GREEN-HOUSE GASES DIFFUSING EMISSIONS ESTIMATION FOR HYDROELECTRIC ENERGY PRODUCTION FACILITIES IN COLOMBIA: CO_2 AND CH_4

Yohen Cuellar Alvarez[1,3], Harold D Cuadros-Tejeda[1], Juan S Chirivi-Salomon[1] and Marco Andres Guevara Luna[1,2,3]

[1]Universidad Nacional Abierta y a Distancia-ECAPMA, Colombia
[2]Smart and Simple Engineering, Research Department, Colombia
[3]Universidad Nacional de Colombia, GICA-Grupo de Investigacion de Calidad del Aire, Colombia

In Colombia, the hydropower share is 70% of the installed capacity and more of 50% in of the monthly generation share in 2015 during the strongest El Nino phenomenon (Southern Oscillation) reported in the region. This amount of hydroelectric generation is due to the geography and great water resources in the country which represents its biggest known potential for power supply. The generation via hydropower implies the construction of dams and water reservoirs; these flooded areas generate an important amount of GHG. The main aim of this research is to quantify the diffusing emissions of CO_2 and CH_4 in the flooded areas of the main hydroelectric power facilities in Colombia. In this research, the IPCC methodology for diffusing GHG emissions calculation was implemented. The results show that 1,042,500 t CO2-Eq (i.e. CO_2 and CH_4) are emitted in Colombia per year from this kind of power generation, representing 4.4% of the total GHG emissions respect to other sources of energy generation.

Biography

Yohen Cuellar Alvarez has completed a PhD in Chemical engineering at the Universidad Nacional de Colombia, in Bogota. She is a Chemical Engineer and she has a Master's degree in Environmental Engineering. She has been working on life-cycle assessment (LCA) methodology applied to energy systems used by the urban transport (bioethanol, biodiesel, fossil fuels, wind and solar power energy). Now, she is interested in integrating economic indexes and the social criteria to the environmental analysis especially for the renewable energies.

ycuellara@unal.edu.co