec}{1,E+03} = \frac{31.192.000 * 0,501}{1,E+03} = 15.627 \text{ tonCO2}$$

Where:

CEO= cogeneration electricity output (KWh/year)

BEFelec= baseline CO2 emission factor for electricity from public supply (0.5010 ton CO2/MWh)

Total Baseline emissions

BEtotal= 27.496,8 + 10 + 15 + 15.627,2 = **43.149,30** **tonCO2**

B.5. 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 (assessment and demonstration of additionality): >>

The project boundary covers CO_2 emissions associated with the production of heat and electricity that are offset by the output of the cogeneration system. This package is additional and the installation would not happen in the absence of CDM since the baseline scenario would be as following:

- Electricity: The industry will continue to purchase the electricity from the grid to meet the power demand of the plant independently of which of options of baseline scenario applies.

- Heat. The heat demand of the industry will also be provided by boilers at the industrial plant. If the industry were to undertake improvements in boiler efficiency, either through retrofit or through replacement, the natural gas consumption needed to provide the heat output

The proposed project is additional respect the results from the application of the addicionality test.

There are two options for determination of addicionality. Option 2 was chosen and since the project is a case which includes a self owned cogeneration package, a technological and institutional barriers analysis was applied.

1. *Technological barriers*

There is a low market of cogeneration and deficient infrastructure to support installation and maintenance of such systems. The proposed cogeneration technology will provide heat and electricity to Colgate industrial facility is and advanced alternative of energy generation in comparison with the current practices of purchasing electricity from the grid, and use fuel to generate the steam demand for the processes. Therefore the project activity faces a technological barrier.

Cogeneration systems don't have a significant presence in the industrial sector at most of the developing countries like Mexico. Although Mexico has analysed its cogeneration potential it has not been realized. With data from the National Commission for Energy Savings, (CONAEA), in the National Strategy for Climate Change it is reported that the industrial sector has a potential of cogeneration of 9,600 MW each year equivalents to 84,000 GWh . At the moment only 7,253 GWh are operating at the mode of cogeneration (Prospective of electric sector, 2006-2013). This amount of MW generated, represent 7.5% of the national potential analyzed.

Permisos	Modalidad	Permisos		Generación GWh	
		Vigentes	Operando	Potencial	Producida
Total		494	463	137,159*	75,390*
Anteriores a 1992	Usos propios continuos	55*	54	1,688	1,392
Posteriores a 1992	Producción independiente	21	17	87,778	46,281
	Autoabastecimiento	342	322	24,653	14,369
	Exportación	5	4	12,091	6,035
	Cogeneración	39	35	10,769	7,253
	Importación	32	31	500*	5*

Electricity generation. Source: Power sector prospective 2006-2015

As a conclusion of this test, the new technological alternative implies additional risk with respect to costs, operation and performances, compared to the existing and common practices of buy/generate heat and electricity separately.

2. Institutional barriers

In Mexico, the Power Regulatory Commission (CRE), is the institution that approves the power generation in the private sector. It is stated, that the cogeneration plants can ask for normal and support services and energy transmission depending on the benefits in terms of energy efficient that can give to each project (CRE, 2007).

There is a tariffs applicable to the project known as "Supporting service" intended to support when the power cogeneration are not enough for the facility.

Penalties exist and are seen in terms of inflexibility of the contracts, because it is necessary to establish a support demand in advance, and even if it is not consumed will be necessary to pay a default value plus the specific costs per KW consumed.

Therefore, purchasing the electricity from the power grid under this scheme involves additional high costs to the project that increases the risks based on economic and financial terms, therefore the project faces institutional barriers.

3. Skill barriers:

Colgate-Palmolive company does not have experience in projects of this type. To support the information a list of cogeneration projects in Mexico was revised and the information found demonstrate that there is no related company which has permits or knowledge in this specific area.

The above addicionality tests determine that the package cogeneration system proposed is additional respecting the substantial analysis made.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

The industrial plant, where the proposed cogeneration system is to be installed purchases electricity from the power grid and also purchases natural gas to meet the plant's heat requirements. The project involves the installation of a "package" cogeneration system which consumes natural gas and generates electricity and heat to the industrial plant. at the industrial facility because of the heat and electricity supplied by the cogeneration system. Thus, the project involves the use of natural gas and the methodology selected is specifically designed for package cogeneration system using natural gas.

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	Natural gas
Data unit:	M3
Description:	Volume consumed
Source of data to be used:	Paper and electronic record based on a spreadsheet.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The value is taken from the engineering study regarding the energy demand of the industrial plant.
Description of measurement methods and procedures to be applied:	Will be monthly monitored and the 100% of the volume consumed will be measured from the records of the natural gas distribution company and the records registered by the company.

QA/QC procedures to be applied:	Because of the low uncertainty these data will be used as supporting information to calculate emission reductions for the project activity and the data will be verified by the results of the emission calculation.
Any comment:	
Data / Parameter:	Electricity
Data unit:	MWh
Description:	Cogeneration energy supplied to industrial plant
Source of data to be used:	Paper and electronic record based on a spreadsheet.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The value is taken from the specifications of the cogeneration equipment, and expected variations in power demand from the industrial plant, obtained in the engineering study.
Description of measurement methods and procedures to be applied:	Will be monthly monitored and 100% of power consumed will be measured, also will be measured the additional energy bought from the grid for an atypical situation if it is necessary.
QA/QC procedures to be applied:	Because of the low uncertainty these data will be used as supporting information to calculate emission reductions for the project activity and the data will be verified by the results of the emission calculation.
Any comment:	
Data / Parameter:	Cogeneration heat supplied to industrial plant
Data unit:	GJ
Description:	Cogeneration system maximum heat output rate
Source of data to be used:	Paper and electronic record based on a spreadsheet.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The value is taken from the specifications of the cogeneration equipment. Total heat output is in MBTU and the conversion factor used is 1 Btu = 1055 J.
Description of measurement methods and procedures to be applied:	Will be monthly monitored from the heat output.
QA/QC procedures to be applied:	Because of the low uncertainty these data will be used as supporting information to calculate emission reductions for the project activity and the data will be verified by the results of the emission calculation.
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

Emission reductions are the difference between baseline and project emissions taking into account any adjustments for leakage. Project emissions (including CO2, CH4, N2O) are those a priori estimations associated with natural was consumption for the cogeneration system and the emissions of CH4 related to leakages from the production, transport and distribution ok natural gas through the pipeline. As defined in the methodology and explained above, fugitive emissions from natural gas production, transport and distribution are not included since there is not fuel change.

The emission reductions are calculated as follow:

CO2 emissions

$$Ecs = \frac{AEC_{NG} * EF_{NG}}{1.E+03} = \frac{450{,}720 * 56.06}{1.E+03} = 25{,}267.4 \text{ tonCO2}$$

Where:

AECNG	annual energy consumption of natural gas in cogeneration system GJ/year
EFNG	CO2 emission factor of natural gas (56.06 kgCO2/GJ)

CH4 emissions

$$Eeq = \frac{AEC_{NG} * MEF}{1.E+06} = \frac{450720 * 1}{1.E+06} = 0.4507 = 9 \text{ ton CO2e}$$

Where:

AECNG	annual energy consumption of natural gas in cogeneration syst.GJ/year
MEF	methane emission factor (1kg CH4/TJ, Source IPCC,2006.)
GWP	global warming potencial (CH4)= 21

N2O emissions

$$BEeq = \frac{AEC_{NG} * NEF}{1.E+06} = \frac{450720 * 0.1}{1.E+06} = 0.04507 = 14 \text{ tonCO2e}$$

Where:

AECNG	annual energy consumption of NG in the cogeneration syst.GJ/year
NEF	nitruos oxide emission factor (0.1 kg CN2O/TJ, Source: IPCC,2006.)
GWP	global warming potencial (N2O)= 310

Leakages CO2 emissions from the waste heat boiler
1,881,927 BTU/hr
1985432985 J/hr
1.99 GJ/hr
0.11 ton CO2

Total project emissions

BEtotal= 25,267.4 + 9 + 14 - 0.11 = **25,290.25** **tonCO2**

Total project emissions= *Total Baseline emissions - Total project emissions*

Total Baseline emissions			*Total project emissions*	
43.149,30	**tonCO2**	-	**25.290,25**	**tonCO2**

Emission Reduction

BEtotal= 43.149,30 - 25.290,25 = **17.859,05** **tonCO2**

B.6.4 Summary of the ex-ante estimation of emission reductions:

Emission Reduction

BEtotal= 43.149,30 - 25.290,25 = **17.859,05** **tonCO2**

B.7 Application of the monitoring methodology and description of the monitoring plan:

The monitoring methodology is based on the approved monitoring methodology AM0014, applicable to natural gas-based cogeneration projects.

The monitoring methodology involves monitoring of the following:

- The natural gas consumption at the cogeneration system;
- Heat production at the cogeneration system;
- Electricity production at the cogeneration system

Following project implementation, Colgate Palmolive will add the cogeneration system to the engineer department to be in charge of the project, and support the implementation and follow it with the maintenance necessary.

B.7.1 Data and parameters monitored:

(Copy this table for each data and parameter)

Data / Parameter:	Natural gas
Data unit:	M3
Description:	Volume consumed
Source of data to be used:	Paper and electronic record based on a spreadsheet.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The value is taken from the engineering study regarding the energy demand of the industrial plant.
Description of	Will be monthly monitored and the 100% of the volume consumed will be measured from the

measurement methods and procedures to be applied:	records of the natural gas distribution company and the records registered by the company.
QA/QC procedures to be applied:	Because of the low uncertainty these data will be used as supporting information to calculate emission reductions for the project activity and the data will be verified by the results of the emission calculation.
Any comment:	

B.7.1 Data and parameters monitored:	
(Copy this table for each data and parameter)	
Data / Parameter:	Electricity
Data unit:	MWh
Description:	Cogeneration energy supplied to industrial plant
Source of data to be used:	Paper and electronic record based on a spreadsheet.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The value is taken from the specifications of the cogeneration equipment, and expected variations in power demand from the industrial plant, obtained in the engineering study.
Description of measurement methods and procedures to be applied:	Will be monthly monitored and 100% of power consumed will be measured, also will be measured the additional energy bought from the grid for an atypical situation if it is necessary.
QA/QC procedures to be applied:	Because of the low uncertainty these data will be used as supporting information to calculate emission reductions for the project activity and the data will be verified by the results of the emission calculation.
Any comment:	The employees in charge of the monitoring will receive prior training.

B.7.1 Data and parameters monitored:	
(Copy this table for each data and parameter)	
Data / Parameter:	Cogeneration heat supplied to industrial plant
Data unit:	GJ
Description:	Cogeneration system maximum heat output rate
Source of data to be used:	Paper and electronic record based on a spreadsheet.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The value is taken from the specifications of the cogeneration equipment. Total heat output is in MBTU and the conversion factor used is 1 Btu = 1055 J.
Description of	Will be monthly monitored from the heat output.

measurement methods and procedures to be applied:	
QA/QC procedures to be applied:	Because of the low uncertainty these data will be used as supporting information to calculate emission reductions for the project activity and the data will be verified by the results of the emission calculation. Natural gas consumption will be measured at an appropriate measuring station. This station shall have gas flow meters, and each shall have calibration certificate.
Any comment:	

B.7.2 Description of the monitoring plan:

>>

B.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

September 2007
Joaquin Cardoso

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

Not defined

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

+-20 years

C.2 Choice of the crediting period and related information:

10 years

C.2.1. Renewable crediting period

No

C.2.1.1. Starting date of the first crediting period:

2009

C.2.1.2. Length of the first crediting period:

10 years

C.2.2. Fixed crediting period:

-

C.2.2.1. Starting date:

-

C.2.2.2. Length:

-

SECTION D. Environmental impacts

Project´s contribution to the sustainable development of the country is due to the reduction of greenhouse gases and other pollutants, use of less intensive carbon fuel, avoidance of fossil fuel usage, abatement of environmental impact of process at local and regional level, adding economical value for energy efficiency improvement and improvement of the IRR by the generation of CER´s. Other benefits will be the following:

- Global and local benefits in the control of global climate change, by reducing CO_2 emissions.
- Improvement of the efficiency of power generation.
- Promotion of the sustainable development of the country by reducing energy consumption and using lower carbon fuel.
- Regional and local environmental benefits through the reduction of emissions and other pollutants like NOx.
- Contribution to cleaner air at the metropolitan zone of Mexico City.

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

Not available

D.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:

--

SECTION E. Stakeholders' comments

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

NA

E.2. Summary of the comments received:

NA

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

NA

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Colgate Palmolive
Street/P.O.Box:	Presa La Angostura 225
Building:	Col. Irrigación
City:	México
State/Region:	México D.F
Postfix/ZIP:	11500
Country:	Mexico
Telephone:	5626-7443
FAX:	
E-Mail:	Joaquin_Cardoso@colpal.com
URL:	
Represented by:	
Title:	Mr.
Salutation:	
Last Name:	Cardoso
Middle Name:	
First Name:	Joaquin
Department:	Environmental
Mobile:	
Direct FAX:	
Direct tel:	5626-7443
Personal E-Mail:	

Annex 2

Calculation of the Combined Margin according to the process proposed at the consolidated methodology ACM002

a) Mexican power generation profile

Power generation in Mexico (GWh)						
Type	**Low cost or must run**	**2002**	**2003**	**2004**	**2005**	**2006**
Residual fuel oil and/or gas	no	79.300	73.743	66.334	65.077	52.058
Dual	no	13.879	13.859	7.915	14.275	13.875
Combined cycle	no	44.765	55.047	72.267	73.381	52.058
Gas turbine	no	6.394	6.933	2.772	1.358	1.589
Internal combustion	no	555	751	610	780	853
Coal	no	16.152	16.681	17.883	18.380	17.931
Hydroelectric	yes	24.862	19.753	25.076	27.611	30.085
Nuclear	yes	9.747	10.502	9.194	10.805	10.866
Geothermal	yes	5.398	6.282	6.577	7.299	6.685
Wind	yes	7	5	6	5	44.197

Source: Electricity Sector Prospective 2006-2015, Page 65, Table 16. and statics from www.sie.energia.gob.mx

	2002	**2003**	**2004**	**2005**	**2006**	
Total generation (GWh)	201.059	203.556	208.634	218.971	230.197	
Low cost/must run generation (GWh)	40.014	36.542	40.853	45.720	91.833	
Low cost/must run generation (%)	19,90%	17,95%	19,58%	20,88%	39,89%	**< 50%**

Simple method wil lbe used due to low cost resources constitute less than 50% of total grid generation. The information is based on long term for electricity production.

b) Operation Margin

	Conversions		Energy		Fossil fuel consumption for power generation					
					2004		2005		2006	
					%	TJ/day	%	TJ/day	% [1]	TJ/day
Diesel	5,426	MJ/bl	34,15	TJ/Mm3	0,48%	20	0,72%	31	0,73%	31
Coal	19,405	MJ/ton	19405,000	TJ/MMt	16,81%	712,403	18,64%	792,149	18,54%	781,516
Natural gas	38,116	KJ/m3	38,12	TJ/MMm3	45,43%	1.925	44,03%	1.871	51,00%	2.150
Residual fuel oil	6019	MJ/bl	37,87	TJ/Mm3	37,27%	1.579	36,62%	1.556	29,74%	1.253
Total consumption (TJ / dia)					4.237		4.251		4.215	

Source: Electricity Sector Prospective 2006-2015, Page 90, Graphic 32 Electricity Sector Prospective 2005-2014, Page 82, Graphic 30. National Balance 2005. Calorific Values Page 84

CO_2 emission coefficient of each fuel	
Oxidation factor [1]	CO_2 emission factor [2] ($kgCO_2/TJ$)
0,99	74,10
0,98	94,60
0,995	56,10
0,99	77,40

Source: IPCC Guidelines for National Greenhouse Gas Inventories, Reference Manual

	2004	2005	2006
Total CO_2 emissions (tCO_2/year)	107.934.794	114.449.149	108.039.714
Total generation (GWh)	208.634	218.971	230.197
Low cost/must run generation (GWh)	40.853	45.720	91.833
Electricity generation for OM (GWh/year)	167.828	173.338	138.364
OM emission factor (tCO_2/MWh)	0,6431	0,6603	0,7808
Average OM emission factor (tCO_2/MWh)	**0,6947**		

c) Building Margin

New power plants installed					
Year	**Central** [1]	**Capacity** [1] **(MW)**	**Technology** [2]	**Power generation** [2] **(MWh/year)**	**Accumulated power generation (MWh/year)**
2006	El Cajón	754,00	HYD	6.605.040	6.605.040
	Carboeléctrica	678,00	C	5.939.280	12.544.320
	Altamira V	1.153,00	CC	10.100.280	22.644.600
	Valladolid II	540,00	CC	4.730.400	27.375.000
	Tuxpan V	509,00	CC	4.458.840	31.833.840
	La Venta II	83,00	EO	727.080	32.560.920
	Tamazunchle	1.163,00	CC	10.187.880	42.748.800
2005	Holbox [3]	0,80	IC	1.230	42.750.030
	La Laguna II (PIE)	498,00	CC	2.754.000	45.504.030
	Río Bravo IV (PIE)	500,00	CC	1.885.000	**47.389.030**
	Botello [3]	9,00	HYD	39.999	
	Baja California Sur I	42,90	IC	121.000	
	Yécora [3]	0,70	IC	404	
	Ixtaczoquitlán [3]	1,60	HYD	3.269	
	Hermosillo	93,30	CC	68.420	
2004	Chicoasén (Manuel Moreno Torres)	900,00	HYD	2.078.625	
	Rio Bravo III (PIE)	495,00	CC	1.717.000	
	San Lorenzo Potencia [3] [4]	266,00	GT		
	Tuxpan (Pdte. Adolfo López Mateos)	163,00	GT	906.764	
	El Sauz	128,00	CC	680.040	
	Guerrero Negro II [3] [4]	10,80	IC		
2003	Altamira III y IV (PIE)	1.036,00	CC	5.932.000	
	Tuxpan III y IV (PIE)	983,00	CC	5.464.000	
	Mexicali (PIE)	489,00	CC	2.191.000	
	Transalta Chihuahua III (PIE)	259,00	CC	1.100.000	
	Naco Nogales (PIE)	258,00	CC	1.819.000	
	Transalta Campeche (PIE)	252,40	CC	1.782.000	
	Los Azufres	79,80	GEO	608.580	
	Los Azufres	26,80	GEO	204.385	
2002	Río Bravo II (PIE)	495,00	CC	2.279.000	
	Monterrey III (PIE)	449,00	CC	3.147.000	
	Bajio (PIE)	591,70	CC	4.698.000	
	Altamira II (PIE)	495,00	CC	3.083.000	
	Valle de Mexico	249,30	CC	1.091.691	
	El Encino	130,80	CC	720.817	
	El Sauz	129,00	CC	685.353	

[1] Source: Electricity Sector Prospective 2006-2015, Table 13 and 26 Electricity Sector Prospective 2005-2014, Page 51, Table 14. Electricity Sector Prospective 2004-2013, Page 44, Table 9. Electricity Sector Prospective 2003-2012, Page 41, Table 8.

CO_2 emissions of the sample group of power plants				
Efficiency [1] ($MWh_{electric}$ / MWh_{fuel})	Fuel consumption (TJ/year)	CO_2 emission coefficient [2] (tCO_2/TJ)	CO_2 emissions (tCO_2)	Accumulated CO_2 emissions (tCO_2/year)
	0		0	0
0,3784	56.505	94,60	5.345.352	5.345.352
0,5244	69.338	56,10	3.889.879	9.235.231
0,5244	32.474	56,10	1.821.799	11.057.030
0,5244	30.610	56,10	1.717.215	12.774.245
			0	12.774.245
0,5244	69.940		0	12.774.245
0,4761	9	74,10	689	12.774.934
0,5244	18.906	56,10	1.060.637	13.835.571
0,5244	12.941	56,10	725.962	**14.561.533**
	0		0	
0,4761	915	74,10	67.797	
0,4761	3	74,10	226	
	0		0	
0,5244	470	56,10	26.350	
	0		0	
0,5244	11.787	56,10	661.261	
0,3840	0	56,10	0	
0,3840	8.501	56,10	476.901	
0,5244	4.668	56,10	261.901	
0,4761	0	74,10	0	
0,5244	40.723	56,10	2.284.567	
0,5244	37.510	56,10	2.104.328	
0,5244	15.041	56,00	842.307	
0,5244	7.551	56,10	423.638	
0,5244	12.487	56,10	700.544	
0,5244	12.233	56,10	686.294	
	0		0	
	0		0	
0,5244	15.645	56,10	877.702	
0,5244	21.604	56,10	1.211.991	
0,5244	32.252	56,10	1.809.321	
0,5244	21.165	56,10	1.187.343	
0,5244	7.494	56,10	420.438	
0,5244	4.948	56,10	277.605	
0,5244	4.705	56,10	263.947	

Source: Electricity Sector Prospective 2006-2015, Page 102, Table 39.

Total power generated in 2006 (MWh/year)	230.197
20% of the total power generated in 2005 (MWh/year)	46.039
Electricity generation for BM (MWh)	47.389.030
Total CO_2 emissions (tCO_2)	14.561.533
BM emission factor (tCO_2/MWh)	**0,3073**

d) Building Margin

OM emission factor (tCO_2/MWh)	0,6947
BM emission factor (tCO_2/MWh)	0,3073
CM emission factor (tCO_2/MWh)	**0,5010**

Annex 3

Monitoring information

The Monitoring and Verification Plan is based on recording natural gas used by the cogeneration plant, and electricity and heat supplied by cogeneration plant to the factory. Data will be collected on a monthly basis for the duration of the project lifetime and crediting period.

GHG emissions following project implementation are determined from the parameters monitored, as described above. Project emissions basically comprise CO2 , CH4 and N2O emissions from natural gas combustion in the cogeneration system. These GHG emissions are estimated from natural gas consumption data using standard estimates of emissions factors.

The emissions avoided in the power grid because of power generation of the cogeneration system are defined in terms of the emissions factors for the grid. No project specific monitoring is required to determine the emissions factor.

The data collection required for the project, in order to determine and verify emissions reductions achieved by the project. This project will require only straightforward collection of data, described below. Considering the project boundary, the following data need to be monitored in order to estimate project and baseline emissions, and emissions reductions.

- Natural gas used by the cogeneration plant, m3.
- Net electricity supplied by cogeneration plant to factory, MWh.
- Net heat supplied by cogeneration plant to factory, GJ

These parameters should be monitored continuously and recorded monthly.

The staff responsible for Project monitoring will complete the electronic worksheets on a monthly basis. Given that some of these data may be collected more frequently, data will be aggregated to allow monthly inputs into the spreadsheet. Also, the person in charge of the project will conduct annual internal audits, checking the above mentioned procedures for collecting data.

Data entry sheets:

- o Natural gas consumption,
- o Cogeneration electricity supply to plant, and
- o Cogeneration heat supply to plant

Project Idea Note

Reducing GHG by increasing the Power train Efficiency from a Suburban Delivery Fleet operating on LP Gas, in Veracruz, Mexico

Contents

1. Project Description

Project Name	Reducing GHG by increasing the Power train Efficiency from a Suburban Delivery Fleet operating on LP Gas, in Veracruz, Mexico.	
Project Briefing		
Project Objective	Mitigating GHG emissions from a 254-vehicle-fleet (used in urban and suburban LP Gas delivery), through increasing the mechanical efficiency level of an internal combustion engine by inducing a denser intake air richer in oxygen in a LPG (Liquefied Petroleum Gas) burning engine, aiming at a 6.5% increase from the current operating level; which approximately translates into: • Utilizing 5 to 6.5% less fuel, while keeping the same routes and number of operating vehicles • Mitigating around 3,500 tCO2e during the project first phase period	
Project Description	The Project will be developed by applying a physical principle aiming at increasing the mechanical efficiency of the engines by means of • Reducing in around 15ºC the temperature of the intake air • Introducing clean air to the intake manifold, isolated from the under hood area • Testing each vehicle type for fuel performance versus intake routing as to generate a RAM effect at average operating speeds • Installing pressure differential balancing lines in the LP gas regulators, to compensate for the extra pressure fluctuations	
Project Life Cycle	The Project life period will be from 30 December 2006 to 31 December 2012.	
Project Participants		
Project Developer	Name	Cosmo Consulting, S.C.
	Industry	Energy and Environment
	Functions	Project design and co implementation; MDL proceedings
	Address	Avenida Circunvalación Poniente No 1 Desp 202
	Contact	Ing César Antonio Rodríguez Belmar
	Telephone	+ 52 (55) 5364-7076
	Web site/e-mail	www.cosmomexico.com / cesar.rodiguez@cosmomexico.com
Other Participants	Name	None
	Industry	
	Functions	
	Address	
	Contact	
	Telephone	
	Web site/e-mail	
Project Location – 1	City	Veracruz, Veracruz
	Traveling Directions	460 kilometers south-east of México City through federal highway 150
	Coordinates	19º 10' latitude north; 96º 11' longitude west

Project Location – 2	City	Córdoba / Orizaba, Veracruz
	Traveling Directions	330 kilometers south-east of Mexico City through federal highway 150
	Coordinates	18º 51' latitude north; 97º 06' longitude west
Project Location – 3	City	Coatepec / Xalapa, Veracruz
	Traveling Directions	187 kilometers south-east of Mexico City through federal highway 150, then 145 kilometers east through state highway 140
	Coordinates	18º 54' longitude north; 99º 43' latitude west

2. Emissions Analysis

Mitigating GHG Gases	CO_2 (**X**)		CH_4 ( )		N_2O ( )
	HFC ( )		PFC ( )		SF_6 ( )
Activity Type	Cogeneration ( )		Process ( )		Transport (**X**)
	Solid Waste ( )		Leaking Emissions ( )		Biomass( )
Emissions Assurance	*Methodological Explanation*				*Calculation Tools*
Base Line	The base line emissions will be determined through the amount of fuel burned by the fleet vehicles in spinning their wheels during the first six months of 2007; generating measures per vehicle, per location and for the total fleet. The fuel volume figure in liters, will be checked against the computerized LP Gas inventory control operated by the company, and once the total volume is crossed out, the volume in liters will be converted to TON CO_2e				IPCC 2006 GHG Inventory Guidelines IPCC Carbon equivalent conversion factors for Mobile Fuels
Monitoring Plan	The Monitoring Plan will cover the information path of all the key operating parameters, with emphasis on daily, weekly and monthly figures for distances covered, volume of fuel assigned to the vehicles, and system calculations for fuel rates. The plan will provide a quality assurance manual, including: Questionnaires, flow charts for the fuel utilization process, designated spot checks and Critical Variable Identification. All of these to facilitate validation, and monitoring activities				
Indirect Emissions	There are no indirect emissions in the project				None
Selected Base-Period	From January 1st 2007 to June 30th 2007				
Project Yearly Calendar	2006	2007	2008	2009	2010
	2011	2012	Project Total =	(2006 to 2012)	
BAU Total Yearly CO_2e Emissions in Tons	8,716	8,975	9,245	9,523	9,808
	10,105	10,405	BAU Total =	66,777 TON CO_2e	
Project Total Yearly CO_2e Emissions in Tons	8,716	8,,680	8,644	8,904	9,171
	9,449	9,729	Project Total =	63,293 tCO2e	
Project Yearly Mitigated CO_2e Emissions in Tons	0	295	601	619	637
	656	676	Project Total =	3,484 TON CO_2e	
Total Number of Vehicles in Fleet	254	262	269	278	286
	294	303			

3. Project Contributions to Sustainable Development

Emissions without the Project	66,777 TON of CO_2e
Mitigated Emissions from the Project	3,484 TON of CO_2e
Project Direct Benefits	• Cleaner air in the biosphere of the three/five cities involved in the project • Increase in the technological level of the fleet administration labor market in the area • Change of focus for the LPG carburetion equipment suppliers, committing them not only to operational savings, but also to market greening objectives • Better training level for the fleet operators, creating among them an awareness of the ecological impacts in driving excesses • Speed reduction on the climate change effects in the gulf and eastern areas of the state of Veracruz • The creation of a success story for other fleets to follow, and in doing so launching a GHG mitigating wave across the country among the fleet operating companies
Project Indirect Benefits	• Introduction of more advanced conversion techniques for fleet shops • Better understanding of the fuel combustion process for the fleet maintenance personnel • Less pressure on the Mexican authorities to increase the price of the domestic fuel • Through this success history, make the LPG carburetion market segment, more competitive, thus being able to refrain the fleet market penetration of fuels much less amicable to the Kyoto Protocol objectives
Project Barriers	Traditionally the technical level of the LP Gas delivery fleets has been at the low end of the Mexican ranking, which is led by the bread and pastries delivery fleets. There is little motivation from the fuel price alone, as the LP gas dealer gets it much cheaper than any other fleet. In this scenario, the possibility of obtaining CER's through the CDM scheme of the Kyoto Protocol, makes appealing to the LP Gas dealers top management the sponsoring of such a project, due to the relevance of the direct and indirect benefits, and the greening message sent by the industry.
Regulations	• Federal – The sponsoring fleet operates under the Mexican laws, stated in the Act of Regulations for Storage and Distribution of Liquid Propane Gas • State – All vehicles in the sponsoring fleet should meet the ecological requirements issued by the Veracruz State Secretary of Social Development and Environment • Local – All vehicles should comply with the local traffic regulations
Technology Transfer	The main activity on the technology transfer issue is going to be through the international manufacturers of LP Gas carburetion equipment, and the transferring frame will be through their technical support departments, and no cost or royalties are going to be involved.

4. Project Financing

Total Estimated Project Cost			
Development Costs	€ 83,000		
Material Costs	€ 30,000		
Labor Costs	€		
Sundry Costs	€ 20,000		
Total Project Cost	€ 133,000		
Financing Sources			
Internal Financing	€ 133,000		
Debt	€	(entity)	
Other Sources	€	(entity)	
Income through CER's trading			
CER estimated cost	€ 8.00		
Income 2nd year	CER's 896		€ 7,168.00
Savings 2nd year	117,000 liters of LPG @ € 0.2210/L		€ 25,848.00
Income BEP	Payback 3.25 years		€ 133.000.00
Income 2007 - 2012	CER's 3,484		€ 27,852.00
Project Financial Evaluation			
IRR w/o CER's	% 4.81		
IRR with CER's	% 11.62		

5. Sponsoring Organization

Name	Gas del Atlántico S.A de C.V.
Address	Km. 34 Carretera Veracruz- Córdoba Tramo Manlio Fabio Altamirano Manlio Fabio Altamirano, Veracruz
Project Liason	Ing. Jhony Chablé
Telephone Mobile	52+22+ 9989-8420 52+045-22+9915-0322
e-mail	jchable@gasdelatlantico.com.mx
Parent Company	Promotora de Gas LP S.A. de C.V.
Representative	Jorge Garza Rodríguez
Telephone	52+81+8363-3888
e-mail	jgarza@proglp.com.mx

PROJECT IDEA NOTE (PIN)

Name of Project: Vapor and Electricity Generation from Bagasse Used as Fuel

Date submitted: June 20th, 2007

Description of size and quality expected of a PIN

Basically a PIN will consist of approximately 5-10 pages providing indicative information on:

- the type and size of the project
- its location
- the anticipated total amount of greenhouse gas (GHG) reduction compared to the "business-as-usual" scenario (which will be elaborated in the baseline later on at Project Design Document (PDD) level)
- the suggested crediting life time
- the suggested Certified Emission Reductions (CERs)/Emission Reduction Units (ERUs)/Verified Emission Reduction (VERs) price in US$ or € /ton CO_2e reduced
- the financial structuring (indicating which parties are expected to provide the project's financing)
- the project's other socio-economic or environmental effects/benefits

While every effort should be made to provide as complete and extensive information as possible, it is recognised that full information on every item listed in the template will not be available at all times for every project.

NOTE: For forestry projects, please use the PIN Template for LULUCF projects available at www.carbonfinance.org.

A. PROJECT DESCRIPTION, TYPE, LOCATION AND SCHEDULE

OBJECTIVE OF THE PROJECT *Describe in not more than 5 lines*	Reduction of Greenhouse Gases emissions, estimated at 100,987 tCO2/year, through partial substitution of fossil fuel (Heavy Fuel Oil) used to heat vapor and co-generate electricity at a brewery, by bagasse residues, which is a by-product of the brewing process.
PROJECT DESCRIPTION AND PROPOSED ACTIVITIES *About ½ page*	The brewing process used at the Compañía Cervecera de Zacatecas, S.A. de C.V., as well as the support installations require the supply of vapor and electric energy. At present, the vapor is produced in boilers using Heavy Fuel Oil. Part of the vapor is sent to the brewing process for indirect heating, and the rest of the vapor is sent to turbogenerators for the production of electricity. Moreover, a by-product of the brewing process is malt bagasse, a biomass residue with high humidity content. At present, the bagasse is commercialized as animal feed. The project activity relies on the use of calorific value of the bagasse to use it as an alternative fuel in the main boiler of the brewery, boiler n°5 "Radiant Box Type". To such purpose, the following steps must be undertaken: 1 – Reduction of the bagasse humidity content: The bagasse humidity will be reduced through physical and mechanical processing, in order to bring it down to acceptable levels for the combustion of the bagasse. 2 – Combustion of the bagasse in the boiler: The bagasse is fed as suspension to the boiler's hearth, in order use its calorific power.
TECHNOLOGY TO BE EMPLOYED[1] *Describe in not more than 5 lines*	The following equipment will be acquired to fulfill the Project activity: - Four tangential Burners for bagasse - Three electric dry-off oven (press type) - One fluid bed dryer, fuel: vapor - One Bagasse silo, 80m^3 - Helicoidal transporters (endless screw) - One ash collection silo - One electrostatic precipitator - Ventilator Alter the various modifications are brought to Boiler n°5, it will have the following characteristics: - Vapor generation capacity: 119,000 kg/h - Operating pressure: 30.90 kg/cm^2 - Temperature of water supply: 143°C - Temperature of vapor: 400°C
TYPE OF PROJECT	

[1] Please note that support can only be provided to projects that employ commercially available technology. It would be useful to provide a few examples of where the proposed technology has been employed.

Greenhouse gases targeted $CO_2/CH_4/N_2O/HFCs/PFCs/SF_6$ *(mention what is applicable)*	CO_2
Type of activities Abatement/CO_2 sequestration	Abatement through fuel switch from fossil fuel to biomass residues (bagasse)
Field of activities *(mention what is applicable)* *See annex 1 for examples*	1. Renewables 1c. Bagasse
LOCATION OF THE PROJECT	
Country	Mexico
City	Calera de Víctor Rosales, Zacatecas
Brief description of the location of the project *No more than 3-5 lines*	The brewery is located in a mainly industrial zone, although the directly neighboring lots are dedicated to agricultural activities. The closest residential area is Calera de Víctor Rosales, located approximately 2.5km away from the plant. Latitude North 22° 58' 22" Longitude West 102° 42' 27"
PROJECT PARTICIPANT	
Name of the Project Participant	Grupo Modelo, S.A. de C.V.
Role of the Project Participant	a. Project Operator b. Owner of the site or project c. Owner of the emission reductions d. Seller of the emission reductions ~~e. Project advisor/consultant~~ f. Project investor ~~g. Other, please specify:~~
Organizational category	~~a. Government~~ ~~b. Government agency~~ ~~c. Municipality~~ d. Private company ~~e. Non Governmental Organization~~ f. ~~Other, please specify:~~
Contact person	Fernando Aguirre García Juan Carlos de León Ayala
Address	Javier Barros Sierra No. 555, piso 3, Col. Zedec Santa Fe, Del. Álvaro Obregón. C.P. 01210, México, D.F.
Telephone/Fax	55 22660000 Ext. 4432 y 6454
E-mail and web address, if any	fernando.aguirre@gmodelo.com.mx juan.deleon@gmodelo.com.mx www.gmodelo.com
Main activities *Describe in not more than 5 lines*	
Summary of the financials *Summarize the financials (total assets, revenues, profit, etc.) in not more than 5 lines*	
Summary of the relevant experience of the Project Participant *Describe in not more than 5 lines*	Grupo Modelo, founded in 1925, is a leader in the elaboration, distribution and sale of beer in Mexico, with a total market share (national sales and exportation) of 62.8%, as of December 31st 2005. The company owns seven breweries in the Mexican Republic, with an installed annual capacity of 56 million hectoliters of beer. Grupo Modelo owns 12 brands of beer, among which stand out Corona Extra, the world's best selling Mexican beer, Modelo Especial, Victoria, Pacífico, Negra Modelo and other regional brands.

	The Group exports 5 brands of beer, selling in over 150 countries, and is the exclusive importer in Mexico of beers produced by Anheuser-Busch, which includes Budweiser and Bud Light. Since 1994, Grupo Modelo is quoted at the Mexican Stock Exchange.
Please insert information for additional Project Participants as necessary.	
EXPECTED SCHEDULE	
Earliest project start date *Year in which the plant/project activity will be operational*	The projected start-up sequence is as follows: - March 2008: 25% capacity - June 2008: 50% capacity - July 2008: 100% capacity
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: __ months Time required for legal matters: __ months Time required for construction: __ months Overall it is expected that the project can be operational within 6 months.
Expected first year of CER/ERU/VERs delivery	2008
Project lifetime *Number of years*	Indefinite
For CDM projects: Expected Crediting Period *7 years twice renewable or 10 years fixed*	To be defined. Option 1: 10 years fixed. Option 2: 7 years twice renewable
Current status or phase of the project *Identification and pre-selection phase/opportunity study finished/pre-feasibility study finished/feasibility study finished/negotiations phase/contracting phase etc. (mention what is applicable and indicate the documentation)*	Pre-feasibility study has been completed. Financing plan is secured.
Current status of acceptance of the Host Country *Letter of No Objection/Endorsement is available; Letter of No Objection/Endorsement is under discussion or available; Letter of Approval is under discussion or available* *(mention what is applicable)*	The letter of no objection has not been requested yet.
The position of the Host Country with regard to the Kyoto Protocol	Has the Host Country ratified/acceded to the Kyoto Protocol? YES: Mexico ratified the UN Framework Convention on Climate Change (UNFCCC) on March 11, 1993, and presented the First National Communication in 1997 at the Kyoto COP meeting. Mexico's congress approved the Kyoto Protocol (April. 2000) by unanimous consent. Has the Host Country established a CDM Designated National Authority / JI Designated Focal Point? YES: Mexico has appointed its designated national authority before the Clean

	Development Mechanism, through the creation of a Climate Change Office in SEMARNAT (the Ministry of Environment). More specifically, one of the working groups of the Climate Change Office is responsible for acting as DNA: the "Comité Mexicano para Proyectos de Reducción de Emisiones y de Captura de Gases de Efecto Invernadero" (COMEGEI).

B. METHODOLOGY AND ADDITIONALITY

ESTIMATE OF GREENHOUSE GASES ABATED/ CO_2 SEQUESTERED *In metric tons of CO_2-equivalent, please attach calculations*	Annual (if varies annually, provide schedule): 2008: 61,006 tCO_2-equivalent 2009 and subsequent years: 100,987 tCO_2-equivalent Up to and including 2012: 464,954 tCO_2-equivalent Up to a period of 10 years: 969,889 tCO_2-equivalent Up to a period of 7 years: 666,928 tCO_2-equivalent See annex II for calculation hypothesis.
BASELINE SCENARIO CDM/JI projects must result in GHG emissions being lower than "business-as-usual" in the Host Country. At the PIN stage questions to be answered are at least: • Which emissions are being reduced by the proposed CDM/JI project? • What would the future look like without the proposed CDM/JI project? *About ¼ - ½ page*	The brewery mainly consumes Heavy Fuel Oil to produce vapor and electricity, both used for on-site energy needs. About 20%, or 1,306,436 GJ/year of this fossil fuel will be replaced by feeding bagasse to the boiler. The emissions being reduced by the CDM project are those resulting from the fraction of fossil fuel to be burned in the boiler that will be replaced by the bagasse biomass residues. No GHG emissions reductions will be claimed for the biogas resulting from the waste water treatment plant burned in the boilers, only the substitution of Heavy fuel oil for bagasse is considered within the scope of the project activity. Without the proposed CDM project, the main fuel used for the generation of vapor and electricity at the brewery would continue to be Heavy Fuel Oil. The bagasse would continue to be sold as animal feed. The following table presents the fuel mix used at the brewery for the baseline scenario and the project activity:

Fuel	Baseline	Project
Heavy Fuel Oil	97.76%	77.67%
Biogas	2.23%	2.77%
Bagasse	0%	19.55%

ADDITIONALITY Please explain which additionality arguments apply to the project: (i) there is no regulation or incentive scheme in place covering the project (ii) the project is financially weak or not the least cost option (iii) country risk, new technology for country, other barriers (iv) other	(i) There is no regulation or incentive in Mexico to use Bagasse as fuel. Also, there is no dis-incentive for Heavy Fuel Oil use. The project activity does not respond to any regulatory obligation or external incentive other than the CDM. (iii) There are strong barriers to the implementation of the project without the CDM incentive: • Difficult to obtain debt funding, considering the very innovative nature of the project, • High interest rates and cost of capital in Mexico, • Extra costs and resources needed for the disposal of a new kind of waste at the brewery: bagasse combustion ashes, • Implementation of a radically new technology, entailing high investment

	in human and financial resources for the company. Furthermore, a common practice analysis reveals that the kind of technology needed for this project (boiler accepting gaseous, liquid and solid fuels) is not only unique in Mexico, but pilot in the brewing industry at global level.
SECTOR BACKGROUND Please describe the laws, regulations, policies and strategies of the Host Country that are of central relevance to the proposed project, as well as any other major trends in the relevant sector. Please in particular explain if the project is running under a public incentive scheme (e.g. preferential tariffs, grants, Official Development Assistance) or is required by law. If the project is already in operation, please describe if CDM/JI revenues were considered in project planning.	There are no public incentives for the use of bagasse as fuel. There are no sector specific regulations regarding the project activities. Under Mexican Environmental Regulations, Bagasse is considered as a non-hazardous waste.
METHODOLOGY Please choose from the following options: For CDM projects: (i) project is covered by an existing Approved CDM Methodology or Approved CDM Small-Scale Methodology (ii) project needs a new methodology (iii) projects needs modification of existing Approved CDM Methodology	Project needs modification of existing methodology (AM0036 or ACM0006) or a new methodology. See annex III for detailed analysis of the applicability of AM0036 and ACM0006

C. FINANCE

TOTAL CAPITAL COST ESTIMATE (PRE-OPERATIONAL)	
Development costs	0 US$ million (Feasibility studies, resource studies, etc.)
Installed costs	14.95 US$ million: Acquiring the equipment, installation and testing.
Land	0 US$ million
Other costs (please specify)	There are other annual operating costs to be taken into account: - Canceled income from selling the Bagasse as animal feed - Maintenance and manpower, - Electricity consumption for the dryers - Disposal of bagasse ash waste - Extra waste water treatment from the drying of the Bagasse

	The total annual cost is estimated at 3.3 US$ million. See Annex IV for annual cash flows and IRR analysis.
Total project costs	*14.95 US$ million.*
SOURCES OF FINANCE TO BE SOUGHT OR ALREADY IDENTIFIED	
	Project financing will be supported through the organization's own resources.
Equity Name of the organizations, status of financing agreements and finance (in US$ million)	N/A
Debt – Long-term Name of the organizations, status of financing agreements and finance (in US$ million)	N/A
Debt – Short term Name of the organizations, status of financing agreements and finance (in US$ million)	N/A
Carbon finance advance payments[2] sought from the World Bank carbon funds. (US$ million and a brief clarification, not more than 5 lines)	N/A
SOURCES OF CARBON FINANCE Name of carbon financiers other than any of the World Bank carbon funds that your are contacting (if any)	N/A
INDICATIVE CER/ERU/VER PRICE PER tCO_2e[3] *Price is subject to negotiation. Please indicate VER or CER preference if known.*[4]	
TOTAL EMISSION REDUCTION PURCHASE AGREEMENT (ERPA) VALUE	
A period until 2012 (end of the first commitment period)	___ US$ / €
A period of 10 years	___ US$ / €
A period of 7 years	___ US$ / €

[2] Advance payment subject to appropriate guarantees may be considered.
[3] Please also use this figure as the carbon price in the PIN Financial Analysis Model (cell C94).
[4] The World Bank Carbon Finance Unit encourages the seller to make an informed decision based on sufficient understanding of the relative risks and price trade-offs of selling VERs vs. CERs. In VER contracts, buyers assume all carbon-specific risks described above, and payment is made once the ERs are verified by the UN-accredited verifier. In CER/ERU contracts, the seller usually assumes a larger component - if not all – of the carbon risks. In such contracts, payment is typically being made upon delivery of the CER/ERU. For more information about Pricing and Risk, see "Risk and Pricing in CDM/JI Market, and Implications on Bank Pricing Guidelines for Emission Reductions".

Please provide a financial analysis for the proposed CDM/JI activity, including the forecast financial internal rate of return for the project with and without the Emission Reduction revenues. Provide the financial rate of return at the Emission Reduction price indicated in section "Indicative CER/ERU/VER Price". DO NOT assume any up-front payment from the Carbon Finance Unit at the World Bank in the financial analysis that includes World Bank carbon revenue stream. Provide a spreadsheet to support these calculations. The PIN Financial Analysis Model available at www.carbonfinance.org is recommended.

D. EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS

LOCAL BENEFITS E.g. impacts on local air, water and other pollution.	Reduction of air emissions due to fossil fuel combustion. Reduction of risks related to the land transportation of inflammable fuel.
GLOBAL BENEFITS Describe if other global benefits than greenhouse gas emission reductions can be attributed to the project.	Mitigation of climate change.
SOCIO-ECONOMIC ASPECTS	
What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project? Indicate the communities and the number of people that will benefit from this project. *About ¼ page*	Local economy support through the acquisition of products and services.
What are the possible direct effects (e.g. employment creation, provision of capital required, foreign exchange effects)? *About ¼ page*	Employment creation.
What are the possible other effects (e.g. training/education associated with the introduction of new processes, technologies and products and/or the effects of a project on other industries)? *About ¼ page*	Pilot installation of new technology for the brewing industry will incentive other brewing companies to implement similar technology.
ENVIRONMENTAL STRATEGY/ PRIORITIES OF THE HOST COUNTRY A brief description of the project's consistency with the environmental strategy and priorities of the Host Country *About ¼ page*	Mexico has proven to bring emphasis to the climate change issue since the early days of the global concern, as proves its early ratification of the Kyoto Protocol and its early efforts to establish a national inventory and National communications on the country's specific mitigation opportunities. Furthermore, the Mexican Ministry of Environment (SEMARNAT) has recently published the *2007 National Strategy for Climate Change*, which includes a detailed assessment of mitigation opportunities. Among these opportunities figure the implementation of cogeneration and the use of renewable sources of energy as some of the most promising for the industrial sector. Furthermore, the new Mexican Environmental legislation emphasizes the re-

	use and the valorization of wastes as the priority strategies for waste management. Given the described project activities and impacts, it can be considered that the project is consistent with the Mexican environmental strategy.

ANNEX I - Technologies

1. Renewables
   1a Biomass
   1b. Biogas
   1c. Bagasse
   1d. Wind
   1e. Hydro
   1f. Geothermal
   1g. Photovoltaic
   1h. Solar Thermal
2. Fossil Fuel Switch
3. Energy Efficiency
   3a. Cement Efficiency Improvement
   3b. Construction material
   3c. District heating
   3d. Steel Gas Recovery
   3e. Other Energy Efficiency
4. Waste Management
   4a. Landfill Gas recovery/utilization
   4b. Composting
   4c. Recycling
   4d. Biodigestor
   4e. Wastewater Management
5. Coalmine/Coalbed Methane
6. Oil and Gas Sector
   6a. Flared Gas Reduction
   6b. Reduction of technical losses in distribution system
7. N_2O removal
8. HFC23 Destruction
9. SF6 Recovery
10. Transportation
    9a. Fuel switch
    9b. Modal switch
11. Others

ANNEX II – Calculation hypothesis for the emission reduction

According to laboratory tests, the bagasse produced in the brewery has a calorific value of 0.01626 GJ/kg.
According to the factory projections, based on historical activity data, the bagasse generation is estimated at an average of 80,346,666 kg/year.
The energy therefore available is of 1,306,436 GJ/year.

The Heavy Fuel Oil to be substituted will therefore be for the equivalent energy supply of 1,306,436 GJ/year.
According to the "*Guide to calculation worksheets "Calculating CO2 emissions from the combustion of standard fuels and from electricity/steam purchase" v 2.1 (World Business Council for Sustainable Development)*", the emission factor for Heavy Fuel Oil is of 77.3 kg CO_2/GJ.
The emission reduction thus calculated is of 100,987 ton CO_2/year.

Note: this primary estimation takes into account neither the increase in electricity consumption for the drying of the bagasse prior to its combustion, nor the increase in Biogas available for burning, generated from the extra waste water extracted from the humid bagasse.

Table of Contents

I. Introduction

The Project Idea Note (PIN) is the first general information on the project and enables the Programme Management to assess the basic eligibility of a potential JI or CDM project. It comprises details on the following subjects:

- Project identification;
- Project participants;
- Host Country;
- General project information;
- Project organisation;
- Greenhouse gas emission reductions;
- (Additional) ecological, socio-economic and/or development effects; and
- Additionality and sustainability effects.

Chapter II contains the PIN template.[1]

[1] It focuses on "directly" emission-reducing projects. In the case of sink projects the template has to be adapted and used accordingly.

II. Template for the Project Idea Note (PIN)

A PROJECT IDENTIFICATION

A 1 Project summary	
Title of project activity	**GHG emissions reductions by the installation of a Coke Dry Quenching System at Steel facility.**
Applicant	Sicartsa Lázaro Cardenas Las Truchas, S.A. de C.V
Host Country	Mexico
Project type	○ Joint Implementation ✕ Clean Development Mechanism
Category of project activity	b) Improvement of energy efficiency of existing production equipment
Generation of emission reductions	Crediting period of seven years From: 2009 to: 2015
Estimated emission reductions *(in t CO_{2e} up to 2012)*	Annual (average): **46,700 ton CO2e** Up to and including 2012: **186,800tCO2-equivalent**
Crediting Period	Seven years
Offered amount of emission reductions	○ Joint Implementation: ERUs: _____ AAUs ("early credits"): _____ ✕ Clean Development Mechanism: CERs: None
Proposed ERU/CER price (EUR)	USA $ 13
Date of submission of Expression of Interest	

B PROJECT PARTICIPANTS

B 1 Applicant	
Name	Sicartsa Lázaro Cardenas Las Truchas, S.A. de C.V
Type of organisation *Please also describe the ownership structure.*	Private company (Steel Manufacturing)
Other functions of the Applicant within the project	☒ Sponsor ☐ Intermediary ☐ Technical consultant ☐ Other: _____
Main activities, knowledge and experience	Sicartsa Lázaro Cárdenas is the third largest iron and steel integrated company in Mexico. The technology of Sicartsa Lázaro Cárdenas is conformed by an integrated plant, that includes advanced secondary metallurgy and vacuum degassing facilities, enables it to produce a broad variety of grades of slabs (intermediary products used to manufacture flat rolled steel products) with wide-ranging applications. Encompass all aspects of steelmaking, combining both integrated and mini-mill facilities and producing much of the iron ore and coking coal used in our furnaces.
Name of contact person	Ing. Mariano Montejano Vega
Address	Sicartsa Lázaro Cárdenas Las Truchas, S.A. de C.V. Fco. J. Mújica No. 1, Col. Centro. C.P. 60950 Lázaro Cárdenas Michoacán México
Phone/fax	01 753 53 3 10 00 ext. 1742
E-mail	Mariano.montejano@arcelormittal.com

B 2 Project developer	
Name	Sicartsa Lázaro Cárdenas Las Truchas, S.A. de C.V.
Type of organisation	Steel Manufacturing Company
Other functions of the project developer within the project	○ Sponsor ○ Intermediary ○ Technical consultant ☒ Other: _Operator

Main activities, knowledge and experience	Same as above
Name of contact person	
Address	
Phone/fax	
E-mail	

B 3 Other project participants	
Name of project participant	
Type of organisation	○ Governmental body: _____ ○ Private enterprise ○ NGO ○ Other: _____
Function within the project	○ Sponsor ○ Intermediary ○ Technical consultant ○ Other: _____
Name of contact person	
Address	
Phone/fax	
E-mail	

C HOST COUNTRY

C 1 Location of project activity	
Host Country Party(ies)	Mexico
Region/State/Province etc.	Cd. Lázaro Cárdenas, Michoacán.
City/Town/Community etc.	Michoacán State
Brief description of the project location	Sicartsa is located in Lázaro Cárdenas City which is located in the south west of Mexico, within the Michoacán State. 

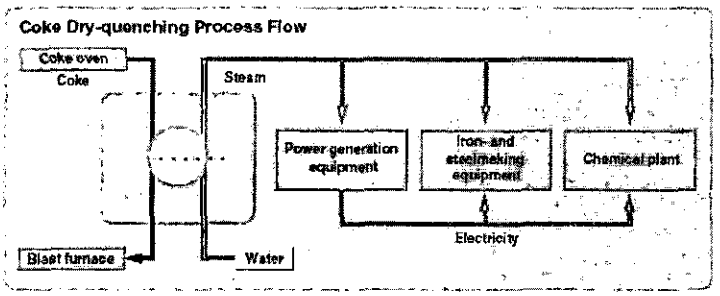
C 2 Status of Host Country	
Host Country[2]	☒ Signed and ratified, accepted, approved or acceded to the Kyoto Protocol ○ Signed the Kyoto Protocol and has demonstrated a clear interest in becoming a Party in due time ○ Has already started or is on the verge of starting the national accession process
Existing Memorandum of Understanding (MoU) (if Yes, please list the countries)	☒ Yes Signed and ratified with existing Memorandum of Understanding (MoU) with Spain, Italy, Germany, Netherlands, Austria and Canada. ○ No

[2] The list of countries which have ratified the Kyoto Protocol is available at http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf.

D GENERAL PROJECT INFORMATION

D 1 General Information	
Project name	**GHG emissions reductions by the installation of a Coke Dry Quenching System at Steel facility.**
Project objective	The project activity aims to reduce GHG emissions through installation of a heat recovery system known as coke dry quenching (CDQ) equipment to coke ovens in a steel facility. The process happens when the red-hot coke is quenching by circulating inert gas within a closed environment, preventing discharge of coke particles, while the sensible heat of the red-hot coke is recovery into the waste heat boiler for use as process steam and power generation to grid. The project will contribute to mitigation of global warming by reducing the amount of fossil fuel consumption.
Description of project background	Currently the company uses wet quenching system by spraying water to quench coke discharged from the oven, the large amount of heat by the system is dissipated into the atmosphere as unused waste heat. Thus, the coke dry quenching equipment (CDQ) will be introduced to recover the heat possessed by the run-of oven coke. Coke dry quenching equipment (CDQ) is a technology that recover the sensible heat of the WDQ system since the CDQ equipment will be introduced to recover the heat possessed by the run-of oven coke and thereby generate power for in-house consumption and it will displace electricity purchased from the Mexican grid.

D 2 Category(ies) of project activity	
Project category *Please mark accordingly.*	○ Construction (or retrofitting) of combined heat and power installations; ○ Fuel-switch projects in energy conversion installations and production plants to renewable energy sources or from energy sources with high carbon content to energy sources with lower carbon content, especially in existing district heating systems; ○ Construction (or retrofitting) of generating plants operated with renewable energy sources (especially wind power plants, biogas or biomass combined heat and power plants as well as hydroelectric power plants); ○ Projects whose purpose is the avoidance or (energy) recovery of landfill gas; ○ Waste management measures which contribute to the avoidance of greenhouse gas emissions, especially through energy recovery from waste, if possible with waste heat utilisation; ☒ Energy efficiency projects: projects serving the reduction of end-user energy consumption in residential buildings, public and private office buildings as well as industrial applications and processes (including waste heat potentials); ○ Other: _____

D 3 Technical aspects	
Technical description *The essential technical aspects should be briefly presented.* *A detailed description (max. 3 A4 pages) should be enclosed with the PIN including the following aspects:* *Project purpose* *Applicant's facilities to generate Emission Reductions* *Description of technology employed and associated risks* *Milestones, time schedule and current status of implementation* *Key permits and expected date of approval* *Key contracts and expected date of signing* *Risks during project implementation and operation*	Coke dry quenching: is a type of technology that cools coke by inert gases instead of conventional water and recovers heat energy which can be used to generate steam and electricity. The project activity aims to reduce GHG emissions through installation of a heat recovery system known as coke dry quenching (CDQ) equipment in the oven. The set of CDQ equipment will generate electricity using currently wasted heat that comes out of the coke ovens, and it will displace electricity purchased from the grid.  The project activity consists of the following units: ■ Waste heat recovery boiler ■ Steam turbines ■ Power generator ■ Appropriate power evacuation system and the related instrumentation and controls. ■ A dust collecting station will be built to catch a great lot of dust and powder from CDQ production and coke conveyance (this is an outstanding environmentally protective technology)

E PROJECT ORGANISATION

E 1 Project team	
Project-specific qualifications and experiences *The essential qualifications and experiences should be briefly presented, details should be enclosed with the PIN[3].*	Sicartsa Lázaro Cárdenas is one of the largest iron and steel integrated company in Mexico. It has experience in the implementation on energy efficiency measures and thus reducing their energy indicators. The technology of Sicartsa Lázaro Cárdenas is form an integrated plant, it includes advanced secondary metallurgy and vacuum degassing facilities, enables it to produce a broad variety of grades of slabs (intermediary products used to manufacture flat rolled steel products) with wide-ranging applications.

E 2 Schedule	
Current project status	○ Project idea ✗ Planning Evaluation by top management ○ Implementation
Status of financing	In financing evaluation
Status of negotiations with the Host Country	As soon as the project will be approved by top management, it will be submitted to DNA to ask for non objection and recommendation letter .
Status of permission procedures of authorities	Not started
Project preparation	From: 2007 to: 2008
Construction/assembly	From: 2007 to: 2008
Project lifetime	20 Years
Generation of ERUs/CERs	From: 2009 to: 2015
Other milestones	
Effect of PIN acceptance on the time schedule of the project	Acceleration of the process

[3] In this context please refer to Appendices 4 and 5 of the Call for Expression of Interest.

<table>
<tr><th>E 3 Financial aspects</th><th></th></tr>
<tr><td>Costs of project development (EUR)

Please give figures and briefly explain (background of) calculations.</td><td>The cost of the project is already in analysis by top management. The figures will describe the operational cost, implementation cost; benefits of the certified emissions reduction and the depreciation cost are included.</td></tr>
<tr><td>Costs of project implementation (EUR)

Please give figures and briefly explain (background of) calculations.</td><td></td></tr>
<tr><td>Estimated annual operating costs (EUR)

Please give figures and briefly explain (background of) calculations.</td><td></td></tr>
<tr><td>Estimated annual revenues (EUR)

Please give figures and briefly explain (background of) calculations.</td><td>
<table>
<tr><th>Year</th><th>tCO2-equivalent</th><th>ERPA VALUE USA $</th></tr>
<tr><td>2009</td><td>46,700</td><td>607,100</td></tr>
<tr><td>2010</td><td>46,700</td><td>607,100</td></tr>
<tr><td>2011</td><td>46,700</td><td>607,100</td></tr>
<tr><td>2012</td><td>46,700</td><td>607,100</td></tr>
<tr><td>2013</td><td>46,700</td><td>607,100</td></tr>
<tr><td>2015</td><td>46,700</td><td>607,100</td></tr>
<tr><td>2016</td><td>46,700</td><td>607,100</td></tr>
<tr><td>Total</td><td>326,900</td><td>$ 4,249,700</td></tr>
</table>
Up to and including 2012: USA $ 4,249,700
Up to 7 years: USA$ 8,499,400
Up to 14 years: USA $ 12,749,100</td></tr>
<tr><td>Financing sources (equity/debt capital, financing institutions)</td><td></td></tr>
<tr><td>Proposed ERU/CER price (EUR)
Please explain calculation.</td><td>USA $ 13</td></tr>
</table>

F GREENHOUSE GAS EMISSION REDUCTIONS

Only projects resulting in emission reductions of greenhouse gases listed in table F1 can be accepted as JI or CDM projects. All emissions and/or emission reductions must be stated in metric tonnes of CO_2 equivalent.

F 1 Greenhouse gases	
Greenhouse gases to be reduced by the project	✗ CO_2 ○ CH_4 ○ N_2O ○ HFCs ○ PFCs ○ SF_6

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 project activity.

F 2 Project Boundary	
Description of Project Boundary	The boundary will be the industrial facility where waste heat, steam and electricity are generated

F 3 Project emissions	
Description and estimation of project-specific greenhouse gas emissions within the Project Boundary	The methodology applied for the projects is the ACM0012: "Consolidated baseline methodology for GHG emission reductions for waste heat based energy system" The selected approach from paragraph 48 of the CDM modalities and procedures is: "Existing actual or historical emissions". The consolidated methodology is for project activities that utilize waste gas and/or waste heat as an energy source for: • Generation of electricity. The energy generated in the project activity will be used within the industrial facility.

A Baseline is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the project ("business-as-usual-scenario"). By comparing the Baseline with the project emissions the emission reductions generated can be calculated.[4]

F 4 Baseline	
Outline of considered Baseline methodology/scenario and estimation of Baseline emissions within the Project Boundary	● The conventional CWQ (Coke Wet Quenching) facilities in the cooling process of iron and steel factories, and the waste heat realized to atmosphere directly, is identified as the common practice in Mexico. ● In the absence of the project activity, the electricity provided would have been procured from the National Commission of Power. This would result in higher GHG emissions than those emitted in the project activity. ● Because investment in a Coke Dry Quenching project is more expensive compared to CWQ project, thus, without the income from sales of CER's, the proposed CDM project activity would not happen and without the project activity, the conventional CWQ (coke wet quenching) facilities in the cooling process of iron and steel factory would continue. And the waste heat will realized to atmosphere directly. ● The proposed project will lead to the reduction of GHG emissions corresponding to 46,700 tonnes of CO2 equivalent per year and 326,900 tonnes of CO2 equivalent during 7 years. The emission reduction will come through waste heat recovery. ● The electricity generated by the recovery of waste heat from the wet quenching system will be 85 GWh/year, that will results in a reduction of 46,700 tCO2/year that otherwise will be emitted in absence of the project activity. ● The waste heat utilization is not mandate under regulation of Mexico. The generation of power with waste heat from wet quenching system is not mandate by the applicable regulation and /or promoted by the sectoral policies. The cost of the Dry quenching system is very high, thus the project would not have occurred without CDM benefits. ● The project is reducing GHG emissions and such emissions reductions would not occur in the absence of the CDM project activity.

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 project activity.

[4] Additionally, Leakage has to be taken into account.

F 5 Leakage	
Description and estimation of Leakage	No leakage was identified in the project activity.

F 6 Emission reductions	
Crediting period	7 years
Estimated annual and total abatement of greenhouse gas emissions in tonnes of CO_2 equivalent in comparison to the Baseline scenario (taking into account Leakage)	<table><tr><th>Year</th><th>tCO2-equivalent</th></tr><tr><td>2009</td><td>46,700</td></tr><tr><td>2010</td><td>46,700</td></tr><tr><td>2011</td><td>46,700</td></tr><tr><td>2012</td><td>46,700</td></tr><tr><td>2013</td><td>46,700</td></tr><tr><td>2014</td><td>46,700</td></tr><tr><td>2015</td><td>46,700</td></tr><tr><td>**Total**</td><td>**326,900**</td></tr></table> Up to and including 2012: **186,800 ton CO2e.** Up to 7 years: **326,900 ton CO2e.** Up to 14 years: **653,800 ton CO2e.** Up to a period of 21 years: **980,700 ton CO2e.**

G (ADDITIONAL) ECOLOGICAL, SOCIO-ECONOMIC AND/OR DEVELOPMENT EFFECTS

G 1 Expected environmental effects	
Expected global/local environmental effects (positive and negative) of the project[5]	Waste heat recovery has a positive impact at national level toward the adoption of sustainable pathways, saving carbon intensive fuels and environmental improvement. The project will bring national benefits because of the increasing of the competitiveness of the steel companies in the country. Local benefits expected are from the reduction of environmental pollution, recovery of waste heat realized. In terms of GHG emissions abatement, the reductions will come from de recovery of waste heat realized for power production for own consumption and the abatement of the CO2 emissions at the National Power Commission, additional to the savings of coal due to the waste heat recovery of the CDQ system. The system includes a dust collecting system, thus the air pollution will be controlled and the impact to the atmosphere can be enormously reduced. By avoiding the generation of greenhouse gases it would also result in avoidance of thermal pollution in the vicinity that would have occurred due to waste gas emissions at high temperature. Also, the CDQ technology will contribute to water conservation. The project will reduce water usage comparing to the wet quenching system.

G 2 Socio-economic and development aspects	
Expected social and economic effects of the project	Transfer of technology from a developed country to a developing country.
Project-related employment structure	○ Employees under 14 years ✗ Employees over 14 years
Do any of the listed effects occur due to the project? NA	○ Resettlement ○ Restriction of access to essential resources ○ Compulsory purchase of land

[5] Abstraction of ground water or surface water may in no event be larger as the natural water influx.

H ADDITIONALITY AND SUSTAINABILITY EFFECTS

H 1 Additionality	
Presentation of the Additionality of the project *Please explain briefly how and why the project is additional and therefore not the (considered) Baseline scenario. Please describe 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.*	According with the stages presented in the addicionality tool, the investment barrier was identified for the implementation of the project activity Investment barriers: Changing to a DQC technology is a bigger change in the steel plant. A strong inversion on this kind of change is a very important decision. It will require a financing sponsor. The expected annual revenues from the CER are a strong incentive in order to reduce the IRR. In the absence of the revenues from the CER´s the project activity would not have happened. The project activity contributes to the sustainable development to the country due to the energy savings, the increasing of environmental improvement and the increasing of the steel competitiveness. Technical barriers: Since installation of CDQ is a first experience for Sicarta Lázaro Cárdenas Mexico, and those equipment have advanced technology and complicated system. This results in requirements for facility design and construction than that of wet quenching system. As a consequence, CDQ will require additional engineers to operate and maintain the equipment

H 2 Sustainability Effects	
Summarising description of the project's contribution to the sustainable development of the Host Country	Waste heat recovery has a positive impact at national level toward the adoption of sustainable pathways, saving carbon intensive fuels and environmental improvement. The project will bring national benefits because of the increasing of the competitiveness of the steel companies in the country. Transfer of technology from a developed country to a developing country.

Table of Contents

A PROJECT IDENTIFICATION

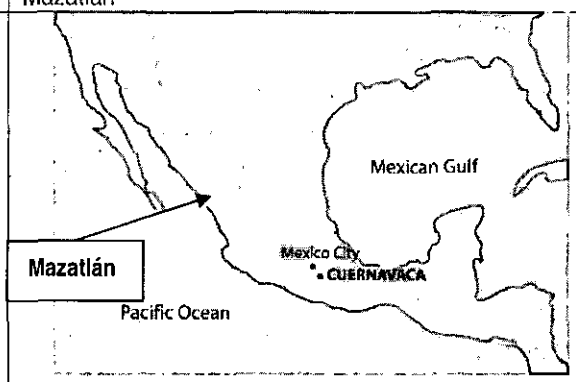
<table>
<tr><td>A 1 Project summary</td><td></td></tr>
<tr><td>Title of project activity</td><td>GHG emission reduction by energy efficiency improvement in metal sheet lacquering operations.</td></tr>
<tr><td>Applicant</td><td>Envases Universales México</td></tr>
<tr><td>Host Country</td><td>Mexico City</td></tr>
<tr><td>Project type</td><td>▯ Joint Implementation
X Clean Development Mechanism</td></tr>
<tr><td>Category of project activity</td><td>Energy efficiency project</td></tr>
<tr><td>Generation of emission reductions</td><td>1,840 tCO_2/year
From: 2009 to: 2018
Up to and including 2012: 7,360 tCO2-equivalent
Up to a period of 10 years: 18,400 tCO2-equivalent</td></tr>
<tr><td>Estimated emission reductions (in t CO_{2e} up to 2012)</td><td>Up to 2012 estimated emission reductions: 7,360 ton CO2e</td></tr>
<tr><td>Crediting Period</td><td>Ten years</td></tr>
<tr><td>Offered amount of emission reductions</td><td>○ Joint Implementation:
ERUs: _____
AAUs (“early credits”): _____
X Clean Development Mechanism:
CERs:
<table>
<tr><th>Year</th><th>Emissions (tons CO_2)</th></tr>
<tr><td>2009</td><td>1,840</td></tr>
<tr><td>2010</td><td>1,840</td></tr>
<tr><td>2011</td><td>1,840</td></tr>
<tr><td>2012</td><td>1,840</td></tr>
<tr><td>2013</td><td>1,840</td></tr>
<tr><td>2014</td><td>1,840</td></tr>
<tr><td>2015</td><td>1,840</td></tr>
<tr><td>2016</td><td>1,840</td></tr>
<tr><td>2017</td><td>1,840</td></tr>
<tr><td>2018</td><td>1,840</td></tr>
<tr><td>Total</td><td>18,400</td></tr>
</table></td></tr>
<tr><td>Proposed ERU/CER price (EUR)</td><td>13 ERU/CER</td></tr>
<tr><td>Date of submission of Expression of Interest</td><td>To be defined</td></tr>
</table>

B PROJECT PARTICIPANTS

B 1 Project Developer	
Name	Envases Universales México
Type of organisation Please also describe the ownership structure.	Manufacturing organization. The main activity is the production of steel, PET and aluminum containers.
Other functions of the Applicant within the project	○ Sponsor ○ Intermediary ○ Technical consultant X Other: **Operator**
Main activities, knowledge and experience	Envases Universales México it is conformed by a group of business units whose aims is the production of containers for several kind of industries. It was founded in 1994 to produce steel containers for the food industry and polyethylene container for the chemical industry. En 1998 it was included PET production for the soft drink industry. In 2003 Envases Universales de Mexico S.A. De C.V. Joining the group as a division of aluminum containers. In 2006, the expansion continued reaching a total of 15 plants distributed strategically in Mexico, with a total production of : 7,000,000,000 containers and 8,000,000,000 close containers.
Name of contact person	Dr. Arturo Zapata
Address	Calzada de Guadalupe No. 504 Col. Centro. Cuautitlán, Estado de México C. P. 54806 México.
Phone/fax	58-70-22-22 Fax: 5870-2020
E-mail	arturo.zapata@euniversales.com

B 2 Other project participants	
Name of project participant	
Type of organisation	○ Governmental body: _____ ○ Private enterprise ○ NGO Other:
Function within the project	○ Sponsor ○ Intermediary Technical consultant ○ Other:
Name of contact person	
Address	
Phone/fax	
E-mail	

C HOST COUNTRY

C 1 Location of project activity	
Host Country Party(ies)	Mexico
Region/State/Province etc.	Sinaloa
City/Town/Community etc.	Mazatlán
Brief description of the project location	

C 2 Status of Host Country	
Host Country[1]	X Signed and ratified, accepted, approved or acceded to the Kyoto Protocol ○ Signed the Kyoto Protocol and has demonstrated a clear interest in becoming a Party in due time ○ Has already started or is on the verge of starting the national accession process
Existing Memorandum of Understanding (MoU) (if Yes, please list the countries)	X Yes SPAIN, ITALY, GERMANY, NETHERLANDS, AUSTRIA, CANADA, ETC ○ No

[1] The list of countries which have ratified the Kyoto Protocol is available at http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf.

D GENERAL PROJECT INFORMATION

D 1 General Information	
Project name	GHG emission reduction by energy efficiency improvement in metal sheet lacquering operations.
Project objective	Reduction of GHG emissions based on the reduction of fossil fuel consumption (natural gas) due to the energy efficiency improvement by the installation of a new technology (drying oven) in a lacquering metal paint process.
Description of project background	**Current situation:** The coating process involves the application of coating with varnish, external painting, internal health protection and drying. The drying process is done in an serial oven in which hot air is applied to the freshly painted sheet . Every sheet The sheet. The temperature and drying time will depend on the type of coating used (190 ° C-210 ° C). At the exit there is a cooling zone and after this the sheet is received in a stacker. The drying process for the coating applied is done in a serial oven where hot air is applied to the freshly painted sheet. The temperature and drying time will depend on the type of coating used (190 ° C-210 ° C). At the exit there is a cooling zone and after this the sheet is received in a stacker. In order to fulfill environmental requirements for air emissions, there is installed an incinerator to burns the air gases coming from the drying process. **Project Purpose:** With the growing concern of climate change, the company has focused on energy conservation strategies in the existing operations. The basic objective of the project is to reduce GHG emissions through the energy efficiency improvements by the replacement of the current equipment which in turn reduces the fossil fuel gas consumption in the plant and subsequently reduces the Greenhouse Gas (GHG) emissions. The ECO-TNV German technology represents the most economical form of air purification system for use in metal sheet lacquering operation. It has integrated an air pollution control equipment fitted. The technology in Mexico is new and only one plant in Mexico uses by the lacquering process. The drying process occurs in only one chamber, reducing the consumption of fuel used. Additionally, the thermal energy of the process is recovery and recycled, thus it reduces energy consumption. The system includes a vapor absorption chiller thereby reducing power consumption for the refrigeration system.

D 2 Category(ies) of project activity	
Project category *Please mark accordingly.*	○ Construction (or retrofitting) of combined heat and power installations; ○ Fuel-switch projects in energy conversion installations and production plants to renewable energy sources or from energy sources with high carbon content to energy sources with lower carbon content, especially in existing district heating systems; ○ Construction (or retrofitting) of generating plants operated with renewable energy sources (especially wind power plants, biogas or biomass combined heat and power plants as well as hydroelectric power plants); ○ Projects whose purpose is the avoidance or (energy) recovery of landfill gas; ○ Waste management measures which contribute to the avoidance of greenhouse gas emissions, especially through energy recovery from waste, if possible with waste heat utilisation; **X** Energy efficiency projects: projects serving the reduction of end-user energy consumption in residential buildings, public and private office buildings as well as industrial applications and processes (including waste heat potentials); ○ Other: _____

D 3 Technical aspects

Technical description

The essential technical aspects should be briefly presented.

A detailed description (max. 3 A4 pages) should be enclosed with the PIN including the following aspects:

Project purpose

Applicant's facilities to generate Emission Reductions

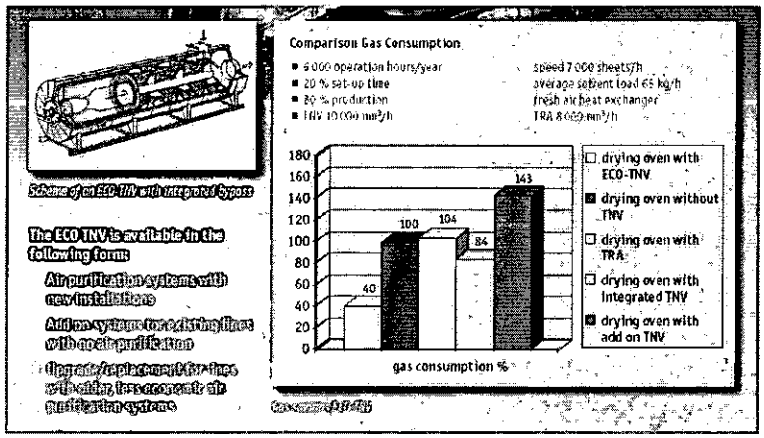
Description of technology employed and associated risks

Milestones, time schedule and current status of implementation

Key permits and expected date of approval

Key contracts and expected date of signing

Risks during project implementation and operation



E PROJECT ORGANISATION

E 1 Project team	
Project-specific qualifications and experiences *The essential qualifications and experiences should be briefly presented, details should be enclosed with the PIN[2].*	

E 2 Schedule	
Current project status	X Project idea ○ Planning ○ Implementation
Status of financing	In process
Status of negotiations with the Host Country	None
Status of permission procedures of authorities	None
Project preparation	From: 2007 to: 2008
Construction/assembly	From: 2007 to: 2008
Project lifetime	20 years
Generation of ERUs/CERs	From: 2008 to: 2018
Other milestones	
Effect of PIN acceptance on the time schedule of the project	Implementation of the project

[2] In this context please refer to Appendices 4 and 5 of the Call for Expression of Interest.

<table>
<tr><td>E 3 Financial aspects</td><td></td></tr>
<tr><td>Costs of project development (EUR)
Please give figures and briefly explain (background of) calculations.</td><td>Confidential information</td></tr>
<tr><td>Costs of project implementation (EUR)
Please give figures and briefly explain (background of) calculations.</td><td></td></tr>
<tr><td>Estimated annual operating costs (EUR)
Please give figures and briefly explain (background of) calculations.</td><td></td></tr>
<tr><td>Estimated annual revenues (EUR)
Please give figures and briefly explain (background of) calculations.</td><td>
<table>
<tr><th>Year</th><th>Emissions (tons CO_2)</th><th>Revenues for CER´s</th></tr>
<tr><td>2009</td><td>1,840</td><td>23,920</td></tr>
<tr><td>2010</td><td>1,840</td><td>23,920</td></tr>
<tr><td>2011</td><td>1,840</td><td>23,920</td></tr>
<tr><td>2012</td><td>1,840</td><td>23,920</td></tr>
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<tr><td>2017</td><td>1,840</td><td>23,920</td></tr>
<tr><td>2018</td><td>1,840</td><td>23,920</td></tr>
<tr><td>Total</td><td>18,400</td><td>239,200</td></tr>
</table>
</td></tr>
<tr><td>Financing sources (equity/debt capital, financing institutions)</td><td></td></tr>
<tr><td>Proposed ERU/CER price (EUR)
Please explain calculation.</td><td>13 EUR/CER
The international price is around of the 22 EUR, for CDM projects, the price is around of 15 EUR. In order to be conservative the price chosen was 13 EUR.</td></tr>
</table>

F GREENHOUSE GAS EMISSION REDUCTIONS

Only projects resulting in emission reductions of greenhouse gases listed in table F1 can be accepted as JI or CDM projects. All emissions and/or emission reductions must be stated in metric tonnes of CO_2 equivalent.

F 1 Greenhouse gases	
Greenhouse gases to be reduced by the project	X CO_2 ○ CH_4 ○ N_2O ○ HFCs ○ PFCs ○ SF_6

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 project activity.

F 2 Project Boundary	
Description of Project Boundary	The boundary will be the industrial facility where metal sheet lacquering operations occurs.

F 3 Project emissions	
Description and estimation of project-specific greenhouse gas emissions within the Project Boundary	The emissions of the projects are those related with the consumption of the fuel used. It is a small scale project, ant the methodology used for the emission estimation it the small scale type II-D. The methodology says that in the absence of the project the existing facility would continue to consume energy at historical average levels, until the time at which the industry facility would be likely to be replaced. From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and baseline energy consumption is assumed to equal project energy consumption, and no emission reductions are assumed to occur. The application of the methodology and the estimations are in the follow sheet.

A Baseline is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the project ("business-as-usual-scenario"). By comparing the Baseline with the project emissions the emission reductions generated can be calculated.[3]

F 4 Baseline	The selected approach for the baseline emissions is according to the "Existing actual or historical emissions".
Outline of considered Baseline methodology/scenario and estimation of Baseline emissions within the Project Boundary	It was identify three options as a the baseline scenario: 1) In the absence of the project activity, the drying of the metal sheet lacquering operations will continues the same process. The financing inversion of this kind of technology is very high, and the replacement of the metal sheet equipment would not have occurred without CDM benefits. 2) In the absence of the project activity, the drying of the metal sheet lacquering operations will continues at least 5 years and after will be replaced by a similar technology already implemented. 3) The third scenario is the implementation of the ECO-TNV technology which will be a technology transfer from Germany where its experience has been implemented successfully. The project will reduce GHG emissions and the emissions reductions would not occur in the two first cases, it results in higher GHG emissions than those emitted in the project activity. As the project is a replacement measure, the baseline identified consists of the energy baseline of a new identical facility that will be replaced in medium term. The approved methodology for this project is the AMS-IID, and the baseline emissions are the historical emissions. Baseline emissions taking into a count the efficiency of the equipment: Annual consumption of natural gas: 1,320,000 m3 Annual consumption of Propane gas: 1,010,000 m3 From natural gas: 1890 ton CO2 From propane gas: 1538 ton CO2 **Total emissions: 3,428 tonCO2**

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 project activity.

F 5 Leakage	

[3] Additionally, Leakage has to be taken into account.

Description and estimation of Leakage	The identified leakages are those related with the emissions resulting because of the dismantling of the current equipment and the installation of the new equipment.

F 6 Emission reductions	
Crediting period	2008-2018
Estimated annual and total abatement of greenhouse gas emissions in tonnes of CO_2 equivalent in comparison to the Baseline scenario (taking into account Leakage)	Project emissions: Annual consumption of natural gas: 880 m3 Annual consumption of Propane gas: 708 m3 Total emissions: **890 ton CO2** ***Emission reductions = 3,428 - 890 = 1,840 ton CO2***

G (ADDITIONAL) ECOLOGICAL, SOCIO-ECONOMIC AND/OR DEVELOPMENT EFFECTS

G 1 Expected environmental effects	
Expected global/local environmental effects (positive and negative) of the project[4]	The use of the technology not only produces clean air, it also reduces the level of CO2 emissions, save fuel consumption.

G 2 Socio-economic and development aspects	
Expected social and economic effects of the project	- Contribution to improve air quality, life and local health by reducing emissions to the atmosphere. - Positive effects in the social aspect due to the implementation of measures toward sustainability of the energy resources. - Improve security of energy supply. - Additional economic value in the business scenario due to the generation of CERs as economic incentive or revenues in order to reduce the IRR. - Reduction of fossil fuel consumption.
Project-related employment structure	○ Employees under 14 years ○ Employees over 14 years
Do any of the listed effects occur due to the project?	○ Resettlement.....NO ○ Restriction of access to essential resources NO ○ Compulsory purchase of land.....NO

[4] Abstraction of ground water or surface water may in no event be larger as the natural water influx.

H ADDITIONALITY AND SUSTAINABILITY EFFECTS

H 1 Additionality	
Presentation of the Additionality of the project Please explain briefly how and why the project is additional and therefore not the (considered) Baseline scenario. Please describe 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.	In Mexico, there is some facility that the typical average technical lifetime is bigger than 30 years, such is the case of the sugarcane industry, some ovens or kilns, and it is the same case for metal sheet lacquering industry. The additionality of the project activity can be demonstrated by the amortization time of the investment of the project.

H 2 Sustainability Effects	
Summarising description of the project's contribution to the sustainable development of the Host Country	Project contributes to the sustainable development of the country by the conservation of natural resources, saving fossil fuel and reduction of pollution.