

2012 Greenhouse Gas Emissions Report



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1. FCC CONSTRUCCIÓN'S COMMITMENT

FCC Construcción, with more than 110 years' accumulated experience, is the construction company of FCC Group. Its business activities cover every field of construction areas, being a benchmark company in the construction of civil engineering works (roads, railways, airports, hydraulic and maritime works) and buildings (residential and non-residential), both on the national market as well as internationally. FCC Construcción has a proven experience in the development of concession projects and it has a group of subsidiary companies involved in the industrial and energy sector and in construction-related activities (engineering, prefabrication, installations etc.).

FCC Construcción continues to be firmly committed to sustainability and, particularly at present, it has deemed it necessary to take a step forward in the organisation's environmental management. This is why, in the context of a given climate change strategy, in 2011 FCC Construcción became the first Spanish construction company to have its Greenhouse Gas (henceforth, GHG) emissions report verified by AENOR, an official external verifier.

The company verified again its GHG inventory in 2012; in this financial year it received AENOR's Environmental certificate "CO₂ verified" which guarantees the accuracy of the organisation's Carbon Footprint calculation and demonstrates that the company has included GHG management in its System and its strategy. The initiative launched by FCC Construcción was awarded by the organisation "Fundación Entorno" in 2012 with a prize in the category "Management for sustainable development" of the European Business Awards for the Environment.

The recognitions bestowed upon us have made us further reinforce the way we do things, continuing to include the risks and opportunities of climate change in the company strategy and maintaining the commitment acquired with Society and with ourselves as citizens, workers and as a company. However, in the construction sector, which does not produce a high amount of GHG emissions, but is distinguished by the wide range of suppliers and subcontractors involved in the process, FCC Construcción regards the following as priority actions: the raising of the awareness of the implied parties, the establishment of calculation tools and the internal and external communication of Good Practices' examples.

This report includes the GHG inventory for 2012 reporting period recording all emissions from the activities carried out at construction sites and premises of FCC Construcción located in Spain. This report is the responsibility of the Quality and Training Director.

The report has been prepared according to the requirements of ISO Standard 14064-1:2006: "Greenhouse Gases. Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals" and of the sector guidelines of the European Network of Construction Companies for Research and Development (henceforth, ENCORD), May 2012 edition: "Construction CO₂ Measurement Protocol". Said document has obtained the logo "Built on GHG Protocol", making it the sector guidance of GHG Protocol for construction companies.

The verification of the Greenhouse Gas inventory has been carried out with a limited level of assurance by AENOR. (see annex)



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2. ORGANISATIONAL BOUNDARIES, OPERATIONAL BOUNDARIES AND EXCLUSIONS

2.1. Organisational boundaries

FCC Construcción uses the operational control approach for GHG emissions recording and for consolidation of GHG emissions data. This approach is recommended best practice, since it is the most appropriate for the activities of the construction sector. For the quantification of scope 1 and scope 2 emissions (emissions associated with the consumption of fuel and electricity), the GHG inventory does only consider those emissions over which the company has financial control, that is, the emissions deriving from consumption whose costs are assumed by FCC Construcción.

The information included in the GHG inventory for 2012 reporting period contains data of all centres located in Spain, taking centres to mean construction sites and premises (offices, warehouses and plant storage /maintenance facilities).

2.2. Operational boundaries

The emissions of the centres within the organisational boundaries of FCC Construcción are quantified, assuming the following scopes:

Scope 1: Direct GHG emissions

These are emissions from sources that are owned or controlled by the company. They include emissions deriving from the burning of fuel used by FCC Construcción. They can be broken down into:

- Emissions associated with fuel used at projects (construction sites).
- Emissions associated with fuel used at premises (offices, warehouses, plant storage /maintenance facilities).

Scope 2: Indirect GHG emissions

Scope 2 emissions are a consequence of the organisation's activities, but they occur at the facility where electricity is generated. They include emissions from the generation of purchased electricity consumed by FCC Construcción. They can be broken down into:

- Emissions associated with electricity used at projects.
- Emissions associated with electricity used at premises.
- Emissions associated with electricity used as vehicle fuel.

Scope 3: Other indirect GHG emissions

These emissions are a consequence of the company's activities, but they occur from sources not owned or controlled by FCC Construcción. It has been decided to include the following emissions under scope 3:

- Emissions associated with the production and transport of purchased materials.
They include emissions from the manufacture and transport to site of concrete, bituminous products (asphalt) and steel and emissions from transport to site of earth and aggregates.



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- Emissions associated with the subcontracted work units. They include earth-moving works.
- Emissions associated with the transport and management of surplus waste and materials. They include emissions from the transport of surplus earth and surplus clean rubble off-site.
- Emissions associated with employee business travel.
- Emissions deriving from losses due to electricity transport and distribution.

2.3. Exclusions

FCC Construcción has decided to exclude from quantification any fugitive emissions from air-conditioning leaks from equipment controlled by the company, given its low representativeness (<0.5%) with regard to the total emissions.

3. UNCERTAINTY AND MAXIMUM RELATIVE IMPORTANCE

The emissions' estimation uncertainty is a combination of the uncertainty in emission factors and in activity data.

The emission factors deployed to draw up FCC Construcción greenhouse gas inventory are obtained from official sources and they are specific to each emission source category. The selection of these emission factors is carried out aiming to reduce uncertainty, as far as proves possible. Unless there is clear evidence otherwise, it is assumed that the probability density functions are normal and hence that the uncertainty in emission factors is low.

The activity data derive from billing data, delivery notes, measurements and data from the construction project. Based on the supplementary guidance document about uncertainty assessment ("Guidance on uncertainty assessment in GHG inventories and calculating statistical parameter uncertainty") drawn up by ECCR under the "GHG Protocol", we can assume that the origin of the FCC Construcción activity data guarantees the maximum achievable certainty for the various GHG emission sources.

A maximum relative importance level of 7% has been established with regard to the total reported Greenhouse Gas emissions.

4. QUANTIFICATION OF GHG EMISSIONS

This section contains the GHG emissions' quantification of FCC Construcción in 2012.

Firstly, the emissions are classified by scopes as defined in the Standard UNE-ISO 14064-1. The emissions are then classified according to the emission blocks of the ENCORD sector guidelines.

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EMISSIONS CLASSIFIED BY SCOPES (ACCORDING TO UNE-ISO 14064-1:2006)	t CO ₂ e 2011	t CO ₂ e 2012
Scope 1: Direct GHG emissions	29.661,91	20.749,74
associated with fuel used at projects	27.146,83	19.455,81
associated with fuel used at premises	2.515,08	1.293,93
Scope 2: Indirect GHG emissions	8.115,74	4.819,77
associated with electricity used at projects	7.532,58	4.164,39
associated with electricity used at premises	582,66	654,34
associated with electricity used as vehicle fuel	0,50	1,04
Scope 3: Other indirect emissions	197.934,39	305.762,47
associated with the production and transport of purchased materials	141.144,12 ¹	255.177,16
associated with the subcontracted work units	32.137,98 ¹	24.862,66
associated with the transport and management of surplus waste and materials	17.960,24 ¹	17.008,33
associated with employee business travel	6.123,98	8.430,02
deriving from losses due to electricity transport and distribution	568,07	284,30
TOTAL EMISSIONS	235.712,04	331.331,98

¹ Recalculated emissions data. See section "6. Base year".

EMISSIONS CLASSIFIED BY EMISSION BLOCKS (ACCORDING TO ENCORD GUIDELINES)	t CO ₂ e 2011	t CO ₂ e 2012
Construction ²		
1. Fuel (projects)	27.146,83	19.455,81
2. Fuel (premises)	2.515,08	1.293,93
3. Process and fugitive emissions ³	0,00	0,00
4. Electricity (projects)	7.532,58	4.164,39
5. Electricity (premises)	582,66	654,34
6. Heat	0,00	0,00
7. Vehicle fuel ⁴	1.446,30	709,84
8. Public transport	4.678,18	7.721,22
9. Subcontractor	32.137,98 ⁵	24.862,66
10. Waste	17.960,24 ⁵	17.008,33
11. Materials	141.144,12 ⁵	255.177,16
TOTAL EMISSIONS	235.143,97	331.047,68 ⁶

² The ENCORD sector protocol divides the construction sector into three key areas of operation: the materials manufacture stage (off-site production and transport of materials used for construction); the construction stage (project design, execution of the works, including demolition and refurbishment and on-site materials manufacture); and the operation stage (management or use of the final product). All FCC Construcción activities are included in the construction stage.

³ See section "2.3. Exclusions".

⁴ The emission block 7 only considers emissions associated to the use of vehicles powered by electricity and emissions associated to leased or privately owned vehicles used for business travel. Emissions associated to the business travel in company owned vehicles are included under the quantification of emissions associated with fuel consumption at construction sites and premises, corresponding to emission blocks 1 and 2, respectively.

⁵ Recalculated emissions data. See section "6. Base year".

⁶ The total emissions quantified in accordance with ENCORD guidelines do not coincide with the total emissions quantified according to the Standard UNE-ISO 14064-1. This is due to the fact that ENCORD guidelines do not include a category to classify "emissions deriving from losses due to electricity transport and distribution" which stand at 284,30 t CO₂ eq. verified.

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5. AVOIDED EMISSIONS

This section sets out a quantification of the avoided Greenhouse Gas emissions in 2012 due to the implementation of environmental good practices on site. The report details the emissions which are no longer produced by implementing the following directed actions, as defined according to the terminology of Standard UNE-ISO 14064:

AVOIDED EMISSIONS	t CO ₂ e 2011	t CO ₂ e 2012
Avoided emissions		
by reusing surplus material on site and not taking it to landfill	11.783,15 ⁷	13.092,22
by pH neutralization with CO ₂	488,48	451,93
by suitable maintenance of the machinery operating on site	1.361,73	744,65
due to vehicle speed control on site	80,71 ⁷	74,67
due to the use of electric vehicles	2,25	3,41
TOTAL EMISSIONS	13.716,32	14.366,88

⁷ Recalculated emissions data. See section "6. Base year".

6. BASE YEAR

Despite the fact that FCC Construcción already verified its GHG inventory for 2010 in accordance with the Standard UNE-ISO 14064-1:2006 and the ENCORD sector guidelines, 2011 has been selected as historic base year for GHG emissions to be compared over time, while the GHG inventory for 2010 reporting period has been considered as an initial inventory, useful for understanding the company's situation.

Some of the base year emissions concepts for 2011 have been recalculated. An explanation of the causes which have led to the recalculation of said emissions has been provided below:

- The emissions associated with the production and transport of purchased materials, the emissions associated with the subcontracted work units, the emissions associated with the transport and management of surplus waste and materials and the emissions avoided by reusing surplus material on site and not taking it to landfill have been recalculated due to the improvement in the accuracy of the emission factors that result in a significant change in the base year GHG emissions data. To define the factors to be used in the calculation, the considerations of the GHG inventory for 2012 have been taken into account, along with the activity data and emission factors of 2011.
- The emissions avoided due to vehicle speed control on site have been recalculated because of the discovery of errors in the calculation code of this concept, which entailed a non-significant inaccuracy.

In addition to the prior assumptions, the recalculation of the base year emissions will be carried out when any of the following aspects occurs:

- Changes in the operational boundaries.
- Structural changes at FCC Construcción that have a significant impact on the company's base year GHG emissions.



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7. QUANTIFICATION METHODOLOGIES

FCC Construcción determines its Greenhouse Gas emissions using a calculation approach, multiplying the activity data compiled at each construction site or premise by the documented GHG emission factors which are selected and updated periodically at corporate level.

FCC Construcción uses a centralised approach, consolidating the activity data gathered at each construction site or premise and quantifying the GHG emissions at corporate level, though being able to create GHG emission reports at different levels (by project, business area, geographical distribution, etc.)

Reference is made below to the quantification methodologies and GHG emission factors used to draw up this report.

Scope 1: Direct GHG emissions

- *Emissions associated with fuel consumption.*

To calculate these emissions, fuel consumption (at construction sites or at premises), according to FCC Construcción billing, is multiplied by the emission factors which have been calculated using the data from Annex 8 of the “1990-2010 (2012) GHG Inventory Emissions Report Spain” and the data from Table 2.3. of “2006 IPCC Guidelines for National Greenhouse Gas Inventories”.

Scope 2: Indirect GHG emissions

- *Emissions associated with electricity consumption.*

To calculate these emissions, electricity consumption (at construction sites, at premises or in the electric vehicle fleet), according to FCC Construcción billing, is multiplied by the emission factor from the electric mix estimate carried out in line with the data provided by Red Eléctrica Española for the peninsular system.

Scope 3: Other indirect GHG emissions

- *Emissions associated with the production and transport of purchased materials.*

The quantification methodology is based on activity data (materials’ production and consumption data and the distance travelled from their production site to the construction site) and on the emission factors associated with the production and transport of said materials.

The emission factor for asphalt (bituminous products) has been obtained from the verified emissions of FCC Construcción’s own premises, the emission factor for steel has been obtained from a study of Cantabria University and the emission factor for concrete has been obtained from historical data of FCC Construcción plants’ electricity consumption.

The emission factors associated with transport have been obtained from the Annexes to the report by the UK Department for Environment, Food and Rural Affairs (DEFRA) “2012 Guidelines to Defra/DECC’s GHG Conversion Factors for Company Reporting”.

- *Emissions associated with the subcontracted work units.*

To calculate emissions associated with earth-moving works, the methodology uses an emission factor which is calculated based on a consultation that determines the amount and type of fuel required to carry out earth-moving of a certain size and using the fuel emission factors from Annex 8 of the “1990-2010 (2012) GHG inventory Emissions Report Spain”.



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- *Emissions associated with the transport and management of surplus waste and materials.*

The emissions associated with the transport of surplus earth and surplus clean rubble off-site are calculated, considering as activity data the volumes of surplus rubble and earth and the distances from the construction site or premise to its final destination.

The emission factors associated with transport have been obtained from Annexes to the report by the UK Department for Environment, Food and Rural Affairs (DEFRA) "2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting".

- *Emissions associated with employee business travels.*

The activity data required for calculating these emissions, in other words, the kilometres travelled by FCC Construcción employees in business travels, are supplied by the Corporate Department which obtains these data from the reports provided by the different suppliers.

The emission factors associated to the different forms of transport (car, coach, train, plane) derive from Annex 6 to the Report by the UK Department for Environment, Food and Rural Affairs (DEFRA) "2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting".

- *Emissions deriving from losses due to electricity transport and distribution.*

These emissions are obtained as a product of the emissions associated with electricity consumption (scope 2) by an electricity distribution losses factor which is to be found in Annex 10 to the DEFRA Report "2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting".

8. AENOR EXTERNAL ASSURANCE

See annex.