



7th INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“CLEANER PRODUCTION FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS”

Assessment and Management of the Carbon Footprint in the Research Center Santa Lucia (UNIPAZ) (Barrancabermeja, Santander)

ÁVILA, O.A. ^{a*}, PINILLA, L. ^a, RAMIREZ, J. ^a

a. *Instituto Universitario De La Paz (UNIPAZ), Barrancabermeja*
**omar.avila@unipaz.edu.co*

Abstract

The investigation was made in the Center of Investigation of Santa Lucía (CISL) in the University Institute of Peace (UNIPAZ), in order to create the baseline of its main sources of Greenhouse Gas (GHG) Emissions (Methane, Carbon dioxide, Carbon monoxide, oxides of Sulfur and Nitrogen, etc.) generated directly (by use of fossil fuels and generation of animal faeces) and indirectly (by consumption of electrical energy) and to establish the level of atmospheric affectation, by means of the estimation of the carbon footprint (CF) under the Life cycle Analysis "LCA" method, according to the norm NTC-ISO 14040/14044 of 2006 (Software SIMAPRO 7.1®, IMPACT 2002 evaluation method) and NTC-ISO 14067 of 2013 (IPCC GWP method). The scope of the environmental assessment contemplated the energy consumption required during a month of academic activities (by 1.941 individuals) in the different areas: administrative (offices), library (library, auditoriums, systems rooms, cafeterias), external area (agricultural sector), public lighting, nursing), building of classrooms, power plants, combustion of ACPM in transport and generation of faeces (porcine, bovine, equine and poultry). The baseline was made from the collection of information through surveys, field visits and validation with bibliographic references, where the quantification of the global energy consumption associated with the use of electrical and electronic equipment was determined (2.75491,53 MJ/month), as well as the use of ACPM fuel for the personnel mobilization (5.282,39 gal/month) and finally the generation of feces (64,80 kg / day) for all the evaluated species. According to the environmental analysis obtained by the IPCC GWP method, over time the total effect of the power of global warming (225.109 kg CO₂ eq) in periods of 20 years was estimated (impact of 55%, equivalent to 124.815 kg CO₂ eq.), 100 years (impact of 28%, equivalent to 61.833 kg CO₂ eq.) and 500 years (impact of 17%, equivalent to 38460 kg CO₂ eq.). The monthly Carbon Footprint estimated by the CISL was 31.983,14 kg CO₂ eq, equivalent to a monthly per capita of 15.07 kg CO₂ eq, which means that the CISL has greater CO₂ absorption capacity through the native forests and sown, that the same emission that is generated (> 97% approximately). When comparing the value obtained by the UNIPAZ, with the CF per capita in Colombia (141,7 kg CO₂ eq), it is clear that the per capita emission generated by the CISL is much lower, because the activities carried out within the facilities of the campus are different and of shorter duration than those commonly done in the home.

Keywords: Carbon footprint, life cycle analysis, greenhouse gases, potential environmental impact.

“CLEANER PRODUCTION FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS”

Barranquilla - Colombia - June 21st and 22nd - 2018