Streamlining the “Inward clearing process” of Sri Lanka Customs to reduce the Carbon foot print

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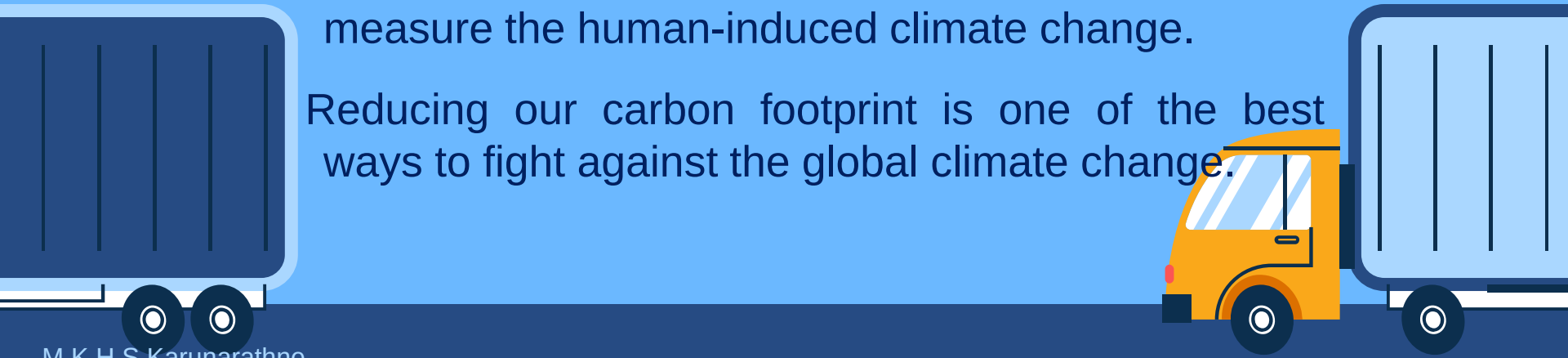
Introduction

Human-induced climate change is one of the defining issues in the present.

Climate change affects the whole world and the scales of the impacts are unprecedented.

Carbon footprint is one of the main ways we can measure the human-induced climate change.

Reducing our carbon footprint is one of the best ways to fight against the global climate change.



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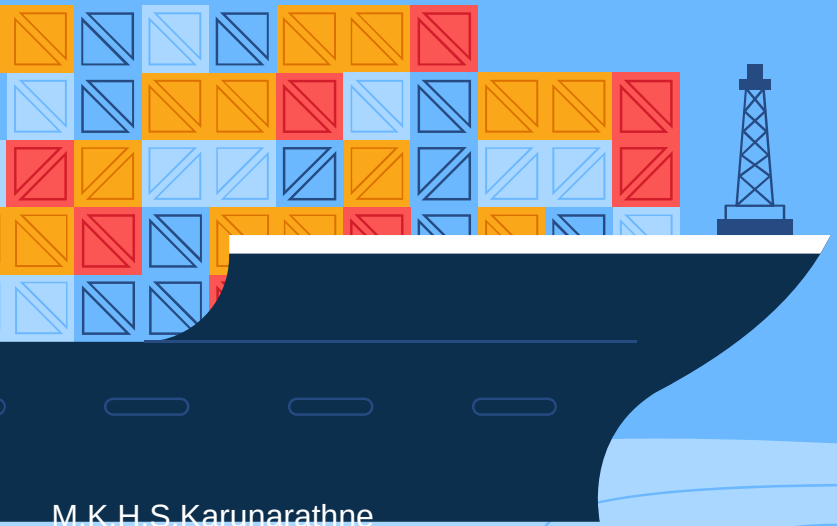
Customs and the Carbon footprint



- Not many researches related to the carbon footprint of Customs procedures.
- Supply chains account for a disproportionately large share of the world’s carbon emission.
- Sri Lanka has an average of 19 billion USD worth of imports annually.
- More than 80% of these imports enter the country through the Port of Colombo.

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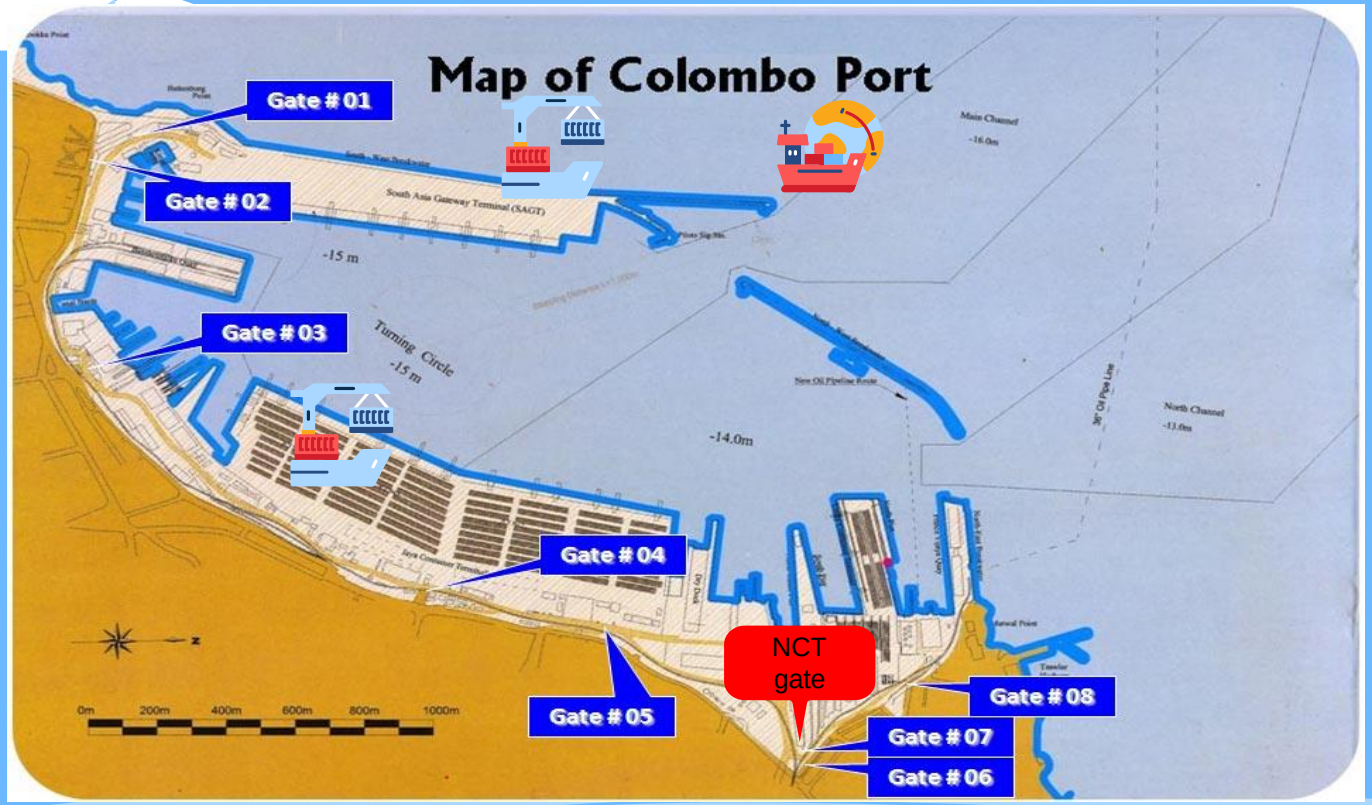
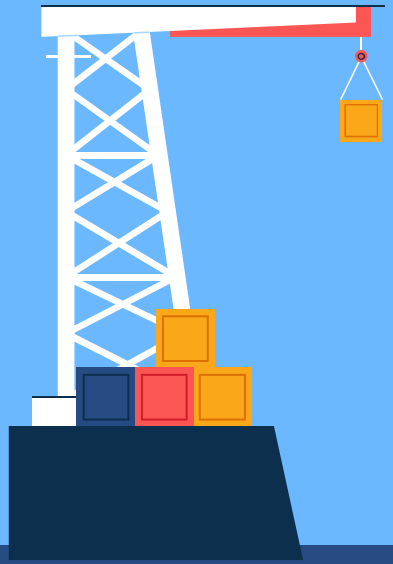

Map of Colombo Port
Gate # 01
Gate # 02
Gate # 03
Gate # 04
Gate # 05
Gate # 06
Gate # 07
Gate # 08
NCT gate
South Asia Gateway Terminal (SAGT)
Main Channel
-16.0m
-15 m
Turning Circle
-15 m
-14.0m
New Oil Pipeline Route
North Channel
-13.0m
0m
200m
400m
600m
800m
1000m

OBJECTIVES



- Identifying the activities where we can reduce the GHG emissions.
- Finding out the ways we could reduce carbon footprint through streamlining the procedures.
- Adopting the best practices and the practical issues faced while streamlining the procedures.

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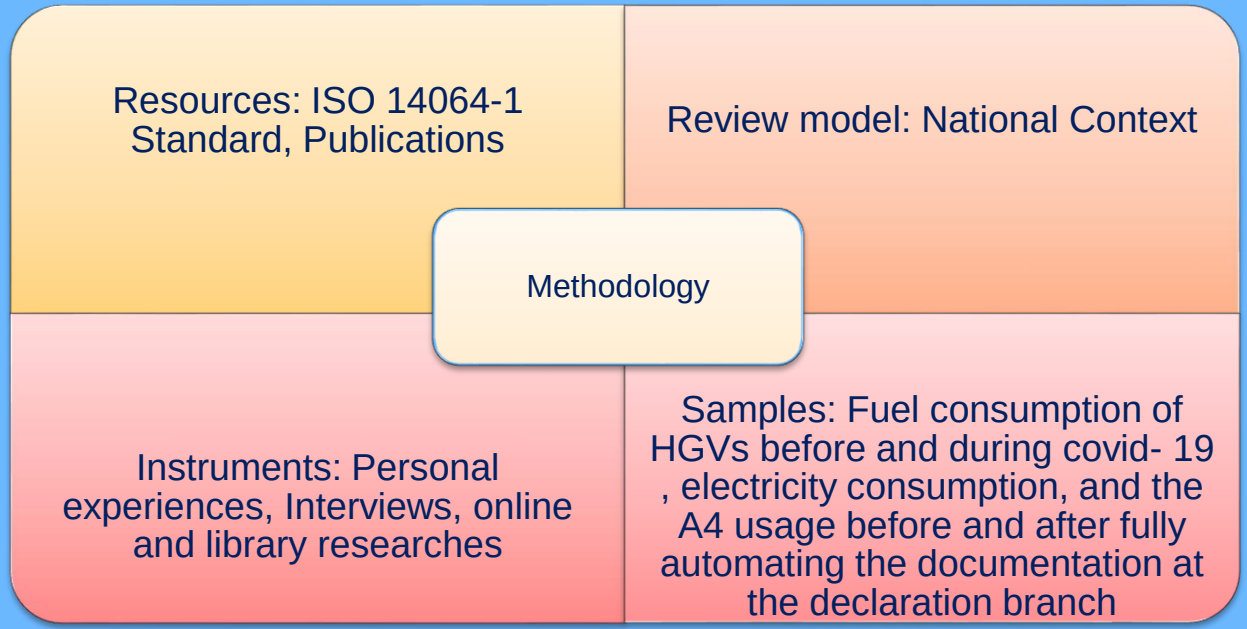
METHODOLOGY



Import clearance process in the declaration branch before automation (Stage I)

1. Lodging the CusDec in to AsyCuda system

2. Submitting the documents

3. Verifying the documents by appraisers and SCC

4. Assessing the risk and selecting the channel

5. Issuing the gate pass

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Import clearance process taken place at the port of Colombo (Stage II)

1. CHA Taking the gate pass to the container terminal and clears the goods out
2. Mounting the containers in to the HGV
3. Customs seal and the gate pass at the NCT gate
4. Exiting the harbour
5. Examination yard or the destination yard

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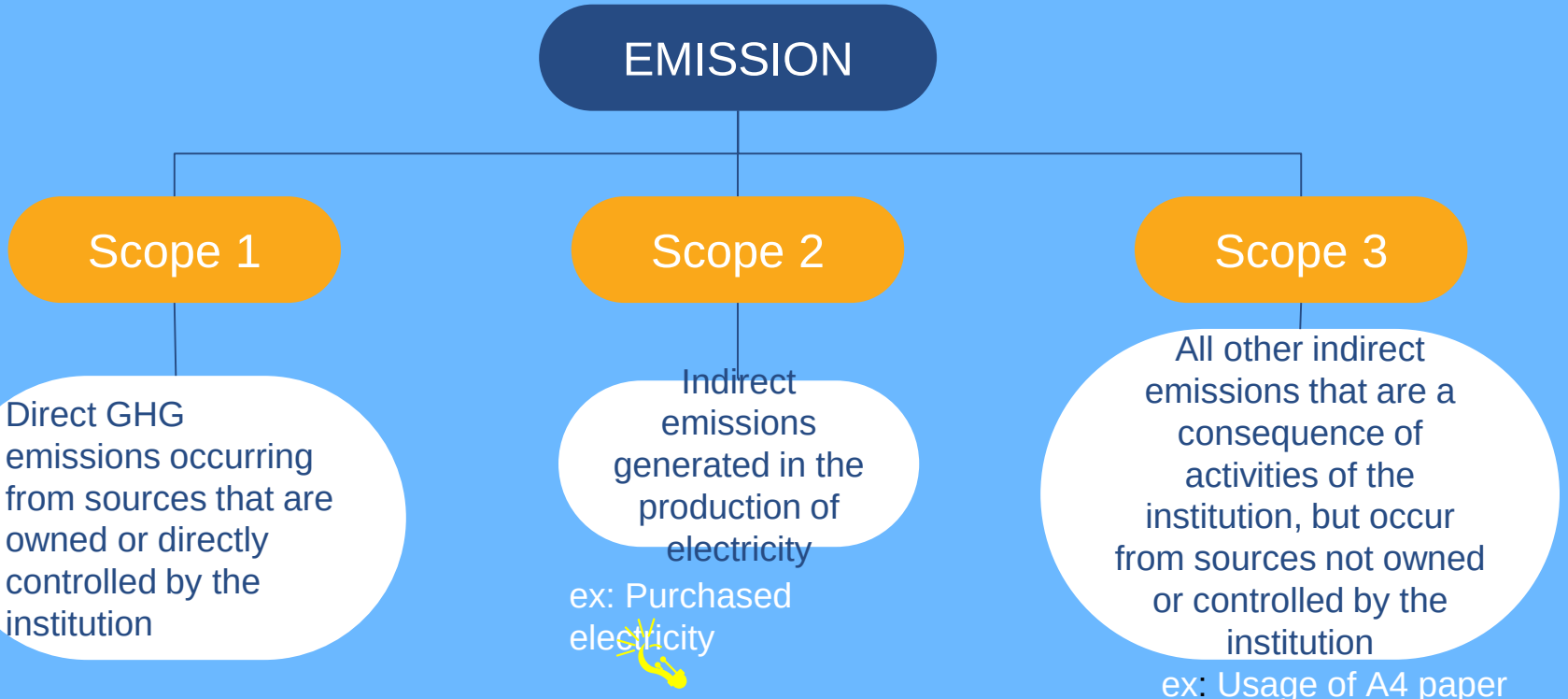
SCOPES OF EMISSION



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BOUNDARIES

There haven’t been any previous Carbon audits or researches related to the GHG emissions in the SLC.

Unavailability base line data for present research.

Two sets of data were collected

Data was collected only for the Inward clearing procedure.

Emissions associated with ground maintenance was not considered.

Staff commuting, bus commuting, and business ground travel and solid waste were not considered.

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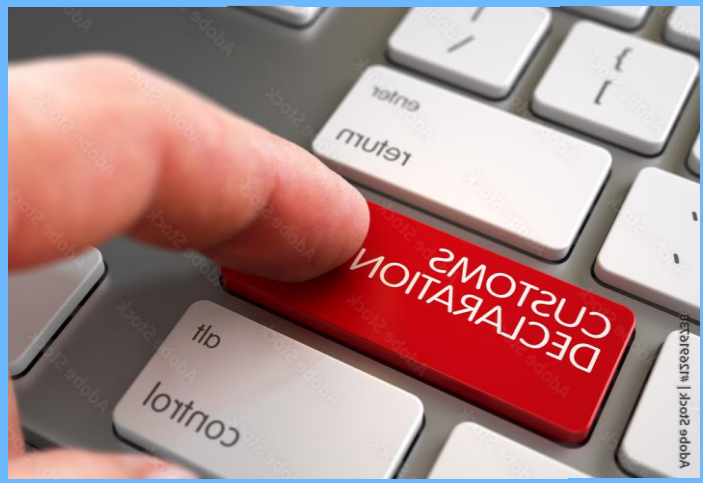
BOUNDARIES

Data on electricity consumption, and fuel consumption by HGVs - from June 2022 to September 2022.

Fuel consumption records during the Covid – 19 pandemic.

Number of A4 papers submitted to the Declaration branch – 6 months before automation and after fully automation.

Generation of waste A4 papers on a daily basis in the office premises – for six months.



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DATA COLLECTION AND CALCULATION

Emission factors to quantify the GHG emissions at Sri Lanka Customs

Emission source	Emission factors
Scope 2	
Electricity (kWh)	0.71kg CO2eq /kWh
Scope 3	
Diesel (Liters)	2.70553 kg CO2eq /L
Production of A4 papers	0.00464 kg CO2eq /unit

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Scope 2

Purchased electricity

	Consumption (kWh)	Emission factor (Kg $eqCO_2$/kWh)	GHG Emission (t $eqCO_2$)
Average consumption per a month	338,247	0.71	240.155
Average consumption per a day	11,275	0.71	8.0051

Scope 3

A4 consumption

	Average usage of A4 sized photocopy papers	Emission factor (kg eq CO_2)	GHG Emission (Kg eq CO_2)
In a week before the automation of Declaration branch	1288.29	0.00464	5.98
In a week after the automation of Declaration branch	903	0.00464	4.19

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Scope 3

A4 consumption

GHG emission reduction in a week, after automation	**12.51 Kg eq CO_2**
Percentage of GHG emission reduction in a week, after automation	**29.90%**

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Scope 3

A4 consumption

Average GHG Emission in a day, due to the general usage/wastage of A4 papers
(in the declaration branch)

Average No. of A4s used or wasted per a day	Emission factor (kg $eqCO_2$/unit)	GHG Emission (t $eqCO_2$)
1215	0.00464	0.00564

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Scope 3

Fuel combustion in HGVs

Average GHG emission from burning of diesel in HGVs during a normal working week before Covid - 19

Day	No. of HGVs	No. of HGVs in a lane	Time spent	diesel per HGV (L)	consumption (L)	emission factor (Kg eqCO_2/L)	GHG emission (t eqCO_2)
Monday	2200	550	7-10h	7	15400	2.70553	41.6652
Tuesday	2500	625	7-10h	7	17500		47.3468
Wednesday	2200	550	7-10h	7	15400		41.6652
Thursday	2000	500	7-10h	7	14000		37.8774
Friday	1800	450	7-10h	7	12600		34.0897
Saturday	500	125	5-6h	4	2000		5.4111
Sunday	100	25	30-45 mins	2.5	250		0.6764

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Scope 3

Fuel combustion in HGVs

Average GHG emission from burning of diesel in HGVs during a normal working week after Covid 19

Day	No. of HGVs	No. of HGVs in a lane	Time spent	diesel per HGV (L)	consumption (L)	emission factor (Kg eqCO_2/L)	GHG emission (t eqCO_2)
Monday	939	234.75	5-6h	4	3844	2.70553	10.4001
Tuesday	1160	290	7-10h	7	7322		19.8099
Wednesday	1203	300.75	7-10h	7	8106		21.9310
Thursday	986	246.5	5-6h	4	3552		9.6100
Friday	868	217	5-6h	4	3184		8.6144
Saturday	216	54	3-4h	2.5	555		1.5016
Sunday	46	11.5	30-45 mins	2.5	125		0.3382

Discussion

Gross GHG emissions in the inward clearing process in an optimal functioning day

Source of emission	GHG emission (t eqCO2)
Scope 2	
Electricity	8.0051
Scope 3	
Diesel in the HGVs	29.8188
A4 papers (import documents)	0.07621
A4 papers (general usage and waste papers)	0.00564
Total gross GHG emission per a day	37.90575

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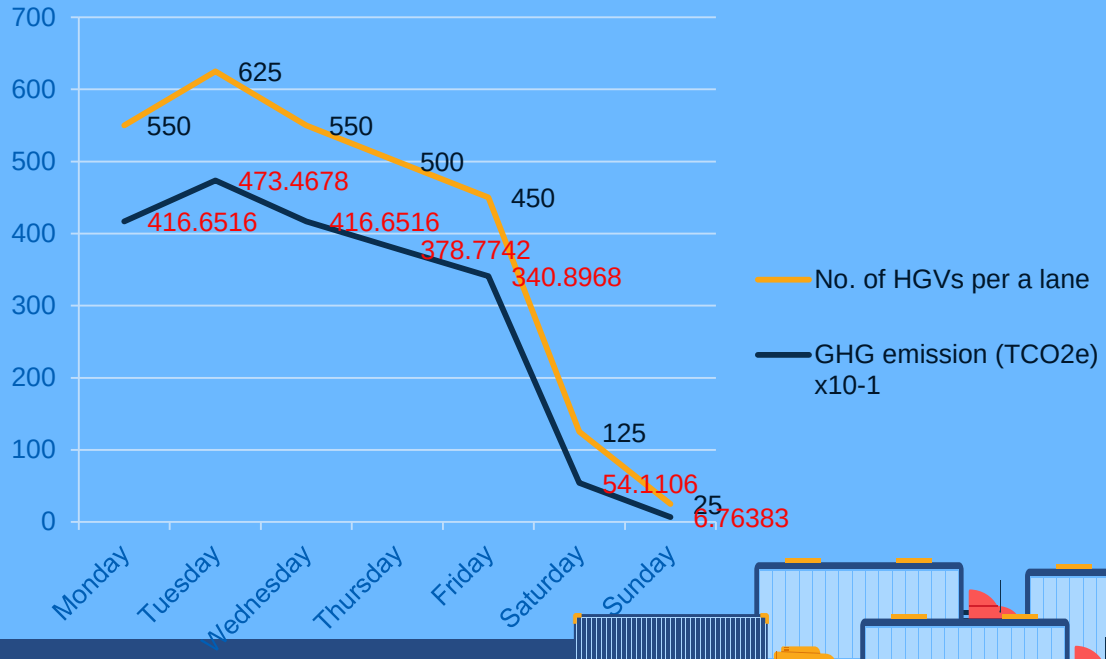
Discussion

Variation of amount of GHG against the number of HGVs in a lane during the days of a typical week (before Covid – 19).



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Discussion

Extrapolation of total GHG emission from 2000 HGVs, when the number of lanes in the NCT gate is increased.

No. of lanes	HGVs per a lane	Time spent	diesel per HGV (L)	consumption (L)	emission factor (Kg $eqCO_2$/L)	GHG emission (t $eqCO_2$)
4 lanes	500	7-10h	7	14000	2.70553	37.87742
8 lane	250	5-6h	4	8000	2.70553	21.64424

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Discussion

- Burning of diesel from the HGVs in queues has the highest contribution to the GHG emission
- GHG emissions from the usage of A4 papers is comparatively minute
- If four more lanes were added to the NCT gate, then the number of HGVs in one lane could be reduced by 50%. And the total GHG emission could be reduced by 42.85% compared to the initial amount of emission when there are only 4 lanes to the exit gate.

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Best practices to adopt

- Being mindful about the wastage of electricity
  - Switching off the bulbs, computers and printers before leaving the office
- Sustainable energy sources for generating electricity
- Increasing the number of lanes in the harbour exit gate
- Using emails and the intranet for communications with in the department
- Sharing documents through LANs
- Reforestation projects

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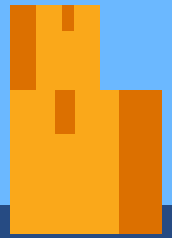
References

- ISO 14064-1:2018 (E) standard
- Balan Sundarakani, Robert de Souza, Mark Goh, Stephan M. Wagner, Sushmera Manikandan, Modeling carbon footprints across the supply chain,International Journal of Production Economics,Volume 128, Issue 1,2010,
- Ana Cláudia Dias, Luís Arroja, Comparison of methodologies for estimating the carbon footprint – case study of office paper, Journal of Cleaner Production,Volume 24,2012,
- Aponte H (2017) Proposal of mitigation strategies based on the calculation of the carbon footprint of the north and south campuses of the University of Applied and Environmental Sciences in the years 2014–2015. University of Applied and Environmental Sciences.
- Natalia Cano, Linda Berrio, Elizabeth Carvajal, Santiago Arango, Assessing the carbon footprint of a Colombian University Campus using the UNE-ISO 14064–1 and WRI/WBCSD GHG Protocol Corporate Standard, Environmental Science and Pollution Research (2002)
- Qingjian Zhao, Sheng Ding, Zuomin Wen, Anne Toppinen, Energy Flows and Carbon Footprint in the Forestry-Pulp and Paper Industry, Forests, (2019), 10(9)
- https://www.customs.gov.lk/
- https://www.energy.gov.lk/ODSM/Carbon-Footprint.html



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¡Thank you!

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