

## Appendix A<sup>1</sup> to the simplified modalities and procedures for small-scale CDM project activities

### **CLEAN DEVELOPMENT MECHANISM SIMPLIFIED PROJECT DESIGN DOCUMENT FOR SMALL SCALE PROJECT ACTIVITIES (SSC-PDD) Version 01 (21 January, 2003)**

#### **Introductory Note**

1. This document contains the clean development mechanism project design document for small-scale project activities (SSC-PDD). It elaborates on the outline of information in appendix B "Project Design Document" to the CDM modalities and procedures (annex to decision 17/CP.7 contained in document FCCC/CP/2001/13/Add.2) and reflects the simplified modalities and procedures (herewith referred as simplified M&P) for small-scale CDM project activities (annex II to decision 21/CP.8 contained in document FCCC/CP/2002/7/Add.3).
2. The SSC-PDD can be obtained electronically through the UNFCCC CDM web site (<http://unfccc.int/cdm/ssc.htm>), by e-mail ([cdm-info@unfccc.int](mailto:cdm-info@unfccc.int)) or in print from the UNFCCC secretariat (Fax: +49-228-8151999).
3. Explanations for project participants are in italicized font (*e.g. explanation*).
4. The Executive Board may revise the SSC-PDD if necessary. Revisions shall not affect small-scale CDM project activities validated prior to the date at which a revised version of the SSC-PDD enters into effect. Versions of the SSC-PDD shall be consecutively numbered and dated. The SSC-PDD will be available on the UNFCCC CDM web site in all six official languages of the United Nations.
5. In accordance with the CDM modalities and procedures, the working language of the Board is English. The completed SSC-PDD shall therefore be submitted to the Executive Board in English.
6. Small-scale activities submitted as a bundle, in accordance with paragraphs 9 (a) and 19 of the simplified M&P for small-scale CDM project activities, may complete a single SSC-PDD provided that information regarding A.3 (*Project participants*) and A.4.1 (*Location of the project activity*) is completed for each project activity and that an overall monitoring plan is provided in section D.
7. A small-scale project activity with different components eligible to be proposed<sup>2</sup> as a small-scale CDM project activity may submit one SSC-PDD, provided that information regarding subsections A.4.2 (*Type and category(ies) and technology of project activity*), and A.4.3 (*brief statement on how anthropogenic emissions of greenhouse gases (GHGs) by sources are to be reduced by the proposed CDM project activity*) and sections B (*Baseline methodology*), D (*Monitoring methodology and plan*) and

---

<sup>1</sup> This appendix has been developed in accordance with the simplified modalities and procedures for small-scale CDM project activities (contained in annex II to decision 21/CP.8, see document FCCC/CP/2002/7/Add.3) and it constitutes appendix A to that document. For the full text of the annex II to decision 21/CP.8 please see <http://unfccc.int/cdm/ssc.htm>.

<sup>2</sup> In paragraph 7 of simplified M&P for small-scale CDM project activities, on clarifications by the Executive Board on small-scale CDM project activities, the Board agreed that in a project activity with more than one component that will benefit from simplified CDM modalities and procedures, each component shall meet the threshold criterion of each applicable type, e.g. for a project with both a renewable energy and an energy efficiency component, the renewable energy component shall meet the criterion for "renewable energy" and the energy efficiency component that for "energy efficiency".

E (*Calculation of GHG emission reductions by sources*) is provided separately for each of the components of the project activity.

8. If the project activity does not fit any of the project categories in appendix B of the simplified M&P for small-scale CDM project activities, project proponents may propose additional project categories for consideration by the Executive Board, in accordance to paragraphs 15 and 16 of the simplified M&P for small-scale CDM project activities. The project design document should, however, only be submitted to the Executive Board for consideration after it has amended appendix B as necessary.

9. A glossary of terms may be found on the UNFCCC CDM web site or from the UNFCCC secretariat by e-mail ([cdm-info@unfccc.int](mailto:cdm-info@unfccc.int)) or in print (Fax: +49-228-8151999).

## **CONTENTS**

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

### **Annexes**

Annex 1: Information on participants in the project activity

Annex 2: Information regarding public funding

## **A. General description of project activity**

### **A.1 Title of the project activity:**

Agua Fresca Multipurpose and environmental services project

### **A.2 Description of the project activity:**

*(Please include in the description*

*- the purpose of the project activity*

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

Agua Fresca Project is located in the Republic of Colombia, Department of Antioquia, in the jurisdiction of Jericó and Fredonia Municipalities. In its first stage, it is a hydroelectric run-of river power generation project, with an installed capacity of 7.49 MW and an annual production of 63.3 GWh. Its second stage consists in the construction of a regional aqueduct to provide water for human consumption as for irrigation to the lands and settlements located in the Cauca River canyon between La Pintada and Bolombolo, harnessing the hydrological resource contributed by the Piedras River, and thus promoting tourism and the agro-industrial development of the region.

The project has received the necessary environmental license by the Environmental Authority – Corantioquia (See Attachment 1). The project is also in line with the national policies and programs by promoting the use of renewable energy sources - Law 697, 2001 (See Attachment 2).

The Agua Fresca Project is considered not only as a project of electric power generation and aqueduct, but also as an "Environmental Services Project", since it contributes to decrease the global emissions of carbon through the substitution of polluting fuels as a source of electric power generation; and with its multiple benefits and capacity to yield and consolidate economic resources, it will contribute to the conservation and protection of the Piedras River's basin.

The project counts with Approval Letter of the National Authorized Authority as CDM project for its contribution to the sustainable development (See Attachment 3). It is estimated that the project will displace yearly 27.510 metric tons of CO<sub>2</sub>.

From a Sustainable Development scope, it is important to highlight the reuse and optimization of the harnessing of the hydrological resource provided by the Piedras River, which is first harnessed by the Piedras River Power Plant which belongs to the Society Generar S.A. E.S.P and generates 135 GWh per year, then it is used by Aguas de la Cabaña S.A. E.S.P. to generate 63.3 GWh per year in the Agua Fresca Power Plant, and finally reused in a regional pump aqueduct to provide water for human consumption and agro industrial usage for a region with great water scarcity.

About the environmental effects, Agua Fresca Project, thanks to its characteristics of being a run-of-river-intake project with no dam, and the simplicity involving the civil works, has a minimum environmental impact, since it involves no settlement relocation or displacement whatsoever, it has a low effect on the ecosystems in the area of influence and its land requirements are minimal.

Additionally, the reduction of 2.7 m<sup>3</sup>/s of the Piedras River's flow in the section of the river located between the discharge of the Piedras River Power Plant and its mouth to the Cauca River, will help to control the erosion of the shores in this section, which have been qualified by experts as geologically unstable.

The Environmental Management Plan for the construction stage contemplates an investment of USD 133.000, distributed in the following programs: Sediment and erosion control, as well of management of the vegetal layer; solid waste management; liquid waste management; communitary information and participation; labor force contracting; archeological monitoring; environmental education; road signing; environmental control; occupational health and social security; tracking and monitoring program; and an investment of 1% of the Project's value, according to Law 99 of 1993.

In relation with the investment of the 1% of the project's value, one or a combination of both of the following programs, which are previously agreed with the Municipality of Jericó and CORANTIOQUIA, will be executed: i) Conformation and adjustment of Las Nubes Botanical Garden ii) Acquisition of land lots in the Piedras river's headings

Once construction is completed, the power plant will be delivering around 63.3 GWh/year in the dispatching scheme of the Colombian National Interconnected System (SIN). According to the official indicative expansion plan, options to meet increasing energy demand in Colombia are mostly thermal. Due to the small size of the Agua Fresca Run-of-River Power Project (7.49 MW) relative to the net installed capacity (13.3 GW), the proposed project has no discernable effect on the planned expansion of the SIN, but it will displace energy that is dispatched at the margin (largely thermal energy).

Agua Fresca Multipurpose and Environmental Services Project can contribute to sustainable development in different ways:

- It can show the potential of run-of-river power plants as alternative to conventional hydropower or thermo power plants, encouraging the construction of run-of-river plants in the Country. These plants produce sustainable development mechanisms using small resources in different places in the Country.
- Plants of this type contribute to the reduction of polluting particles in the Country, which can else be discharged by thermo power plants.
- It can develop great knowledge and nationwide experience in the construction of run-of river power plants; also strengthen the national institutional capacities focused to the consolidation of competitive advantages to participate in the international carbon market.
- It can demonstrate the potential value of the environmental services in the region, through the recognition of the role of the natural forest ecosystems in the generation of electric power and in the production and acquisition of the resources destined to their conservation and protection.
- The local community can obtain benefits with short term social programs, becoming a key element to assure the approval, backup and participation of the community in the project and its complementary activities.

### **A.3 Project participants:**

*(Please list Party(ies) and private and/or public entities involved in the project activity and provide contact information in annex 1 of this document.)*

*(Please designate one of the above as the official contact for the CDM project activity.)*

Applicant: Aguas de la Cabaña S.A. E.S.P. (Private entity - official contact for the CDM project activity)

Project Developer and Sponsor: Generadora Unión S.A. E.S.P. (Private Entity)

Purchaser of Certified Emission Reduction:

The Republic of Austria. Federal Minister of Agriculture, Forestry, Environment and Water Management, represented by Kommunalkredit Public Consulting GmbH (KPC).

Contractors:

- Civil works construction: Construcciones El Cóndor and Geominas (Private entities)
- Equipments supply and assembly: Va Tech Bouvier Hydro and Va Tech Colombia (Private entities)
- Operation, Maintenance and Energy Purchase: Empresas Públicas de Medellín (Public entity)

For contact information, please refer to Annex 1.

#### **A.4 Technical description of the project activity:**

##### **A.4.1 Location of the project activity:**

**A.4.1.1** Host country Party(ies): Colombia<sup>3</sup>.

**A.4.1.2** Region/State/Province etc.: Antioquia Department

**A.4.1.3** City/Town/Community etc: Municipality of Jericó

**A.4.1.4** Detailed description of the physical location (*max one page*):

The Agua Fresca Multipurpose and Environmental Services Project is located in the Republic of Colombia at the municipality of Jericó (Department of Antioquia) within the area of influence of the Piedras River basin.

Jericó is at the south west of the department of Antioquia, in the Colombian Andes, with an altitude ranging from 600 m to 3000 m. Jericó has a population of 17.624 inhabitants, 42% of which live in the urban area. In the rural zones the main activities are agriculture, and the most important crops are coffee, banana, corn, cardamom and stockbreeding.



##### **A.4.2 Type and category(ies) and technology of project activity**

---

<sup>3</sup> The Colombian Government ratified "United Nations Framework Convention on Climate Change" by the Law 164, 1994, and signed the Kyoto Protocol on March 22, 1998 ratified it by the Law 629, 2000. (See Attachment 4).

*(Please specify the type and category of the project activity using the categorization of appendix B to the simplified M&P for small-scale CDM project activities, hereafter referred to as appendix B. Note that appendix B may be revised over time and that the most recent version will be available on the UNFCCC CDM web site.*

*In this section you shall justify how the proposed project activity conforms with the project type and category selected (for simplicity, the rest of this document refers to “project category” rather than “project type and category”).*

*If your project activity does not fit any of the project categories in appendix B, you may propose additional project categories for consideration by the Executive Board, in accordance with paragraphs 15 and 16 of the simplified M&P for small-scale CDM project activities. The final SSC-PDD project design document shall, however, only be submitted to the Executive Board for consideration after the Board has amended appendix B as necessary.)*

*(This section should include a description of how environmentally safe and sound technology and know-how is transferred to the host Party, if such a transfer is part of the project.)*

Project Type: I: Renewable Energy Projects  
Project Category: I.D.: Renewable electricity generation for a grid

Agua Fresca Project in its first stage, it is a hydroelectric run-of river power generation project, with an installed capacity of 7.49 MW and an annual production of 63.3 GWh. The connection of the Project to the National Electrical Grid will be done in the Municipality of Fredonia. For this, it will be necessary to build a 44 kV transmission line with a maximum length of 15 km.

Essential technical aspects:

- Run-of-the river facility. The project does not imply the construction of dam or reservoir.
- Installed Capacity: 7.49 MW
- Design Flow: 2.7 m<sup>3</sup>/s
- Total Head: 327 m
- Power generation: 63.3 GWh / year
- Basin: Río Piedras. The project will reuse the waters of Río Piedras Hydroelectric Plant.
- Water inlet to back.
- Power house at surface.
- For electricity generation, and profiting the steep slope between the Río Piedras plant and the new project that will be located at the final stretch, the following technologies will be employed:
  - o One Pelton turbine with vertical axis of 7.49 MW, 720 rpm, and five jets, with 327 m of total head
  - o One synchronic generator of 8.08 MVA and 4.16 kV of nominal tension.
- Connection to the grid: transmission line (44 kV) 15 km length.
- Construction stage: 13 months
- Emission reduction: 27.510 Ton CO<sub>2</sub>e per year.
- Commissioning, Operation and Maintenance of the Plant by Empresas Públicas de Medellín. (There is an agreement with this Utility in order it will be the responsible for this activities (See Attachment 5))
- Phase II of the project: Aqueduct (this issue it's not included into the budget of the project and its financial evaluation).

Brief Description of Technology:

A Pelton turbine with vertical axis and a rated capacity of 7.49 MW will be used to generate power making use of the kinetic energy carried by the fast flowing stream and the potential energy between the entry and exit points of the project. This will obviate the need for water storage and the use of reservoirs, therefore avoiding potential environmental and social impacts in the area. Pelton turbines have been extensively utilized in hydroelectric projects around the world and in Colombia because of.

Because of this, and because the technology of the project is the last state of the art for this kind of projects, the project technology is unlikely to be superseded by other more efficient technologies at least within the first seven years crediting period.

In the other hand, and in relation with the initial training and the maintenance of the plant once the operational stage begins. Taking into account the fact that there are several hydropower plants using the same technology operated by Empresas Públicas de Medellín who has a contract with Aguas de la Cabaña to operate the project, the project does not envisage any extraordinary initial training and maintenance efforts.

**A.4.3 Brief statement on how anthropogenic emissions of greenhouse gases (GHGs) by sources are to be reduced by the proposed CDM project activity:**

*(Please state briefly how anthropogenic greenhouse gas (GHG) emission reductions are to be achieved (detail to be provided in section B.) and provide the estimate of total anticipated reductions in tonnes of CO<sub>2</sub> equivalent as determined in section E. below.)*

The Agua Fresca Project contributes to decrease the global emissions of carbon through the substitution of polluting fuels as a source of electric power generation. The project will displace yearly 27.510 metric tons of CO<sub>2</sub>. According to this fact until December 2012, it is expected for the project to displace a total of 165.060 metric tons of CO<sub>2</sub>, and between the years 2013 and 2019 a total of 192.570 metric tons of CO<sub>2</sub>.

**A.4.4 Public funding of the project activity:**

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

Aguas de la Cabaña S.A. E.S.P. is a Private Society. There is not public funding in the Agua Fresca Multipurpose and Environmental Services Project. For this reason Annex 2 is not applicable.

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

*(Please refer to appendix C to the simplified M&P for the small-scale CDM project activities for guidance on how to determine whether the proposed project activity is not a debundled component of a larger project activity.)*



Agua Fresca CDM small scale project activity is not a debundled component of a larger project activity.

## **B. Baseline methodology**

### **B.1 Title and reference of the project category applicable to the project activity:**

*(Please refer to the UNFCCC CDM web site for the most recent list of the small-scale CDM project activity categories contained in appendix B of the simplified M&P for small-scale CDM project activities.)*

Category I.D. Renewable electricity generation for a grid. (Reference: Appendix B of the simplified modalities and procedures for small-scale CDM project activities. Version 05: 25 February 2005).

### **B.2 Project category applicable to the project activity:**

*(Justify the choice of the applicable baseline calculation for the project category as provided for in appendix B of the simplified M&P for small-scale CDM project activities.)*

Category I.D. comprises renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal, and biomass, that supply electricity to an electricity distribution system that is or would have been supplied by at least one fossil fuel or non-renewable biomass fired generating unit. Agua Fresca Project is a hydroelectric renewable energy generation project with an installed capacity lower than 15 MW (7.49 MW) that will be connected to the national grid by a 44 kV transmission line, 15 km length.

### **B.3 Description of how the anthropogenic GHG emissions by sources are reduced below those that would have occurred in the absence of the proposed CDM project activity (i.e. explanation of how and why this project is additional and therefore not identical with the baseline scenario)**

*(Justify that the proposed project activity qualifies to use simplified methodologies and is additional using attachment A to appendix B of the simplified M&P for small-scale CDM project activities.)*

*(National policies and circumstances relevant to the baseline of the proposed project activity shall be summarized here as well.)*

The fuel conversion (from coal, oil to gas) as a source of energy is harmful to the environment and clearly increases local air pollution and GHG emission releases. Actually, natural gas based power plants are being rapidly built in Latin America to the detriment of non-GHG emitting technologies. Indeed, there is a general tendency to an increase in the regional thermal generation share and a decrease in non-fossil fuel based generation such as hydropower.

Run-of-the river power plants provide a good example of non-GHG emitting power generation projects that address both local environment needs and global environmental problems such as climate changes. In these terms, the project fulfils national and environmental priorities:

- It is consistent with national ratification of the Kyoto Protocol and associated voluntary commitments regarding global climate change mitigation.
- It is consistent with regional and local needs in terms of supplying sustainable electricity.
- It is consistent with the power sector development plans since a run-of the-river power plant uses a renewable source of energy for electricity generation that produces minimum local impacts.

- From the social viewpoint the project will generate employment during the construction phase. The company will also support the creation of community organizations for the development of the region and promotion of sustainable human development.
- In addition, the project will contribute to national economic growth by placing the company shares in the Colombian capital market boosting in this way the dynamics of domestic savings in productive investments.

The project will reduce 27.510 metric tons of carbon dioxide equivalent (mtCO<sub>2</sub>e) per year.

#### Total Emission Reductions:

First Period (Jan 2007 – December 2012): 165.060 metric tons CO<sub>2</sub> e

Second Period (January 2013 – December 2019): 192.570 metric tons CO<sub>2</sub> e

Total (Jan 2007 – December 2019): 357.630 metric tons CO<sub>2</sub> e

#### Financial Additionally:

Financial Analysis shows that at current energy prices the project is marginally viable but with the inclusion of revenues from carbon trade, the Internal Rate of Return (IRR) in US dollars increase 1.4 points from 15.1% to 16.5% (in Colombia the Minimum IRR in US dollars for a shareholder is 15%), and debt coverage (Free cash flow / Debt Service) increases from 1.29 to 1.38 (in Colombia, Financial Institutions, to lend money to this kind of businesses, require a debt coverage higher of 1.35).

For calculations of IRR with carbon trade it was used a price of €4 / metric ton of CO<sub>2</sub> equ on a basis of 27.510 metric ton of CO<sub>2</sub> equ/year. For purposes of the estimation of IRR, 20% of the carbon revenues has been considered as an expenditure to be transferred to the community.

Investment barriers:

The “barriers to investment” criterion establish that investment in a project such as Agua Fresca is not feasible under the financing and structural conditions demanded by the capital markets in Colombia (i.e. short maturity periods and high interest rates which lead to unsustainable debt service coverage). Colombia has adopted an open, regulated market oriented energy sector. Within this framework, no project has legal obligation to be built.

The project faces many contributing barriers that individually and collectively increase the risk perception by investors and financiers. This perception of risk implies that for the project to be attractive to investors it must be produce high returns on the proposed venture capital. High levels of risk force financiers to act cautiously, demanding more guarantees and high financial coverage ratios.

Results from the financial analysis conducted for the business as usual (BAU) scenario show that the financial constraints impose an insurmountable barrier, exemplified by returns on equity close to the lower limit of the returns expected by the investors in Colombia and the project inability to cover its debt service.

The participation of the project in the carbon market with associated qualitative and quantitative leverage (i.e. structuring of stakeholder participation to reach financial closure, better financing conditions, higher return to investment due to the carbon revenue) results in sustainable debt service coverage ratios agreeable to financiers and an increase in the internal rate of return. The previous was evidenced once the ERPA was defined with the Austrian Government: Until February of 2005, only about 50% of the equity was acquired and only one State Bank (IDEA) was interested in financing the project. After signing the ERPA with the Austrian Government, 100% of the equity was reached, and two Private Banks (Banco

Popular and Corfivalle) have manifested their interest to finance the project (this financing is currently under studies) at a longer deadline than usual in Colombia and with a very competitive interest rate.

#### **B.4 Description of the project boundary for the project activity:**

*(Define the project boundary for the project activity using the guidance specified in the applicable project category for small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities.)*

The project boundary is the National Electrical Grid.

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

**B.5.1** Specify the baseline for the proposed project activity using a methodology specified in the applicable project category for small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities:

The Colombian Energy and Mining Planning Unit (UPME) is in charge of designing the National Electricity Sector Expansion Plan which is a reference or indicative plan based on the criteria established in both the PND and the PEN. The national strategic elements related to the electricity sector are summarized below:

- Attend the electricity demand with a reliability higher than 95% in the long term
- Enhance the availability of firm capacity through the addition of thermal based capacity
- Improve system's efficiency through the installation of clean efficient technology
- Diversify the sources of electricity generation in the system, in the context of the availability of domestic energy resources.

Increased reliance on thermal-based generation capacity. After severe droughts, registered during the 1990s (i.e. 1992, 1997), that caused power shortages with associated forced rationing, the system has encouraged the development of more thermal generation capacity, specifically with the intention of increasing the share of firm capacity and enhancing the system's reliability of supply. The increase in thermal share of the SIN has also been the indirect result of the withdrawal of the public sector in large investments and the reluctance of private generators to enter the hydro electric generation an associated environmental and social requirements. Therefore, future additions to the power mix to attend the projected growth in demand are anticipated to be thermal-based. While this responds to the need for flexibility and robustness of the system, the increase in thermal share contributes to the gradual increase of GHG emissions by the sector and the release of local criteria pollutants (such as NO<sub>x</sub> and, SO<sub>x</sub> particulates and volatile hydrocarbons, which have been linked to health of exposed populations).

**B 5.1.1 Reference Documents:** the elaboration of the following calculations is based on the Resolutions 18401 and 18462 of the Mines and Energy Ministry (which approves the Document UPME Dem 02/04. Metodología Simplificada para el cálculo de la línea base para proyectos de pequeña escala). This document have as reference the Appendix B of the version 02 of December 2, 2003, which includes the amendment made in the twelfth meeting of the Executive Board the days 27 and 28 of November, 2003. (See Attachment 6)

**B.5.1.2 Methodology:** For all activities concerning ID category "Power Generation with renewable sources for interconnected systems" projects, the calculation of the baseline is the generated power (kWh) multiplied by an emission coefficient. For project activities that include

generation units that work with fuel oil or diesel, the baseline will be the annual generated power (kWh) times the emission coefficient of a modern diesel power generation unit, described in the I.D.I table of paragraph 28 of appendix B.

For the rest of the project activities, paragraph 29 of appendix B describes a simplified methodology to calculate the baseline, where the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO<sub>2</sub>equ/kWh) calculated in a transparent and conservative manner as:

(a) The average of the “approximate operating margin” and the “build margin”, where:

(i) The “approximate operating margin” is the weighted average emissions (in kg CO<sub>2</sub>equ/kWh) of all generating sources serving the system, excluding hydro, geothermal, wind, low-cost biomass, nuclear and solar generation;

(ii) The “build margin” is the weighted average emissions (in kg CO<sub>2</sub>equ/kWh) of recent capacity additions to the system, which capacity additions are defined as the greater (in MWh)\* of most recent 20%\*\* of existing plants or the 5 most recent plants.

\* Generation data available for the most recent year.

\*\* If 20% falls on part capacity of a plant, that plant is included in the calculation.

OR,

(b) The weighted average emissions (in kg CO<sub>2</sub>equ/kWh) of the current generation mix.

(c) The version of paragraph 29 of Appendix B used, includes the amendment made by the Executive Board 27 and 28 of November 2003, that clarifies in its paragraph 4 the interjection (ii) of apart (a) of paragraph 29.

Accordingly with chapter E of this PDD, Calculation of GHG by sources, as a result of the method described in apart a) of paragraph 29 and based in the respective operating and build margin values, 0.575 and 0.294 kg CO<sub>2</sub>/ kWh, the arithmetic average was calculated to obtain 0.4346 kg CO<sub>2</sub>/ kWh as baseline value for the year 2004.

As mentioned on paragraph 3.2 one of the main characteristics of the Colombian Electric Sector is the vulnerability due to the hydrological variable, especially when great droughts than accompany El Niño Phenomenon occur. Due to this phenomenon, in the years 1992-1993 the country faced an electric rationing which came up to be 25% of the demand that rationing caused incalculable profit losses and significantly affected the health and well-being of the Colombian Population. This rationing, along with the process of economic opening impelled the reforms in the sector.

As one of the results of these reforms, the planning of the expansion of the Colombian electric sector introduced as criteria the robustness and reliability of the system, and the norm introduced concepts such as the capacity charge, which encouraged the private agents to choose for expansion using thermo-power plants, reducing the dangers caused by critical hydrological phenomena as El Niño, as was proved during the summers 1997-1998 and 2002-2003.

One of the most important decisions from the reform to the electric sector is to gradually retire the State as investor of the system. This measurement respects decisions and steps that had already been taken, like the construction of Miel and Urrá Hydropower plants.

Concerning the system expansion, before the year 2010 no important hydraulic generation plants are expected to enter the system. These types of plants require a bigger investment, more construction time and in general are perceived by the agents as riskier. To face the rising demand, the expansion will be done with a significant support of new thermo-power plants and/or with an increase in the energy generated by this type of plants, which means that the emission factor of the system may grow. This shows, even if the actual generation park is mainly hydraulic-based, that in the long term this composition will vary towards a greater participation of thermo-power plants, therefore an ex-ante emission factor calculated with methodology 29 b) does not consider this chronological tendency.

Because of these reasons methodology 29 a) used for the baseline calculus, which considers operating and build margin during a historical period, represents in the most accurate way the long term dynamics of the Colombian electric sector.

**B.5.1.3 Conclusions:** Based in the previous information, and considering that the emission factor calculated by apart a) paragraph 29) Resolutions 18401 and 18462 of the Mines and Energy Ministry adopted as the emission factor 0.477 kg CO<sub>2</sub>e/kWh, which considers a more representative period of time (1995 -2003 in a discretional way). Based on these resolutions, we used for the Agua Fresca Project the previous 3 years (2000-2003 data) which is good common practice in a discretional way, so in this case the emission factor 0.4346 kg CO<sub>2</sub> e/ kWh can be used for the baseline calculus for the activities of small scale power generation projects (with a maximum of 15 MW of installed capacity) connected to the grid that work with renewable energies such as hydro, geothermal, wind, low-cost biomass, nuclear and solar generation, as long as there are no generation units that use fuel oil or diesel. In that case, the baseline will be the annual generated power (kWh) times the emission coefficient of a modern diesel power generation unit, described in the I.D.I table of paragraph 28 of appendix B.

Finally, it is clearly established through a barrier analysis of financial, social and regulatory barriers that the project itself is not likely scenario.

**B.5.2** Date of completing the final draft of this baseline section (DD/MM/YYYY): 29/10/2004.

**B.5.3** Name of person/entity determining the baseline: Ministry of Mines and Energy of Colombia, Accordingly with Resolution No. 18401 of October 29 th, 2004 (See Attachment 6).

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

## **C. Duration of the project activity and crediting period**

### **C.1 Duration of the project activity:**

**C.1.1** Starting date of the project activity: *(For a definition of the term “starting date”, please refer to the UNFCCC CDM web site).* July, 2006

**C.1.2** Expected operational lifetime of the project activity: *(in years and months, e.g. two years and four months would be shown as: 2y-4m.)* 50 years

**C.2 Choice of the crediting period and related information:** *(Please underline the selected option (C.2.1 or C.2.2) and provide the necessary information for that option.)*

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

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

**C.2.1.1** Starting date of the first crediting period (DD/MM/YYYY): 01/01/2007

**C.2.1.2** Length of the first crediting period: *(in years and months, e.g. two years and four months would be shown as: 2y-4m.)*: 6 y

**C.2.2 Fixed crediting period (at most ten (10) years):** Not applicable

**C.2.2.1** Starting date (DD/MM/YYYY): Not applicable

**C.2.2.2** Length (max 10 years): *(in years and months, e.g. two years and four months would be shown as: 2y-4m.)* Not applicable

## **D. Monitoring methodology and plan**

*(The monitoring plan shall incorporate a monitoring methodology specified for the applicable project category for small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities and represent good monitoring practice appropriate to the type of project activity.*

*The monitoring plan shall also provide information on the collection and archiving of the data specified in appendix B of the simplified M&P for small-scale CDM project activities to:*

- Estimate or measure emissions occurring within the project boundary;*
- Determine the baseline, as applicable;*
- Estimate leakage, where this needs to be considered.*

*Project participants shall implement the registered monitoring plan and provide data, in accordance with the plan, through their monitoring reports.*

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

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

*An overall monitoring plan that monitors performance of the constituent project activities on a sample basis may be proposed for bundled project activities. If bundled project activities are registered with an overall monitoring plan, this monitoring plan shall be implemented and each verification/certification of the emission reductions achieved shall cover all of the bundled project activities.)*

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

*(Please refer to the UNFCCC CDM web site for the most recent version of the indicative list of small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities.)*

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

Project Category: I.D.: Renewable electricity generation for a grid

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

*(Justify the choice of the monitoring methodology applicable to the project category as provided for in appendix B.)*



Accordingly with appendix B of the simplified M&P for small scale project activities (Version 05: 25 February 2005) the monitoring for category I.D projects -Renewable electricity generation for a grid - shall consist of metering the electricity generated by the renewable technology.

### **D.3 Data to be monitored:**

*(The table below specifies the minimum information to be provided for monitored data. Please complete the table for the monitoring methodology chosen for the proposed project activity from the simplified monitoring methodologies for the applicable small-scale CDM project activity category contained in appendix B of the simplified M&P for small-scale CDM project activities.*

*Please note that for some project categories it may be necessary to monitor the implementation of the project activity and/or activity levels for the calculation of emission reductions achieved.*

*Please add rows or columns to the table below, as needed)*

<b>Month</b>	<b>Produced Energy (GWh)</b>	<b>Dispatch Energy (GWh)</b>	<b>Emission Reductions (Ton CO2e)</b>	<b>Comment</b>
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
<b>TOTAL YEAR</b>				

- The annual generation of the Agua Fresca plant that will be obtained from the metering system of the Agua Fresca Plant on a daily basis.
- The actual dispatch of the power unit collected that will be obtained from the Centro Nacional de Despacho (CND) and aggregated to produce an annual estimate.

In order to check the workbook and for a detailed description of all of these data and the Monitoring Procedures, please refer to Attachment 7 : Detailed description of the Monitoring Methodology and Plan.

### **D.4 Name of person/entity determining the monitoring methodology:**

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

Generadora Unión S.A. E.S.P. the sponsor and developer of the project. All contact information of this company is included in Annex 1.

**D.5. Potential sources of emissions which are significant and reasonably attributable to the project activity, but which are not included in the project boundary, and identification if and how data will be collected and archived on these emission sources.**

Such emissions can result from the construction period but thought to be negligible. The constructions have the follow characteristics:

- Construction stage: 13 months
- Underground Structures: Main intake structure, 150 lineal meters in tunnel construction.
- Ground Structures: Secondary intake structure and setting tank and load pond, Conduction pipeline and Powerhouse.

However, the fuel consumed during construction will be monitored, documented and discounted against the expected emission reductions.

## **E. Calculation of GHG emission reductions by sources**

### **E.1 Formulae used:**

#### **E.1.1 Selected formulae as provided in appendix B:**

*(In E.1.1 please provide the formula used to calculate the GHG emission reductions by sources in accordance with the applicable project category of small-scale CDM project activities contained in appendix B of the simplified M&P for small-scale CDM project activities.*

*In case the applicable project category from appendix B does not indicate a specific formula to calculate the GHG emission reductions by sources, please complete E.1.2 below.)*

The calculation of GHG by sources, accordingly with the Methodology established in section B.5.1.2 of this PDD is the following:

**Approximate Operating Margin:** The weighted emission factor is calculated as described forward, where the weight is given by the power generated (GWh) during the considered period. The plants considered were only the thermo-power plants of the interconnected system that operated from the year 2000 to the year 2003, a representative period for the sector due that in 1995 the actual regulation system initiates and that includes typical situation from the climatologic, economical and the economic sector point of view, as described as follows:

Laws 142 (public utilities) and 143 (Electric Law) of 1994, are the fundamental base for the reforms occurred in the mines and energy sectors in Colombia. Particularly, the reorganization of the sector with the state as regulative and supervisor entity, the creation of the electric energy market and the initiation of the privatization of different companies of the electric sector. These reforms are operative since 1995.

One of the main characteristics of the Colombian electric sector is the variability of the hydrology, especially due to the droughts occurred during El Niño. In the 1997-1998 and 2002-2003 periods, other dry phenomena occurred. Thanks to the real availability of the thermal plants the system was able to avoid new energy cuts.

Finally, in the 1999-2000 the country suffered an economical crisis which impacted the power demand to the point that it fell about -5%, which reflects in a significant way in the system generation.

A shortest period may compromise the representativeness of the emission factor by not including these characteristic factors of the behavior of the national interconnected system.

$$OWEF = \frac{\sum EF_{ij} \times GWh_{ij}}{\sum GWh_{ij}}$$

Where:

OWEF = Operating Margin Weighted Emission Factor

EF<sub>ij</sub> = Emission factor of Thermo-Power Plant i in year j

i= sub index to designate the thermal plants of the park which operated in a determined year j= sub index to designate years from 2000 to 2003

The emission factor for each thermo power plant for each year EF<sub>ij</sub>, was calculated as follows:

$$EF_{ij} = HR_{ij} * EC_{ik} * CF$$

Where:

FE<sub>ij</sub>= Emission Factor (ton CO<sub>2</sub> / MWh) of plant i in year j  
 EC<sub>ik</sub>= CO<sub>2</sub> Emission Coefficient of fuel k in plant i (ton CO<sub>2</sub> /GJ)  
 HR<sub>ij</sub> = Heat rate of plant i for year j, en BTU / kWh  
 CF = Unit Conversion Factor

Based in these, the Operating Margin Weighted Emission Factor, OWEF for the 2000-2003 period was 0.4346 kg CO<sub>2</sub>e/ kWh.

**Build Margin:** the weighted emission factor is calculated as described forward, where the weight is given by the entire generation park (hydro and thermal) of the interconnected system during the year 2003.

In order to determine it, the power generated (GWh) by 20% of the most recent plants was calculated first, as:

1. 20% of the total power generated in the year 2003 (most recent year with information) was calculated: the power generated in 2003 was 47,078 GWh, 20% of this figure is 9,416 GWh.
2. The power plants were ordered starting by the most recently built, and the power generated by each plant in year 2003 was added, such that the total was equal or slightly greater than 9,416 GWh, it also includes a complete plant for calculus effects, as required by the methodology. Please refer to Table E.2.1 in Section E.2 of this PDD.

The power generated by the last 5 plants was calculated like this:

The plants were ordered starting by the most recently built and entered in operation, and the generated power in 2003 of the 5 most recent was added. The result was the indicated in table E.2.2 of Section E.2. of this PDD.

Based in the previous information and according to apart (a) (ii) of paragraph 29 of Appendix B, the group of plants with more generated power was used; this is 20% of the most recent plants. For this group the weighted emission factor was calculated, as follows:

$$BWEF = \frac{\sum EF_{ij} \times GWh_{ij}}{\sum GWh_{ij}}$$

Where:

BWEF = Build Margin Weighted Emission Factor  
 EF<sub>ij</sub> = Emission Factor of Thermo-Power plant i in the year 2003

i= sub index to designate the thermal plants of the park which operated in a determined year  
 j= sub index to designate 2003

The emission factor for each thermo power plant for each year EF<sub>ij</sub>, was calculated as follows:

$$EF_{ij} = HR_{ij} * EC_{ik} * CF$$

Where:

$FE_{ij}$  = Emission Factor (ton CO<sub>2</sub> / MWh) of plant i in year j

$EC_{ik}$  = CO<sub>2</sub> Emission Coefficient of fuel k in plant i (ton CO<sub>2</sub> /GJ)

$HR_{ij}$  = Heat rate of plant i for year j, en BTU / kWh

CF = Unit Conversion Factor

Based in these, the Build Margin Weighted Emission Factor, BWEF was 0.294 kg CO<sub>2</sub>e/ kWh.

29.a) Average between Operating margin and Build Margin: as a result of the method described in apart a) of paragraph 29 and based in the respective operating and build margin values, 0.575 and 0.294 kg CO<sub>2</sub>/ kWh, the arithmetic average was calculated to obtain **0.4346 kg CO<sub>2</sub>/ kWh** as baseline value.

## **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<sub>2</sub> equivalent)* Not applicable

**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 (for each gas, source, formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent) Not applicable

**E.1.2.3** The sum of E.1.2.1 and E.1.2.2 represents the project activity emissions: Not applicable

**E.1.2.4** Describe the formulae used to estimate the anthropogenic emissions by sources of GHG's 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: *(for each gas, source, formulae/algorithm, emissions in units of CO<sub>2</sub> equivalent)* Not applicable

**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: Not applicable

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

**TABLE E.2.1 - Built Plants 20% of total GWh 2003**

DATE OF COMMERCIAL OFFERING	GENERATING PLANT	NOMINAL CAPACITY MW	Ton CO <sub>2</sub>	GWh	Emission Factor Ton CO <sub>2</sub> /GWh
-----------------------------------	---------------------	------------------------	---------------------	-----	---

DATE OF COMMERCIAL OFFERING	GENERATING PLANT	NOMINAL CAPACITY MW	Ton CO <sub>2</sub>	GWh	Emission Factor Ton CO <sub>2</sub> /GWh
15-Aug-2003	Ingenio Risaralda	5.5	0	6	0
1-Dec-2002	Miel I (8)	396	0	1,227	0
29-Jun-2001	Porce ii	405	0	1,572	0
27-Jan-2001	Termosierab	460	65,737	178	370
30-Nov-2000	Termocentro 1 cc	285	48,947	119	410
13-Jul-2000	Termocandelaria 2	150	21,487	37	578
16-Jun-2000	Urrá	331	0	1,332	0
3-Jun-2000	Termocandelaria 1	150	4,197	7	574
13-Mar-2000	Rio Piedras	19.4	0	126	0
1-Jan-2000	Incauca	20	50,136	91	553
16-Jul-1999	Termoemcali	231	9,869	25	396
7-Jan-1999	Paipa 4	150	1,046,576	1,063	985
17-Dec-1998	Termovalle	203	9,076	23	395
20-Oct-1998	Tebesa	750	1,601,473	3,906	410
	Total		2,857,498	9,712	
				Weighted Average	294.2
	Generated Total 2003		100%	47,078	GWh
			20%	9,416	GWh

**TABLE E.2.2 – Last Five Plants**

DATE OF COMMERCIAL OFFERING	GENERATING PLANT	NOMINAL CAPACITY MW	Data 2003		Emission Factor Ton CO <sub>2</sub> /GWh
			Ton CO <sub>2</sub>	GWh	
Aug-03	Ingenio Risaralda	5.5	0	5.53	0
Dec-02	Miel I (8)	396.0	0	1,227.12	0
Jun-01	Porce ii	405.0	0	1,572.26	0
Jan-01	Termosierab	460.0	65,737	177.86	370
Nov-00	Termocentro 1 cc	285.0	48,947	119.36	410
	Total		114,685	3,102	

## **F. Environmental impacts**

### **F.1 If required by the host Party, documentation on the analysis of the environmental impacts of the project activity: (if applicable, please provide a short summary and attach documentation)**

The Project counts with Environmental License granted by Corantioquia (See Attachment 1)

About the environmental effects, Agua Fresca Multipurpose Project, thanks to its characteristics of being a run-of-river-intake project with no dam, and the simplicity involving the civil works, has a minimum environmental impact, since it involves no settlement relocation or displacement whatsoever, it has a low effect on the ecosystems in the area of influence and its land requirements are minimal. The project will not generate adverse impacts.

Additionally, the reduction of 2.7 m<sup>3</sup>/s of the Piedras River's flow in the section of the river located between the discharge of the Piedras River Power Plant and its mouth to the Cauca River, will help to control the erosion of the shores in this section, which have been qualified by experts as geologically unstable.

For a detailed description of the environmental impacts of the project, please Reffer to Attachment 8.

The Environmental Management Plan for the construction stage contemplates an investment of USD 133.000, distributed in the following programs: Sediment and erosion control, as well of management of the vegetal layer; solid waste management, liquid waste management; communitary information and participation; labor force contracting; archeological monitoring; environmental education; road signing; environmental control; occupational health and social security; tracking and monitoring program; and an investment of 1% of the Project's value, according to Law 99 of 1993.

In relation with the investment of the 1% of the project's value, one or a combination of both of the following programs, which are previously agreed with the Municipality of Jericó and CORANTIOQUIA , will be executed:

- i) Conformation and adjustment of Las Nubes Botanical Garden
- ii) Acquisition of land lots in the Piedras river's headings

Once the Power Plant enters in commercial operation, 20% of the annual income from the sale of the carbon emission reduction certificates will be destined to sustaining during the useful life of the project the environmental investment programs structured during construction stage shown before.

See Attachment 9 - Environmental Management Plan and Attachment 10 - Environmental Investment Plan.

## **G. Stakeholders comments**

### **G.1 Brief description of the process by which comments by local stakeholders have been invited and compiled:**

Aguas de la Cabaña S.A. E.S.P. developed a consultation process with the community and local and environmental authorities during the studies stage of the project. Additionally, Aguas de la Cabaña S.A. E.S.P. has met with the people of the region and the local authorities in order to inform them periodically about the development and advance of the project.

Several meetings have been made in the Municipality of Jericó with public officials from the Municipal Administration, the Counsel and the community in general where the project has been presented and the inquiries of the community regarding it have been attended.

See Attachment 11: Meetings with the community and local authorities certifications:

- Communication 9373 of August 24th, 2002 from Generadora Unión S.A. E.S.P. The presentation of Agua Fresca Multipurpose Project to the Municipal Counsel of Jerico is scheduled for August 31st, 2002.
- Communication 9397 of September 2nd, 2002 from Generadora Unión S.A. E.S.P. The presentation made for the Municipal Counsel of Jerico in August 31st, 2002 is sent in magnetic format to its President.
- Communication 10036 of December 2nd, 2003 from Generadora Unión S.A. E.S.P. Documentation on the project to be handed in the “Encuentro de Dirigentes del Suroeste Antioqueño” to be held on December 6th, 2003 in the municipality of Andes, Antioquia. (Handed Document Annexed)
- Communication 130-CA-560 of June 15th, 2004 from CORANTIOQUIA and the Mayor’s Office of the Municipality of Jericó. Invitation to present Agua Fresca Multipurpose Project to the Local Community on June 24th in the “Water Day”.
- Invitation Card. Presentation in Jerico of Agua Fresca Multipurpose Project and the information about the signing of the sale contract of the carbon emission reduction certificates – ERPA, with the Austrian Government, with the participation of Clemens Phoechl, executive for the Kommunalkredit Public Consulting, representative of the Austrian Clean Development Mechanism Program. Jerico April 28th, 2005
- Press reports: Signature of ERPA signed between Kommunalkredit and Aguas de la Cabaña S.A. E.S.P.
- Photos of the meetings with the community.

### **G.2 Summary of the comments received:**

No concerns about the project were voiced by the local stakeholders during process described above.

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

Not applicable



Annex 1

**CONTACT INFORMATION FOR PARTICIPANTS IN THE PROJECT ACTIVITY**

Organization:	Aguas de la Cabaña S.A. E.S.P.
Street / P.O. Box:	Transversal 7 A No. 30 -224
Building:	Interior 120
City:	Medellín
State/Region:	Antioquia
Postcode/ZIP:	
Country:	Colombia
Telephone:	(574) 312 4084
FAX:	(574) 312 1711
E-Mail:	<a href="mailto:gerencia@aguasdelacabana.com">gerencia@aguasdelacabana.com</a>
URL:	<a href="http://www.aguasdelacabana.com">www.aguasdelacabana.com</a>
Represented by:	
Title:	Manager
Salutation:	Mr.
Last Name:	Ortega
Middle Name:	Restrepo
First Name:	Gabriel Jaime
Department:	
Personal E-Mail	<a href="mailto:gjortega@epm.net.co">gjortega@epm.net.co</a>

Organization:	Generadora Unión S.A. E.S.P.
Street / P.O. Box:	Transversal 7 A No. 30 -224
Building:	Interior 120
City:	Medellín
State/Region:	Antioquia
Postcode/ZIP:	
Country:	Colombia
Telephone:	(574) 312 4084
FAX:	(574) 312 1711
E-Mail:	<a href="mailto:gunion@epm.net.co">gunion@epm.net.co</a>
URL:	<a href="http://www.gunion.com">www.gunion.com</a>
Represented by:	Represented by:
Title:	Manager
Salutation:	Mr.
Last Name:	Ortega
Middle Name:	Restrepo
First Name:	Sergio
Department:	
Personal E-Mail	<a href="mailto:sortega@epm.net.co">sortega@epm.net.co</a>

Organization:	The Republic of Austria, Federal Minister of Agriculture, Forestry, Environmental and Water Management represented by Kommunalkredit Public Consulting GMBH (KPC)
Street / P.O. Box:	Türkenstrasse 9
Building:	A-1092
City:	Vienna
State/Region:	
Postcode/ZIP:	
Country:	Austria
Telephone:	
FAX:	43/1/31631104
E-Mail:	<a href="mailto:Kyoto@kommunalkredit.at">Kyoto@kommunalkredit.at</a>
URL:	
Represented by:	
Title:	
Salutation:	Mr
Last Name:	Ploechl
Middle Name:	
First Name:	Clemens
Department:	Austrian JI/CDM Programme
Personal E-Mail	c.ploechl@kommunalkredit.at

Organization:	Construcciones El Cóndor
Street / P.O. Box:	Carrera 43 A No. 7- 50
Building:	Centro Empresarial Dann, Piso 11
City:	Medellín
State/Region:	Antioquia
Postcode/ZIP:	
Country:	Colombia
Telephone:	(574) 268 0099
FAX:	((574) 311 0970
E-Mail:	<a href="mailto:Construcciones.elcondor@elcondor.com">Construcciones.elcondor@elcondor.com</a>
URL:	<a href="http://www.elcondor.com">www.elcondor.com</a>
Represented by:	
Title:	General Manager
Salutation:	Mrs.
Last Name:	Correa
Middle Name:	Vargas
First Name:	Luz María
Department:	<a href="mailto:luz.correa@elcondor.com">luz.correa@elcondor.com</a>
Personal E-Mail	

Organization:	Geominas S.A.
Street / P.O. Box:	Calle 16 AA Sur No. 42 -74
Building:	
City:	Medellín
State/Region:	Antioquia
Postcode/ZIP:	

Country:	Colombia
Telephone:	(574) 313 5258
FAX:	(574) 3131577
E-Mail:	<a href="mailto:geominas@epm.net.co">geominas@epm.net.co</a>
URL:	<a href="http://www.geominas.com">www.geominas.com</a>
Represented by:	
Title:	President
Salutation:	Mr.
Last Name:	Alzate
Middle Name:	Osorio
First Name:	Bernardo
Department:	
Personal E-Mail	<a href="mailto:geominas@epm.net.co">geominas@epm.net.co</a>

Organization:	Va Tech Bouvier Hydro and Va Tech Colombia
Street / P.O. Box:	Calle 90 No. 14 – 26
Building:	Edificio La Plazuela, Oficina 502
City:	Bogotá
State/Region:	Cundinamarca
Postcode/ZIP:	
Country:	Colombia
Telephone:	(571) 655 82 00
FAX:	(571) 655 8205
E-Mail:	<a href="mailto:vatech@vatech.com.co">vatech@vatech.com.co</a>
URL:	
Represented by:	
Title:	Manager
Salutation:	Mr.
Last Name:	Ritschard
Middle Name:	Lobsiger
First Name:	Beat
Department:	
Personal E-Mail	<a href="mailto:britschard@vatech.com.co">britschard@vatech.com.co</a>

Organization:	Empresas Públicas de Medellín
Street / P.O. Box:	Carrera 58 No. 42-125
Building:	Edificio Inteligente
City:	Medellin
State/Region:	Antioquia
Postcode/ZIP:	
Country:	Colombia
Telephone:	(574) 380 6900
FAX:	(574) 380 6780
E-Mail:	<a href="mailto:eeppm@eeppm.com">eeppm@eeppm.com</a>
URL:	<a href="http://www.eeppm.com">www.eeppm.com</a>
Represented by:	
Title:	Manager
Salutation:	Mr.
Last Name:	Gaviria
Middle Name:	Gutiérrez
First Name:	Juan Felipe
Department:	
Personal E-Mail	<a href="mailto:jgaviria@eeppm.com">jgaviria@eeppm.com</a>

Annex 2

**INFORMATION REGARDING PUBLIC FUNDING**

Not applicable