**Eco-Audit: “Determination of the Footprint of Cabono”**

**Introduction**

Climate change is the greatest environmental challenge that humanity will face, both because of the magnitude of its consequences, and because of their influence in all spheres of life on Earth. The size of the problem makes it necessary to act quickly and the responsibility of the enriched countries, such as ours, forces us to act decisively from the world of politics, technological development and society, adding efforts and wills to curb climate change and adapt to its consequences. The increase in GHG (Greenhouse Gases) in the atmosphere, caused mainly by CO2 emissions derived from our way of producing, consuming and, in short, of living, is the cause of global warming. (Teaching guide Terral).

**Objective:**

 Carry out an analysis of the CO2 emissions of the educational center, in order to propose environmental and behavioral improvements of the people who live there, aimed at an effective reduction of carbon dioxide emissions.

**Method**

The study focuses on determining CO2 emissions, for this purpose the consumption is going to work:

* Electricity and heating energy consumption.
* Transportation of students and teachers to the educational center.
* Paper consumption.

Once the calculations have been made, a series of measures will be defined, proposed by the students who have carried out the study, and will be included in a decalogue of commitments that the students and the Center will assume. The study will continue in successive courses in order to determine the effectiveness of the proposed decalogue.

Different worksheets will be used to carry out the work:

Sheet 1: Calculation of CO2 emissions due to electricity consumption.

Sheet 2: Calculation of CO2 emissions due to fuel consumption in heating.

Sheet 3: Calculation of CO2 emissions due to transport consumption

Sheet 4. Calculation of CO2 emissions due to paper consumption.

Sheet 5. Collection of calculated CO2 emission data

Sheet 6: Decalogue of intentions.

**Sheet 1. Card for the calculation of electricity emissions**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Energy Consumption** | **Total cost** | **Reactive Energy** | **Medium power** | | | **CO2 emissions** |
|  | **(KWh)** | **Euros** | (Kvarh) | P1 (KW) | P2 (KW) | P3(KW) | \*(0,278 Kg de CO2/KWh) |
| September /18 |  |  |  |  |  |  |  |
| October /18 |  |  |  |  |  |  |  |
| November /18 |  |  |  |  |  |  |  |
| Decembe/18 |  |  |  |  |  |  |  |
| January /19 |  |  |  |  |  |  |  |
| February /19 |  |  |  |  |  |  |  |
| March /19 |  |  |  |  |  |  |  |
| April /19 |  |  |  |  |  |  |  |
| May /19 |  |  |  |  |  |  |  |
| June /19 |  |  |  |  |  |  |  |
| July/19 |  |  |  |  |  |  |  |
| August /19 |  |  |  |  |  |  |  |
| **Total** |  |  |  |  |  |  |  |

\* 2008 WWF Electricity Observatory Report

(Total cost per month = Consumption + Reactive Energy + Power + taxes + Equipment rental)

**- Kg of Total CO2 emitted in Course 18/19 for energy consumption:**

**- Cost of Kg of CO2 emitted to the atmosphere:**

**Makes:**

• Energy consumption graph

• Graph of powers in period 1, 2 and 3

• CO2 emission graph

• Total cost graph

**Conclusions:**

**Sheet 2. Card for calculating heating emissions**

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| --- | --- | --- | --- |
| DATE | **Natural gas consumption Total**  (KWh) | **Total cost**  **(Euros)** | **CO2 emissions**  \*(0,19 Kg de CO2/KWh) |
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| **Total** |  |  |  |

\* Estimated, unofficial data, serve as a reference for calculations. They have been prepared based on the DEFRA tables (Department of Food and Rural Affairs, United Kingdom) and the 2008 Electricity Observatory Report. WWF.

**- Kg of Total CO2 emitted in Course 18/19 for consumption of natural gas in heating:**

**- Cost of Kg of CO2 emitted to the atmosphere:**

**Makes:**

• Graph of total gas consumption (KWh)

• CO2 emission graph

• **Graph of total cost in euros**

**Conclusions:**

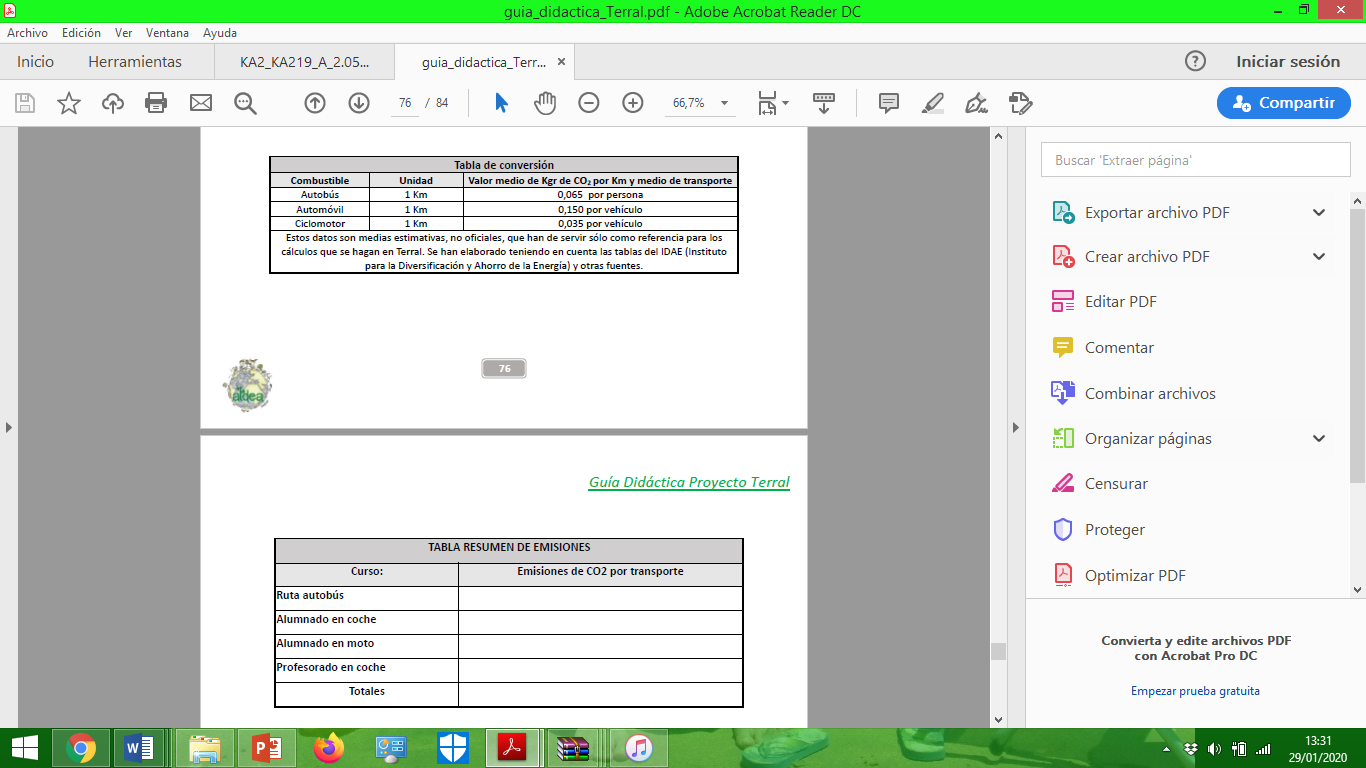
**Sheet 3. Card for the calculation of emissions in transport**

**Complete these tables depending on the means of transport and collective:**

**1) Individually to all the groups of the Center: Students, teachers and PAS**

|  |  |  |
| --- | --- | --- |
| **Collective:**  **Department (teachers):** | **Course (student group):** | |
| What means of transport do you use to go to the Institute? |  |  |
| If you use more than one medium, specify how many times you use each |  |  |
| If you go by car, do you share with colleagues? |  |  |
| In the case of sharing, indicate the number and the course |  |  |
| What is your address? |  | |
| How many km are there? |  | |
| How many times a day do you go to high school? |  | |
| Do you have any difficulty when you come to the institute?  (Traffic jams, wait for the bus, wait for you to be picked up, get cold or hot ..) |  | |
| **CO2 production per day per kg of fuel used** |  | |
| **Production of CO2 per week per kg of fuel.** |  | |
| **Production of CO2 per week per kg of fuel.** |  | |
| **CO2 production per quarter per Kg of fuel** |  | |

**2) Transportation by bus:**



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Total number of students: Courses:**  **Total Number of Teachers: Nº Total PAS:** | | | | | | |
| LINES (stops and people who do it) | km Line daily (One way) | Km line  Daily (round) | Total km / day | Total km / week | Total km / course | CO2 emissions / course |
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| **TOTALES DE EMISIONES DE CO2** | | | | | |  |

1. **Transportation by car:**

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| **Course students** | Nº. Students who go by car | Total distance of km in the course. | Kg CO2 emissions |
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| **Teachers:** | Nº teachers go by car: |  |  |
| **PAS:** | Nº PAS go by car: |  |  |
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| **Total CO2 emissions:** | | | |

1. **Transportation by motorcycle**

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| **Course students** | Nº. Students who go by motorcycle | Total distance of km in the course. | Kg CO2 emissions |
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| **Teachers:** | Nº teachers go by motorcycle: |  |  |
| **PAS:** | Nº PAS go by motorcycle: |  |  |
|  |  |  |  |
| **Total CO2 emissions:** | | | |

**Sheet 4. Calculation of emissions from paper consumption**

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| --- | --- | --- | --- | --- |
| **Type of paper** | **Total annual paper consumption (Kg)** | **Total cost (Euros)** | **Nº. of Trees** | **CO2emission /Kg of paper** |
| **Virgin fiber** |  |  |  |  |
| **Recycling** |  |  |  |  |
| **Total** |  |  |  |  |
| Virgin fiber: 3Kg of CO2 / Kg of paper  Recycled: 1.8 Kg of CO2 / Kg of paper  To get a ton of paper you need 14 adult trees.  (As there is no official source for the conversion, we use the data of the CENEAM-National Center for Environmental Education-in carrying out its internal audit) | | | | |

**- Kg of Total CO2 emitted in Course 18/19 for paper consumption:**

**- Cost of Kg of CO2 emitted to the atmosphere:**

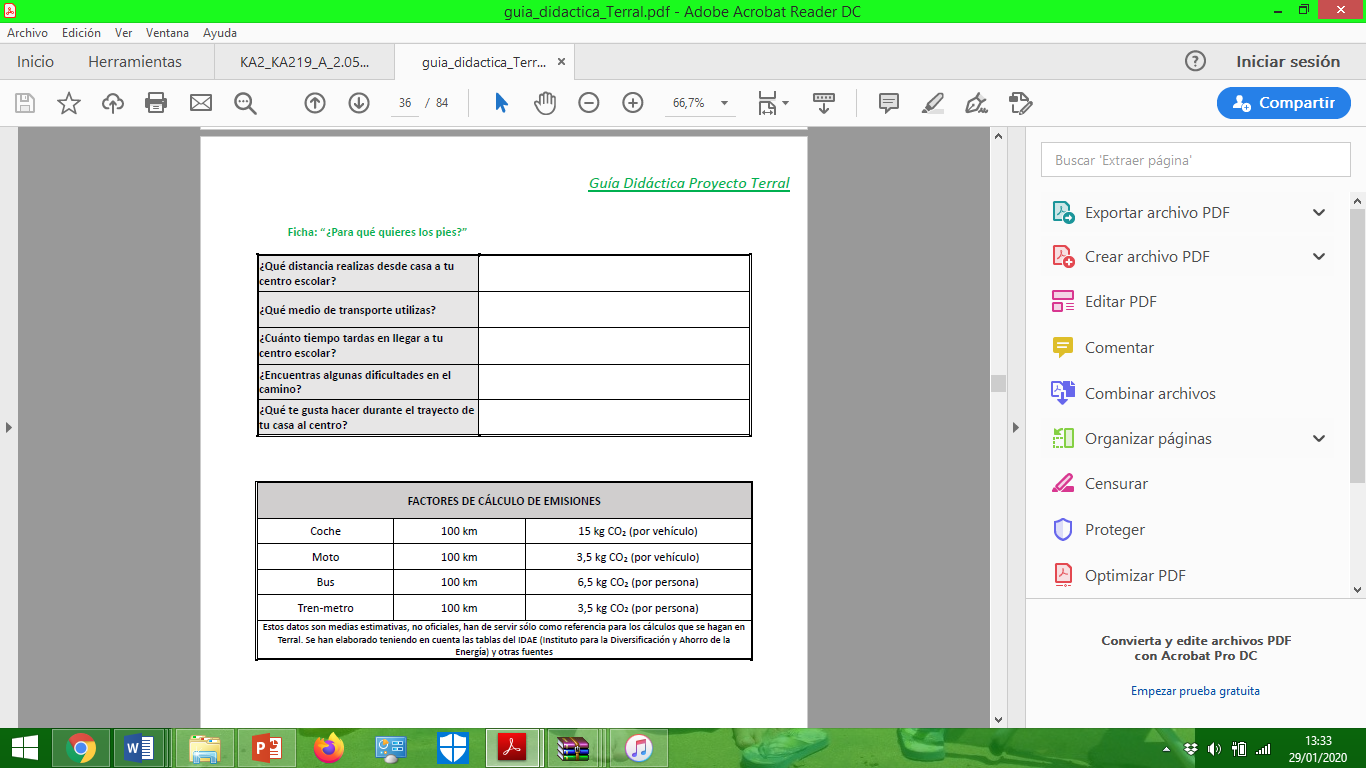
**- Number of trees felled:**

**Conclusions:**

**Sheet 5. Collection of calculated CO2 emission data**

:

|  |  |
| --- | --- |
| **COLECTIVO Y TRANSPORTE** | **CO2 Emssions** |
| Students by car |  |
| Teachers by car |  |
| PAS by car |  |
| Motorcycle students |  |
| Motorcycle teachers |  |
| Motorcycle PAS |  |
| Bus students |  |
| Bus teachers |  |
| Bus PAS |  |
| **CO2 Total Emissions** |  |



The results on the center's emissions, resulting from the study carried out by the Monitoring Commission, are set out below:

The Monitoring Commission, in the study it is doing on the CO2 emissions that are carried out in the center, has reached the following conclusions:

* The amount of electricity spent in the center in one year is \_\_\_\_\_\_\_Kwh, which means emissions into the atmosphere of\_\_\_\_\_\_\_Tm of CO2.
* The amount of fuel spent in the center for heating in one year is \_\_\_\_\_\_\_\_\_\_, which means emissions to the atmosphere of \_\_\_\_\_\_\_\_\_Tm of CO2.
* The amount of gasoline or diesel fuel consumed to come and go to the center implies emissions into the atmosphere of \_\_\_\_\_\_\_\_\_\_ CO2.
* The amount of paper we spend in the center over the year is \_\_\_\_\_\_\_Kg, which means cutting down \_\_\_\_\_\_\_\_ trees and emissions into the atmosphere of \_\_\_\_\_\_\_\_\_\_ CO2.

In total our center has emitted between September 1 of the year \_\_\_\_\_\_ until August 31 of the year \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_Tm of CO2 into the atmosphere

**Sheet 6. Summary sheet of proposal of classroom commitments**

This record will include the annotations and proposals that have been repeated most in the sharing, as a result of the observations made by the students. This document, once completed, will be delivered to the village program coordinator at the center

|  |  |
| --- | --- |
| .**Observations** | **Proposals for improvement** |
| **1** | |
| **2** | |
| **3** | |
| **4** | |
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| **7** | |
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**Bibliography:**

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