CLEAN DEVELOPMENT MECHANISM
SIMPLIFIED PROJECT DESIGN DOCUMENT
FOR SMALL-SCALE PROJECT ACTIVITIES (SSC-CDM-PDD)
Version 02 in effect as of July 8, 2005

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SECTION A. General description of the small-scale project activity

A.1. Title of the small-scale project activity:

Bio energy in General Deheza –Electricity generation based on peanut hull and sunflower husk-.
Version 04, February 10, 2007.

A.2. Description of the small-scale project activity:

Brief

This project activity consists in installing electric power generation within the Aceitera General Deheza (AGD) Plant (Vegetable oil producer). The latter is located in the District of General Deheza, Córdoba Province, Argentina. Biomass waste will be used to generate energy which will feed part of the demand of the oil production plant and/or be exchanged with the Argentine electric power system. At present, AGD takes all of its electric demand from the grid. The bio energy plant will use direct combustion technology in a boiler. The installed project capacity will be 10,95 $MW_{el.}$ The fuel used will mainly be peanut hull. The electric energy thus produced will replace system generation. The argentine power system is based on hydraulic, thermal and nuclear generation. Thermal production employs natural gas, fuel oil, diesel oil, and coal, these last ones in increasing quantities. . The annual energy produced only by biomass is expected to be 63.359 MWh year. Upon this hypothesis, the total amount of CERs that is expected to be obtained along the 21 years of credit is 650.194 tons CO_2.

The AGD commitment with the environment led them, in April, 2001, to the installation of a boiler which could use part of the agro industrial waste as fuel to produce steam process, allowing the substitution, in the generation processes of thermal energy, of other fossil fuels, non-renewable, such as natural gas and fuel oil.

The CDM project activity –power generation- does not take into account steam production, activity that is being developed and will so continue but as a complement to the power generation.

The power produced from bio energy -neutral in terms of greenhouse effect- will replace conventional system power generation, dependent on fossil fuel, thus reducing greenhouse gas emissions. This unit only employs natural gas during exceptional situations such as the temporary starting.

Basic data of the project activity:

Capacity of generation	10,95 MW_{el}	
Biomass annual consumption Estimated	183.000 tons/year .	Peanut hull: between 119.000 and 128.000 tons/year Sunflower husk: between 55.000 and 64.000 tons/year

Contribution to the sustainable development.

The project activity contributes to the sustainable development in the region and the country as follows:

- After having left behind the convertibility period and later renegotiation of the external debt, investments in Argentina decreased considerably. In this sense, the proposed project activity involves a genuine investment of about US$ 8.561.520.
- Installation, erection and further operation of the project activity require qualified labor completely different from the original operation of the AGD. This leads to the training as well as hiring of personnel with new specializations.
- The project activity is aligned with the AGD sustainable development policy, thus it uses a renewable source of fuel.

- It helps prevent the open sky burning of waste from the processing of agricultural products, improving life quality in the area. Open sky burning produces and frees into the environment dioxins and furans.
- The risk of arson in the fields nearby where this open sky burning is practiced is avoided.
- It is disposed of the fuel used (biomass) in the plant as well as in the surrounding areas.
- The project activity (power generation) reduces energy demand from the system. The latter requires an annually increasing amount of fuels different from natural gas. These are, mainly, imported with the resulting negative impact in the Argentinean commercial balance.
- The unit will reduce transmission and distribution losses of the Argentinean electric system.
- This power generation will diminish the demand of the area from the national system, improving grid reliability in the entire region.

A.3. Project participants:

Name of Party involved (*) ((host) indicates a host Party)	Private and/or Public entity (ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (yes/no).
Argentina (host)	**Aceitera General Deheza S.A. (AGD)**	No

(*) In accordance with the CDM modalities and procedures, at the time of making the PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party (ies) involved is required.

Ownership of the project activity.

Aceitera General Deheza S.A. Argentinean private company.

Participation in the project activity.

AGD is the investor and develops the biomass generation project. AGD will be the owner of all the carbon credits.

CDM Consultant:

Ing. Mariela Beljansky

Participation in the project activity

Mariela Beljansky is the official contact for the project activity and is in charge of developing the Project Design Document for Aceitera General Deheza S.A.

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A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

A.4.1.1. Host Party(ies):

Argentina

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

Córdoba Province. Juarez Celman department.

A.4.1.3. City/Town/Community etc.:

General Deheza.

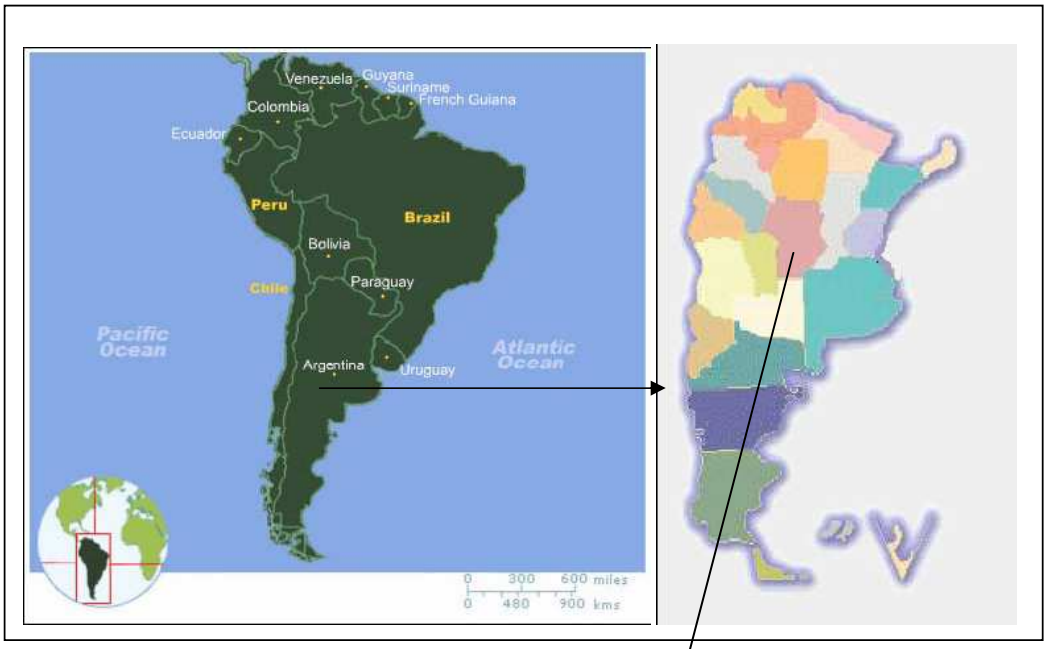
A.4.1.4. Detail of physical location, including information allowing the unique identification of this small-scale project activity(ies):

The bio energy plant will be located within the Aceitera General Deheza plant in Intendente Adrián P. Urquía N° 149 General Deheza, Juarez Celman Department, Córdoba Province, Argentina.

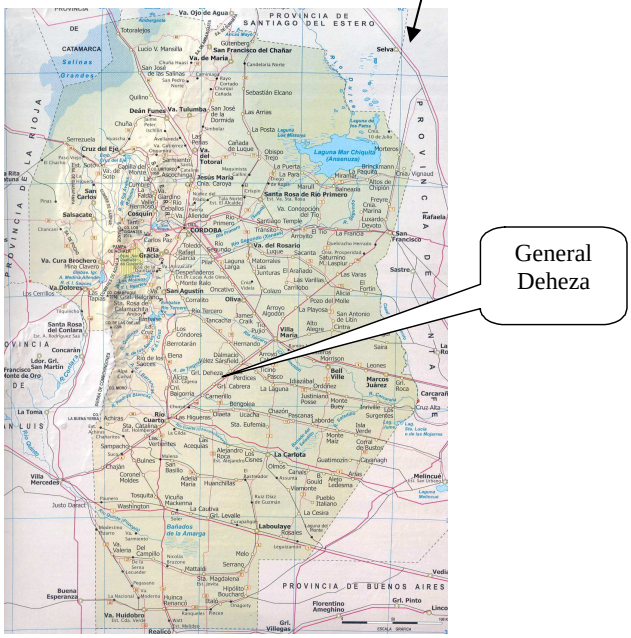
The town of General Deheza is located in the center of the Pampa Húmeda (Humid pampas), agricultural production region for excellence, at about 200 km away South from Córdoba city, on National Route N° 158 that links Río Cuarto city with Villa María city. It holds a population of about 10.000 inhabitants.

The climate is warm with a dry period in the wintertime. The heaviest rainfalls occur in November, December and January.

The map below shows where Argentina and the province of Córdoba are located. Then it can be seen where General Deheza is placed within Córdoba province:



South America/Argentine Republic/Córdoba Province/General Deheza.



A.4.2. Type and category(ies) and technology of the small-scale project activity:

Type and category of the project activity.

The project activity is a small-scale one, which applies to the **I.D.** category, according to Appendix B of the Simplified Modalities and Procedures for small-scale CDM project activities. It is a renewable energy

project - "Grid connected renewable electricity generation". In order to be considered a small-scale activity project 15 MW_{el} should not be exceeded.

This category lies in the following parameters:

1- 10,95 MW_{el} is the electricity generation capacity.
2- The kind of fuel is biomass waste.

Technology to be employed in the small-scale project activity

The project activity involves the implementation of a generation unit based on biomass with a installed capacity of 10,95 MW_{el} employing direct combustion technology on grid, with steam superheater and half open cycle turbo generator.

The generation plant will be designed for operating with agricultural biomass waste. The main part of the fuel will consist of peanut hull and sunflower husk.

There is plenty of peanut hull in the area since it is the major peanut producer region in Argentina.

Peanut hulls are a waste from the peanut selection plants. In Argentina there hardly exists an alternative profitable use for them. Peanut selection plants in the area transport the peanut hull to a nearby field to be open sky burned. This practice has brought serious problems to the inhabitants due to the smoke and ash produced, apart from the emissions of greenhouse gases.

Sunflower husks are a waste from the oil extraction process in the AGD plant. During 45-60 days a year 600 tons/day of the sunflower husk are produced, whereas the rest of the year 200 tons/day are produced.

The AGD commitment with the environment led to the installation of a husk boiler in 2001. In order to avoid the open sky burning AGD moves the peanut hull of its own peanut selection plants from the area to the vegetable oil plant to process it correctly in the boiler.

With this project activity, AGD own waste (sunflower husk produced in the vegetable oil plant and peanut hull produced in AGD peanut selection plants) around 70-75% of biomass needed to generate electric power is obtained. This enables them to process, as well, third parties waste produced in peanut selection plants, also from the area. This fact reduces open sky burning with the resulting emissions of smoke and ash. To this aim AGD will afford removal and transportation costs of 50.000 tons a year. Average trip will be of 35 km.

The project activity proposes to employ between the 50 and 70% of the peanut hull produced in the area for the electricity generation, thus reducing the environmental effects of the biomass open sky burning.

Sunflower is transported with husk from the fields to the vegetable oil plant and that would happen with or without the project activity. In the case that the project activity did not exist the peanut hulls from the peanut selection plants of third parties would be burned in open sky. The project activity -generation of 10,95 MW_{el}- increases the controlled processing of these wastes.

The transportation of the amounts of hull, which had not arrived in the vegetable oil plant without the project activity, produces emissions out of the project boundary. Although, on the other hand, open sky burning emissions and those inherent to energy transmission loss will be avoided.

Biomass generation technology based on high-pressure steam is in itself known and in use in Argentina. However, the use of peanut hull as fuel for electricity generation is an AGD pioneer effort. This project is the first one where the peanut hull is employed to generate electricity in a commercial way.

The main components of the bio energy plant are: the biomass direct combustion boiler, the steam superheater, steam turbine, electric generator, transformer, steam pipes and the storing system.

Biomass direct combustion boiler

The installed boiler is a biomass direct combustion one, with 81% guaranteed for conversion energy efficiency. It has a regular maximum capacity of 120 tons/h of steam production and an automatic control combustion system that assures effectiveness in the biomass combustion and the control of emissions. It also has an electric filter or gas filter equipment that eliminates solid particles (ashes) formed at home. To that purpose it uses a particle ionization principle, which through a potential difference of 45 kV between the collector plates and a central electrode, they are electrically oriented and deposited on the plates. Simultaneously and by means of a software, certain strikes are applied upon the plates and due to gravity ashes fall in a hopper to be later removed by chain transportation. Internally the equipment operates at 170°C, has two electric fields and an efficiency of 90% each.

With the proposed investment, the boiler will burn up to a maximum of 25-26 tons/h of a “variable mix” of peanut hull and sunflower husk. In average annual values, the expected proportion would be 65-70% peanut hull and 30-35% sunflower husk. The boiler must be modified in order to install a steam superheater, apart from the installation of new steam pipes.

Steam turbine, electric generator and transformer

The steam turbine (SIEMENS SST-300) receives overheated steam at 47 bar 400°C from the steam superheater. The steam is used to make run a turbine joint to a 10,95 MW_{el} electric generator.

The steam that is already used in the oil plant –not considered in the CDM project activity- arises from an extraction at 11,5 bar and back pressure at 7 bar.

The generator operates in 13,2 kV. A transformer will be placed to obtain the generated energy in 33 kV (distribution voltage level in the vegetable oil plant), thus connecting the Bio-energy plant with the MEM at General Deheza node.

Storing system

Sunflower husk is not stored, the wastes of the oil extraction process are directly used as fuel in the boiler.

The flow of the peanut hull is practically continuous. Storage is employed only as operative reservoir. This only covers approximately 15 days of exclusive operation with this waste.

Peanut hull is stored in open sky silos. It could be kept between 2 and 3 months, according to the demand and scheduled entrance. A control of entrances and hull rotation is done in order to minimize storing time, always using the oldest hull first (FIFO, First In, First Out). Only in March peanut hull does not come in.

Peanut hull does not require treatment to remove humidity as it comes in with the 5%. During its storing the calorific power could slightly diminish as the humidity in the upper layer of the storing silos could increase, which simply leads to the burning of more amount of hull.

Sunflower husk does not need treatment to remove humidity, either, as the average humidity is of 7-9%.

A.4.3. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed small-scale project activity, including why the emission reductions would not occur in the absence of the proposed small-scale project activity, taking into account national and/or sectoral policies and circumstances:

As most of the industries in Argentine, the plant of processing oleaginous of AGD covers its needs of electricity from the national grid system. However, the commitment with the environment and with the community leads to the implementation of the project activity so as to increase the consumption of agro industrial wastes.

This effort from AGD is an own initiative, without any regulatory and/or legal obligation, promotion or public assistance for the power generation based on biomass.

The project activity will produce energy based on renewable biomass resources that are source of **neutral** energy in terms of greenhouse gases. This is so because during photosynthesis plants catch atmospheric CO_2 to form their tissue structure, while during the biomass burning period that CO_2 is released. Even there exist CO_2 emissions during burning, the CO_2 released equals the CO_2 caught by the plant during life.

Bio energy production –with neutral CO_2 – will replace that of the national grid constituted by fossil fuel with CO_2 emissions that would be generated upon the absence of the proposed project activity. Therefore, the project activity will constitute a clear benefit.

As abovementioned, the generation site enlargements expected to take place in the near future, are units that will employ natural gas and gas oil.[1] .

Therefore, total CERs amount achieved during crediting period aggregates to 650.194 ton CO_2 .

A.4.3.1 Estimated amount of emission reductions over the chosen crediting period:

The chosen crediting period is of 21 years.

[1]The 1427 ruling from the Secretaria de Energía (National Energy Secretariat) issued in December 2004, states an agreement between the public and private sectors of power generation to carry out jointly the construction of two thermal units of combined cycles of 800 MW each. Partial habilitation is expected for June 2007 (as open cycle) and full potency is expected to be reached in 2008.

Years	Annual estimation of emission reductions in tons of CO_{2equiv}
2008	30.961,65
2009	30.961,65
2010	30.961,65
2011	30.961,65
2012	30.961,65
2013	30.961,65
2014	30.961,65
2015	30.961,65
2016	30.961,65
2017	30.961,65
2018	30.961,65
2019	30.961,65
2020	30.961,65
2021	30.961,65
2022	30.961,65
2023	30.961,65
2024	30.961,65
2025	30.961,65
2026	30.961,65
2027	30.961,65
2028	30.961,65
Total estimated reductions (tons of CO_{2equiv})	**650.194,69**
Total number of crediting years	**21**
Annual average over the crediting period of estimated reductions (tons of CO_{2equiv})	**30.961,65**

A.4.4. Public funding of the small-scale project activity:

There is no public funding involved in the financing of this project activity.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a larger project activity:

The Aceitera General Deheza project cannot be considered as part of a larger project activity since it is the first electricity generation plant from peanut hull and sunflower husk in Argentina and the first CDM project of Aceitera General Deheza S.A.

SECTION B. Application of a baseline methodology:

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

The approved baseline methodology applied to the small-scale project activity is:
I.D.: "Grid-connected electricity generation from renewable sources" (Version 09, July 28, 2006).

B.2 Project category applicable to the small-scale project activity:

According to Appendix B of the Simplified Modalities and Procedures for CDM small-scale project activities, category **I.D.** "comprises renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit."

The proposed CDM project activity, small-scale, is a generation plant from biomass that produces electricity for their own consumption and/or for the national grid. The national grid system is based on hydraulic, nuclear and thermal generation. Thermal production employs fuel oil, diesel oil, coal and natural gas as fuels. Therefore, the project activity generation reduces emissions as it is obtained from biomass waste, which avoids the emissions in the electric system reducing generation, and so the emissions of the generation plants with existing capacities.

The project is to install electricity generation. The capacity to be installed is 10,95 MW_{el}. Electricity produced does not exceed the limit of 15 MW_{el} for CDM small-scale project activities (Appendix B of the Simplified Modalities and Procedures for CDM small-scale project activities –I.D. approved methodology, version 09, July 28, 2006).

Biomass is also used to produce steam for the process, but this will not be part of the CDM project activity as it has been a practice since 2001.

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

a. Description of the Argentine Electric Market.

a.1 Mechanisms of energy prices calculation. Law 24065. Year 1992:

In order to develop the concept of economic efficiency, the Wholesale Electric Market was created (in Spanish M.E.M.). This market rules cost per hour of energy upon the base of marginal cost of the offer. CAMMESA[2] is the organism in charge of coordinating the technical operation and administering the

[2] Wholesale Power Market Operator

MEM, and among its responsibilities it must make the operation schedule of the electricity market, that is to say, covering the energy demand, fulfilling with the following objectives:

- Operation with the minimum operating cost
- Consideration of the restrictions imposed by the transport and generation installations
- Operation fulfilling with the strict supply security norms

CAMMESA Board is composed by every electric market agent (consumers and suppliers). The Board is presided by the National Energy Secretariat.

A list of merit is made in order to effect dispatch, from smaller to bigger, of the generating machines according to their cost of electricity generation pursuant to fuel costs declared by the generators that employ fossil fuels and a valorisation of water by the central hydraulic operators. As demand requires energy, the different units are called to generate. The generation cost of the machine that will supply the next physical unit, would fix the price with which all units called were compensated. In 2003 this practice of establishing prices was modified (Ruling 240 from the Secretaría de Energía –National Energy Secretariat-) as it will later be detailed.

On the other hand, a new mechanism was established. Through this mechanism the electricity supply cost of the distributors to their final users should reflect signs of abundance or scarcity that arise from the wholesale market prices. That is to say, as the energy price varies hour after hour it is necessary to establish a stable price in order to link the home user price with the wholesale market cost. Therefore, a stabilization of the price is adopted in function to the energy hour price (Spot Market). This estimation is done by the organism in charge of the dispatch (CAMMESA, Wholesale power Market operator). The proposed energy price arises from an analysis that takes into account the probable hour cost, and a potency price by demand requirements, first class level reservoirs and other services. In order to compensate differences, in excess or defect, there exists a Fund, called of Stabilization. Thus, with the best price estimation and the state of Fund resources, the National Energy Secretariat issues a quarterly resolution with the seasonal price. The distributors demand is then agreed upon at a seasonal price.

Excesses or defects of the industrial demand not covered by agreements are settled in the spot market.

a.2. Regulatory adjustments in the electric sector after law 25.561. Year 2002:

The new authorities of the Executive Power as of 2002 encouraged a deep change in the economic rules in force in that moment. In that sense, the 6 of January 2002, the National Legislative Power passed a Bill of Public Emergency and Reform of the Exchange system (law 25561). This law abolished the convertibility system and enforced, among other issues, the conversion into pesos all the rates of the public services, including those of gas and power supplied by distributors and transporters, their indexation was prohibited and a new stage of renegotiation of public services agreements, yet unfinished, was opened.[3]

Within this situation the authorities of the National Energy Secretariat passed resolution 2/02 by which, considering that one peso equals one dollar, payment per potency and cost of energy not supplied are changed into pesos, among other things.

[3] Up to December 2005, only 4 companies from the sector had finished the first stage of renegotiation of their concession agreements

Authorities of the sector, in hope of maintaining their political objectives passed many rulings that nothing had to do with the originally adopted regulatory model. These rulings affected unevenly the electric sector which lost its distinctive dynamism.

a.3 Debts within the MEM

Until 2003, generators received per physical unit delivered the hour price of the energy (spot). This hour price is supported by Major Users that operate in that market. Distributors pay, according to their demand, at the seasonal price. Differences between what is paid to generators and the demand of the distributing companies valued at seasonal price are covered, in one sense and the other, with contributions of the Stabilization Fund.

On the other hand, and probably forced by the circumstances, the sectorial authorities had to take different steps that in time contributed to increase the energy price. Resolution 8/02 from the National Energy Secretariat, added other costs to the energy price, such us, maintenance. Resolution from the NES 246/02 increased the potency price and modified the mechanism of calculation of the assignation. Concession agreements of the distributing companies employ the seasonal price to build up the price. The political need of keeping the same price value did not allow the modification of the seasonal price until at least mid February 2004, to keep it then, constant until mid 2005. This helped deepen the lack of equilibrium between market costs and users final price of the distributing companies. This distortion caused the exhaustion of the Stabilization Fund at mid June 2003.

As monthly, what was paid by the distributing companies was not enough to cover their credits, deficit continued increasing. Sectorial authorities established a mechanism of income distribution. The NES resolution N°406 from September, 2003 enforced priority payments of generators and other creditors' credits. It was sought out to guarantee the finest features as it is the maintenance of the transportation system, thermal units fuel and operation and maintenance costs so as to assure availability.

The NES resolution 406/03 also established that monthly pending debts were to be considered as payments without a certain due date, besides, a cancellation of debts was established in each month.

In wintertime 2004, the low contributions of the Uruguay River and of the river basins from Comahue region caused a reduction of the hydraulic generation. As a consequence, in order to provide the demand, more than the usual thermal units had to be employed. It also produced an increase in the cost of the hydraulic generation due to the decrease of its availability (less water) in the damming with seasonal regulations. The increase in the energy hour price enlarged even more the deficit of the Stabilization Fund. This situation led the National Energy Secretariat to pass resolution N° 240 from the 14 of August, 2004. The latter, with the aim of limiting energy prices of the spot market, excludes from its formation the Water Value and the Variable Production Cost of the units that operate with other fuels rather than natural gas. That is to say, supposes, to the only effect of determining hour price, a gas provision without restrictions for all the thermal units. The dispatch of the generation units needed to provide the demand with energy, is done in function of the recognized costs of the effectively available units. The difference between the hour price and the real cost of each generator operated is covered by the demand through a specific fund.

Out of this problem there results that the creditors of the Market, generators especially, are not receiving the 100% of their credits.

As published by CAMMESA in its monthly report, the deficit amounts to $ 1.463.148.832 in December 2005.

a.4 Expansion generation plan.

As it was previously stated, generators do not collect the total amount of their credits as the seasonal price does not reflect the hour price. Since the debt continued increasing every month and as the restriction to the private sector investment shows, the National State created through NES resolution N° 712 from July, 2004 a "Fund for necessary investments that could let them increase the Electric power offer in the Wholesale Electric Market ". MEM creditors (generators) were invited to invest in this fund part of their credits.

In August 2004, Resolution N° 826 repeats the invitation to all the creditors agents of the Wholesale Electric Market (MEM). It also proposed the investment of the credits corresponding to the period between January 2004 and December 2006 inclusive. Finally, in December 2004, resolution 1427 and later in January 2005 with resolution N°3, the National Energy Secretariat shows an agreement with main private groups of generation. With this agreement payment of debts with the generation sector will be applied to the construction of two thermal units of combined cycle of 800 MW each. These units are to be installed in the Greater Buenos Aires area and the Litoral, and will use natural gas as fuel and –eventually- gas oil.

a.5 Sources of electricity generation in Argentina

Argentina has a diverse generation source although highly dependent on availability of hydrocarbons. It is shown below how the different sources of generation take part, all of it expressed in MW.

Area	Turbine		Combined Cycles	Diesel	Sub total			Total
	Steam	Gas			Thermal	Nuclear	Hydro	
Cuyo	120	90	374		584		850	1434
Comahue		578	741		1319		4637	5956
Argentinean Northwest	261	399	828	4	1492		219	1711
Center	233	297	99		629	648	914	2191
Greater Buenos Aires and Litoral	3887	636	4287		8810	357	945	10112
Argentinean Northwest (NEA)	25	123			148		1850	1998
Total	4526	2123	6329	4	12982	1005	9415	**23402**
Patagónico System		196	63		259		519	**777**

Potency installed per region.
Source: CAMMESA monthly report, December, 2005.

a.6. Industry prevailing practice.

It is not common in Argentina to install generation in industry plants. In general, only the major Argentinean industries dispose of sites of production of self energy: ALUAR SA -aluminum plant with a self demand close to the 400 MW- or SIDERAR –siderurgical producer of plain steel- and in oil refineries that have cogeneration cycles associated (Repsol YPF Refinery in Ensenada -Buenos Aires- and in Luján de Cuyo -Mendoza-). Smaller size industries do not, practically, dispose of significant self generation according to their demand.

b. Additionality

In accordance with Annex A from Appendix B of the Simplified Modalities and Procedures for the CDM small-scale project activities (version 06, September 30, 2005), the project participant should provide an explanation that shows that the project activity would not have occurred due to **at least one** of the following barriers:

a) **Investment Barrier**: A financially more viable alternative to the project activity would have led to higher emissions.
b) **Technological barrier**: A less technologically advanced alternative to the project activity involves lower risks due to performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions.
c) **Barriers due to prevailing practice**: Prevailing practice or existing regulatory or policy requirements would have led to the implementation of a technology with higher emissions.
d) **Other barriers**: without the project activity, for any other specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

Barriers to be overcome in our project activity are shown below:

b.1. Investment Barriers

After devaluation and further unilateral default in payment of the external debt of US$ 95 thousand million, Argentina was not a chosen place for foreign investors. The huge uncertainty caused by the abandonment of the currency convertibility system that had ruled from 1991 in which 1 peso equaled 1 dollar, strongly impacted on investment and the incoming of capitals. Although Argentina is leaving the crisis, the legal instability and the lack of trust constitute serious barriers to invest. This makes that industry should face difficulties at financing stages. In this sense, the commitment with the environment and the sustainable development of the area, leads AGD to invest over US$ 8,5 million in the expansion of the use of peanut hull and sunflower husk through the incorporation of electricity generation.

As abovementioned, the expansion of electricity generation needed an interaction between the private sector and the National State. This shows barriers for investments present in Argentina.

On the other hand, part of the energy eventually sold to the grid will bear the risk of no collecting the total amount of its credits as it happens at present with the rest of the generators.

b.2. Technological barriers.

Even the boiler is existent and works generating process steam since 2001, with the implementation of the project activity an electricity generator, a steam superheater and a steam turbine will be installed. The equipments have to be operated and maintained by AGD personnel that will have to be trained.

The electric power is an important supply for the plant and the alternative of producing self-energy is riskier than feeding from the national grid. Even it is true that AGD will continue linked to the grid and thus feeding part of the demand, the output of service of its generator will cause transitory problems that would not have existed upon the absence of the project activity.

b.3. Prevailing practice.

- ✓ The project is additional to the common practice scenario as it will be the first plant of cogeneration burning, mainly, peanut hull to supply electric energy to its own oil plant and/or to the national Argentinean grid.

  Furthermore, the common practice scenario for the electricity generation system is to increase capacity based on natural gas, and this practice is expected to continue as such in the future. The NES resolution N° 1427 from December, 2004, details an agreement between the main private generators in Argentina and the National State in order to carry out jointly the construction of two thermal units of combined cycle of 800 MW each. Both units will basically operate from natural gas. These will be the first big size enlargements from 2001 and its full commercial habilitation is expected for late 2008.

- ✓ The manufacturing industry is energy demanding. Except for exceptional cases (big size industries) the industries purchase energy from the interconnected national grid. That is to say, the common practice, for the industry in general as for the oil plants is to trade power from the interconnected national grid.

b.4. Other barriers

- ✓ As abovementioned the project activity –electricity generation- compels the company to interact with the electric sector. This activity is completely new and away from the core business of the company. The project activity obliges AGD to enter the Wholesale Electricity Market (MEM). To carry out this challenge it will need to train staff and adapt the AGD operating structure.

- ✓ Moreover, this new activity is not profitable. The 2005 average annual power price at a wholesale level is of about 22,13 US$/MWh. This price does not pay back private inversions in generation.

b.5 Risks

It is foreseen to employ between the 50-70% of the entire peanut hull produced in the area. The 60-65% of the peanut hull that will be used for electricity generation will be from AGD peanut selection plants. Up to the moment the peanut hull does not have economically profitable alternative uses in the area. There could emerge new activities which could demand peanut hull. In this sense sale of CERs aids to delimit the risks and cooperates with the AGD investment repayment. As stated in note from October 4,

2005 to the Argentinean Organism in charge of the Clean Development Mechanism, the sale of CERs was taken into account.

c. Emissions caused by the project activity

During the operation of the bio energy plant, direct emissions within the limits of the project activity could be due to the natural gas consumption during the temporary starting, the storage and to the biomass combustion. It will be shown below that the emissions due to storage and to combustion are insignificant and therefore considered zero and that they will only have to be taken into account the emissions due to the exceptional natural gas consumption.

c.1 Biomass storage

.

The storage of peanut hull is done in open-sky silos. The peanut hull can remain stored only between 2 and 3 months, this term is in function of the demand and scheduled entry. Time of storage is minimized using the oldest hull.

Peanut hull comes constantly in the plant during 11 months a year. It could be said that only in March there is no entrance of peanut hull. The peanut hull arrives with 5% humidity and during its storage the calorific value could slightly diminish because humidity in the upper layers of the storage silos increases, but this decrease in the calorific value is insignificant and only leads to a higher hull consumption. There is a control on hull entry and its rotation.

With respect to sunflower husk, its provision to the boiler is practically continuous.

There could emerge emissions of NO_2 and CH_4 from storage. However, significant greenhouse gases emissions are not expected as the rotation of the peanut hull is checked up and its storage is short in time terms. The NO_2 emissions are minimum due to the short time of storage and therefore they have not been considered. It will be explained as follows, why the methane emissions are insignificant.

There are three reasons why methane emissions are not to occur due to storage of peanut hull:

1. Methane emissions only take place in anaerobic conditions. Biomass of this project activity is stored dry (it arrives with 5% of humidity and can reach less than the 10% of the humidity content caused by its storage in open-sky silos). The hull is not sealed and therefore there is always oxygen. Under these circumstances an anaerobic digestion is unlikely to occur.
2. As there is not available data about emissions as a consequence of biomass storage, a comparison is done with methane emissions of landfill sites. An Adviescentrum Stortgas study (center for landfill gas consulting) describes what the methane emissions are in different phases once waste has been put in a landfill. After two months, methane emissions start to be emitted and after two years methane emissions reach the maximum level. According to this, it could be concluded that, even there were anaerobic conditions in the biomass storage during the rainy period, methane emissions will require at least two months before starting to emit to the atmosphere and that maximum level would not be reached until after two years. As the average time of storing is of two months and a half and the climate is dry, if there was any methane production, this would be unimportant.
3. Biomass residue employed in this project activity has very few organic components that could be degradable under anaerobic conditions.

Sunflower husk weigh approximate composition is: Carbon 42%, Oxygen 39%, Hydrogen 5%, Nitrogen 1%, Water 9%, Ashes 3%. Medium calorific value: 17500 kJ/kg. Density: 0,11 kg/dm^3 .

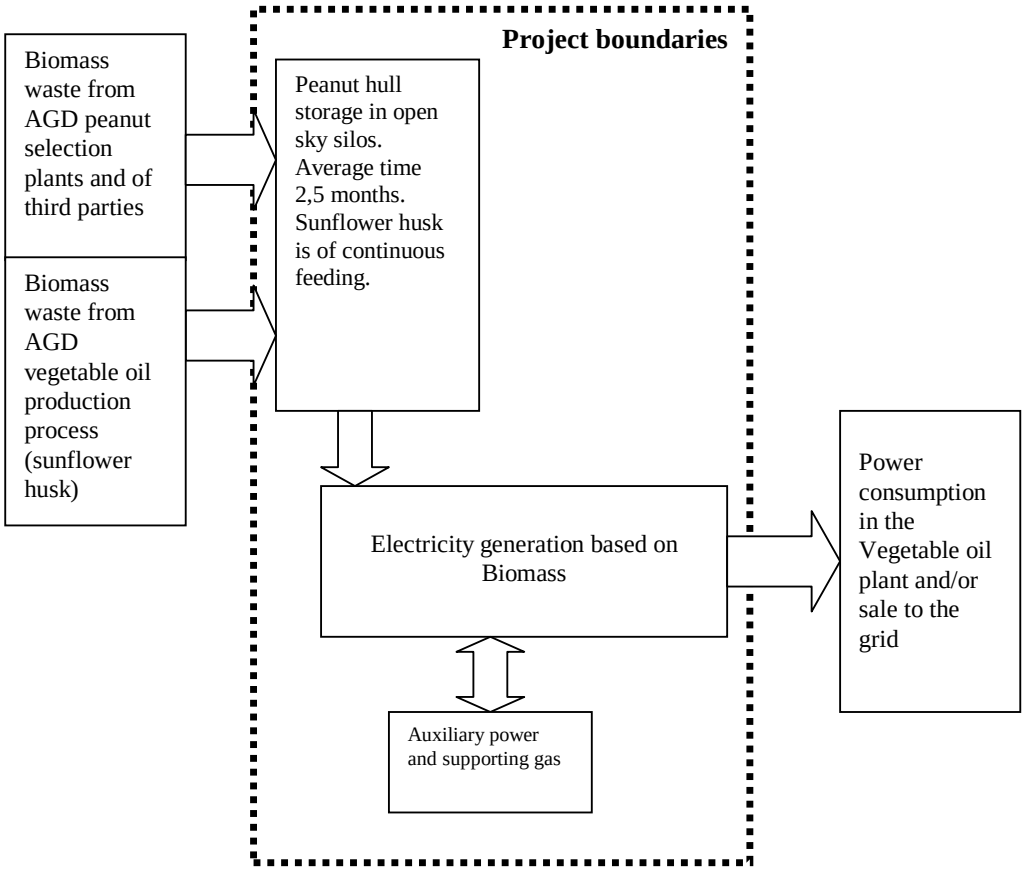
Peanut hull weigh approximate composition is: Carbon 39%, Oxygen 37%, Hydrogen 3%, Alkaline (Calcium/ Potassium/ Magnesium) 8%, Water 6%, Ashes 5%. Medium calorific value: 17800 kJ/kg. Density: 0,10 kg/dm$^{3.}$

c. 2 Biomass combustion

Directly in the site after the implementation of the project activity CO_2 emissions are generated that result from the biomass burning in the boiler. The CO_2 freed equals the quantity of CO_2 captured by the biomass during its growth, therefore there do not occur net emissions.

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

According to the applied methodology, the project boundaries encompasses the physical geographical site of the electricity generation plant based on biomass, including biomass storage and auxiliary power consumed by the same generation plant. Biomass transportation, the grid and energy consumption are not included within the boundaries of the project activity.



Emissions outside the boundaries of the project activity

Transportation of peanut hull of third parties

There are direct emissions outside the boundaries of the proposed project activity as a consequence of the transportation of the 50.000 tons of missing peanut hull (which would not have been transported in the absence of this project activity). Peanut hull will be transported in average, along 35 km by truck. However, in the baseline situation, transportation of fuel oil, diesel oil and coal for the electricity generation in a national level should be taken into account. In average, the distance through which fuels must be carried, would be substantially higher, for the thermal generation plants that burn fossil fuels, than for the distances of our project (35 km). For example, Argentina gets fuel oil from PdVSA Venezuelan Company. As the Venezuelan fuel is not apt for the Argentinean units because of its high content of sulphur, PdVSA acquires in the Mexican Gulf, fuel oil that later will be sold to Argentina. That is to say, that the fuel is carried from over 10.000 km. Therefore, transportation emissions in the baseline scenario will be higher than the transportation emissions related to the proposed project activity. We have not included transportation emissions in the present situation neither in the project activity. The estimation of emission reductions then is conservative.

Biomass open sky burned.

The project activity will result in a direct reduction outside the area compared with the regular situation where part of the biomass wastes are open sky burned, being able to emit NO_2. NO_2 has a heating potential higher than (310 times) that of the CO_2. These emissions, however, are not taken into account, so as to provide a more conservatory estimation for the baseline emissions.

Moreover, the generation of dioxins and furans diminishes as the combustion inside the boiler is a much higher controlled process and with filters that allow the emitted gases in the atmosphere remain within the acceptable values and very inferior to those produced in an open sky combustion. Dioxins and furans are similar and they both have components chemically very stable and structurally very similar as well. They are also known as the environmental hormone, since it affects the normal development and growth of birds, fish, reptiles, amphibious and mammals including human beings. Besides, it produces negative effects on the central nervous system, immune system, endocrine hormonal system (all the glandules of inner secretion, as the hypophysis, for example) and the reproductive system, refraining the development of the youth (offspring) and causing a broad range of cancers.

Transmission and distribution losses.

The electricity generation in the demanding plant, diminishes transmission and distribution losses. This decrease was not considered so as to reach a conservative criterion.

B.5. Details of the baseline and its development:

Baseline is based on the methodology for small-scale project activities included in Appendix B, Type **I.D.**: **"Grid connected renewable electricity generation"** (UNFCCC, Version 09, July 28, 2006). As specified in this approved methodology the baseline scenario will be:

Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined

margin (CM). As a result of this, the baseline emissions (*BEy* in $tonCO_2$) are the product of the baseline emissions factor (*EFy* in $tonCO_2$/MWh), times the electricity supplied by the project activity to the grid (*EGy* in MWh).

The baseline herein proposed is option (a) of the combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology ACM0002 (version 06, May 19, 2006). For the calculation of the Operating Margin (OM), option (c) of the dispatch data analysis was utilized, as it was recommended to be the first methodological choice. The OM will be updated for emission reductions reported during the crediting period. Besides, Option (1) was selected in order to calculate the Build Margin emission factor *EFBM,y ex-ante*.

Considerations:

Calculations for this combined margin must be based on data from an official source (where available) and made publicly available.
Power plant capacity additions registered as CDM project activities should be excluded from all calculations. (subsets *j*, *m*, *n* below).

Calculation of the Operating Margin emission factor ($EF_{OM,y}$)

As specified in option (c) established in the approved methodology ACM0002, version 06, the operating margin emission factor based on the dispatch data analysis is summarized as follows:

$$EF_{OM,y} = \frac{E_{OM,y}}{EG_y} =$$

where:

$EF_{OM,y}$: is the Operating Margin emission factor in the year *y*
EG_y: is the generation of the project (in MWh) in year *y*
$E_{OM,y}$ are the emissions (in $tonCO_2$) associated with the operating margin in the year *y* calculated as:

$$E_{OM,y} = \sum_h EG_h \bullet EF_{DD,h} =$$

where EG_h is the generation of the project (in MWh) in each hour *h* and $EF_{DD,h}$ is the hourly generation weighted average emissions per electricity unit ($tonCO_2$/MWh) of the set of power plants (*n*) in the top 10% of grid system dispatch order during hour *h*:

$$EF_{DD,h} = \frac{\sum_{i,n}\left(F_{i,n,h} \bullet COEF_{i,n}\right)}{\sum_n GEN_{n,h}}$$

where *F*, *COEF* and *GEN* are calculated on an hourly basis for the set of plants (*n*) falling within the top 10% of the system dispatch.
Where:

$F_{i,n,h}$: is the amount of fuel *i* (natural gas, fuel oil, gas oil and coal in a mass or volume unit) consumed by relevant power sources *n* in the houer *h*
$COEF_{i,n}$ is the CO_2 emission coefficient of fuel *i* ($tonCO_2$ / mass or volume unit of the fuel).

To determine the set of plants (*n*), we must obtain from the national dispatch center, CAMMESA:

a) the grid system dispatch order of operation for each power plant of the system; and
b) the amount of power (MWh) that is dispatched from all plants in the system during each hour that the project activity is operating (*GENh*).

At each hour *h*, stack each plant's generation (*GENh*) using the merit order. The set of plants (*n*) consists of those plants at the top of the stack (i.e., having the least merit), whose combined generation (Σ *GENh*) comprises 10% of total generation from all plants during that hour (including imports to the extent they are dispatched).

From CAMMESA Monthly Reports we can have available the fuel volume employed and the energy generated by type of generation unit (thermal, nuclear, hydroelectric and imports and exports). In all the cases the year 2005 is analyzed.

As emission factors, we used the ones published in the First National Communication that coincides with those stated by the IPCC (Intergovernmental Panel on Climate Change) in 1996.

Finally, it results that:

$$\text{Operating Margin Emission Factor } (EF_{OM,y}) = \frac{5.652.362,60}{9.416.990} = 0,60023 \left[\frac{\text{ton } CO_{2equiv}}{MWh} \right]$$

The Operating Margin will be updated for emission reductions reported during the crediting period.

Calculation of the Build Margin emission factor ($EF_{BM,y}$):

As stated in option (1) of the approved methodology ACM0002 version 06 the *ex-ante* build margin emission factor is the weighted average emissions (in $tonCO_{2equiv}$/MWh) of the recent capacity additions to the system (sample of power plants *m*), whose additional capacities (in MW) are defined as the more recent 20% of the existing plants or the 5 more recent plants. The greater annual generation should be taken out of these two options. The emissions are the product between the fuel volume used for the conventional thermal generation and the emission factors respectively. The chart below shows the generation added to the system until completing the 20% of the energy generated by the system in 2005. If 20% falls on part capacity of a plant, that plant must be included in the calculation. It could be seen that the last 5 plants represented a contribution of less than 1% of the generation in 2005.

#	Commercial Authorization		Central	Type	Accumulated Generation	Accumulated Participation in respect to generation 2005
	Year	Month			[MWh year]	
1	2005	Nov	Arcor M Seveso	CC	28.945	0,03%
2	2004	Jun	Consorcio Potrerillos (Cacheuta N)	Hydro	403.682	0,47%
3	2004	Apr	CT San Nicolás	TG	-	0,47%

4	2003	Nov	Autogenerador Shell	TG	99.183	0,58%
5	2003	Jun	CT Pluspetrol Norte	TG	86.137	0,67%
6	2002	Aug	Consorcio Potrerillos (El Carrizal)	Hydro	80.034	0,76%
7	2002	Nov	Petrolera Chevron San Jorge	MTG	-	0,76%
8	2002	Jun	CT Pluspetrol Norte	TG	86.137	0,85%
9	2002	Aug	CT San Miguel de Tucumán	CC	757.409	1,67%
10	2001	Nov	C.T. AES Paraná	CC	4.182.800	6,21%
11	2001	ago	Ave Fénix Energía SA	TG	-	6,21%
12	2001	Jun	Dock Sud	CC	3.809.281	10,34%
13	2000	Sep	Autogenerador Entre Lomas	TG	12.922	10,36%
14	2000	May	CT Puerto Nuevo	CC	2.790.569	13,38%
15	2000	Feb	CT Tucumán	CC	859.635	14,32%
16	2000	Jan	Agua del Cajón	CC	1.303.922	15,73%
17	1999	Dec	Pichi Picún Leufú	Hydro	1.177.263	17,01%
18	1999	Sep	Central Dique	TG	6.320	17,02%
19	1999	July	CT Costanera (*)	CC	1.890.205	19,07%
19	1999	Jan	CT Costanera (**)	TG	1.561.782	20,76%

Source: CAMMESA Monthly report. Own elaboration

(*) C. COSTANERA. Steam Turbine TV10 of 320 MW entries, with which combined cycle is completed. This unit is connected to bars of 220 kV. Commercially authorized on 1/07/99.

(**) C. COSTANERA. Gas Turbine TG9 of 264 MW commercially authorized on 15/01/99. Second TG that will later form the combined cycle of the central.

Therefore, the "build margin emission factor $EF_{BM,y}$" will be the total emissions weighted by the system additional generation, until completing the 20%.

$$EF_{BM,\,y} = \frac{\sum_{i=1}^{\text{until completing all types of fuels}} \left[\sum_{j=1}^{\text{of additional capacity until completing the 20\% of the system}} (\text{Fuel Volume})_{i;\,j} \times (\text{Emission Factor})_{i;\,j} \right]}{\sum_{j=1}^{\text{of additional capacity until completing the 20\% of the demand}} (\text{Thermal Energy})_{j}} =$$

Being, *i* type of fuel (in this case only natural gas and gas oil) consumed by each of the *j* units that have been added to the system up until completing the 20% of the system generation in 2005.

From the CAMMESA Monthly Reports we can have available the fuel volume employed by these units, total generation and gas oil consumption.

For emission factors, we used the ones published in the First National Communication that coincides with those stated by the IPCC (Intergovernmental Panel on Climate Change) in 1996.

Finally, it results that:

$$\text{Build Margin Emission Factor } (EF_{BM,y}) = \frac{7.218.750}{19.142.223} = 0{,}37711 \left[\frac{\text{ton } CO_{2equiv}}{MWh} \right]$$

Calculation of the Carbon Emission Factor or combined margin (CM):

In order to calculate the emissions in the baseline scenario the carbon emission factor or combined margin (CM) is determined, according to the terms stated in the approved methodology ACM0002 version 06. It will be the average of the "operating margin emission factor, calculated by the dispatch method" and the "build margin emission factor calculated with option (1), *ex-ante*". The OM will be updated for emission reductions reported during the crediting period.

$$\text{Carbon Emission Factor or combined margin (CM)} = \frac{\text{Operating Margin} + \text{Build Margin}}{2} =$$

$$\text{Carbon Emission Factor or combined margin (CM)} = \left[\frac{0{,}60023 + 0{,}37711}{2}\right] \cdot \left[\frac{\text{ton } CO_{2equiv}}{MWh}\right] =$$

$$\text{Carbon Emission Factor or combined margin (CM)} = 0{,}48867 \left[\frac{\text{ton } CO_{2equiv}}{MWh}\right]$$

Based on this factor the total emissions of the baseline scenario are calculated as the product between the latter and the energy produced by the project activity.

Baseline conclusion date: January 15, 2007.
Name of the person who determined the baseline: Ing. Mariela Beljansky.

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Ing. Mariela Beljansky is a CDM project activity consultant, she is not a project participant.

SECTION C: Duration of the project activity / Crediting period:

C.1. Duration of the small-scale project activity:

C.1.1. Starting date of the small-scale project activity:

The project activity is expected to start on 01/01/2008

C.1.2. Expected operational lifetime of the small-scale project activity:

Expected operational lifetime of the project activity is of 30 years, 0 months.

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

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

Yes.

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

01/01/2008

C.2.1.2. Length of the first crediting period:

7 years,0 months.

C.2.2. Fixed crediting period

No.

C.2.2.1. Starting date:

N/A

C.2.2.2. Length (max. 10 years):

N/A

SECTION D. Application of a monitoring methodology and plan:

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

The monitoring methodology as it is defined in Appendix B (UNFCCC, **Version 09**, July 28, 2006) for the category: **I.D. 'Grid connected renewable electricity generation'** is applied to this PDD. This methodology involves the measuring of the electricity generated by biomass, biomass quantity and the fossil fuel entrance. The boiler requires natural gas for the temporary starting and as support, therefore, natural gas consumed exclusively by the electricity generation plant, will be measured.

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

The project activity is eligible as a small-scale project activity (see section B.2), category **I.D. 'Grid connected renewable electricity generation'** The monitoring methodology is consistent with the methodology required in Appendix B (UNFCC, Version 09, July 28, 2006). The proposed methodology provides measured data of quantities of the electricity generated, of the natural gas consumed and of the biomass employed. With this data, a reliable estimation on the quantity of emission reductions can be drawn up.

D.3 Data to be monitored:

The chart below includes the variables to be monitored for this project.

	Data Type	Data Variable	Data Unit	Measured (m) Calculated (c) or Estimated (e)	Recording Frequency	Proportion of data to be monitored	How will the data be archived? (electronic / paper)	For how long is archived data to be kept?	Comments
1	Energy	Electricity supplied to the grid	MWh	m	Continuous	100%	Electronic and paper	2 years after the conclusion of the crediting period	Data from the SMEC, electric power meter of the generation unit. Measures the energy supplied by the unit, for self-consumption or for the national grid, own consumption discounted. It helps calculate emission reductions
2	Fuel	Natural Gas	m^3	m	Continuous	100%	Electronic and paper	2 years after the conclusion of the crediting period	Data is relevant in the exceptional cases where natural gas is employed.
3	Fuel	Biomass: Sunflower husk	ton	e	monthly	100%	Electronic and paper	2 years after the conclusion of the crediting	This data is not relevant to estimate the emission

								period	reductions.
4	Fuel	Biomass: Peanut hull	ton	e	monthly	100%	Electronic and paper	2 years after the conclusion of the crediting period	This data is not relevant to estimate the emission reductions
5	Emission Factor	Coefficient	ton CO_{2equiv}/ MWh	c	For each emission reduction reported during the crediting period	100%	Electronic	2 years after the conclusion of the crediting period	It is updated during the crediting period. It is the average of the operating margin and the build margin. The OM will be updated for each emission reduction reported. The BM will be calculated at the beginning of each crediting period. The OM and the BM are calculated from the values published by CAMMESA

Data will be collected as follows:

- Electricity generation will be measured and monitored by the Commercial Measuring System (SMEC) placed in the output of the generation unit according to Argentinean regulations. The latter determines that the measure collects the controlled variables every 15 minutes. It reports daily, automatically, to the dispatch center of CAMMESA.
- The use of natural gas during exceptional situations as it is the temporary starting of the boiler cancels a measure of emission reductions. The consumption of natural gas by the bio energy plant will be taken into account and reflected in the final calculation of the emission reductions. The amount of natural gas will be measured and monitored by an exclusive gas meter with the following features:
    - Primary element:
      Hole plate designed for the passing of grid natural gas at reduced pressure. Design rule is ISO 5167 – 1979 (E)
      Maximum design flow 5400 Nm^3/h
      Design flow 3817 Nm^3/h
      Pipe diameter 202,7 mm
      Hole diameter 101,35 mm
      Beta relation 0,5
      Differential pressure for maximum flow 853 mmca
      Differential pressure for design flow 583 mmca
      Design Temperature 25°C
      Design pressure 4 kg/cm^2
    - Sensor transmission:
      Corresponds to a differential pressure sensor brand ABB
      Rank of the normal operation 0 – 100 mbar

- The estimation of the husk employed in the combustion is calculated according to the following scheme:
    1) The quantity of steam produced is known thanks to the existence of a hole plate at the output of the domo.
    2) Thermal energy efficiency is estimated, that is to say how many tons of steam at 21 bar are obtained from 1 biomass ton (that value is between 5/5,2). Burned husk tons could then be estimated.
    3) It is known the average value of sunflower husk received from its own line (it is approximately 20/21% of sunflower tons employed in oil production).
    4) The quantity of peanut hull employed in the combustion is obtained by difference, which is contrasted with the estimated quantity of peanut hull stored in the Australian silos.
    5) The estimation of the peanut hull received in the oil plant is done through the counting of the number of trucks arrived and knowing the capacity of them.

This check up is done monthly at detail and it is daily estimated.

- The calculation of the operating margin and build margin will be done as explain in section (B.5.). The OM will be updated for each emission reduction reported during the crediting period and the BM will be calculated at the beginning of each crediting period.

Lost data

Eventually, lost data is only relevant in the case that electric power meters were temporarily damaged. In generation plants in Argentina, there exist three meters, one principal, another of support (both measure the agent interchange with the national grid) and a third one that has as specific objective the measuring of the production of the unit of generation discounting their own auxiliary consumption. If the meter that operates as principal is out of order, the others will allow the reconstruction of the missing data, acting as support of the measuring.

In case of all generated energy data being lost, saved emissions of greenhouse gases will not be able to be registered.

Uncertainty in the measuring.

As specified in the Argentinean ruling, the generated energy is measured with measuring instruments Class 0,5s[4]. There are three meters that allow counting the generated energy. Thus, measuring uncertainty is very low.

In the exceptional case of using natural gas (such as the temporary starting) the quantity of used natural gas will be measured. The meter is exclusively for the gas that entries to the boiler. The uncertainty in the measuring is very low.

The project activity is the electricity generation based on peanut hull and sunflower husk and it is not expected for the plant to operate with natural gas except for an exceptional case.

[4] National Energy Secretariat resolution 472/98

In the case of the biomass employed in the combustion it is regarding estimated values. In order to estimate saved emissions, there is no need of an exact quantification of that variable. This data helps to evaluate the efficiency of the unit (quantity of biomass needed to generate a kWh) and detect possible deficiencies.

D.4. Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures are undertaken:

Quality control (QC) and quality assurance (QA) procedures undertaken for the variable monitored.		
Data	Uncertainty level of variable (High/Medium/low)	Explanation of QA/QC procedures planned for these data, or why such procedures are not necessary.
1	Low	This data will be used to calculate saved emissions.
2	Low	This data will be used to calculate project emissions.
3	Medium	This date is not used to calculate saved emissions
4	Medium	This date is not used to calculate saved emissions

The following procedures will be applied:

- The main parameter to be monitored is the electricity generated. As this is done by sealed meter boxes under lock and certified, accuracy of the measuring is assured. These meters cannot be handled. There are three meters that collect data every 15 minutes. CAMMESA daily checks through telephone lines the state of the meters. The maintenance of the power measuring equipment (monitoring) is done by an authorized agent. When the main meter and/or the support and/or the specific one of the generation unit and/or any of its components is above the acceptable limit of precision or either does not work properly, it has to be repaired, calibrated again or replaced by AGD, the sooner possible. The ruling of the electricity sector specifies peremptory terms to carry out this. Otherwise, strong punishments will be applied.
- Truthfulness in the data is certified by CAMMESA. This one checks the results obtained of the measures collected in the meters of the remaining agents of MEM and in real time operating systems.
- The electric filter is annually maintained. There are annual measures of divided material and emissions in the chimney pipes, after and before the filter so as to verify its proper functioning.
- Generation equipment performance will annually be checked up.
- Together with the purchase of the generating unit, AGD paid for a training course for the staff that will operate and maintain the unit. AGD counts with a documented quality management system as well as with a computerized predictive, preventive and correcting maintenance system (MANTEC).
- Training for the monitoring of the new variables will be included in the annual training plan.
- As the project activity requires modifying the boiler, a training course for AGD staff operating it under these new conditions was contracted from the boiler provider (Foster Wheeler). These new pressure conditions require new operating licenses. In Córdoba province operators are trained and assessed to get such licenses, which must be updated every two years.

All the variables of the generation unit will report to the control room where there will be a supervision software. The state of all the variables and the elements that constitute the generation plant could be seen on the screens. Among other things, it is obtained the characteristics of the steam produced, of the total electricity power generation and the supply to the grid, plant auxiliary electricity consumption and its

consumption of gas. There will be daily prints of the data of the day before and will be archived during 9 years. The supervision software stores data automatically and for two months. Data from that software will be collected monthly and will be written down in a calculation form for its final electronic archive.

D.5. Please describe briefly the operational and management structure that the project participant(s) will implement in order to monitor emission reductions and any leakage effects generated by the project activity:

The AGD plant service department will be in charge of operating the generation plant and of monitoring emission reductions and leakage effects generated by the activity. This area operates with 31 persons, 20 of them work in rotary shifts. The plant works the 24 hours.

The person responsible for the operation of the bio energy plant and the monitoring of the variables will be Ing. Mauro Lorenzón. (See Annex 1)

D.6. Name of person/entity determining the monitoring methodology:

Ing. Mariela Beljansky (See also Annex 1).

SECTION E: Estimation of GHG emissions by sources:

E.1. Formulae used:

E.1.1 Selected formulae as provided in Appendix B:

Not applicable, as there is no formulae included in Appendix B

E.1.2 Description of formulae when not provided in Appendix B:

E.1.2.1 Describe the formulae used to estimate anthropogenic emissions by sources of GHGs due to the project activity within the project boundary (for each gas, source, formulae/algorithm, emissions in units of $CO_{2equivalente}$):

The project activity is the electricity generation based on biomass, neutral with respect to CO_2. The plant is designed for supplying electricity for AGD own consumption and/or to the grid. Due to the need of natural gas for exceptional situations, the consumption of this fossil fuel will be measured. Emissions generated within the project boundaries, as a consequence of the use of natural gas for generation will be discounted. The quantification of the emissions of greenhouse gases as a consequence of the use of natural gas for the electricity generation will be the product between the volume of gas used (in cubic decameters) and the natural gas emission factor (2,10 ton CO_2/dam^3).

During the regular operation of the plant (based on biomass) anthropogenic emissions of greenhouse gases due to the project activity within the project boundaries are not expected. For further information see section B.3.

E.1.2.2 Describe the formulae used to estimate leakage due to the project activity, where required, for the applicable project category in Appendix B of the simplified modalities and procedures for small-scale CDM project activities

Leakages have been evaluated according to the definition stated in Appendix B (UNFCCC, Version 09, July 28, 2006) for this category **I.D. 'Grid connected renewable electricity generation'**. Leakages must be considered if the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity. The proposed project is not within this context, therefore , leakages have not been considered. (L=0).

On the other hand, emissions outside the project boundaries have been evaluated and it was concluded that they could be considered null. (See B.4).

E.1.2.3 The sum of E.1.2.1 and E.1.2.2 represents the small-scale project activity emissions:

Project activities emissions= Gas Volume (dam^3) x Gas emission Factor (2,10 ton CO_2/dam^3).

For the gas emission factor it has been considered the one published in the First National Communication that coincides with the value published by IPCC (Intergovernmental Panel on Climate Change) in 1996.

E.1.2.4 Describe the formulae used to estimate the anthropogenic emissions by sources of GHGs in the baseline using the baseline methodology for the applicable project category in Appendix B of the simplified modalities and procedures for small-scale CDM project activities:

As indicated in the approved methodology **I.D. version 09,** the baseline is the MWh produced by the renewable generating unit multiplied by an emission coefficient (measured in $tonCO_{2equ}$/MWh) calculated in a transparent and conservative manner as:

The baseline herein proposed is option (a) of the Combined Margin (CM), consisting of the combination of Operating Margin (OM) and Build Margin (BM). According to **I.D. versión 09,** the procedures prescribed in the approved methodology **ACM0002** must be employed. For the calculation of the Operating Margin (OM), option (c) of the dispatch data analysis was utilized, as it was recommended to be the first methodological choice. The OM will be updated for emission reductions reported during the crediting period. Besides, Option (1) was selected in order to calculate the Build Margin emission factor $EF_{BM,y}$ *ex-ante*.

Calculation of the Operating Margin emission factor ($EF_{OM,y}$)

As specified in option (c) established in the approved methodology ACM0002, version 06, the operating margin emission factor based on the dispatch data analysis is summarized as follows:

$$EF_{OM,y} = \frac{E_{OM,y}}{EG_y} =$$

where:

$EF_{OM,y}$: is the operating margin emission factor in the year *y*
EG_y: is the generation of the project (in MWh) in year *y*
$E_{OM,y}$ are the emissions (in $tonCO_2$) associated with the operating margin in the year *y* calculated as:

$$E_{OM,y} = \sum_h EG_h \bullet EF_{DD,h} =$$

where EG_h is the generation of the project (in MWh) in each hour *h* and $EF_{DD,h}$ is the hourly generation weighted average emissions per electricity unit ($tonCO_2$/MWh) of the set of power plants (*n*) in the top 10% of grid system dispatch order during hour *h*:

$$EF_{DD,h} = \frac{\sum_{i,n}\left(F_{i,n,h} \bullet COEF_{i,n}\right)}{\sum_n GEN_{n,h}}$$

where *F*, *COEF* and *GEN* are calculated on an hourly basis for the set of plants (*n*) falling within the top 10% of the system dispatch.

Where:
$F_{i,n,h}$: is the amount of fuel *i* (natural gas, fuel oil, gas oil and coal in a mass or volume unit) consumed by relevant power sources *n* in the hour *h*
$COEF_{i,n}$ is the CO_2 emission coefficient of fuel *i* ($tonCO_2$ / mass or volume unit of the fuel).

To determine the set of plants (*n*), we must obtain from the national dispatch center, CAMMESA:

c) the grid system dispatch order of operation for each power plant of the system; and
d) the amount of power (MWh) that is dispatched from all plants in the system during each hour that the project activity is operating (*GENh*).

At each hour *h*, stack each plant's generation (*GENh*) using the merit order. The set of plants (*n*) consists of those plants at the top of the stack (i.e., having the least merit), whose combined generation (Σ *GENh*) comprises 10% of total generation from all plants during that hour (including imports to the extent they are dispatched).

The information of each one of the generation units requested for these calculations was obtained from CAMMESA reports. These official reports are publicly available:

- "Parte de Control Post-Operativo". This is a post - operative control report that is emitted every day. From this daily report, the energy generated and the amount of fuel employed was obtained for each one of the generation units.
- Fortnightly declaration of variable cost production (CVP). These costs, declared by each generator, include operation and maintenance costs.

The production costs of a hydro unit ("water value") were supplied by CAMMESA. The "water value" of each reservoir is half-yearly declared by hydro units in the seasonal planning.

So, we count with public data, from the Argentinean power market operator (CAMMESA) of:

- Hourly generation, of each unit.
- The variable generation cost of each generation plant. With these costs the merit order or dispatch is done.
- Fuel consumed in each hour.

All the dispatched generation is included, also electricity imports.
For the calculation the year 2005 is analyzed.

As emission coefficients of fuel, we used the ones published in the First National Communication that coincides with those stated by the IPCC (Intergovernmental Panel on Climate Change) in 1996.
It is then considered:

Source (*)	Index (c)
Coal (a)	**2,54**
Fuel Oil (a)	**3,44**
Natural Gas (b)	**2,10**
Gas Oil (a)	**3,36**

(*)IPCC, 1996 and Argentinean Emission Inventory,1999.

References:

a) coal, fuel oil and gas oil in tons
b) natural gas in cubic decameters
c) the index value corresponds to CO_2 emissions (in tons) per ton of fuel (coal, fuel oil or gas oil) or cubic decameter of natural gas

Finally, it results that:

$$\text{Operating Margin Emission Factor } (EF_{OM,y}) = \frac{5.652.362,60}{9.416.990} = 0,60023 \left[\frac{\text{ton } CO_{2equiv}}{MWh} \right]$$

The OM will be updated for emission reductions reported during the crediting period.

Calculation of the Build Margin emission factor ($EF_{BM,y}$):

As stated in option (1) of the approved methodology ACM0002 version 06 the *ex-ante* build margin emission factor is the weighted average emissions (in $tonCO_{2equiv}$/MWh) of the recent capacity additions to the system (sample of power plants *m*), whose additional capacities (in MW) are defined as the more recent 20% of the existing plants or the 5 more recent plants. The greater annual generation should be taken out of these two options. The emissions are the product between the fuel volume used for the conventional thermal generation and the emission factors respectively. The chart below shows the generation added to the system until completing the 20% of the energy generated by the system in 2005. If 20% falls on part capacity of a plant, that plant must be included in the calculation. It could be seen that the last 5 plants represented a contribution of less than 1% of the generation in 2005.

It was considered as Start Date when the unit was commercially authorized. This data was obtained from the data published by CAMMESA.

#	Commercial Authorization		Central	Type	Accumulated Generation	Accumulated Participation in respect to generation 2005
	Year	Month			[MWh year]	
1	2005	Nov	Arcor M Seveso	CC	28.945	0,03%
2	2004	Jun	Consorcio Potrerillos (Cacheuta N)	Hydro	403.682	0,47%
3	2004	Apr	CT San Nicolás	TG	-	0,47%
4	2003	Nov	Autogenerador Shell	TG	99.183	0,58%
5	2003	Jun	CT Pluspetrol Norte	TG	86.137	0,67%
6	2002	Aug	Consorcio Potrerillos (El Carrizal)	Hydro	80.034	0,76%
7	2002	Nov	Petrolera Chevron San Jorge	MTG	-	0,76%
8	2002	Jun	CT Pluspetrol Norte	TG	86.137	0,85%
9	2002	Aug	CT San Miguel de Tucumán	CC	757.409	1,67%
10	2001	Nov	C.T. AES Paraná	CC	4.182.800	6,21%
11	2001	ago	Ave Fénix Energía SA	TG	-	6,21%
12	2001	Jun	Dock Sud	CC	3.809.281	10,34%
13	2000	Sep	Autogenerador Entre Lomas	TG	12.922	10,36%
14	2000	May	CT Puerto Nuevo	CC	2.790.569	13,38%

15	2000	Feb	CT Tucumán	CC	859.635	14,32%
16	2000	Jan	Agua del Cajón	CC	1.303.922	15,73%
17	1999	Dec	Pichi Picún Leufú	Hydro	1.177.263	17,01%
18	1999	Sep	Central Dique	TG	6.320	17,02%
19	1999	July	CT Costanera (*)	CC	1.890.205	19,07%
19	1999	Jan	CT Costanera (**)	TG	1.561.782	20,76%

Source: CAMMESA Monthly report. Own elaboration

(*) C. COSTANERA. Steam Turbine TV10 of 320 MW entry, with which combined cycle is completed This unit is connected to bars of 220 kV. Commercially authorized on 01/07/99.

(**) C. COSTANERA. Gas Turbine TG9 of 264 MW commercially authorized on 15/01/99. Second TG that will later form the combined cycle of the central.

From CAMMESA monthly reports it could be obtained the generation at each of these units and the volume of gas oil consumed.

As regards the consumption per unit when the thermal unit employs alternative fuel to the natural gas – as gas oil- consumption per unit is taken from the unit consumption published by CAMMESA which is for the unit operating with natural gas. When it is necessary to operate the units with gas oil, some times the machine is started with a mix of natural gas and gas oil. The proportions vary according to the machine load level and natural gas availability. In all cases the incorporation of gas oil in the fuel worsens the unit performance in about a 10%. Thus, assuming a conservatory criterion, the same consumption per unit is taken for both, gas oil and natural gas.

The generation of electricity based on gas oil, is calculated from the data published of the volume of gas oil consumed per agent, considering, as stated before, with a conservatory criterion[5], the same consumption per unit as when natural gas is used.

Regarding the generation of self-producers that entered during the last years, and to keep a conservatory criterion, only the interchange with the grid is considered and not the net generation of the unit, as there only exists public data of the interchanges with the national grid.

Therefore, the "build margin emission factor $EF_{BM,y}$" will be the total emissions weighted by the system additional generation, until completing the 20%.

$$EF_{BM,\,y} = \frac{\sum_{i=1}^{\text{until completing all types of fuels}} \left[\sum_{j=1}^{\text{of additional capacity until completing the 20\% of the system}} (\text{Fuel Volume})_{i;\,j} \times (\text{Emission Factor})_{i;\,j} \right]}{\sum_{j=1}^{\text{of additional capacity until completing the 20\% of the demand}} (\text{Thermal Energy})_{j}} =$$

Being, *i* type of fuel (in this case only natural gas and gas oil) consumed by each of the *j* units that have been added to the system up till completing the 20% of the system generation in 2005.

From the CAMMESA Monthly Reports we can have available the fuel volume employed by these units, total generation and gas oil consumption.

As emission factors, we used the ones published in the First National Communication that coincides with those stated by the IPCC (Intergovernmental Panel on Climate Change) in 1996.

[5] The consumption per unit of alternative fuel to the designed one is higher.

Finally, it results that:

$$\text{Build Margin Emission Factor } (EF_{BM,y}) = \frac{7.218.750}{19.142.223} = 0{,}37711 \left[\frac{\text{ton } CO_{2equiv}}{MWh}\right]$$

Calculation of the Carbon Emission Factor or combined margin (CM):

In order to calculate the emissions in the baseline scenario the carbon emission factor or combined margin (CM) is determined, according to the terms stated in the approved methodology ACM0002 version 06. It will be the average of the "operating margin emission factor, calculated by the dispatch method" and the "build margin emission factor calculated with option (1), *ex-ante*":

$$\text{Carbon Emission Factor or combined margin (CM)} = \frac{\text{Operating Margin} + \text{Build Margin}}{2} =$$

$$\text{Carbon Emission Factor or combined margin (CM)} = \left[\frac{0{,}60023 + 0{,}37711}{2}\right] \cdot \left[\frac{\text{ton } CO_{2equiv}}{MWh}\right] =$$

$$\text{Carbon Emission Factor or combined margin (CM)} = 0{,}48867 \left[\frac{\text{ton } CO_{2equiv}}{MWh}\right]$$

The OM will be updated for emission reductions reported during the crediting period.

Based on this factor the total emissions of the baseline scenario are calculated as the product between the later and the energy produced by the project activity.

Lastly, the following formulae is used to estimate the total emissions that there would have been if the project activity did not exist.

$$\text{Baseline scenario emissions} = \sum_{n=1}^{\text{until completing 21 years}} (\text{Volumen of generated energy})_n \times (\text{Carbon emission Factor})_n =$$

Where:

$\sum_{n=1}^{\text{until completing 21 years}}$ is the summation along the 21 years (crediting period) of the Volume of energy generated in each of the *n* years by the biomass unit (in MWh). This energy, having already discounted the energy consumed for the auxiliaries. The energy is multiplied by the Carbon Emission Factor or combined margin (CM) in the baseline scenario (in $tonCO_{2equiv}$/MWh).

E.1.2.5 Difference between E.1.2.4 and E.1.2.3 represents the emission reductions due to the project activity during a given period:

$$\text{Emission reductions} = \left(\sum_{n=1}^{\text{until completing 21 years}} (\text{Volumen of generated energy})_n \times (\text{Carbon Emission Factor})_n \right) - \left(\sum_{n=1}^{\text{until completing 21 years}} (\text{Volumen of natural gas used})_n \times (\text{Natural Gas Emission Factor})_n \right)$$

The emission reductions due to the project activity will, then, be the product of the total energy generated by the plant and the Carbon Emission Factor or combined margin (CM) of the baseline scenario (they are the emissions that would have existed in the system) discounted the emissions that are generated when using natural gas in the bio energy plant.

Since the natural gas will only be employed exceptionally, for example, during the temporary starting it is assumed that the project activity emissions represent the 2% of the emissions that would be avoided if it was only generated by biomass.

E.2 Table providing values obtained when applying formulae above:

The abovementioned fomulae is used to calculate the quantity of emission reductions per MWh for each of the crediting periods. For the first crediting period is expected the following estimation:

Year	**Baseline emissions**	**Project emissions (2% baseline emissions)**	**Emission reductions**
	[ton CO_{2equiv}]		
2008	31.580,88	619,22	30.961,65
2009	31.580,88	619,22	30.961,65
2010	31.580,88	619,22	30.961,65
2011	31.580,88	619,22	30.961,65
2012	31.580,88	619,22	30.961,65
2013	31.580,88	619,22	30.961,65
2014	31.580,88	619,22	30.961,65

SECTION F: Environmental impacts:

F.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

According to the regulation of Córdoba province, the Cordoba Environmental Agency State Society (Agencia Córdoba Ambiente Sociedad del Estado), is the institution that has jurisdiction over matters related to the coordination and performance of actions tending to the protection of the environment.

Decree 2131/00 in pages 5 and 7 establishes that the generating projects lower to 100MW must furnish a Project Notice with relevant information as regards it, so that the Cordoba Environmental Agency can decide whether an study on the environmental impact should be conducted.

On the other hand, the National Electricity Regulatory Authority (Ente Nacional Regulador de la Electricidad, ENRE) requires, as it is a self-energy generator, the implementation of Environmental management System and check up emissions into the atmosphere. (resolutions ENRE 0013/1997; 881/1999; 555/2001 and National Energy Secretariat 108/2001).

Upon the absence of a full study on the environmental impact at the moment of drawing up this document, the most relevant results are outlined here from the preliminary study that has been conducted by the firm: Ingeniería Laboral y Ambiental S.A.:

- Emissions to the air
- Solid waste
- Employed water
- Emissions to the water

Emissions to the air

Biomass emits considerably fewer NOx in comparison with coal, fuel oil, diesel oil and natural gas and fewer SOx than that emitted by coal, fuel oil and diesel oil.

This project activity avoids the open sky burning of biomass, thus diminishing the generation of dioxins and furans. The combustion in the boiler is a more controlled process and with filters that allow the gasses emitted to the environment to be within the acceptable values and a lot more inferior to those produced in an open sky combustion. Dioxins and furans are similar and are treated as a family of stable chemical components and both are structurally similar. They are also called the environmental hormone since it affects the normal development and growth of birds, fish, reptiles, amphibious and mammals including human beings. Moreover, it produces negative effects on the central nervous system, the immune, the endocrinal hormonal (all the glands of internal secretion such as the hypophisis), and the reproductive systems, refraining the development of the youth (offspring) and causing a huge variety of types of cancer.

Solid waste

The solid particles (ashes) are particular of each fuel. The sunflower husk generates a 3% in weight of ashes and the peanut hull generates a 5% in weight of ashes. It is, then expected that approximately the 4,4% of the total weight of the burned biomass to be changed into ashes.

The configuration of the air currents to complete the combustion gives raise to two types of ashes, the ones called home ashes that are thick and heavy, and the thin and light ashes transported with the combustion gases towards the output of the chimney.

The home ashes, similar to a grayish to brown thick sand, are disposed through a vibrate system on each of the two grids. This movement is preset in the operation. By means of a chain transportation they are deposited in containers with hopper.

The thin ashes have two types of continuous disposal: one for changing direction, where they stay in hoppers and then fall by gravity until a collecting transport and another one through the electric filter. The light ashes that could overcome the direction changes continue traveling through the pipes until the electric filter, based on particles ionization, captures them. Applying a potential difference of 45 kV between the collector plates and a central electrode, particles are electrically oriented depositing themselves on the plates. Simultaneously, and by means of a software, certain strikes are applied on the plates and by gravity the ashes fall in a hopper to be later discharged by chain transportation.

The thin ash looks like a white to grayish powder.

The ashes so obtained are divided into thin and thick. The thin ashes are used as fertilizers because of its high content of nutrients, whereas the remaining ones are used to refill lands and/or roads within the oil plant or in the AGD lands.

Use of Water

With a maximum steam production capacity of 120 ton/h, on starting water consumption in the boiler will be of about 125/128 ton/h (m^3/h). Water is extracted from underground sheets (wells) and a treatment is performed so as to remove salts. It is foreseen that once steam production cycle and transportation are initiated they will return as condensate between 48-55% of the total steam produced. This means that between 58-65 m^3/h of treated cold water must be replaced into the cycle. The difference between the starting water and the replaced water to the cycle is the osmosis effluent (treatment used to remove salt from starting water). As aforementioned AGD at present produces the necessary steam for its processes, with the project activity -grid connected electricity generation from renewable sources- the consumption of water will increase in 30-35% due to a higher and better steam quality needed to generate electricity.

Water emissions

Boiler's purges are joined with the rest of the water effluents of the oil plant and are derived to a biologic treatment.

<u>Environmental sustainability</u>.

The project activity will have a positive impact on the environment thus it will reduce the production of energy based on fossil fuels and will lead to a sustainable increase in the generation sector.

Besides, the generation plant will be equipped with high efficiency technology that reduces the consumption per output unit and increases combustion efficiency.

A pollution control equipment (electric filter) is already installed to assure a minimum particle emission from the plant.

The project activity will enable them to reduce open sky waste burning, and to increase self sufficiency of electricity supply.

SECTION G. Stakeholders' comments:

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

For this activity type, there are not regulation/laws that require a stakeholder consultation process.
An executive brief and a survey form have been drawn up, besides a letter addressed to each entity and/or person consulted, where it is explained the importance of their comments and it is also indicated to whom they have to send the survey completed and duly signed. This mechanism allowed AGD to have a closer encounter with its community and raised a high interest in the consulted ones.

The executive brief delivered consist of two parts:
First part: Consists of an explanation of general concepts about greenhouse effect and international actions taken: United Nations Framework Convention on Climate Change, the Kyoto Protocol, the Clean Development Mechanism and lastly institutional national framework.
Second part: Description of the Greenhouse gases Emission Reductions Project in Aceitera General Deheza due to the electricity generation that employs peanut hull and sunflower husk as fuel, both agro industrial waste from the area.

The survey process was conducted during March 2006. The first days of April the answers have been received.

Consulted people were:

- General Deheza municipality
- Community hospital
- General Deheza Fire department
- Cooperadora Policial (Police Dept. association)
- Primary School
- High school
- Parroquia Nuestra Sra. de la Asunción (Church)
- Mutual de las comunidades (Private Association)
- Particulars: Pharmacy
  - Tire shop and repair
  - Engineering bureau
  - Caffarati Industry

G.2. Summary of the comments received:

All the surveys were answered and with highly positive comments. Comments reflect a deep concern for the environment care and that they feel proud for having a project of this kind carried out in their community which is within the international mechanisms to mitigate the Climate change. They consider this topic a problem for everyone.

All of the cases believe that this project activity will contribute to reach a sustainable development in the area and in Argentina itself.

The issue of the open sky burning of peanut hull, is a worrying problem and with pending solution, therefore they positively receive this project since it will contribute to diminish this highly polluting practice.

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

Since all the comments were highly positive it was not necessary to take them particularly into account.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Description of Aceitera General Deheza S.A. (AGD)

Aceitera General Deheza S.A. is a privately owned company, one hundred per cent Argentine, founded in 1948 that operates in the industrialization of oleaginous seeds. AGD bets, with strong conviction, to the development and production activities within the agribusiness sector with a view to supplying a growing global demand and projecting itself into the future. It contributes with over the 13% of the oil industry exports.

Aceitera General Deheza S.A. produces crude vegetable oils to be later refined in its state of the art refinery. The multi-seed extraction lines allow the simultaneous crushing of three different oilseeds: soybeans, sunflower seed and peanuts. The complex also includes an automated oil bottling plant, producing its own PET bottles and Polyethylene caps. The premises and installations are ISO 9001 certified.

The companies making up the AGD group are:

Aceitera General Deheza S.A
Aceitera Chabás S.A.I.C.
Niza S.A.
Terminal 6 (Port – Industry)
NCA (Railroads)

Apart from providing the local market, AGD was solidly positioned in the MERCOSUR through the opening of offices in the member countries, and it was consolidated in the international market exporting its product to 45 nations spread over the five continents. The 50% of the present invoicing comes from its overseas customers.

AGD performs all production processes from oilseed growing and crushing up to the bottling and packing of its own products under ISO 9001 rules. It is a solidly integrated company with a highly competitive technological profile.

This industrial group, whose head office is at General Deheza city, employs a staff of over 2.000 people.

In addition to its agricultural activities and trading of grain, mostly for export, the industrial group headed by Aceitera General Deheza produces soybean, sunflower seed and groundnut crude oils, refined bottled oils, vegetable proteins, confectionery and blanched peanuts (peanut apt for human consumption (HPS) and peeled peanut), peanut butter, mayonnaise, sauces and dressings, and soybean-based beverages and natural juices.

It is further involved in agricultural exploitation of lands owned by the company and undertakings with partner farmers and provides railroad and port services.

AGD could invoice, in the 2003/4 fiscal year, about 1.100 million dollars accounting the totals for exports and domestic market sales..

Contact information on participants in the project activity:

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Annex 2:

INFORMATION REGARDING PUBLIC FUNDING

There are no expected public funds involved in the financing of this project.