MRIIRS REPORT

ON

CARBON FOOTPRINTS

FOR THE YEAR 2022-23

CARBON FOOTPRINTS

Carbon is the building block of life on Earth. It is integrated into plants by photosynthesis, ingested by animal species via food, present in the atmosphere as carbon dioxide (CO_2), trapped into rocks like limestone, and compacted into various fossil fuels such as coal and oil. As CO_2 levels in the atmosphere continue to rise, most climate models predict that the world's seas and trees will continue to absorb more than half of the CO_2. Plants on land and in the water absorbed carbon over many years, increasing the percentage of carbon expelled during decay, and this increased carbon became locked up as fossil fuels under the planet's surface. We brought increased worry about global warming, climate change, food security, poverty, and population expansion at the start of the twenty-first century. More carbon has been released into the atmosphere than has been absorbed in the twenty-first century. As we are aware that CO_2 is a major contributor to global warming. Carbon dioxide levels in the atmosphere have risen by 40% since preindustrial times, to more than 390 parts per million CO_2. Given this context, there is an urgent need to address the research fields associated with climate change.

Estimation of Carbon foot prints

Global warming is one of the most pressing concerns that we all confront in today's world. Global warming is defined as an increase in mother Earth's average global temperature. The primary cause of global warming is an increase in the concentration of greenhouse gases (GHGs) in the atmosphere as a result of anthropogenic activities, and their level is calculated using global warming potential (GWP) and expressed as Carbon Footprint (CF). Another word for GHGs or carbon dioxide emissions in terms of CO2 equivalents is carbon footprint. There are many different definitions of carbon footprint in the literature.

However, Wiedmann's most well-known definition is "the Carbon footprint is the measure of carbon dioxide emissions directly or indirectly caused by an activity or accumulated over the life stages of a product." "A carbon footprint" is defined as "the total greenhouse gas (GHG) emissions caused directly and indirectly by an individual, organisation, event, or product."

Manav Rachna International Institute of Research and Studies has committed in line with the goal of our Prime Minister Hon'ble Narendra Modi Ji to achieve net zero carbon by 2045 from all greenhouse gas emissions sources, as defined by the World Resources Institute Greenhouse Gas Protocol (GHG Protocol). This commitment is supported by a target to reduce gross Scope 1 and 2 emissions by 60-65% by 2035.

A. Direct Emissions: The direct emissions of Carbon from institute owned facilities i.e., Fuel used for fleet and other services.

B. Indirect Emissions: Emissions from the imported electricity, heat or steam consumed by the organization.

C. Other Indirect Emissions: The indirect emissions are from commuting and business travel, transportation of materials, people & waste; waste generated by MRIIRS but managed by another organization; production and distribution of energy products, other than electricity, steam, and heat, consumed by the organization; purchased raw or primary materials.

GHG Protocol's Corporate Standard (Scope 1 and 2) and the Corporate Value Chain Standard (Scope 3).

Table 1 lists the annual carbon emissions in the Institution with the factors, consumption and carbon emission in Kg per annum with percentage.

Table-1: Annual carbon emissions in the Institution with the factors, consumption and carbon emission in Kg per annum with percentage

Sr. No.	Description	Units	Kg/annum	%
1	Imported Electricity	3300000	2607000	56.14
2	Natural Gas (LPG)	31098	108843	2.34
3	Laptops	620180	31009	0.67
4	Food Wastage (kg/year)	84000	159600	3.44
5	Mobile Phone	460000	1573200	33.88
6	Commuting Employee	66,666.67	6,666.67	0.14
7	Commuting students	4,80,000.00	13,920.00	0.30
8	Support staff	36,375.00	1200.375	0.03
9	Fuel	39975	107932.5	2.32
10	Paper, notebooks approx. kg/yr	20000	12600	0.27
11	Waste Treatment Plant	7300000	18943.5	0.41
12	Biogas Plant	6701.4	17.390133	0.00
13	Laboratories & workshops	LPG & Other chemicals	2500	0.05
kgCO2 e/annum			**4643432.432**	
tonsCO2 e/annum			**4643.44**	

Table.2. Direct, Indirect and other Indirect Emission of Carbon Footprint in the Institution

Factor Classification	Carbon Emission in Kg. per annum
Direct Emission (Scope-1)	216775.5
Energy Indirect Emissions (Scope-2)	2607000
Other Indirect Emission (Scope-3)	1819656.93

Emission reduction to the tune of 5% was achieved in the current year with installation of energy efficient devices, sensitization of stakeholders about judicious use of resources etc.

Following are the broad plan/strategy statements of MRIIRS for Enhanced Carbon Reduction in the coming years:

1. Progressive reduction in amount of energy sourced from HSEB (Haryana State Electricity Board) by increasing installation of solar energy panels.
2. DG sets to be converted/replaced with NG/Green Hydrogen in phased manner
3. Strategize to reduce the congestion at entry and exit points to the campus
4. Reduction in food waste generation
5. Reducing paper consumption by technological interventions
6. Generated biogas to be used in kitchen
7. Re-evaluation of GHG emission inventory
8. Exploring options for increasing the renewable sources of energy (solar etc) at campus
9. Promoting pool transport amongst the stakeholders
10. Promotion and procurement of biodegradable/recyclable products/materials
11. Increase in natural light through technological intervention.
12. Training of stakeholders for using eco-friendly products and reducing plastic waste generation.
13. Promoting donation/reuse of unused items frequently.
14. Sensitizing stakeholders for using local and in-season fruits and vegetables.
15. Organizing health check-up for faculty and staff members. Encouraging faculty and staff members to register for organ and tissue donation.
16. Organizing old book donation drives in campus and sending these to under privileged children of villages in adjoining areas.
17. Organizing sensitising sessions to be vocal for local.
18. Extending support in organizing campaigns for collection of relief material for combating disasters the country experiences from time to time.