CLEAN DEVELOPMENT MECHANISM
SIMPLIFIED PROJECT DESIGN DOCUMENT
FOR SMALL-SCALE PROJECT ACTIVITIES (SSC-CDM-PDD)
Version 02

CONTENTS

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.

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

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

Title: Switching of fuel from coal to palm oil mill biomass waste residues at Industrial de Oleaginosas Americanas S.A. (INOLASA).

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

The proposed CDM project activity comprises the installation of a biomass generated boiler to supply steam for internal production processes, displacing two coal-fired boilers. Coal will be replaced by palm kernel shells (PK shells) and empty fruit bunches (EFB), saving 100% of the coal consumption, consequently reducing carbon emissions. The project is estimated to reduce a total of **258,525 tCO_2** during the crediting period.

The proposed project activity will be developed at INOLASA (Industrial de Oleaginosas Americanas S.A). INOLASA is a company established in 1986 in Costa Rica, with the objective of supplying the country and the region of Central America with high quality soybean products. The company is located in the province of Puntarenas, the district of Barranca.

INOLASA will purchase the biomass waste from three palm oil mills called Palo Seco, Naranjo and Coto. The first two mills are located in Quepos and the last one in Golfito, in the province of Puntarenas. The three palm oil mills belong to "Grupo NUMAR", a group of several companies active in the plantation, extraction, processing and production of vegetable oil. There is an abundant supply of biomass available as input for INOLASA.

The current operation at INOLASA involves the use of bunker to generate heat. Due to the increase in bunker prices, the company evaluated the switch to alternative fuels. Both coal and biomass were assessed. It was found that without CDM income coal is the most feasible option while with CDM biomass is the most feasible option. This is mainly due to logistical and organisational risks concerning the biomass supply stream from distant palm oil mills to INOLASA. Therefore the company is seeking CDM approval for the proposed project. Since coal is financially more attractive than bunker, in the baseline situation coal would have been selected as fuel.

Current situation	Baseline situation	Project activity
Bunker-fuelled boilers	Coal-fuelled boilers	Biomass-fuelled boiler

Figure 1: Location of INOLASA and Numar´s Industries

The biomass will be transported from the palm oil plants using trucks with a capacity of 28 tons each, making three trips per day. During the maintenance period of the biomass boiler, bunker will be combusted for two weeks in the current boilers in order to supply the required energy.

The project contributes to sustainable development in Barranca, Punteras as it uses renewable resources in an innovative technology that contributes to environmental and social sustainable development in Barranca, Puntarenas. Sustainable development has to take into consideration all impacts related to environmental sustainability and socio-economic sustainability. These issues are described in more detail below:

Environmental aspects:

PK shells and EFB are a sustainable source of energy, bringing advantages for mitigating global warming. Local benefits include:

- Environmental contamination. The project prevents the PK shells from being burned in the field, avoiding air polution.
- Degradation and contamination of the soil. Biomass that would otherwise be left for decay is being used for steam generation, preventing degradation and contamination of the soil.
- Local air pollution. Sulphuroxide (SOx) emissions will decrease, since biomass contains a much lower sulphur content than coal.

The environmental diagnosis shows that the project activity has no negative environmental consequences to the region.

Socio-economic aspects:
The project also aims to improve quality of life for local habitants:

- A local school will directly benefit from the proposed project activity. The biomass revenues of Coto (Grupo Numar) will be directed to this school.
- Employment opportunities will increase, especially during the construction and installation of the system, but also over the longer term during maintenance and operation activities of the more advanced biomass-fired boiler and related systems.
- A sustainable competitive advantage for the palm oil industry is created by using waste of the production processes in a more efficient way.

A.3. Project participants:

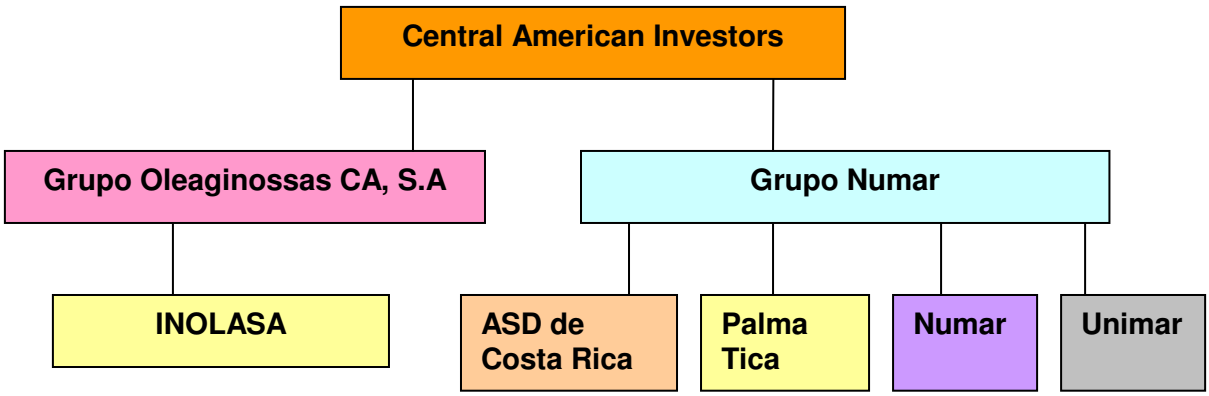
Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Costa Rica	Industrial de Oleaginosas Americanas S.A (INOLASA, private entity)	No

Industrial de Oleaginosas Americanas S.A. (INOLASA)

- Role: Project Developer

The ownership structure of the participants is presented in the following figure:

Figure 2: Ownership structure



Brief description:
INOLASA is a corporate company developing soybean products. ASD de Costa Rica S.A. produces seeds. Palma Tica's main activity concerns management of the plantations and crude palm oil extraction. Numar is a subsidiary involved in the refinery of the palm oil and is producer of greases, butters and oils. Unimar takes care of commercialization of the products.

INOLASA will purchase the biomass waste from three palm oil mills called Palo Seco, Naranjo and Coto. These three palm oil mill companies belong to Palma Tica.

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

Currently, steam is produced with two bunker-fuelled boilers. Each has a capacity to produce 20 tons of steam/hour with a pressure of 12 bar. Two coal-fired boilers would have been installed as part of the baseline. These boilers both have the capacity of 40 kBtu/h, 10.4 barg.

The proposed CDM project activity intends to replace the actual boilers by a new biomass boiler. This new boiler will have a capacity to produce 35 tons of steam/hour with a design pressure of 35 bars. However, during the first years it will only produce 20 tons of steam/hour with a pressure of 12 bars. INOLASA will install, operate and maintain this new boiler that is imported from Malaysia. The boiler will combust biomass in a mixture of approximately 85% PK shells and 15% of EFB. The quantity of PK shells that the plant will need is approximated 20,000 tons a year.

The combustion of biomass will result in a low amount of ash production, corresponding to 3 - 4% of the feeding mass. These ashes will be used as an aggregate for cement and concrete mixtures.

Key information and data to determine the baseline scenario and the project scenario:

Characteristics	**Baseline Scenario**	**Project Scenario**
Operating Boilers	Two coal fired boilers, 40 kBtu/h, 10.4 barg.	One biomass fired boiler, 35 T/h, 35 Barg.
Fuel Input	Coal (Bituminous)	Biomass (PK shells and EFB)

The next table shows the new boiler's design and technical specifications:

Technical Design Specification of Biomass Boiler	
Boiler Type	Fraser II Bi-Drum Watertube Boiler, Membrane wall design
Boiler Capacity	35,000 Kg/Hr
Boiler Model	FR 16/49
Boiler working pressure	12.0 bar resp. 31.0 bar
Design pressure	35.0 bar
Steam Temperature	192°C (Saturated) resp. 275°C (40° Superheated)
Feed water temperature	120°C +/- 5% (Economizer Water outlet temperature)
Air temperature at F.D Fan	220°C to 240°C (pre-heater air outlet temperature)
Actual steam evaporation	35,000 Kg/Hr.
Draught system	Balance Draught
Burning method	Reciprocating Step Grate; water cooled; hydraulically operated; grate material with high allow content.
Fuel to be used:	85% PK shells with Max 15% EFB (45% moisture)
Dust Emissions	<=100 mg/ nm³
Overall efficiency on Gross Calorific Value of Fuel	80%

From its storage site, the biomass is transported by an elevator into a conveyor that is used to conduct the biomass unto the boiler's feed system.

The PK shells transportation equipment type is a 'Grate Cooled Hydraulic Operated Reciprocating Step'. A reciprocating grate is a continuous ash discharge grate used for firing the biomass fuel. The reciprocating grate consists of cast iron bars mounted on shafts. Alternate shafts are connected together and oscillated by hydraulic driven mechanism. There are fixed shafts at the sides of each oscillating shaft. The bars have slots to allow for combustion air at the bottom of the grate.

The fuel is fed into the boiler by gravity at the front end of the grate. Due to the reciprocating action of the grate, the fuel moves towards the ash discharge end. The speed of the grate is set in such a way that the fuel is fully incinerated when it reaches the discharge end. This results in a continuous ash discharge.

The boiler's specifications comply with all the emission regulations of the country.[1] There are bag filters in the boiler's chimney in order to keep dust emissions below 100 milligrams/nm³. Compared to the baseline, no additional water consumption will take place during the project activity.

[1] "Reglamento sobre emisiones de contaminantes atmosféricos provenientes de Caldera. # 30222 – S – MINAE" *and* "Reglamento de Calderas # 26789 – MTSS".

As a result of the palm oil milling process, some types of waste are generated. There are three types of biomass waste streams:

- Mesocarp fibres (MF)
- Palm kernel shells (PKS)
- Empty Fruit Bunches (EFB)

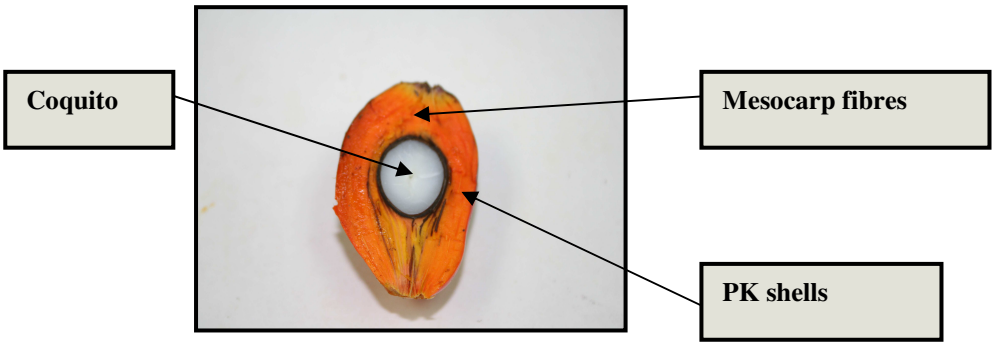
The three palm oil mills involved are Palo Seco, Naranjo and Coto. Two of these, Palo Seco and Naranjo, currently use MF and PKS as input for their boilers to generate heat. These mills will adjust their boilers so that the more humid EFB can also be combusted. This will result in an abundance of PKS, which will be used at INOLASA's proposed CDM project activity. Coto has already adjusted its boiler; the abundance of PKS is currently left in the open air for decay. This is in line with Costa Rican laws concerning biomass waste treatment.

During the proposed project activity Coto's PKS will also be used at INOLASA production facility to generate heat. Coto is located in a free trade zone and therefore is not allowed to commercialize its biomass without previous permission by the competent authorities. In order to avoid bureaucratic delays Palma Tica decided to donate the PKS to a local school. The school in their turn will sell the PKS to INOLASA for a price of 1,00 US$ per ton and will be the recipient of these revenues. Although this construction seems to be very complicated, it is much easier than overcoming the bureaucratic hurdles for commercialization of the biomass. At the same time this construction allows INOLASA and Palma Tica to reinforce their social commitment in the region.

All three palm oil mills are currently using EFB as fertilizer. The EFB is left in open air to decay before it can function as fertilizer, resulting in the emission of methane to the atmosphere. In order to be conservative, methane emissions prevented by using the EFB for heat generation purposes instead, will not be taken along in CDM baseline emission calculations.

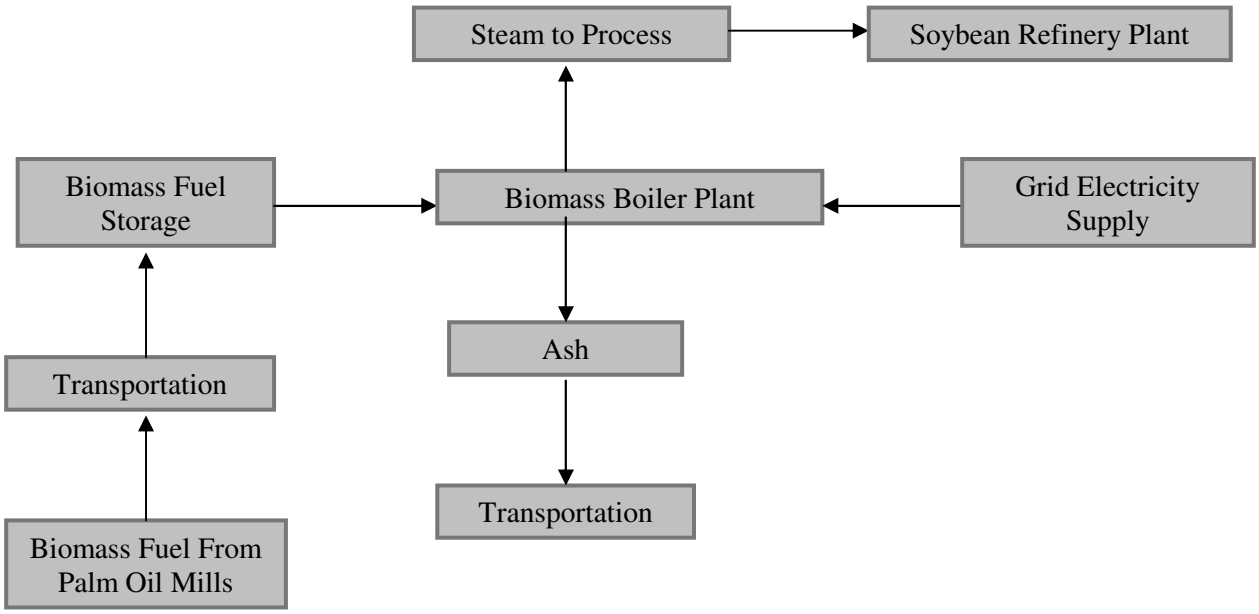
Figure 3: Picture of the EFB storage

Figure 4: Palm fruit



INOLASA has a storage capacity of 15 days, corresponding to 1,500 tons of PK shells. It will be stored in a new warehouse with a capacity of 3,000 m³, located next to the boiler.

Figure 5: Diagram of the process (project activity)



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

A.4.1.1. Host Party(ies):

Costa Rica

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

Province of Puntarenas

A.4.1.3. City/Town/Community etc:

District of Barranca

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

The project activity is located in Puntarenas, the largest province of Costa Rica. Puntarenas is an area of 11,276 km^2 and has a population of 350,000 habitants. The central part of Puntarenas has a population of 100,000 habitants and is situated 130 km from San José, the capital of Costa Rica. The project activity is situated in district eight, Barranca, in the central part of Puntarenas.

Precise coordinates for the project are 454.5-459 North; 217.5-217.9 East. Latitude of Barranca is N 09, 59', 23.5'', and longitude is W 084, 42', 36.9''. Its altitude is sea level. It has an approximate population of 38, 199 habitants.

Figure 6: Location map of INOLASA

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

The project is a small scale project activity and falls under the category I.C according to the Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities. It is a "*Thermal energy for the user*" project, displacing steam generation from fossil fuel-fired steam boilers by a biomass combustion boiler. The energy in the form of steam will be used for on-site consumption only.

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:

The proposed project activity will directly reduce greenhouse gas emissions from existing and future generation of steam production by means of fossil fuels. Under the baseline scenario coal would be combusted to provide steam for industrial uses. The project will displace the use of coal for steam generation with a carbon neutral alternative: the use of palm kernel shells and empty fruit bunches.

In the absence of the project activity the coal fired boilers would be installed instead of the biomass fuelled boiler. Please see further section B.3. why the emissions reductions would not occur in the absence of the project activity.

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

Years	Annual estimation of emission reductions (in tonnes of CO2 e)
2007	30.802
2008	32.651
2009	34.610
2010	36.680
2011	38.879
2012	41.207
2013	43.696
Total emission reductions (tonnes of CO_2 e)	**258.525**
Total number of crediting years	7
Annual average over the crediting period of estimated reductions (tonnes of CO_2 e)	36.932

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

This project obtains no public support, including ODA funding.

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

As highlighted in Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities, a proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

- With the same project participants;
- In the same project category and technology/measure;
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

On the basis of the above, the project cannot be considered a debundled component of a large project as this project activity represents the first and only biomass fuelled boiler for INOLASA.

SECTION B. Application of a baseline methodology:

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

Type I – Renewable Energy Projects

Title of baseline methodology: "*Thermal energy for the user*", Type I.C in Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities. Version 08_Scope 1_03 March 2006.

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

Project category: I.C. Thermal energy for the user

This category comprises renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels. Upgrading of existing equipment is not allowed. The simplified methodology type I.C covers co-fired systems where the energy output is not exceeding 45 $MW_{thermal}$.
This project is an example of this category because it includes a technology (biomass boiler) that provides thermal energy that displaces the use of fossil fuel. The boiler rating is 35 ton of steam/hr at 35 bar. This corresponds to an energy capacity of about 27 $MW_{thermal}$ and is lower than the prescribed threshold. Therefore the simplified baseline and monitoring methodology of type I.C can be applied.

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:

National policies and circumstances
Currently no legislation is in place in Costa Rica governing the use of PK shells and EFB as a fuel in the Costa Rican oil industry. Also, there are no direct programs or regulations limiting the future use of fossil fuels.

Description of additionality arguments
Current operation at INOLASA involves the use of bunker to generate heat. During recent years, the use of bunker for heat generation purposes was becoming more and more cost intensive due to increasing world market prices. Therefore, the company assessed alternative fuels. The use of coal proved to be more cost-efficient than bunker and a feasibility assessment was undertaken in the year 2004. The outcomes from the assessment favoured a switch to coal. Consequently, the company decided to proceed with this switch from bunker to coal.

During the investigation phase of the coal boiler type, INOLASA discovered that efficiency improvements at the nearby Palm Oil Mill plantation of Coto had led to a surplus of biomass, in the form of palm kernel shells. INOLASA assessed the possible use of palm kernel shells instead of coal. INOLASA decided not to proceed with this option as it was not considered viable due to several reasons. First of all, it was seen as a very complicated alternative, having to deal with risks concerning security of biomass supply, a new and yet unknown and unproven technology in the sector, and other logistical and organisational risks. Besides that, the use of biomass presented a financially less attractive option. This was not the main reason though, because the rates of return do not differ much.

However, the financial advantages of developing it as a CDM project are expected to outweigh the identified risks and this option was chosen. Summarizing, in the baseline situation coal would have been selected as fuel, while CDM allows for switching to biomass.

Determination of additionality
In line with attachment A to appendix B of the simplified M&P for small-scale CDM project activities, the project participants shall provide an explanation to show that the project activity would not have occurred anyway 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 the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions,

(c) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

(d) Other barriers: without the projects activity, for another 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.

In below it is explained that the proposed project activity would not have been implemented without CDM due to technological barriers, a barrier due to prevailing practice and other barriers. The financial analysis indicates a small advantage of implementing the coal-fuelled boiler compared to implementing the biomass-fuelled boiler without taking into account CDM revenues. The difference is too small for INOLASA to have decided solely based on this financial analysis. In other words, the other barriers are decisive.

(a) Investment barrier

In order to show that the project activity is additional to the baseline situation, first of all an investment comparison is made in accordance with the "Tool for the demonstration and assessment of additionality (version 2)"[2]. The financial indicators NPV and the IRR are used to compare the alternatives to the project activity.

There are three realistic and credible alternatives that are available to the project participants in terms of the generation of heat for auxiliary use:

1) Continue with the current operation of using bunker as fuel for heat generation
2) Implement coal-fired boilers for heat generation
3) Develop the project activity without CDM revenue

[2] as proposed in the Executive Board's 16th meeting.

The three alternatives are in compliance with applicable laws and regulations in Costa Rica. These laws are:

- "Reglamento sobre emisiones de contaminantes atmosféricos provenientes de Caldera. # 30222 – S – MINAE" (norms for the emissions from boilers)
- "Ley Organica del Ambiente" (General environmental law)

The three alternatives are compared on the basis of the Net Present Value (NPV) and the Internal Rate of Return (IRR). The NPV is used since the continuation of the current operation (alternative #1) does not require any additional investment. The IRR is used only to compare alternative #2 and #3 (as these do require investment). Although the project activity covers a seven year crediting period (only seven years of carbon revenues), the NPV and IRR analysis are based on a period of 10 years. This period is typical for INOLASA's investment decisions making process.

Table 1: Comparative financial indicators heat generation

Option	Description	Investment	IRR (10 years)	NPV (10 years) in US $
1	Continue with the current operation of using bunker	$0	n/a	-$ 40,344,000
2	Implement coal-fired boilers for heat generation	$3,346,000	62%	$ 7,317,000
3	Develop the project activity without CDM revenue	$3,031,000	61%	$ 6,632,000

Option 1, continuing with INOLASA's current facility will not require any additional investments. This option leads to a low NPV compared to the alternatives. Therefore, this option has been rejected by INOLASA. Implementing coal-fired boilers requires the highest investment, compared to the alternatives. This option has a small advantage compared to implementing the biomass-fuelled boiler without taking into account CDM revenues. This difference is too small to base decisions on solely though.

As part of the 'Tool for the demonstration and assessment of additionality (version 2)' a sensitivity analysis is performed as well.

Table 2: Sensitivity analysis

Option	Description	Sensitivity in O&M	IRR (10 years)
2	Implement coal-fired boilers for heat generation	+5%	62%
3	Develop the project activity without CDM revenue	-5%	61%

A 5 % increase of operation and maintenance costs of the coal boiler would lead to an IRR of 62%.
A 5 % decrease of operation and maintenance costs of the biomass boiler would lead to an IRR of 61%.

Thus, in case the O&M costs for both alternatives would turn out to be 5% different then expected, in any case the coal-fired boiler would yield a higher IRR.

Barriers b, c and d

b) Technological barrier

- Employers at INOLASA currently operate the bunker fuelled boiler. Implementing the baseline technology (coal boiler) would not have resulted in major changes concerning complexity in boiler operation. Procedures involved to feed the boiler with coal are not very different from those relating to the bunker boiler. Feeding biomass into the biomass boiler involves more complicated technology, using for example an advanced biomass transportation type of equipment. More on this can be found in section A.4, technical description of the project activity.
- The palm oil mill 'Coto' has already adjusted its boiler in order to combust the more humid empty fruit bunches. 'Palo Seco' and 'Naranjo' still have to adjust their boilers in order to realise the required amount of palm kernel shells that will be used at INOLASA. The uncertainty concerning timely and adequate implementation of the new technology at these two palm oil mills poses a risk to INOLASA's production process.

c) Barrier due to prevailing practice

- This project is to be considered first of its kind. No other industries use biomass waste streams from another industrial sector. INOLASA is the first plant in Costa Rica using waste streams from several other facilities for own heat generation purposes.
- Contrary to the food processing industry INOLASA makes up part of, using biomass to generate heat is widely spread in the palm oil business in Costa Rica. Common practice in Costa Rican food processors is steam generation by the use of bunker boilers. Although there are some existing examples present in the food processing industry using biomass for heat generation, this is not a common option in the sector.

d) Other barriers

- Logistical barrier: INOLASA is dependent of three remote palm oil mills supplying the biomass. Trucks are transporting the biomass each day, at a minimum distance of 133 kilometres between INOLASA and the three palm oil mills. This results in uncertainty regarding timely supply of biomass.
- Barrier regarding security of supply: By implementing the proposed project activity, INOLASA becomes dependent of biomass residue production at the three palm oil mills. If by some unforeseen reason the quantity of biomass residues does not satisfy the requirements at INOLASA, its production process might be disrupted. This is in contrary to the supply of coal in the baseline scenario, a relatively secure option that would hardly have involved supply risks at all.

Impact of CDM registration

CDM revenue contributes to the project to a great extent. Without it, the project will not be implemented. If carbon credits are secured, assuming an average CER price of $US 12 per tCO_2 up to 2012, and a post-2012 price of $US 5, the following investment evaluation is realised.

Table 3: Financial analysis of project

Description	Investment (incl CDM dev costs)	NPV (10 years)	IRR (10 years)
Develop project activity as CDM project	$3,081,000	$7,649,000	68%

With CDM revenues, an IRR of 68% is expected. This is 6% higher than the baseline IRR. Therefore, the CDM revenues mean that INOLASA will choose the biomass-fuelled boiler over the coal-fired boiler.

Concluding
In absence of the project activity the most likely scenario would be that INOLASA would continue to implement coal-fired boilers. This baseline scenario would not contribute to the sustainable development as the new project will do, in that it uses renewable resources in an innovative technology that contributes to environmental, social, cultural and economical sustainable development.

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:

Referring to the Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities, project boundary is the physical, geographical site of the renewable energy generation. A brief description of all sources of baseline and project emissions is given in below.

Baseline
The GHG emissions related to the generation of heat by means of coal combustion are part of the project boundary. These emissions are solely related to the combustion of coal; any emissions related to transport and indirect processes are not included to be conservative. Emissions related to electricity consumption of the coal boiler are included.

Note that the current operation at INOLASA involves the use of bunker to generate heat. As is indicated in baseline methodology: "*Thermal energy for the user"*, Type I.C in Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities, "*…the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity…"*. As indicated in section A.2, the current operation is the use of bunker, but coal would have been used in absence of the project activity. As shown in section B.3. by use of the "Tool for the demonstration and assessment of additionality (version 2)", a) NPV comparison between bunker-fuelled boilers and coal-fired boilers and b) barrier analysis of a biomass-fuelled boiler versus a coal-fuelled boiler indicates that coal combustion should be considered as the baseline situation.

Project activity
The GHG emissions related to steam production by combusting biomass are zero, as the fuel source can be considered 'carbon neutral'. Emissions from biomass and ash transportation are included, as well as emissions from grid electricity supply for operating the biomass boiler.

Below you find a diagram of the project boundary; the parts colored turquoise are part of the boundary as these relate to GHG emissions due to the project activity.

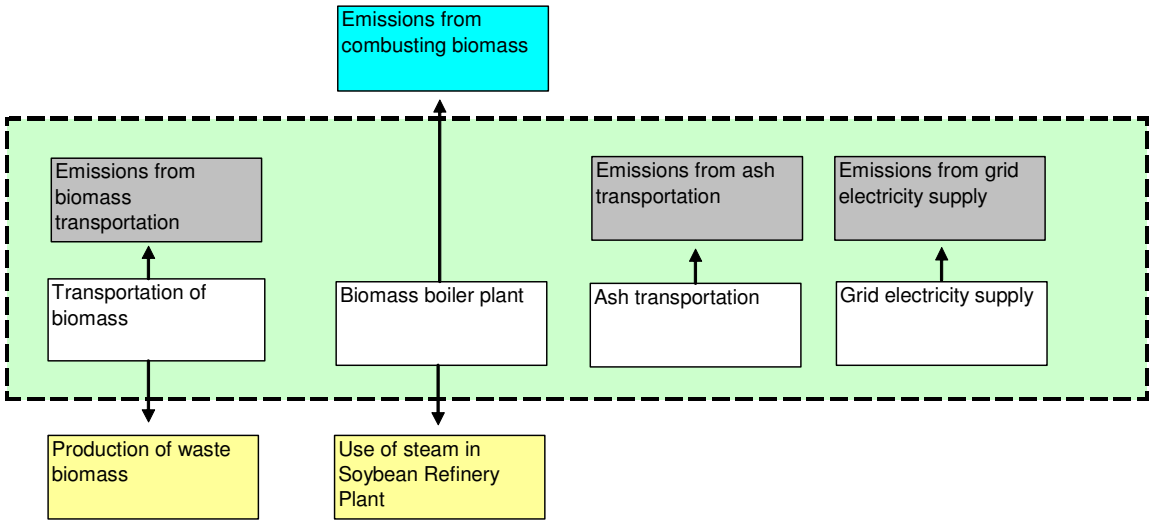


Figure 7: Project boundary

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

Date of completing the final draft of this baseline section: 09-11-2006

The baseline has been prepared by Ecofys BV.

Company name: Ecofys BV
Visiting address: Kanaalweg 16-G
3526 KL Utrecht
The Netherlands
Postal address: P.O. Box 8408
3503 RK Utrecht
The Netherlands
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Fax number: +31.30.2808301
E-mail: cgalleguillos@ecofys.nl

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:

15/01/2007

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

25 years

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

C.2.1. Renewable crediting period:

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

01/03/2007

C.2.1.2. Length of the first crediting period:

7 years

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

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C.2.2.2. Length:

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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:

Title of monitoring methodology: "*Thermal energy for the user*", Type I.C in Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities. Version 08_Scope 1_03 March 2006. According to this methodology, monitoring shall consist of metering the energy produced by a sample of systems where the simplified baseline is based on the energy produced multiplied by an emission coefficient.

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

Monitoring methodology Type I.C is has been selected since it corresponds to the requirements of the project activity. The methodology is appropriate, reliable and compatible with the standard procedures and equipment used in thermal energy projects.

As mentioned in the monitoring methodology, monitoring shall consist of metering the energy produced by a sample of the systems where the simplified baseline is based on the energy produced multiplied by

an emission coefficient. Therefore, parameters of the biomass that is used for combustion during the execution of the proposed project activity, such as the net calorific value or the humidity, will not be monitored.

The quantity of thermal energy (Q_y) is determined as follows:

Q_y (GJ/year) = Q_s (GJ/tonne) x S (tonnes/hour) x $\sum O_h$ (hours/day/year)

Q_s = Energy content of steam (GJ/tonne)
S = Steam generated (tonnes/hour)
O_d = Daily operating hours, which will be summed over the annual operating days (O_y)
O_y = Annual operating days

Q_s is a function of the steam temperature (T) and pressure (P). If temperature and pressure are known then the energy content of steam can be calculated by referring to a standard steam table (e.g. as can be found at http://www.simetric.co.uk/si_steam.htm)

The outcome Q_y can be filled in the formula presented in section E in order to calculate the real emission reductions:

$$ER_{heat,y} = \frac{Q_y \cdot COEF_i}{\varepsilon_{boiler} \cdot NCV_i}$$

where:

$ERheat_{,y}$	are the emission reductions due to the savings of fossil fuels during the year y in tons of CO_2
Q_y	is the quantity of heat generated in the project plant that displaces heat generation in the fossil fuel fired boiler during the year y in TJ
ε_{boiler}	is the energy efficiency of the boiler that would be used in absence of the project activity
NCV_i	is the net calorific value of the fossil fuel type i per TJ/kt
$COEF_i$	is the CO_2 emission factor of the fossil fuel type i fired in the boiler in the absence of the project activity in tons CO_2/kt

The QC and QA procedures during monitoring will permit cross-verification of data during the compilation of the energy inventory. The data and all the related information shall be documented, filed and notated in order to facilitate the diagnosis and evaluation of the expected GHG emissions.

Monitoring and data management:
The monitoring data will be archived both in paper and in electronic in a computer on the soy bean refinery plant. The monitoring variables and their frequency of recording are described on section D.3. The results of the inspections and the maintenance procedures are recorded in a journal, stored in a computer at the plant.

Calibration of instruments
The calibration of the instruments utilized for the measurement of the monitoring variables is done on a monthly basis.

D.3 Data to be monitored:

Data to be collected in order to monitor emissions from the project activity and to determine the baseline, and how this data will be archived:								
ID number	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
1	Q_y: Steam delivered	Project Owner	GJ/hr	c	Daily	100%	electronic	Project participants should calculate the net heat generation and subtract any condensate return
2.	S: Steam generated	Project Owner	Tonnes/hour	m	Daily	100%	electronic	
3.	T: Steam temperature	Project Owner	ºC	m	Daily	100%	electronic	
4.	P: Steam pressure	Project Owner	bar	m	Daily	100%	electronic	
5.	O_d: Daily steam generation operating hours	Project Owner	Hours	m	Daily	100%	electronic	These daily hours will be summed over each of the annual steam generation operation days to give total number of hours per year
6.	O_y: Annual steam generation operating days	Project Owner	Days	m	Daily	100%	electronic	Number of days over which daily steam generation operating hours are to be summed
7.	Qs: Energy content of steam	Project Owner	GJ/tonne	e	Daily	100%	Electronic	The energy content of steam can be looked up in a steam table when the temperature and pressure values

								are known (steam tables can be found at http://www.simetric.co.uk/si_steam.htm)
8.	NCV_i: Net calorific value of fossil fuel	Laboratory of Puerto Bolivar, La Guajira	GJ/tonne	m	Once	100%	electronic	
9.	$COEF_{CO2,i}$: Emission factor of fossil fuel	National resources	tCO_2 / mass or volume unit of the fuel	e	Once	Random	electronic	In the verification of monitoring report a statement shall be included if IPCC values have changed.
10.	$NO_{vehicles,i,y}$: Number of vehicles for transport with similar loading capacity	Project Owner	-	m	Daily	100%	Electronic	
11.	$Km_{i,y}$: distance travelled by vehicle type i	Project Owner	km	m	Daily	100%	Electronic	
12.	VF_{cons}: vehicle consumption in litres per kilometre for vehicle type i	Project Owner	l/km	e	Daily	100%	Electronic	
13.	CV_{fuel}: Calorific value of the fuel	IPCC or national resources	MJ/kg	e	Once	100%	Electronic	
14.	D_{fuel}: fuel density	IPCC or national resources	Kg/l	e	Once	100%	Electronic	
15.	EF_{fuel}: Emission factor of the fuel	IPCC or national resources	t CO_2/MJ	e	Once	100%	Electronic	
16.	EFB: Empty Fruit Bunches	Project Owner	t	m	Daily	100%	Electronic	
17.	PKS: Palm Kernel Shells	Project Owner	t	m	Daily	100%	Electronic	

18.	$B_{maintenance}$: Bunker use during maintenance period	Project Owner	l	m	Daily (during maintenance period)	100%	Electronic	
19.	E_{boiler}: Electricity consumption biomass boiler	Project Owner	GWh/year	m	Daily	100%	Electronic	

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

Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored		
Data *(Indicate table and ID number e.g. 3.-1.; 3.2.)*	Uncertainty level of data (High/Medium/Low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
2	Low	Flow meters will be subject to a regular maintenance and testing regime to ensure accuracy. (see table 7, Annex 3)
3,4	Low	The steam analyser will be subject to a regular maintenance and testing regime to ensure accuracy. (see table 7, Annex 3)
5,6	Low	The equipment is subject to an annual calibration and maintenance procedure, executed by Inolasa Oficials
8	Low	The Inspectorate Colombia LTDA certifies that the analytical results were established in accordance with the applicable ASTM standards (see table 7, Annex 3)
9, 13-15	Medium	IPCC default values or national resources
19	Low	The kWh meter will be calibrated annually by the supplying firm

Note: In Annex 3 a detailed overview is presented on accuracy level, calibration procedure, quality assurance and quality control of the monitoring process.

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:

INOLASA is responsible for the operation of the biomass boiler and administration of the data, also for the costs of the operation and maintenance of the boiler's control system.

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

Company name: Ecofys BV
Visiting address: Kanaalweg 16-G
3526 KL Utrecht
The Netherlands

Postal address: P.O. Box 8408
3503 RK Utrecht
The Netherlands
Contact person: Mss. Carolina Galleguillos
Telephone number: +31.30.2808300
Fax number: +31.30.2808301
E-mail: cgalleguillos@ecofys.nl

SECTION E.: Estimation of GHG emissions by sources:

E.1. Formulae used:

Formula relevant for project activity emissions:

$$L_{t,y} = \sum_{i}^{n} NO_{vehicles,i,y} * km_{i,y} * VF_{cons,i} * CV_{fuel} * D_{fuel} * EF_{fuel}$$

Formula relevant for the baseline:

$$ER_{heat,y} = \frac{Q_y \cdot COEF_i}{\varepsilon_{boiler} \cdot NCV_i}$$

E.1.1 Selected formulae as provided in appendix B:

The baseline emissions are calculated using Appendix B, section C. “Thermal energy for the user”.

Paragraph 6 of this appendix states:
“For renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity times an emission coefficient for the fossil fuel displaced. IPCC default values for emission coefficients may be used.” In the case of the proposed project activity the baseline is the use of coal-fuelled boilers to meet the steam demand of INOLASA’s plant.

No specific formulae are provided in the appendix. Therefore the GHG estimation option mentioned in paragraph 6 will be used to determine the total emissions avoided by the project. Also, parameters set forth in Approved Methodology AM0025 / Version 03, paragraph “Emissions from transportation” are used as guidance. In addition, guidance from ACM006, paragraph “Emission reductions…due to the displacement of heat” has been used.

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:

The emissions related to biomass steam production are zero, as the fuel source is a renewable source of waste biomass.

Emissions arising from the construction of the project have been excluded from the project boundary. It is assumed that similar activities and related emissions – for example, installation of new boilers as older boilers are retired – would also occur in the baseline situation. It is also extremely difficult to accurately estimate the emissions arising from construction, especially transportation of materials.

Emissions related to bunker use during the maintenance period has been excluded as well. This same maintenance period would have been required in the baseline situation as well.

Emissions from biomass and residual ash transportation are taken along. Emissions from the use of electricity consumption by the biomass boiler are covered as well.

Emissions from transportation ***($L_{t,y}$)***
The project results in a change in transport emissions as both waste biomass and waste output from biomass combustion (ash) need to be transported to and from the biomass combustion plant. Diesel fueled trucks are used for transportation.

This project uses parameters set forth in Approved Methodology AM0025 / Version 03, paragraph "Emissions from transportation" as guidance. As mentioned in AM0025, for calculations of the emissions, IPCC default values for fuel consumption and emission factors may be used. The CO_2 emissions are calculated from the quantity of fuel used and the specific CO_2-emission factor of the fuel for vehicles i to n, as follows:

$$L_{t,y} = \sum_{i}^{n} NO_{vehicles,i,y} * km_{i,y} * VF_{cons,i} * CV_{fuel} * D_{fuel} * EF_{fuel}$$

where:

$NO_{vehicles,i,y}$	is the number of vehicles for transport with similar loading capacity
$Km_{i,y}$	is the average additional distance travelled by vehicle type i compared to baseline in year y
VF_{cons}	is the vehicle fuel consumption in litres per kilometre for vehicle type i (l/km)
CV_{fuel}	is the Calorific value of the fuel (MJ/Kg or other unit)
D_{fuel}	is the fuel density (kg/l), if necessary
EF_{fuel}	is the Emission factor of the fuel (tCO_2/MJ)

The vehicles use 2.08 liter of diesel per kilometer[3]. The calorific value of the fuel is 45.91 MJ/kg[4]. The fuel density of diesel in Costa Rica is 0.85 kg/l[5] and the emission factor of the fuel is 20.2 tC/TJ[6].

[3] Source: truck supplier

Emissions from grid electricity consumption (E_{boiler})
Taking into account the maintenance period of two weeks, the biomass fuelled boiler will run a total of 5796 hrs per year. The total electricity consumption of the boiler sums is 471 kW. An emission factor of 488.35 tCO_2/GWh is used for the Costa Rican grid. This factor has been taken from the registered small-scale CDM project "Cote small-scale hydro power project". This baseline emission factor was calculated ex-ante in a transparent and conservative manner as the average of the "approximate operating margin" and the "build margin".

Specifications and breakdown of electricity consumption can be found in annex 4.

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

According to Appendix B, I.C., paragraph 8, leakage is to be considered if the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity. Since this is not the case, the proposed project activity does not quantify leakage effects.

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

Project activity emissions (t CO_2/year) = Emissions from the consumption of grid electricity + Emissions from transportation = 2,694 t CO_2/year

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:

Emissions due to coal combustion
For steam generation, Appendix B, section C. "Thermal energy for the user", paragraph 6 states:

"For renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity times an emissions coefficient for the fossil fuel displaced. IPCC default values for emission coefficients may be used."

In calculating the fossil fuel consumption that would have been used in the absence of the project activity, guidance from ACM006, paragraph "Emission reductions…due to the displacement of heat"[2] was used.

"Emission reductions from savings of fossil fuels are determined by dividing the quantity of generated heat that displaces heat generation in fossil fuel fired boilers (Q_y) by the net calorific value of the fuel

[4] Source: Refinadora Costarricense de Petróleo, RECOPE

[5] Source: Refinadora Costarricense de Petróleo, RECOPE

[6] Source: IPCC Reference Manual

and the efficiency of the boiler that would be used in the absence of the project activity (NCV_i and ε_{boiler}), and by multiplying with the respective CO2 emission factor ($COEF_i$), as follows:"

$$ER_{heat,y} = \frac{Q_y \cdot COEF_i}{\varepsilon_{boiler} \cdot NCV_i}$$

where:

$ERheat_y$	are the emission reductions due to the savings of fossil fuels during the year y in tons of CO_2
Q_y	is the quantity of heat generated in the project plant that displaces heat generation in the fossil fuel fired boiler during the year y in TJ
ε_{boiler}	is the energy efficiency of the boiler that would be used in absence of the project activity
NCV_i	is the net calorific value of the fossil fuel type i per TJ/kt
$COEF_i$	is the CO_2 emission factor of the fossil fuel type i fired in the boiler in the absence of the project activity in tons CO_2/kt

The quantity of heat generated in the project plant (Qy), is determined by forecasting the heat demand of the production process. This quantity is expected to increase by 5.9 % per year, based on the trend in energy consumption over the last three and a half years. Please find Annex 5 with the data. The maintenance period of the coal boiler in the baseline scenario has been taken into account.

The energy efficiency of the boiler that would be used in absence of the project activity is based upon the manufacturer's information.

The net calorific value of the fossil fuel is determined by means of analytical results at the 'Laboratory of Puerto Bolivar, La Guajira, in accordance with the applicable ASTM standards. The resulting 'Screen Analysis Certificate' was developed by the 'Inspectorate Colombia Ltda.'.

IPCC default values[7] are used to determine the CO2 emission factor of the fossil fuel in the boiler in absence of the project activity.

Emissions caused by grid electricity consumption (coal boiler)
Taking into account the maintenance period of two weeks, the coal fuelled boiler will run a total of 5796 hrs per year. The total electricity consumption of the boiler is 107 kW. An emission factor of 488.35 tCO_2/GWh is used for the Costa Rican grid. This factor has been taken from the registered small-scale CDM project "Cote small-scale hydro power project". This baseline emission factor was calculated ex-ante in a transparent and conservative manner as the average of the "approximate operating margin" and the "build margin".

Specifications and breakdown of electricity consumption can be found in Annex 4.

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:

[7] as presented in the 'IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual'

Annual Emission Reductions (tCO_2)	=	Estimated baseline emissions (tCO_2/year)	-	Annual Emission Reductions (tCO_2)
	=	39,626 tCO_2/year	-	2,694 tCO_2/year
	=	36,932 tCO_2/year		

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

Baseline emissions

Table 4 : Baseline emissions

Energy Balance and Baseline Emissions INOLASA												
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Energy Demand (excluding maintenance period)												
Efficiency bunker boiler	75%											
Energy content bunker C	38,39	MJ/liter										
Price bunker C	0,35	US$/liter										
Maintenance for coal or biomass boiler	2	weeks/year										
Bunker C consumption replaced		k liters	9.956	10.544	11.166	11.824	12.522	13.261	14.043	14.871	15.749	16.678
Energy demand INOLASA (wo maintenance)		GJ	275.629	291.890	309.110	327.346	346.658	367.109	388.766	411.702	435.990	461.711
Bunker C cost		k US$	3.485	3.690	3.908	4.139	4.383	4.641	4.915	5.205	5.512	5.837
Coal demand baseline												
Efficiency coal boiler	78%											
Energy content coal	25,73	MJ/kg										
Price coal	44	US$/t										
Coal demand		t	13.734	14.544	15.402	16.311	17.273	18.292	19.371	20.514	21.724	23.006
Coal cost		k US$	604	640	678	718	760	805	852	903	956	1.012
Biomass demand project												
Efficiency biomass boiler	80%											
Energy content Palm Kernel Hulls (dry base)	22,7	MJ/kg										
Energy content Empty Fruit Bunches	17,9	MJ/kg										
Humidity PKH	17%	H2O										
Price PKH and EFB from Palma Tica Quepos	50	US$/t										
Price PKH from Palma Tica Coto	1	US$/t										
Palm kernel hull demand (wet base)		t	18.287	19.365	20.508	21.718	22.999	24.356	25.793	27.314	28.926	30.632
PKH supply from Coto		t	12.751	13.864	15.043	16.365	17.646	19.003	19.875	21.325	22.528	23.140
PKH supply from Palma Tica		t	5.536	5.501	5.465	5.353	5.353	5.353	5.353	5.353	5.353	5.353
EFB supply from Palma Tica		t	0	0	0	0	0	0	595	670	1.100	2.252
Biomass cost		k US$	290	289	288	284	285	287	317	322	345	403
Baseline emissions												
Baseline emissions coal combustion												
Emission factor coal	2,38	tCO2/t coal										
Coal demand		t	13.734	14.544	15.402	16.311	17.273	18.292	19.371	20.514	21.724	23.006
Emissions from coal combustion		tCO2	32.711	34.641	36.685	38.849	41.141	43.568	46.138	48.860	51.743	54.795
Baseline emissions electricity use coal boiler												
Emission factor Costa Rican grid	488,35	tCO2/GWh										
Operating hours per year*		hrs	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23
Electricity consumption		GWh	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07
Emissions from electricity use coal boiler		tCO2	521,22	521,22	521,22	521,22	521,22	521,22	521,22	521,22	521,22	521,22
Total baseline emissions		tCO2	33.232	35.162	37.206	39.370	41.662	44.089	46.659	49.381	52.264	55.317
Total baseline emissions (10 year period)		tCO2	434.344									

Project activity emissions

Table 5 : project activity emissions

			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Electricity consumption biomass boiler												
Emission Factor Costa Rican grid	tCO2/GWh	488,35										
Operating hours per year*	hrs		5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23	5.769,23
Electricity consumption	GWh		2,72	2,72	2,72	2,72	2,72	2,72	2,72	2,72	2,72	2,72
Total emissions from electricy consumption	tCO2/year		1.327	1.327	1.327	1.327	1.327	1.327	1.327	1.327	1.327	1.327
* Excluding maintenance period of two weeks												
Transportation of Palm Oil Mill biomass												
Truck capacity	tonnes/year	28										
Km - distance Coto 47 to Barranca	km/year	340										
Km - distance Quepos	km/year	133										
VF - vehicle fuel consumption	l/km	2,08										
CV - calorific value of fuel	MJ/kg	45,91										
D - fuel density	kg/l	0,85										
EF - emission factor of fuel	tCO2/MJ	0,00007										
Load - Coto 47 to Barranca	tonnes/year		12.751	13.864	15.043	16.365	17.646	19.003	19.875	21.325	22.528	23.140
Load - Quepos to Barranca	tonnes/year		5.536	5.501	5.465	5.353	5.353	5.353	5.948	6.023	6.453	7.605
Total distance per year	km		181.127	194.480	208.624	224.143	239.701	256.176	269.586	287.554	304.202	317.107
Total emissions from transportation biomass	tCO2/year		1.091	1.172	1.257	1.350	1.444	1.543	1.624	1.732	1.833	1.910
Transportation of residual ash from the biomass boiler to CEMEX plant in Colorado de Abangares												
Truck capacity	tonnes/year	20										
Km - distance to Colorado de Abangares	km/year	60										
VF - vehicle fuel consumption	l/km	2,08										
CV - calorific value of fuel	MJ/kg	45,91										
D - fuel density	kg/l	0,85										
EF - emission factor of fuel	tCO2/MJ	0,00007										
Load - Barranca to Colorado de Abangares	tonnes/year		684	684	684	684	684	684	684	684	684	684
Total distance	km/year		2052	2052	2052	2052	2052	2052	2052	2052	2052	2052
Total emissions from transportation ash	tCO2/year		12	12	12	12	12	12	12	12	12	12
Total project activity emissions	tCO2/year		2.431	2.511	2.596	2.690	2.783	2.883	2.963	3.072	3.172	3.250
Total project activity emissions (10 years)												
Total emissions from electricity consumption (10 years)	tCO2	14.957										
Total transport emissions (10 years)	tCO2	15.081										
Total project activity emissions (10 years)	tCO2	30.037										

SECTION F.: Environmental impacts:

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

The National Technical Environmental Secretariat (SETENA), the branch of the Ministry of the Environment and Energy (MINAE) is responsible for reviewing environmental impact assessments for development projects in Costa Rica.

The project must comply with the environmental regulations of the country and obtain the necessary approvals of SETENA.

INOLASA took into account all of SETENA's Environmental Evaluation Procedures, which included two steps:

1. Initial Evaluation, which consisted of performing the Previous Environmental Evaluation (D1 or FEAP) for determining the environmental classification of the project activity.
2. Final Evaluation: Depending on SETENA's resolution on the D1, the company should carry out one of the following requirements:
    a. DJCA: Sworn Statement on Environmental Commitments,
    b. PPGA: Forecast of Environmental Management Plan,
    c. EsIA: Environmental Impact Study.

INOLASA presented to SETENA the D1 and obtained its approval on July 15, 2006 at 9:05 a.m. with resolution No. 1127-2006. After determining the project's feasibility, SETENA agreed that the project didn't require preparing an Environmental Impact Study (EsIA) because there where no significant environmental impacts. Instead, INOLASA had to make a Sworn Statement on Environmental Commitments. The SETENA approval of the Environmental Evaluation Procedures means that the project complies with all of the requisites of the government's environmental law. The environmental approval letter and the DJCA are attached in Annex 6.

In addition, the company obtained the following permits to start with the Project:

1. The Occupational (Labour) Health Counsel supplied them the permission for installing the boiler, on April 21-2006 with the resolution No.072-2006.
2. The Costa Rican Health Ministry supplied the "location permission" for the construction of the boiler project on March 20, 2006.

As the project plant will be located in the designated industrial area inside INOLASA's plant, there will not be any significant impact on neighboring communities or industries. In addition, the company will provide constant maintenance to the boiler's functioning system with the objective of controlling the vibrations and noise levels. Finally, is important to mention that the boiler fulfils the emission regulations in the country.

SECTION G. Stakeholders' comments:

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

The stakeholder consultation took place on Wednesday 13 of September 2006, 4 p.m. in meeting room #1 of the Instituto Nacional de Aprendizaje (INA) in Puntarenas, district Barranca.

The following procedure to prepare for the event was followed:

A preliminary search and selection for invitees was carried out considering the principal political representatives (regional and local government), ecclesiastic representatives, organized groups and institutions in the Barranca district and Puntarenas. Special regard was made to their proximity to INOLASAs installations.

After the selection, organizations and persons that had been identified were approached directly by the staff in charge, to announce informally the stakeholder consultation and to circulate the relevant information in the local and regional community. The importance of an active participation in the event was highlighted.

The final invitation was made through different channels, as: email, fax, signed letters with a written receipt and publication in the two most popular newspapers in the region. Respective copies are presented in a separate document.

21 participants attended the stakeholder presentation representing a total of 13 organizations and institutions. A list with the signatures of the participants is presented in a separate document as well.

Form of presentation of the project at the meeting:

A power point presentation was given, explaining the project details regarding technology, construction and operation. After the presentation an open question round was held. A video of the whole stakeholder consultation is available and can be submitted on request. A compilation of the question and answers given in this part of the consultation can be found in section G.2.
Afterwards a questionnaire with 5 specific but open questions was distributed, giving room for personal remarks. A compilation of the given comments is includen in section G.2., copies of the filled in questionnaires are also presented in a separate document.

G.2. Summary of the comments received:

Summary of the questions received during the open round and the respective answers:

Question	Answer
How does this closed CO2 cycle work?	CO2 is converted by plants, e.g. rice, sugar cane or palm trees, because they need it.
Is there any change in the emission of gases through the new boiler?	Yes, a reduction of Sulfur.
We only have sugar cane and no palm trees! Where	CO2 is converted by plants, e.g. rice, sugar cane or

does the CO2 produced by INOLASA fall?	palm trees, because they need it. *Comment from Police:* They won't have to buy fossil fuel anymore; the plant will be auto sufficient. It will generate more employment.
We understood that Palma Tica was going to move and to fuse with INOLASA, and now we just hear that there is huge amounts of palm kernel hulls (PKH) in Golfito.	That was a misunderstanding, the invitation did not state anything like this. It only made reference to the carbon credits, which lower the production costs, reduce the drain of foreign currency from the country, generate employment and more companies will copy the project in order to lower their costs.
Currently, there are three bunker boilers, which will be replaced by only one biomass boiler. What will happen with the employees? What are the risks of explosion in an emergency situation?	The biomass boiler directly and indirectly requires more employees. The technology is more sophisticated and the biomass storage does not involve any risks. Therefore, it is safer than the bunker boilers.
What kind of noises would be caused by this new boiler?	It is one boiler instead of three, so it will be less noisy.
Regarding the PKH: How is it going to be stored, because of the pests like rodents and flies?	PKHs will be stored closed and under a roof, since some 100 tons per day will be consumed but biomass for two weeks will be stored. In this time no bad odors are generated nor can rodents breed. In addition the PKH have to be dry.
There is a time bomb (FERTICA, an industry in the vicinity) in Barranca! What are the dangers of the new boiler?	This boiler is safer than the former ones and of course one boiler involves less risk of an accident than three. The boiler was designed in London and has a certification that we can show to you.
We know that you're working well. I'd like to know if there will be changes in the design against fires?	Yes, we have plans, approved by the INS, and there is an extension to cover the new approach zones and more.
What would happen if the PKH caught fire?	That is very improbable because the PKH will only be stored for a short time.

Additional comments:

Person	**Comment**
Fire brigade	All requirements are fulfilled very well. I'm looking forward to see the new approach. I'd like to thank Roy the firefighter who works at INOLASA.
CCSS	I congratulate INOLASA on the change from hydrocarbons and the utilization of additional filters that eliminate the emission of particles, because the worst disease in Barranca is respiratory infection.
Vice Mayor	The community is interested. Thanks to INOLASA and the source of employment it provides. There is negative investment in Puntarenas, that's why people leave. Therefore, I'm not worried about INOLASA developing projects because they pass through many institutional filters. They are reputable, clean the atmosphere and do not violate the law. All permits required from the local government and the community will be granted, concratulations.
Victor Castro	I'm proud that you will present the project for CDM to the UN and that it

	is considered by them. The boiler is very important to the community. Hopefully, there was 20 INOLASAs around. Puntarenas does not have any support, you're a blessing.

Summary of the comments in the questionnaires:

	1. What is your level of participation in communal decision making?	**2. What kind of participation do you exercise regarding environmental problems in the area?**	**3. What position do you have with regard to the development of the project?**	**4. What do you expect from the project?**	**5. What are the possible impacts of the projects to the neighbours?**
MUNICIPALIDAD Lic. Reinaldo Vargas Campos, Lic. Marni Chang Sibaja	High, because it's the local government.	High level of participation	It's an excellent project for the development of the region.	That other companies will be appealed to develop their operations in Puntarenas.	The viability of the project has to be assessed by SETENA.
Bomberos de El Roble Alexander Araya Micó.	High, especially in emergencies.	Limited, only in case of an emergency	It should fulfil the required rules of security.	Employment and welfare is expected.	Noise and bad odours
Comité Cantonal de Deportes Y Riojalandia # 1 Pablo Vega M.	High, since we're an entity for recreation, formation and sports in the community	observant	Positive, with regard to the benefit for the community	More employment and improvement for the employees	Not enough knowledge to judge
Policía de proximidad de Barranca Freiby Salas Villalobos	High, always supporting the community	Participates and cooperates in manifestations and complaints if necessary	neutral	Should be coordinated with the security company	Possible contamination
Área de Salud de Barranca Licda. Doris Chávez Salas	Low	Educate and create consciousness in the community regarding the environment.	We admire and give our props to the initiative of substituting hydrocarbons.	Decrease local, national and worldwide contamination	More employment, less contamination
Asociación Desarrollo de Guadalupe Bº Los Ángeles Barranca	High, we're heard in all projects.	Through us the whole community is represented.	It is very good.	We hope to be considered in the distribution of the employment.	No negative effects are expected
Asociación Desarrollo Integral Barranca Puntarenas Jersen Fallas Alex Brenes	High, we watch over the welfare of the whole community we represent.	Following the new law of SETENA we have to consult entrepreneurs about benefits and damages on	The presented objectives shall be fulfilled and the received comments shall be considered.	The quality of the environment will not be altered. To be considered in the distribution of the employment.	Damage in the roadways close to the plant.

		an environmental level.			
Asociación Pro mejoras Doña Cecilia Víctor Castro Cruz	Medium	Observant	None	No contamination in the community will occur.	A positive effect like more employment is expected.
Asociación Desarrollo Del Roble Andrés Narauz	Low	Low	Be careful with the management of boilers.	Positive, with regard to the development of the project	No consequences are expected.
Junta de Salud de Barranca Sra. Rosibel Pizarro Mora	Medium	Educate and raise consciousness in the community with regard to the environment.	None	Decrease local, national and worldwide contamination	Better security for the employees and the community
Industrias Cerdas S.A. Arnoldo Cerdas	Low	None	We support the project.	Decrease of contamination	The emission of particle decreases
Unidad Pacifico Central (INA) Luis Marcial Arguedas Trejos	Low	Our policy is to respect the environment and the right for a healthy ambience.	Supportive, conditioned to the realisation according to what was presented.	Lower labour risk and less contamination from hydrocarbons	More traffic, possible contamination
Zona Franca Barranca Silvia Moraga Berrocal Luis Arguedas	Low	Cooperation	Very positive	Competitiveness, less global warming	Work, clean ambience

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

The concerns regarding damages to the main roadways refer to a situation that is not caused by the operation of one sole company. There are many companies running business in the zone, like Zona Franca de Barranca, Arrocera, Industrias Sardimar and Subasta Ganadera. All of them make use of the main road that passes by INOLASA.
In this specific case there will be no significant increase of truck traffic because the biomass transporters will replace the bunker tankers. The increase in traffic will be from 2 to 3 additional truck trips per day. Actually, an improvement of the traffic situation is expected on the short term due to the upcoming complete opening of the coastal road and the finalization of the San Jose-Puerto Caldera road which will alleviate traffic.

Regarding the concern for the possible increase of noise it was made clear and accepted, that the new boiler will not cause more noise than the existing bunker boilers.

Furthermore, bad odours and the breeding will be prevented thanks to the following measures:

- The biomass is going to be used as fuel and consequently has to remain dry. Therefore, it is going to be transported and stored in a dry environment, roofed over under optimal conditions for its

incineration. At the same time this dry ambient and the short storage time prevent the biomass from decay and the generation of bad odours.

- INOLASA is a processor of alimentary products of first-class quality. Consequently, it is obliged by the Ministry of Health of Costa Rica to apply the most rigorous hygiene measures. Additionally, a big part of INOLASAs production is exported and it therefore has to fulfil the phytosanitary requirements for exportation and the standards of the importing countries.

For the above reasons the installation and operation of the new biomass boiler will be in compliance with local and international security standards and with the highest sanitary standards. An extremely hygienic management and vigilance of the biomass is in the best interest of the company, since it is required for its successful operations and sales.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	INOLASA Industrial de Oleaginosas Americanas S.A.
Street/P.O.Box:	Barranca
Building:	
City:	Puntarenas
State/Region:	
Postfix/ZIP:	
Country:	Costa Rica
Telephone:	
FAX:	
E-Mail:	cgonzalez@numar.net
URL:	
Represented by:	Carlos González May
Title:	
Salutation:	
Last Name:	González May
Middle Name:	
First Name:	Carlos
Department:	Vicepresidente Desarrollo de Negocios
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding in this project.

Annex 3

QA MONITORING

#		Equipment or method (e.g. signed lists) used for measuring (manufacturer if possible)	Continous or sample	If sample: what frequency?	Will data be checked by a third entity?	Accuracy level
	Heat generation					
2	Steam generated (tonnes/hour)	*Steam flow indicator and recorder a.DP transmiter c/w square root extractor 0-100 kPa, 200 mm steam flow orifice plate, SIEMENS SITRANS P preasure transmiter,*	Continous		STEAM BOILER INSPECTOR AUTHORIZED BY MINISTERIO DEL TRABAJO	*±5% error*
3	Steam temperature (degrees celcius)	*DK TM1 temperature gauge 0-500 deg C*	Continous		STEAM BOILER INSPECTOR AUTHORIZED BY MINISTERIO DEL TRABAJO	*±1% error*
4	Steam pressure (bar)	*Steam preassure indicator and recorder a, SIEMENS SITRANS P preasure transmiter,*	Continous		STEAM BOILER INSPECTOR AUTHORIZED BY MINISTERIO DEL TRABAJO	*±1% error*
5	Steam generation operating hours per day	*Fuji Electric Data adquisition and recorder, microjet recorder E , type PHE-2 , time and Steam production data*	Continous		No	N.A.
6	Annual steam generation operating days	*according to FUJI rcorder and Pegasys data adquisition sofware*	Continous	monthly report	No	N.A.
	Electricity consume plant + auxiliary systems + biomass management	*ICE.(Instituto Costarricense de Electricidad) KWH meter site 132181200208 - #0003171, Pegasys data adquisition software*	Continous		I.C.E.	N.A.
16&17	Consume cascarilla (tonnes)	*Truck Scale , Fairbanks Morse , 60 ton capacity, electronic recorder and indicator*	sample	per trip	Inolasa officials	0,5%
18	Bunker use during maintenance period	Level lecture on tank storage	sample	daily	No	5%

Annex 4

ELECTRIC ENERGY CONSUMPTION BOILERS

OPERATING HOURS PER YEAR	6000	HRS		
PRICE PER KWH	$ 0,085			
CONSUMPTION COAL BOILER	185	KW	$	94.452
CONSUMPTION BIOMASS BOILER	471	KW	$	240.023

Annex 5

GROWTH RATE PREDICTION

LITROS	COLONES	PRODUCCION FRIJOL EN TM
679.113,02	43.352.895,29	21.333,72
596.053,63	41.582.957,22	15.277,58
732.519,17	58.104.590,69	17.617,62
692.422,73	57.006.462,09	16.673,57
787.321,01	55.642.713,35	18.029,53
702.947,68	48.178.034,63	18.267,90
815.156,29	59.127.371,40	21.183,86
637.357,96	47.559.083,30	18.024,26
662.762,51	51.118.042,87	18.213,53
717.120,42	57.611.456,89	17.877,62
651.285,93	52.415.111,65	17.657,34
732.462,04	58.230.548,22	19.354,58
694.127,44	56.082.963,30	17.728,40
547.846,05	44.994.992,61	15.405,84
675.400,84	59.917.099,41	19.502,42
744.809,98	66.883.983,12	17.170,86
648.276,78	60.306.232,40	16.042,59
737.220,67	72.292.389,61	18.030,74
770.792,18	75.831.859,92	19.649,15
583.708,37	61.155.384,62	15.236,84
702.023,49	78.495.840,13	15.066,73
782.181,82	92.247.200,49	18.515,94
807.083,87	100.167.868,45	20.251,31
740.833,18	91.114.989,51	20.894,65
683.231,64	81.577.260,75	18.607,25
677.781,26	83.192.158,87	17.406,53
763.097,18	94.834.092,29	18.006,89
724.289,08	93.140.871,81	19.837,36
766.164,77	109.783.163,70	19.401,47
759.564,40	104.605.452,20	18.342,22
758.533,70	102.972.363,67	18.628,67
794.332,68	108.850.824,33	19.525,11
786.385,35	113.038.021,71	19.513,64
928.296,66	142.762.390,51	21.306,51
821.299,92	133.009.856,48	20.527,72
938.620,16	144.444.555,18	21.939,38
861.919,67	128.304.878,24	19.952,91
788.139,44	131.562.742,85	17.840,25
834.834,97	152.259.859,16	19.792,48
789.139,01	144.804.126,21	19.017,16
894.844,40	166.290.944,26	22.285,49
887.503,15	171.378.018,48	22.626,20
925.919,26	178.893.831,30	22.689,46

consumption '03	8.406.522,39
consumption '04	8.434.304,67
consumption '05	9.401.596,80
growth '03 to '04	0,33%
growth '04 to '05	11,47%
average growth '03 to '05	5,90%

9,04%

Annex 6

ENVIRONMENTAL APPROVAL LETTER

The following pages contain the approval letter and the DJCA (Sworn Statement on Environmental Commitments).

REFERENCIA: **exped. D1-120-2006-SETENA**

RESOLUCION DE SETENA 839-2006

PROYECTO: Caldera de Combustible Sólido (cascarilla Inolasa)

INDUSTRIAL DE OLEAGINOSAS AMERICANAS S.A. OTORGA

DECLARACION JURADA SOBRE

COMPROMISOS AMBIENTALES

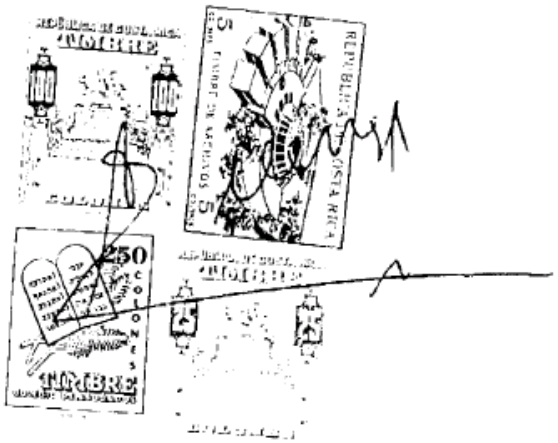
NOTARIO: ALLAN GUERRERO VARGAS

SAN JOSE, 9:00 HORAS DEL DIA

23 DE MAYO DEL AÑO 2006

ESCRITURA NUMERO CIENTO OCHENTA Y TRES: Ante mi, **ALLAN GUERRERO VARGAS,** Notario Público con oficina en San José, comparece el señor **FABIO GUERRERO CHAVARRIA,** mayor, casado una vez, Gerente, vecino de San Jose, cédula de identidad número ocho-cero cinco siete-cinco nueve cuatro, en su condición de APODERADO GENERALISIMO SIN LIMITE DE SUMA, de conformidad con el artículo mil doscientos cincuenta y tres del Código Civil, de la empresa denominada **INDUSTRIAL DE OLEAGINOSAS AMERICANAS S.A.**, cédula jurídica número tres-ciento uno-cincuenta y ocho mil setecientos setenta, con domicilio social en la Uruca, de la fabrica de calzado ADOC cien metros al este,-personería, facultades y vigencia de la cual el suscrito Notario DA FE con vista a la Base de Datos del Registro de Personas Jurídicas, bajo el número de persona jurídica tres-ciento uno-cincuenta y ocho mil setecientos setenta, con documento de origen tomo quinientos cincuenta y seis, asiento un mil novecientos cuarenta y nueve, seeuencia uno, subseeuencia uno, **y DICE:** Que bajo la fe de juramento y advertido por el suscrito Notario de las consecuencias legales de sus manifestaciones. **DECLARA**: Que en su carácter dicho de representante legal de INDUSTRIAL DE OLEAGINOSAS AMERICANAS S.A. y en cumplimiento de lo establecido en la Resolución numero ochocientos treinta y nueve - dos mil seis - SETENA, manifiesta - **BAJO FE DE JURAMENTO- : A)** QUE su representada se compromete a cumplir con todas las acciones, normas y aspectos que regulan la Operación y Mantenimiento de la Calderas de Combustible sólido (Cascarilla) de mi representada, segun lo establecido en el Reglamento de Calderas, la Ley Organica del Ambiente número siete mil quinientos cincuenta y cuatro y la demas legislación relacionada que exista; asimismo se compromete a implementar todo lo que concierne a las medidas de mitigación, en cuanto a su aplicación para el buen funcionamiento de la caldera y cumplir con los aspectos contenidos en el expediente administrativo de la SETENA número D Uno- ciento veinte- dos mil seis SETENA y su documento de evaluación ambiental, tanto en sus actividades especificas, como en su costo y cronograma de implantacion; y **B)** QUE tiene pleno conocimiento de lo establecido en los artículos veinte, noventa y ocho, noventa y nueve, cien y ciento

uno de la Ley Orgánica del Ambiente número siete mil quinientos cincuenta y cuatro y de los artículos ochenta y nueve, noventa, noventa y dos, noventa y tres, noventa y cuatro, noventa y cinco, noventa y seis, noventa y ocho, noventa y nueve, cien, ciento uno, ciento dos, ciento tres y ciento cinco del Reglamento General Sobre Procedimientos de Evaluación de Impacto Ambiental (EIA), Decreto Ejecutivo numero treinta y un mil ochocientos cuarenta y nueve-MINAE-SALUD-MOPT-MAG-MEIC, del día veintiocho de junio del año dos mil cuatro; en lo referente a las sanciones a que se verá sujeto el proyecto de Caldera de Combustible Sólido (cascarilla) y su representada, en caso de incumplimiento de los compromisos ambientales adquiridos, en el marco de la Evaluación Ambiental, efectuada ante la Secretaría Técnica Nacional Ambiental (SETENA); esto por cuanto, en dicha Evaluación se han establecido los Términos técnicos razonablemente predecibles para el pronóstico y prevención de un potencial daño ambiental, por lo cual, el incumplimiento de estos compromisos por parte de mi representada o desarrollador lo hará responsable directo del daño ambiental producido y sujeto, por tanto, a las sanciones que establece la normativa vigente. ES TODO. Extiendo un primer testimonio a solicitud del compareciente, para ser presentado ante la Secretaría Técnica Nacional Ambiental. Leo lo escrito a su otorgante resultó conforme, la aprobó y juntos firmamos en la ciudad de San José, a las nueve horas del día veintitrés de mayo del dos mil seis.---------FIRMA ILEGIBLE-------A.GUERRERO--------LO ANTERIOR ES COPIA FIEL Y EXACTA DE LA ESCRITURA NUMERO CIENTO OCHENTA Y TRES, INICIADA AL FOLIO CIENTO SETENTA Y UNO FRENTE DEL TOMO DIECINUEVE DE MI PROTOCOLO, CONFRONTADA CON SU ORIGINAL RESULTO CONFORME Y LA EXTIENDO COMO PRIMER TESTIMONIO A LA HORA DE OTORGARSE LA ESCRITURA MATRIZ.



DE : SETENA-MINAE NO. DE FAX : 15 JUN. 2006 10:4

Ministerio de Ambiente y Energía
Secretaría Técnica Nacional Ambiental
SETENA
Teléfono: 234-3387-234-3368 Fax: 225-6862
Apartado Postal 5288-1000 San José

Resolución Nº 1127-2006-SETENA

EL MINISTERIO DE AMBIENTE Y ENERGÍA, LA SECRETARÍA TÉCNICA NACIONAL AMBIENTAL, A LAS **09** HORAS **05** MINUTOS DEL **15** DE **JUNIO** DEL **2006**.

PROYECTO CALDERA DE COMBUSTIBLE SÓLIDO (CASCARILLA INOLASA)
EXPEDIENTE ADMINISTRATIVO N° 120-2006-SETENA

Conoce la Comisión Plenaria de esta Secretaría la Declaración Jurada de Compromisos Ambientales del proyecto Caldera de Combustible Sólido (Cascarilla Inolasa), presentado por el señor Fabio Guerrero Chavarría, a nombre de la sociedad Industrial de Oleaginosas Americanas S.A, expediente administrativo número D1-120-2006-SETENA.

RESULTANDO

PRIMERO: Mediante resolución No. 839-2006-SETENA, del día 16 de mayo del 2006, se le solicita al desarrollador, en el plazo de treinta días hábiles, contados a partir de la notificación de la presente resolución, la presentación de una Declaración Jurada de Compromisos Ambientales.

SEGUNDO: El día 26 de mayo del 2006, es recibido en esta Secretaría la Declaración Jurada de Compromisos Ambientales del Proyecto Caldera de Combustible Sólido (Cascarilla Inolasa), presentado por el señor Fabio Guerrero Chavarría, a nombre de la sociedad Industrial de Oleaginosas Americanas S.A.

CONSIDERANDO

PRIMERO: Que se tiene por legitimado al señor Fabio Guerrero Chavarría, para solicitar la evaluación ambiental, a nombre de su representada Industrial de Oleaginosas Americanas S.A.

SEGUNDO: Que el artículo 19 de la Ley Orgánica del Ambiente señala que: "Las resoluciones de la Secretaria Técnica Nacional Ambiental deberán ser fundadas y razonadas. Serán obligatorias tanto para los particulares como para los entes y organismos públicos."

TERCERO: Que el artículo 6 de la Modificación del Artículo 45 al Reglamento General sobre los Procedimientos de EIA, del Decreto Ejecutivo No. 31849-MINAE-S-MOPT-MAG-MEIC, indica sobre la Cláusula de Compromiso Ambiental Fundamental, lo siguiente: "La Presente Viabilidad (licencia) Ambiental se otorga en el entendido de que el desarrollador del proyecto, obra o actividad cumplirá de forma integra y cabal con todas las regulaciones y normas técnicas, legales y ambientales vigentes en el país y a ejecutarse ante otras autoridades del Estado Costarricense. El incumplimiento de esta cláusula por parte del desarrollador no solo lo hará acreedor de las sanciones que implica el no cumplimiento de dicha regulación, sino

que además, al constituir la misma, parte de la base fundamental sobre el que se sustenta la VLA, hará que de forma automática dicha VLA se anule con las consecuencias técnicas, administrativas y jurídicas que ello tiene para la actividad, obra o proyecto y para su desarrollador, en particular respecto a los alcances que tiene la aplicación del artículo 99 de la Ley Orgánica del Ambiente.

CUARTO: Que el artículo 17 de la Ley Orgánica del Ambiente señala que: "Las actividades humanas que alteren o destruyan elementos del ambiente o generen residuos, materiales tóxicos o peligrosos, requerirán una evaluación de impacto ambiental por parte de la Secretaría Técnica Nacional Ambiental creada en esta ley. Su aprobación previa, de parte de este organismo, será requisito indispensable para iniciar las actividades, obras o proyectos. Las leyes y los reglamentos indicarán cuales actividades, obras o proyectos requerirán la evaluación de impacto ambiental." En el presente procedimiento administrativo, se determinó que el instrumento de evaluación ambiental idóneo a solicitar a la desarrolladora fue una **Declaración Jurada de Compromisos Ambiental,** la cual fue presentada en tiempo y debidamente analizada por el Departamento de Gestión Institucional, se concluyó que cumple con lo requerido por esta Secretaría. En virtud de lo anterior, y de conformidad con las facultades de control y seguimiento establecido en el artículo 20 de la Ley Orgánica del Ambiente, que señala: "La Secretaría Técnica Nacional Ambiental establecerá instrumentos y medios para dar seguimiento al cumplimiento de las resoluciones de la evaluación de impacto ambiental. En los casos de violación de su contenido, podrá ordenar la paralización de las obras. El interesado, el autor del estudio y quienes lo aprueben serán, directa y solidariamente, responsables por los daños que se causen.", se ha analizado el documento presentado por la desarrolladora y se ha determinado que el mismo cumple, por lo que lo procedente en el presente caso es aprobar el instrumento de evaluación de impacto ambiental, y otorgar la viabilidad ambiental.

POR TANTO

LA COMISIÓN PLENARIA RESUELVE:

En sesión Ordinaria Nº **043-2006** de esta Secretaría, iniciada el **12 de junio del 2006**, en el Artículo No. **02** se acuerda:

PRIMERO: Se aprueba la Declaración Jurada de Compromisos Ambiental, sometido a evaluación por la proyectista. Se le previene a los desarrolladores, que debe de cumplir con la matriz de mitigación de impacto y los estudios complementarios, presentados en el Formulario D1.

SEGUNDO: Se le comunica al interesado que, de conformidad con los Artículos 17,18 y 19 de la Ley Orgánica del Ambiente, se ha cumplido con el Proceso de Evaluación Ambiental del Proyecto:
Nombre Proyecto: Caldera de Combustible Sólido (Cascarilla Inolasa), No. Exp. **D1-120-2006-SETENA**, Propietario: Industrial de Oleaginosas Americanas S.A, Ubicación: Provincia: Puntarenas, Cantón: Puntarenas, Distrito: Barranca, Hoja Cartográfica: Barranca, Esc: 1: 10.000, Coordenadas: 217.6-217.9 Norte / 454.5-459 Este, No. De Plano Catastrado: P-288297-77, Número de Finca: 91072-000. **Descripción del Proyecto:** Consiste en la instalación, operación y mantenimiento de una caldera de combustible sólido (cascarilla principalmente). La caldera se instalará en un terreno plano, a suelo abierto y operará

quemando una mezcla de cascarilla de coquito el 80% y el 20% restante con cascarilla de arroz, pinzote o carbón. La cascarilla de coquito que se ocupará anualmente es de aprox. 20.000 toneladas.

Por lo que se le otorga la **VIABILIDAD AMBIENTAL** al proyecto, quedando abierta la etapa de Gestión Ambiental y en el entendido de cumplir con la Cláusula de Compromiso Ambiental fundamental, indicado en el Considerando Tercero anterior.

TERCERO: El incumplimiento de las obligaciones contraídas en la Declaración Jurada de Compromisos Ambientales, la matriz de mitigación de impacto y los estudios complementarios, presentados en el D1, podrá ser sancionado de conformidad con lo establecido en el artículo 99 de la Ley Orgánica de Ambiente, así como las demás legislación vigente.

CUARTO: La vigencia de esta viabilidad será por un período de **DOS Años** para el inicio de las actividades. En caso de no iniciarse las obras en el tiempo establecido, se procederá a aplicar lo establecido en la legislación vigente.

QUINTO: Contra esta resolución cabe interponer dentro del plazo de tres días a partir del día siguiente a la notificación, los recursos ordinarios de revocatoria ante la SETENA, y el de apelación ante el Ministro de Ambiente y Energía, de conformidad con los artículos 342 y siguientes de la Ley General de Administración Pública y 87 de la Ley Orgánica del Ambiente.

SEXTO: Toda documentación que sea presentada ante la SETENA deberá indicarse claramente el número de expediente, el número de resolución y el nombre completo del proyecto.

Notifíquese,

Patricia Campos Mesén
Secretaria General

MINISTERIO DEL AMBIENTE Y ENERGIA
setena
SECRETARIA TECNICA NACIONAL AMBIENTAL
SECRETARIO GENERAL

Annex 7

BREAKDOWN O&M COSTS COAL AND BIOMASS BOILER

	COSTOS OPERATIVOS DE CALDERA DE CARBON		
1,1	COSTOS MANTENIMIENTO LABORATORIO Y AGUA	$104.807	
1,2	COSTO DE BUNKER EN TIEMPO DE MANTENIMIENTO	$0	
1,3	COSTO MANTENIMIENTO SISTEMA MANEJO , ALMACEN Y ALIMENTACIÓN CARBON	$21.600	
1,4	COSTO CONSUMO DE COMBUSTIBLE EQUIPO DE TRANSPORTE CARBON	$12.622	
1,5	COSTOS DE MANO DE OBRA	$34.078	
1,6	COSTO DE ENEGÍA ELECTRICA	$95.281	
	TOTAL COSTOS OPERATIVOS →	$268.387	ANUALES

	COSTOS OPERATIVOS DE CALDERA DE CASCARILLA		
1,1	COSTOS MANTENIMIENTO LABORATORIO Y AGUA	$104.807	
1,2	COSTO DE BUNKER EN TIEMPO DE MANTENIMIENTO	$137.376	
1,3	COSTO MANTENIMIENTO SISTEMA MANEJO , ALMACEN Y ALIMENTACIÓN CASCARILLA	$18.942	
1,4	COSTO CONSUMO DE COMBUSTIBLE EQUIPO DE TRANSPORTE CASCARILLA	$25.243	
1,5	COSTOS DE MANO DE OBRA	$53.272	
1,6	COSTO DE ENEGÍA ELECTRICA	$239.280	
	TOTAL COSTOS OPERATIVOS →	$578.920	ANUALES