D - Inventory of Greenhouse Gas Emissions

Climate change and greenhouse gas emissions

Climate change is an unquestionable scientific reality brought about by human activity. Therefore, the Kyoto Protocol established the objective of attainment of a 5% reduction by 2012 of the 1990 greenhouse gas emission levels of the globe's developed countries.

GHG emissions are related to the industrial activity of countries. Therefore, the countries with the highest degree of industrialization are those with the highest emission levels. To reduce them, without affecting the GNP, the development of clean industrial technologies, substitution of fossil energy consumption with renewable energy, and modification of the population's consumption habits is necessary. This is a challenge facing not only governments, but companies and citizens as well. Agenda21 of the United Nations establishes the activity framework for facing up to the challenges of the new century, by integration of environment and development.

The role of companies in the fight against climate change is synthesized in management of clean production and promotion of responsible undertaking, and is implemented through different actions:

- Management of knowledge of the emissions themselves: accounting and balance of the same, with tracking of the different inputs.
- Plan for reducing and minimizing emissions, of the raw materials and inputs utilized, and of wastes and discharges through suitable management of the same.
- Labeling of products.
- Analysis of the life cycles of products and businesses, with assessments of potential for improvement.
- Innovation.
- Aligning new businesses with sustainable development.
- Voluntarily, the company may become a neutral emitter by purchasing carbon funds that compensate its emissions balance.

In coherence with the above, Abengoa has rolled out an inventory of its greenhouse gas emissions to provide it with in-depth knowledge of the direct and indirect GHG emissions associated with each activity of the company and evaluate its situation and identify improvement options. Moreover, this inventory will allow labeling of Abengoa's products and services, identification of the GHG emissions associated with each product or service, and appraisal of its providers in function of the GHG emissions associated with the production of the products and services acquired by the company.

Standard for generation and upkeep of the Abengoa Group greenhouse gas (GHG) emissions inventory (NOC-05/003)

Introduction

Historically, Abengoa has demonstrated its firm commitment to the environment. Consequently, the aspects of sustainability have always been taken into consideration in the activities conducted by the Group. In 2007, a work group was established under the auspices of Presidency. This consisted of a team from Abengoa's Quality and Environment Department and coordinators from the business units. The objective was to develop a Standard for the generation and upkeep of Abengoa's greenhouse gas emissions inventory (common management systems Standard).

Fruit of this work, said Standard (NOC-05/003) was published in June 2008. Its objective is to define the methodology for the generation and upkeep of an emissions inventory that allows tracking and reporting of greenhouse gas emissions in all Abengoa companies. Said inventory includes both direct and indirect emissions.

At global level, there are very few companies with robust methodologies for quantification of their scope 3 emissions. As best practice, in its Standard, Abengoa has included the methodology for calculating these scope 3 emissions by involving the entire chain of goods and services providers.

Scope

NOC-05/003 is applicable in all the Abengoa companies in which the Common Management Systems are implemented. In addition, it is applicable in the JVs, EIGs or other consortiums or concession companies in which an Abengoa company has control of management.

For the effects and purposes of the inventory, the following activity segments have been established: production, execution of works and maintenance, offices, workshops, stores and transportation.

Each company's inventory includes direct as well as indirect emissions. That is to say, the emissions associated with sources under the control of the company (Scope 1 of the Kyoto Protocol), emissions associated with the generation of the electric energy consumed (Scope 2), emissions from the chain of value of the energy acquired and consumed, emissions resulting from acquired goods and services, emissions associated with business trips, and emissions associated with travelling to and from the work center (Scope 3).

The inventory GHG are the gases included in the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Main emission sources

To enable and homogenize the calculation of GHG emissions, the NOC incorporates detailed methodology for calculating the emissions of the three Kyoto Protocol scopes. The main sources taken into consideration are detailed below:

Scope 1	Scope 2	Scope 3
Stationary combustion	Purchased electricity	Chain of value of acquired energy and fuels
Mobile combustion	Purchased thermal energy	Acquired goods and services
Flares	-	Business trips
Metal recovery process	-	Travelling to and from work center
Bioethanol production process	-	Losses in transportation and distribution of electric energy
Composting process	-	Transportation of merchandize
Dump emissions	-	-
Fugitive emissions natural gas	-	-
Cooling systems (HFC)	-	-

Electric switchgear (SF6)	-	-
Aerosols (HFC/PFC)	-	-
Foam blowing (HFC/PFC)	-	-
Lubricants	-	-
Slack waxes	-	-
Use of gases containing GHG	-	-

Bases for calculating the emissions

The emissions can be determined by applying a methodology based on calculation or a methodology based on metering. The calculation-based methodology is the main methodology for determining emissions. The metering-based methodology is restricted to determining channelized emissions.

It is important to mention the bases for calculating the emissions corresponding to acquired goods and services (scope 3). All purchase orders include the obligation for the supplier to provide details of the emissions associated with the requested goods or services. Suppliers are also under the obligation to adhere in writing to the Social Responsibility Code for Abengoa providers and subcontractors. In order to enable adaptation of all the suppliers to the new purchasing conditions a transition period has been established for those who are not immediately in a condition to provide their emissions, but who undertake in writing to implement an emissions reporting system. The transition period is six months. During this transition period, the supplier undertakes to provide the data requested of him to allow an estimation of its emissions to be made. These data must be provided by the supplier within four weeks.

Quality of the emissions data

The NOC establishes that each emission data must be accompanied by a quality index. This quality index is associated with the emissions data for each source and greenhouse gas. The quality index indicates the degree of reliability of the data and is always expressed standardized to 10.

Minimum quality requirements are established in the Standard for each emission source, and in function of the emitter potential of the center and of whether it is a main, secondary or minimal source.

Recording and reporting of information

At present, the companies are reporting their emissions via the corporate reporting system. This corporate reporting system contains a GHG emissions section accessible for the people responsible for the inventory. From this section, access is available to the monthly GHG emissions report of each company (detail of scope 1, 2 and 3) and to the list of suppliers and their degree of commitment to the NOC (provision of emissions associated with supplies).

During the first quarter of 2009, Abengoa plans to bring specific software into operation for calculating GHG emissions. This will also allow consolidation of the data and improve functionality of the inventory.

Attribution of emissions to products and services

The NOC contemplates the future attribution of emissions to products. This assigning shall be done utilizing main and auxiliary emissions distribution centers methodology, analogue to that of cost centers. In the 2008 inventory, the GHG emissions have not been attributed to products and/or services.

Defined control tools

Each company must implement an internal audit process to verify correct implementation of the requirements included in the Standard.

The planning of this audit process must be documented correctly, and be of an annual nature.

Furthermore, the Inventory of each company shall be evaluated under the control and tracking visits program managed by Abengoa's Quality and Environment Department.

Implementation methodology

During the second half of 2008, Abengoa's companies implemented the emissions inventory in accordance with the following stages:

- Identification of the battery limits.
- Selection of the emissions quantification methodology.
- Collection of data.
- Application of the methodology.
- Reporting.
- With the final objective of ensuring correct implementation of the NOC in all the group's companies, Abengoa has organized training/feedback sessions for first and second level personnel (approximately 1,000 people).
- Consolidation of the 2008 emissions of the different companies is programmed for 2009.