

GHG Report

Abstract

Lady Doak College (LDC) releases its Carbon neutrality action plan that includes a time frame and steps to become a Low Carbon Institution/Carbon Neutral Institution. Carbon neutrality occurs when energy and resources are used in a way that does not increase the net amount of carbon dioxide or other greenhouse gases (GHG) in the atmosphere over time. From January 2013 - December 2013, January 2014 - December 2014 & January 2015 - December 2016, Lady Doak College emitted 1010.368, 1013.893 & 1440.988 tons of CO₂ equivalents respectively. This report considers data collected for January 2013– December 2014 as the base line measurements to assess its carbon emission, and from where progress could be made to reduce carbon emission . The data for the period January 2015- December 2015 is measured after various managing strategies through the action plan proposed by the CES in 2014 to reduce carbon emission. Lady Doak College completes its Green House Gas (GHG) emissions inventory in general accordance with GHG protocol Corporate Standard convened by the World Resources Institute (WRI) specification with Guidance at the Organizational Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals.

Keywords: carbon neutrality, green house gas, carbon di-oxide, carbon emission.

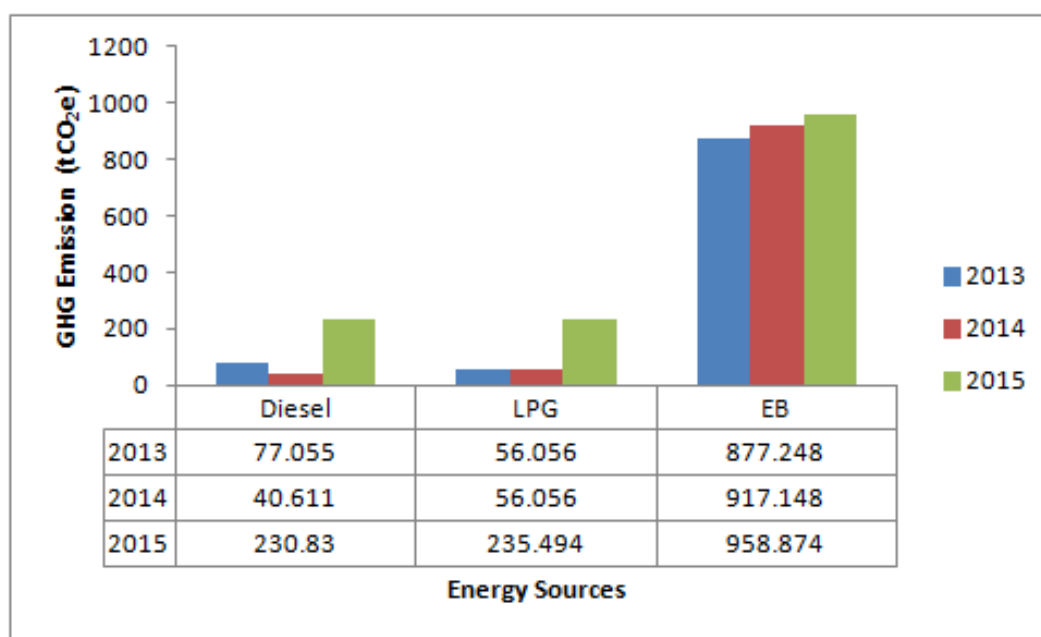
INTRODUCTION

LDC prepared and posted in the college website the Greenhouse Emission Inventory baseline study for the annual years 2013&2014 . The College is one of the first academic Institutions in India to create an inventory study on the emission of Greenhouse gas based on the universally recognized GHG Protocol. The college holds a centre for Environmental studies which actively sorts out the issues related to the environment within the college. As a part of Green Campus Initiatives by the centre, it engages itself in bringing the college to Carbon Neutrality by the year 2025. In this regard, the college prepared a baseline inventory study to check for the GHG emission for the year 2013 & 2014 and sustainable resource management from the year 2015 onwards. With this baseline study, the college has planned for the establishment of strategies in pursuing GHG reductions goals in the forthcoming years. The

college will publicly track and report its progress every year towards achieving its GHG emission reduction goals to become a Carbon Neutral Institution.

Results & Discussion:

Comparative GHG emission for the years 2013, 2014 & 2015



Assumptions:/ Discussion

1. There is increase in the usage of diesel in the year 2014 because of increase in usage of generator for online test conducted for undergraduate students.
2. The emission of CO₂ from electricity is found to be increased in 2015, due to purchase of more lab equipments, fridges, air conditioners etc.,

GHG Removals and Sinks:

Green vegetation removes carbon dioxide from the atmosphere and stores in vegetative tissues. LDC campus has trees, shrubs and herbs as part of the green campus. About 1100 trees are present within the campus. Vegetation in LDC is calculated to about 71,576 sq. meter land through GIS mapping system, available in the department of Physics, LDC, and is used to calculate the carbon dioxide sink/ sequestration.

The amount of Co2 sequestered through the vegetation is given below.

S.No	Description	Details
1	Total persons in Lady Doak College	4738
2	Total annual CO ₂ emission	8528.4 tCO ₂ e

3	Total monthly CO ₂ emission	710.70 tCO ₂ e
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GIS ANALYSIS OF VEGETATION AT LDC FOR THE YEAR 2015



Generation of Electricity through Solar panel:

Solar panel installed in the College hall and Pandian Hostel generated the electricity unit of about 18,000. Thus the renewable energy generated from solar panel helps in the reduction of CO₂ emission which accounts to about 21.02 tCO₂e.

Mitigation strategies followed in LDC campus for the reduction of GHG emission during the year 2015.

1. Energy Star procurement Policy: Replacement of energy star certified appliances in all areas wherever practical. Below is the list of replaced electronic items.

S.No	Star rated Electronic items replaced	Quantity
1	Air conditioner	19
2	Fridge	2
3	Tube lights (36W & 28W)	280
4	Fan	13
5.	LED monitors	36
6.	Solar street lamps	11

2. Energy efficiency strategies carried out during the year 2015:

1. T5 tube lights (20,000 hr lamp life) were replaced with **LED lights**, wherever possible.

2. The temperature of the air conditioners is being maintained at 24⁰ C in all the places within the college.
3. Planting of trees was done as much as possible to increasing the carbon sequestration.
4. Recycled grey water is used for watering the plants in the campus.
5. Awareness creation regarding energy saving and GHG emission, among the campus community including Teaching faculty, Non teaching faculty and students by conducting survey through questionnaire and display of stickers in various places regarding tips to reduce electricity and wastage of resources.

Mitigation strategies planned by the college towards achieving carbon neutrality in the forthcoming years:

The college has initiated tangible actions towards carbon near neutrality campus by implementing the below mentioned offsets. It is found that the release of green house gas through the use of electricity is increased in 2015 when compared to the 2013 & 2014. It is assumed that the increase in CO₂ emission, might be due to the increase in the usage of electronic items during the year 2015. In this view, the following mitigation strategies were planned for efficient energy usage for the forthcoming year.

1. Routing the electricity generated by solar plant in Pandian hostel to the administration block during the month of May and June.
2. The process of Installation of solar panels in Newton Block (20kWA) is in process.
3. Fixing up off sub-meters in the hostel blocks, administrative block and college blocks.
4. Increasing the carbon sequestration by planting more number of plants.
5. Awareness creation regarding energy saving and GHG emission, among the campus community.
6. Exporting excess electricity generated through solar panel campus to the common grid.
7. Installation of methane captures systems for sewage treatment plants and solid waste.
8. Installation of windmills / purchase of wind energy.