

# Carbon Footprint of the International Conference “Climate Change and Sustainable Energy” LoCaRe Project

PRINCIPALITY OF ASTURIAS – JANUARY 26<sup>th</sup> & 27<sup>th</sup>, 2011



## Executive Summary

The carbon footprint is the total set of greenhouse gas (GHG) emissions caused by an organization, event, product or person. For reporting simplicity, it is often expressed in terms of carbon dioxide amount, or its equivalent of other emitted GHGs. The carbon footprint shows the environmental impact through an inventory of emissions associated with the different GHGs. Regarding to an organization or company, its carbon footprint reflects the CO<sub>2</sub> emissions impact from daily operations. In the case of an individual or home, carbon footprint represents the CO<sub>2</sub> emissions related to their daily activities meanwhile the carbon footprint of a product or service does include additional CO<sub>2</sub> emissions from the production chain lifecycle.

Once the carbon footprint has been calculated, mitigation and compensation measures can be implemented in order to reduce environmental impact. Therefore, it is a useful tool in the fight against climate change because *"what is not measured cannot be controlled"*.

This study examines the carbon footprint of the International Conference on "Climate Change and Sustainable Energy". The conference was held at Laboral Ciudad de la Cultura, in Gijón, Asturias, on the 26<sup>th</sup> and 27<sup>th</sup> of January 2011. The event, which lasted two days, consisted of a series of lectures, accompanied by lunch and two site visits: A solar panel factory (Rioglass SOLAR) and the post-combustion CO<sub>2</sub> capture pilot plant of La Pereda (HUNOSA). The study was led by the Sustainability, Climate Change and Participation Office of the Environment, Spatial Planning and Infrastructures Ministry of Principality of Asturias Government.

By analyzing the carbon footprint, different GHGs emission sources can be identified, that will enable us to carry out further measurements, and to propose solutions and actions in order to reduce greenhouse gas emissions at future events.

The study concluded that the organization and development of the event generated **10,484.77 kg CO<sub>2</sub>e**, which represents an average of **74.43 kg CO<sub>2</sub>e** per attendee. Global emissions of the Conference have been equivalent to those generated by a car running for **61,482 km** or carbon stored by a wood of **282 trees** (conifers) along 10 years.

As regards the process of calculating greenhouse gas emissions, it should be noted that the various methodologies developed as standards to quantify the carbon footprint, establish some criteria when defining the types of emissions to be considered in each case. For the event carbon footprint analysis, the calculation methodologies contained in the "Greenhouse Gas Protocol" created by the World Resources Institute and World Business Council for Sustainable Development, the "PAS 2050" created by BSI British Standards, the Carbon Trust and the DEFRA and the ISO 14064 Standard established by the International Organization for Standardization have been used.

To help delineate direct and indirect emission sources, improve transparency, and provide utility for different types of organizations and different types of climate policies and business goals, three "scopes" are defined for GHG accounting and reporting purposes:

**Scope I:** Direct GHG emissions occur from sources that are owned or controlled by the company, for example, owned combustion emissions or controlled boilers, furnaces, vehicles, etc.

**Scope II:** Indirect electricity GHG emissions. Scope II accounts GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organizational boundary of the company.

**Scope III:** Other indirect GHG emissions. Scope III is an optional reporting category which allows the treatment of all other indirect emissions. Scope III emissions are consequence of the company activities, but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

- Both data collection and analysis thereof were carried out by combining all the previous steps in order to obtain a rigorous result for the company in terms of the used methodologies.

#### GHGs Emissions Associated with the Main Sources

The main GHGs generation sources considered for the carbon footprint analysis are as follows:

- Raw Materials
- Electricity
- Transportation
- Stationary combustion

The following table shows the contribution of each emission source to the overall computation:

SOURCES	EMISSIONS [Kg CO <sub>2</sub> e]
RAW MATERIALS	1,084.2
TRANSPORT	8,697.0
ELECTRICITY	496.2
COMBUSTION	207.4
<b>TOTAL</b>	<b>10,484.77</b>

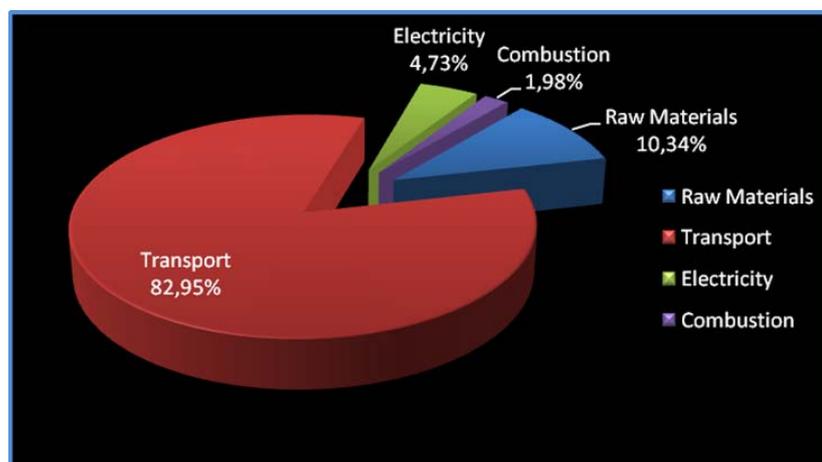


Diagram 1: Summary of Process Emissions

After analyzing the results we concluded that the raw materials consumed during the event account approximately 10% of the total emissions, while transport to the venue of the event for the guests and organizers is the source with the greatest weight, accounting for approximately **83%** of the total. The electricity consumed due to the event has a minimal impact on global emissions, accounting for less than **5%** of total emissions even less than raw materials.

- **Raw materials:** In order to account the emissions associated with the raw materials used during the event, the transportation used fuel has been considered. The distance taken for this purpose was the point of origin of each material to the vendor’s factory and later on to Laboral Ciudad de la Cultura at Gijón. Raw material represents **10.34%** of the total emissions.

- **Electricity:** Emissions associated with electricity generated during the event are categorized within Scope II and III and represent a **4.73%** of the total emissions.
- **Travel:** In the case of the involved participant’s journey, it was the aspect generating most of GHG emissions, accounting for **82.95%** of total emissions, based on internationally accepted emission factors and taking into account the attendant travelled distance.
- **Combustion:** Regards the gas consumption used in several sites of the meeting and at the attendant used hotels, amounting to **1.98%** of total emissions.

### GHG Emissions by Scope

Greenhouse gases emissions generated during the event, from organizing to execution, are distributed as follows according to the scope mentioned above.

SCOPES	EMISSIONS [Kg CO <sub>2</sub> e]
SCOPE I	155.23
SCOPE II	9.8778
SCOPE III	10,320
<b>TOTAL</b>	<b>10.484.77</b>

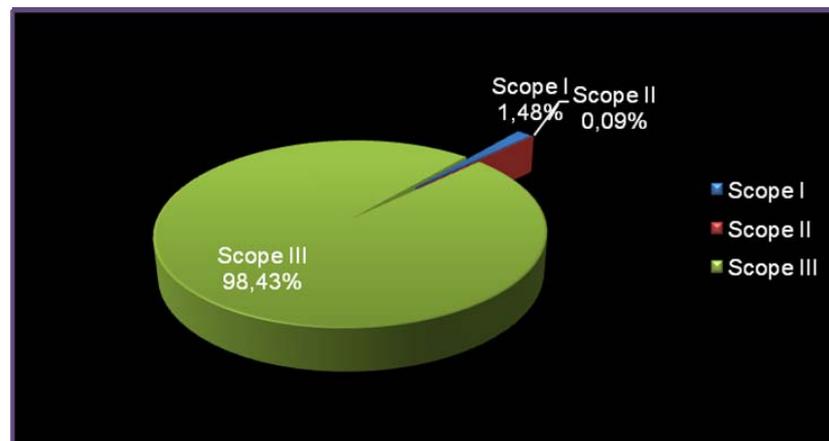


Diagram 2: Summary of Scopes Emissions

**Scope I:** Emissions included in this scope, i.e. emissions directly released into the atmosphere are emissions from vehicles and transports that are owned or controlled by the company, ie organizers and personnel transport to Laboral Ciudad de la Cultura, and the bus contracted for transportation of the attendees to the event. These emissions represent approximately **1.48%** of total emissions.

**Scope II:** emissions grouped within scope II are generated by the power consumption, accounting for less than **1%** of total emissions. Its origin is the electricity consumption. The calculation of emission factors used to determine the power consumption is in accordance with the values presented by the Spanish Renewable Energy Plan.

**Scope III:** Finally, optional indirect emissions or scope III, are represented by the emissions associated with the acquisition of raw materials, transportation of speakers and guests, electricity and gas consumption at the hotel ABBA Playa Gijón. They represent approximately **98%** of the total emissions.

**GHG Emissions Considering the Different Actors Participating in the Event**

The ratio of emissions among the organizers, vendors and participants, allows us to highlight the emissions directly attributable to each group. As noted in the chart below, guests represent the group that generates the largest amount of emissions released into the atmosphere, being this group also the largest. Regarding to organizers, it is interesting to note that they generate very low emissions even when they are in charge of managing all the organization of the event. Vendors represent **10.34%** of total emissions.

PARTICIPANTS	EMISSIONS [Kg CO <sub>2</sub> e]
ORGANIZERS	0,153
GUESTS	6,091
SPEAKERS	3,143
PERSONNEL	0,0125
VENDORS	1,084
<b>TOTAL</b>	<b>10,485</b>

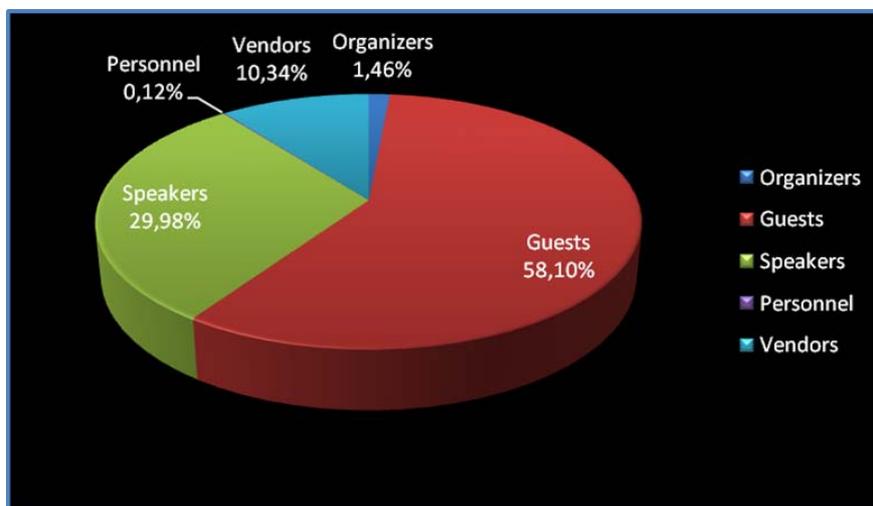


Diagram 3: Summary of Participants Emissions

**Average Emissions per Attendee Recommendations**

As mentioned above, the average emissions per attendee represents **74,43 kgCO<sub>2</sub>e**. The group of guests who generated most of the emissions are those using planes for their travelling to Gijón, followed by those attendants travelling from other places in Asturias.

VEHICLE	EMISSIONS [Kg CO <sub>2</sub> e]
CAR	1844,47
BUS	314,86
PLANE	6532
MOTORBIKE	1,059
TRAIN	4,56
<b>TOTAL</b>	<b>8696,9</b>

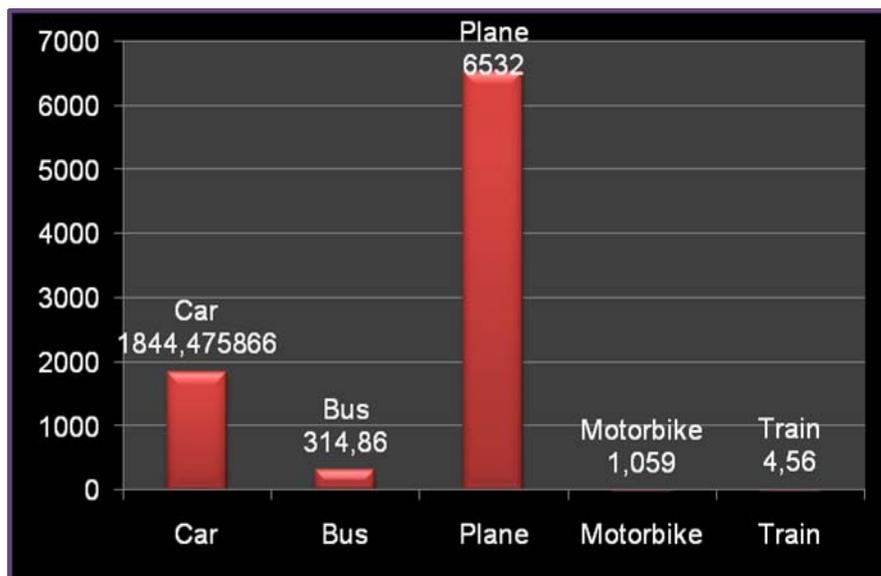


Diagram 4: Summary of Emissions by Type of Vehicle

By analyzing the carbon footprint it is possible to identify different GHGs emission sources allowing to carry out subsequent measurements and being able to propose solutions and actions in order to reduce future events emissions.

### Recommendations

Calculating this event carbon footprint has the ultimate goal of identifying potential reduction and efficient use of energy. Some recommendations for future events are the following:

- Organize events during the morning for harness sunlight or otherwise install solar lighting and low energy light bulbs.
- Provide maintenance to equipment that use energy, whether electricity or heat to avoid leakage and malfunction. If necessary replace equipment with new technology, more efficient and more economical in the long term and implement energy saving measures.
- Make travel plans as possible, with alternative routes to avoid congestion and to reduce the known routes and save fuel and travel outside rush hours. Use of public transportation.
- Reduce inputs purchase travels, increasing vehicles carrying capacity and consider providers in areas surrounding the event’s venue.
- Reduce solid waste production, avoiding the use of PET and plastics for the event (catering, meals, etc.)

- Reduce the importation of foreign products (mainly foodstuffs needing air transport).
- Reduce the consumption of paper for printing invitations, use e-mail instead and prioritize the use of recycled paper for printing of supplements and brochures distributed at the event.
- Encourage the use of fuel-efficient vehicles for the resources transport, equipment and staff, and proper vehicles maintenance.
- Promote vehicles sharing to transport personnel and / or public transportation if possible.

As organizers cannot "force" their guests to improve their efficiency regarding transportation (reducing emissions from air travel or car sharing) at least they can advise them to meet certain measures.

