A Cement Plant's Life Cycle Analysis

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Introduction

Cement is one of the most frequently used and manufactured building materials on the planet. Despite the fact that cement manufacturing increased dramatically from 2010 to 2014, Cement production, on the other hand, is expected to rise to 4682 Mt yr1 by 2050. Cement production is driven by rapid urbanisation in many regions of the world, particularly in emerging countries. The breakdown of limestone to calcium oxide is an energy-intensive process that necessitates a substantial amount of fossil fuels. Many countries (especially developing countries) use coal as a calcination fuel, although it generates a lot of Greenhouse Gases (GHGs). Overall, the calcination process accounts for up to half of all CO2 emissions from cement manufacture, with the balance coming from kiln fuel combustion. The CO2 emissions are proportional to the amount of clinker utilized (i.e., the major ingredient in cement manufacturing).

Material and Methods

We followed the four key stages of LCAs, which are: (a) aim and scope definition, (b) Life Cycle Inventory (LCI), (c) Life Cycle Impact Assessment (LCIA), and (d) interpretation and communication of the primary results.

Cement production process

The main phase of concrete creation is the extraction of natural substances from quarries and their transportation to solidify plants. The unrefined substances, to be specific limestone, dirt, laterite, and gypsum are quarried in their individual mining regions and shipped to the concrete plant through various means relying upon the unique situation (for example a transport line, truck, boat, train).

Goal and scope definition

The objective of this LCA is to assess the ecological exhibition of concrete creation in the Max Myanmar Cement Plant, and model two situations for the fuel utilized in the calcination stage. In deciding the framework limits, LCAs ought to consider the whole life pattern of items/administrations, beginning from the obtaining of unrefined components to garbage removal.

Life cycle inventory

The improvement of a day to day existence cycle stock includes the evaluation and assemblage of all information connected with the data sources, yields, energy use, and created waste to deliver a utilitarian unit of the item inside the researched framework limit.

Life cycle impact assessment

The mid-point sway classifications can be sorted into neighborhood, territorial, and worldwide impacts, with (a) asset consumption and vaporous emanation as the vitally nearby impacts, (b) fermentation and eutrophication as the super local impacts, and (c) environmental change as the really worldwide impact.

Elective scenario for energy use

The plant utilizes a fuel blend comprising of 90% coal and 10% flammable gas in the furnace. Nonetheless, while considering the enormous ecological effect related with energy use in the oven and the chance of fuel switch as distinguished by plant staff, we created two elective situations for energy use in the furnace, to be specific (a) 100 percent petroleum gas (Scenario 1), and (b) 100 percent coal.

Conclusion

This study evaluated the ecological effects of concrete creation in Myanmar utilizing a LCA approach and demonstrated different elective fuel situations for nuclear power use. Generally speaking, the review recognized that current concrete creation rehearses are answerable for quite a long time effects like GHG discharges, fermentation, and eutrophication, among others. The calcination stage is answerable for a large portion of these effects, contributing around 89% of the general impact for the environmental change sway classification. Supplanting the current fuel blend in with unadulterated flammable gas for nuclear power age during calcination has a huge CO2 outflow decrease potential.