test vvv

August 2022

Transport Ministry

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Executive Summary

Report Name: test vvv

Sector(s): Transport

Year(s): 1993,1994,1995,1996,1997,1998,1999,2000,2002,2005,2007,2010,2012,2013,2014,2015,2016,2016,2017,2018,2019,2020,2021,2022,

Table 1: Summary of the assessments of climate actions in Transport sector

Aggregated Actions	Specific Climate Actions	Year	Type	Emission Reduction (tCO_2e)	MAC (tCO_2e/USD)
25% trucks and buses using CNG by 2030	5 diesel powered trucks convered to CNG in 2023	2023	GHG Ex-ante	184	N/A
30% trucks and buses using CNG by 2040	Shift fossil fuel freight vehicle-(YY0001) to CNG	2023	GHG Ex-ante	184	N/A
Generic enabling activities	Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030	2023	GHG Ex-post	565180	N/A
Generic enabling activities	Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030	2023	GHG Ex-post	701146	N/A
Generic enabling activities	Test Project Pasan	2020	GHG Ex-ante	-10751	N/A
Generic enabling activities	Test Project Pasan	2019	GHG Ex-post	292640	N/A
Introduce taxes and other instruments to promote public transport	Introduce cordon pricing for Colombo Metropolitan	2023	GHG Ex-post	23	N/A
NDC	Test SCA for testing	2018	GHG Ex-post	-291264	N/A
NDC	Shift passengers from motor cars to buses in Sri Lanka	2034	MAC Ex-post	1292	472
NDC	Introduction of new electric buses in Colomobo Distric	2020	GHG Ex-post	338681	N/A
Switch back to rail from road transport	shift in transportation of cargo from road transportation to water or rail transportation	2014	GHG Ex-post	-251	N/A

Figure 1 illustrates the status of achieving emissions reduction targets of Transport sector of Sri Lanka. The expected emission reduction of the Transport sector by 2030 year is 140 tCO_2e conditionally, and 153 tCO_2e unconditionally. Mitigation actions implemented by year 2030 were able to reduce Transport sector emissions from 1596023 tCO2e.

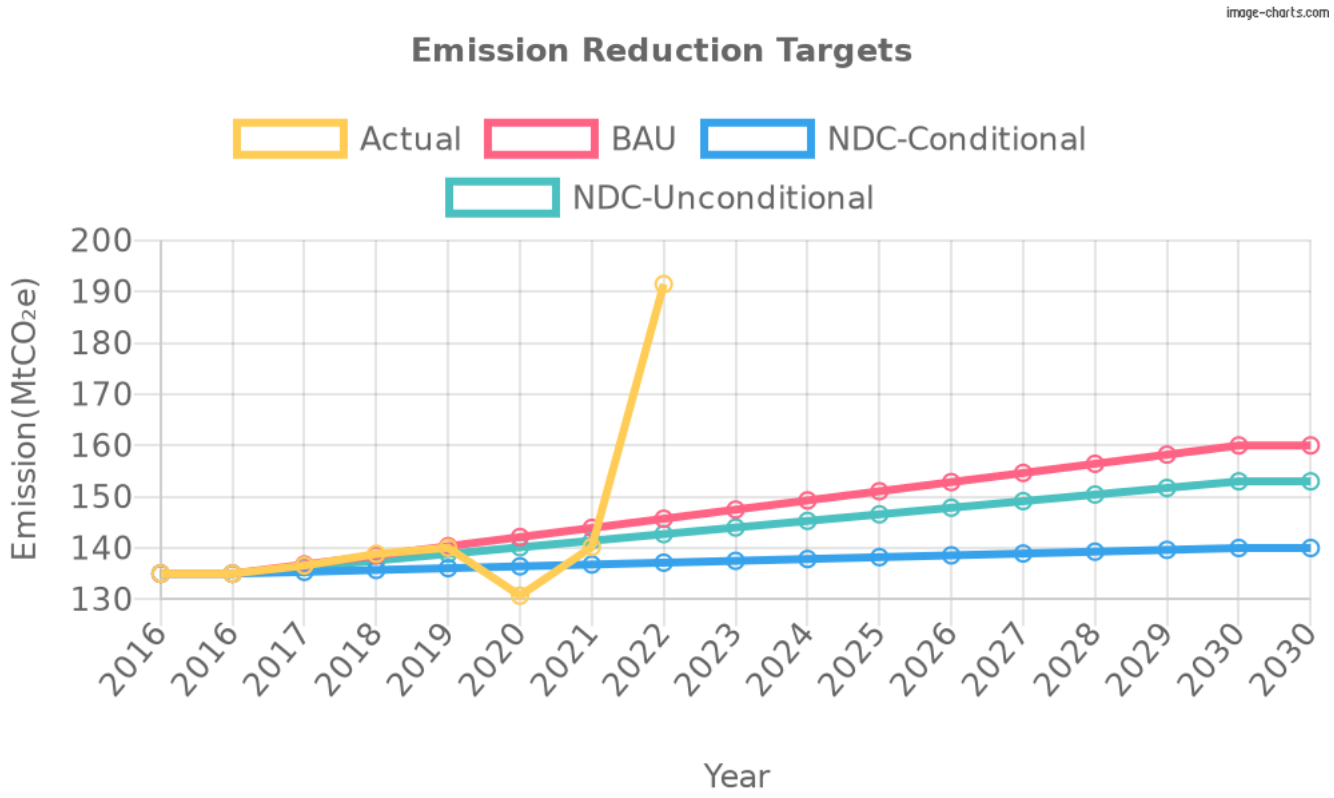

Figure 1 Emissions reduction of Transport sector of Sri Lanka

NDC

Test SCA for testing

Test SCA for testing Ministry of Education by Government to null. Action includes This is for test purposes.. The geographical boundary of the project includes Central, Kandy, Gampola. Implemented It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Test SCA for testing

Boundary elements	Description
Geographic Boundary	Central, Kandy, Gampola
Temporal Boundary	2022 - 2018
Transport subsector	Freight
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-post
Base Year	2020
Assessment year(s)	2018
Methodology	CMD_AMS_III_AK_A

Baseline Scenario

baseline

Table Data required to assess baseline emissions of Test SCA for testing

Key indicators	Unit
Consumption of (blended) biofuel - powerplant	t
CO2 emission factor - Diesel	tCO2/GJ
Net calorific value of biofuel produced in year - powerplant	GJ/t
Production of biofuel - powerplant	t
Quantity of biofuel consumed - powerplant	t
Quantity of biofuel produced with other alcohols - powerplant	t
Fraction of blending - powerplant	N/A
Blending fraction of fuel - powerplant	N/A

Baseline emissions attributed to the Test SCA for testing are given in Table.

Table Baseline emissions of Test SCA for testing

Year	Emissions (MtCO2e)
2018	1294180

Project Scenario

Project test scenario

Table: Data required to assess project emissions of Test SCA for testing

Key indicators	Unit
CO2 emission factor - Sugarcrane - Van	t CO2/GJ
Return trip distance - Sugarcrane - Van	km
Total mass of freight transported - Sugarcrane - Van	t
Project emissions from combustion - Sugarcrane - Diesel	tCO2
Project emissions from the consumptions - Sugarcrane - Diesel	tCO2e
Quantity of methanol consumed - Sugarcrane - Methanol	t
Carbon emission factor of methanol - Sugarcrane - Methanol	tC/t MeOH
Project emissions from electricity consumption - Sugarcrane - Electricity	tCO2
Area in which feedstock is cultivated - Sugarcrane	ha
Deafault emmission factor - Sugarcrane	tCO2e/ha
Project emissions from anaerobic treatment of waste/waste water - Sugarcrane	tCO2
Length of the first crediting period of the project - Sugarcrane	Years
Rate of nitrogen applied - Sugarcrane	t N/ha
Area of land subjected to soil fertilization and management - Sugarcrane	ha
Aggregate emission factor for N2O and CO2 emissions - Sugarcrane	t CO2e/(t N)
Allocation factor for the land cultivation of feedstock - Sugarcrane	N/A
Amount of biofuel produced with feedstock - Sugarcrane	t
Market price per ton of main product - Sugarcrane	$/tonne
Mass of main product - Sugarcrane	t
Market price per ton of dry co-product - Sugarcrane	$/tonne
Mass of co-product - Sugarcrane	t
Reference SOC stock applicable - Sugarcrane - stratum	t C/ha

Key indicators	Unit
Reletive stock change factor for land-use in the basline in stratum - Sugarcrane - stratum	N/A
Area of land stratum - Sugarcrane - stratum	ha
Relative stock change factor for land management in the baseline stratum - Sugarcrane - stratum	N/A
Relative stock change factor for input in the baseline stratum - Sugarcrane - stratum	N/A
Reletive stock change factor for land-use in the project in stratum - Sugarcrane - stratum	N/A
Relative stock change factor for land management in the project stratum - Sugarcrane - stratum	N/A
Relative stock change factor for input in the project stratum - Sugarcrane - stratum	N/A
Area of stratum of land subjected to clearance or fire - Sugarcrane - stratum	N/A
Fuel biomass consumption per hectare in sratum - Sugarcrane - stratum	N/A
Root-shoot ratio for sratum - Sugarcrane - stratum	N/A

Direct project emissions attributed to the Test SCA for testing are given in Table 6.

Table: Direct project emissions attributed to Test SCA for testing

Year	Emissions (MtCO2e)
2018	1579443

Lekage Scenario

Table gives the key indicators used to assess the emissions due to leakages. Please see Annex 1 for activity data and the sources.

Table Data required to assess leakage emissions of Test SCA for testing

Key indicators	Unit
CO2 emission factor for most carbon intensive fossil fuel - Common	N/A
Net calorific value of biofuel produced in year - Common	N/A
Emission factor - Diesel	t CO2e/TJ
Pre-combustion emissons factor - Methanol	N/A
Quantity of methanol consumed - Methanol	t
Quantity of biomass residues - Agricultural crop residues	t
NCV of the biomass residues - Agricultural crop residues	GJ/t

Indirect project emissions attributed to the Test SCA for testing are given in Table 8

Table Leakage emissions of Test SCA for testing

Year	Emissions (MtCO2e)
2018	6000

Emissions estimated for 2018 are summarized in Table 9. According to the table, Test SCA for testing reduce -291264 tCO2e in the 2018.

Table Emissions reduction due to Test SCA for testing

Scenario	2018 Emissions (MtCO2)
Baseline emissions	1294180
Project emissions	1579443
Lekage reductions	6000
Emission reductions	-291264

Introduction of new electric buses in Colomobo Distric

Introduction of new electric buses in Colomobo Distric ClimateSI by Government to null. Action includes Introduction of new electric buses. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will null. In addition, mitigation action has various sustainable

development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Introduction of new electric buses in Colomobo Distric

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2022 - 2020
Transport subsector	Passenger and Freight
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-post
Base Year	2016
Assessment year(s)	2020
Methodology	AMS-iii-C - Emission reductions by electric and hybrid vehicles

Baseline Scenario

Diesel Bus

Table Data required to assess baseline emissions of Introduction of new electric buses in Colomobo Distric

Key indicators	Unit
Total distance - Common	km
Specific fuel consumption - Diesel-Lorry	g/km
Number of operational vehicles - Diesel-Lorry	N/A
Technology improvement factor - Common	N/A
Total distance - Common	km
Technology improvement factor - Common	N/A
CO2 emission factor - Diesel	gCO2/J
Net calorific value - Diesel	J/g

Baseline emissions attributed to the Introduction of new electric buses in Colomobo Distric are given in Table.

Table Baseline emissions of Introduction of new electric buses in Colomobo Distric

Year	Emissions (MtCO2e)
2020	339033

Project Scenario

Electric Buses

Table: Data required to assess project emissions of Introduction of new electric buses in Colomobo Distric

Key indicators	Unit
Number of operational vehicles - Electricity-Lorry	N/A
Specific fuel consumption - Electricity-Lorry	g/km
Average technical transmission and distribution losses - Electricity-Lorry	%
Total distance - Common	km

Key indicators	Unit
Total distance - Common	km
CO2 emission factor - Electricity	kgCO2/kwh

Direct project emissions attributed to the Introduction of new electric buses in Colomobo Distric are given in Table 6.

Table: Direct project emissions attributed to Introduction of new electric buses in Colomobo Distric

Year	Emissions (MtCO2e)
2020	352

Emissions estimated for 2020 are summarized in Table 9. According to the table, Introduction of new electric buses in Colomobo Distric reduce 338681 tCO2e in the 2020.

Table Emissions reduction due to Introduction of new electric buses in Colomobo Distric

Scenario	2020 Emissions (MtCO2)
Baseline emissions	339033
Project emissions	352
Lekage reductions	N/A
Emission reductions	338681

Test SCA for purpose

Test SCA for purpose Ministry of Education by Government to null. Action includes This is for SCA testing. The geographical boundary of the project includes Central, Kandy, Gampola. Implemented It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

Shift passengers from motor cars to buses in Sri Lanka

Shift passengers from motor cars to buses in Sri Lanka Acceed Lanka by Private to Objective 1. Action includes Shift passengers from motor cars to buses in Sri Lanka. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will N/A. In addition, mitigation action has various sustainable development benefits such as N/A and N/A

Cost of climate action

The marginal abatement cost (MAC), in general, measures the cost of reducing one more unit of pollution. Table 10 indicates the MAC of Shift passengers from motor cars to buses in Sri Lanka.

Table 10 MAC of the Shift passengers from motor cars to buses in Sri Lanka

Year	MAC (USD/tCO2e)
2020	472

Shift passenger from motor cars to 170 buses in Colombo

Shift passenger from motor cars to 170 buses in Colombo Ministry of Public Transport by Private to null. Action includes Description. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will Reduce traffic congestion, reduce air pollution, increase the average speed of transport modes, and reduce private automobiles . In addition, mitigation action has various sustainable development benefits such as Goal 11 sustainable cities, and communities and Goal 13 climate actions, Goal 5 gender equity

Establishment of 20 vehicle inspection centers

Establishment of 20 vehicle inspection centers Ministry of Public Works and Transport by Government to Improve vehicle efficiency by inspections . Action includes Introduce new inspection centers to improve efficiency of vehicles . The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will Reduce traffic congestion, reduce air pollution, increase the average speed of transport modes, . In addition, mitigation action has various sustainable development benefits such as Goal 11 sustainable cities, and communities and Goal 13 climate actions, Goal 5 gender equity

25% trucks and buses using CNG by 2030

kasulTest

kasulTest kasulTest by Government to kasulTest. Action includes kasulTest. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will kasulTest. In addition, mitigation action has various sustainable development benefits such as kasulTest and kasulTest

5 diesel powered trucks convered to CNG in 2023

5 diesel powered trucks convered to CNG in 2023 Ministry of Industry by Government to 5 diesel powered trucks convered to CNG in 2023. Action includes 5 diesel powered trucks convered to CNG in 2023. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will

null. In addition, mitigation action has various sustainable development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of 5 diesel powered trucks convered to CNG in 2023

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2023 - 2030
Transport subsector	Not specified
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-ante
Base Year	2023
Assessment year(s)	2023
Methodology	ICAT methodology for cordon pricing

Baseline Scenario

Diesel powered trucks

Table Data required to assess baseline emissions of 5 diesel powered trucks convered to CNG in 2023

Key indicators	Unit
Total annual distance - Diesel-Truck - YY0001	km
Total annual tonnes of goods transported - Diesel-Truck - YY0001	tons
The annual average distance of transportation per tonnes of freight - Diesel-Truck - YY0001	km
Fuel efficiency - Diesel-Truck - YY0001	fuel/km
CO2 emission factor - Diesel	t-CO2/TJ
Net calorific value - Diesel	TJ/t

Baseline emissions attributed to the 5 diesel powered trucks convered to CNG in 2023 are given in Table.

Table Baseline emissions of 5 diesel powered trucks convered to CNG in 2023

Year	Emissions (MtCO2e)
2023	770

Project Scenario

CNG powered trucks

Table: Data required to assess project emissions of 5 diesel powered trucks convered to CNG in 2023

Key indicators	Unit
Fuel efficiency - CNG-Truck - YY0001	fuel/km
Total annual tonnes of goods transported - CNG-Truck - YY0001	tons
Total annual distance - CNG-Truck - YY0001	km
The annual average distance of transportation per tonnes of freight - CNG-Truck - YY0001	km
Net calorific value - CNG	TJ/t
CO2 emission factor - CNG	t-CO2/TJ

Key indicators	Unit
Consumption of fuel - CNG-Truck - YY0001	t/y

Direct project emissions attributed to the 5 diesel powered trucks convered to CNG in 2023 are given in Table 6.

Table: Direct project emissions attributed to 5 diesel powered trucks convered to CNG in 2023

Year	Emissions (MtCO2e)
2023	586

Emissions estimated for 2023 are summarized in Table 9. According to the table, 5 diesel powered trucks convered to CNG in 2023 reduce 184 tCO2e in the 2023.

Table Emissions reduction due to 5 diesel powered trucks convered to CNG in 2023

Scenario	2023 Emissions (MtCO2)
Baseline emissions	770
Project emissions	586
Lekage reductions	N/A
Emission reductions	184

Projection of GHG Emissions

GHG emissions attributed to the 5 diesel powered trucks convered to CNG in 2023 are projected to undefined considering the 2023 based on the Gross Domestic Production (GDP). Figure 3 illustrates the BAU and project emissions of the 5 diesel powered trucks convered to CNG in 2023.

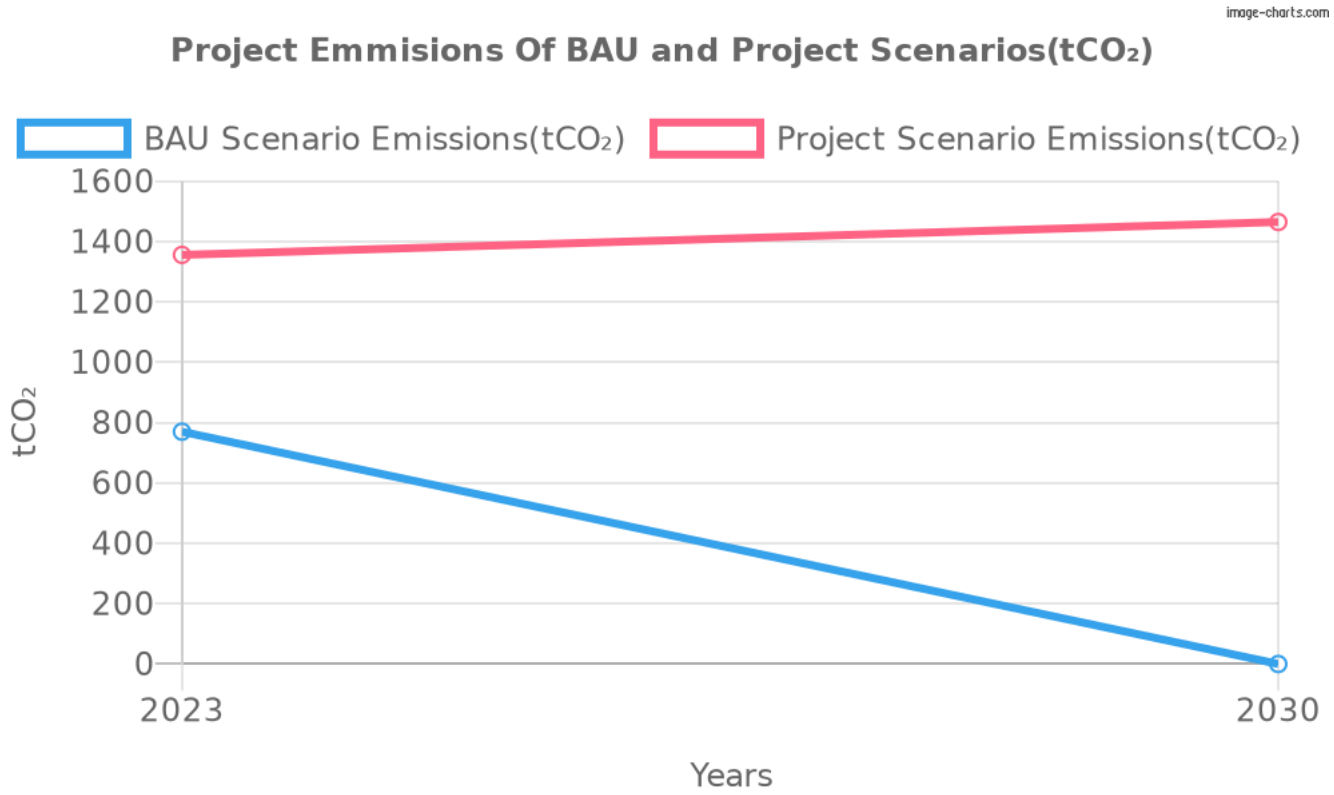

Figure 3: BAU and project emissions of 5 diesel powered trucks convered to CNG in 2023

Test CA report 2

Test CA report 2 Ministry of Finance by Government to Objective is this. Action includes test data. The geographical boundary of the project includes Test NL 1, Test NL 2, Test NL 3. Adopted It is expected that the project will Test outcoome. In addition, mitigation action has various sustainable development benefits such as SDB and ISDB list

am-90

am-90 test by Government to test. Action includes test. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

ppp-test

ppp-test test by Government to ssssss. Action includes sssssssssss. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

pradeep-test

pradeep-test test by Government to null. Action includes null. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

testinggggggg

testinggggggg test by Government to fhfjfj. Action includes vhghjghj. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

Sri Lanka

Sri Lanka test by Government to dddwd. Action includes null. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

Introduce taxes and other instruments to promote public transport

Introduce cordon pricing for Colombo Metropolitan

Introduce cordon pricing for Colombo Metropolitan Ministry of Transport by Government to Emission reduction. Action includes Introduce cordon pricing for Colombo Metropolitan. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will Emission reduction. In addition, mitigation action has various sustainable development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Introduce cordon pricing for Colombo Metropolitan

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2022 - 2023
Transport subsector	Not specified
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-post
Base Year	2022
Assessment year(s)	2023
Methodology	ICAT methodology for cordon pricing

Baseline Scenario

Without

Table Data required to assess baseline emissions of Introduce cordon pricing for Colombo Metropolitan

Key indicators	Unit
Density of Diesel - Diesel	Kg/m3
Specific fuel consumption - Diesel-Other	L per VKT
Vehicle kilometres travelled - Diesel-Other	VKT
Vehicle travel reduction percentage - Diesel-Other	%
Net calorific value of Diesel - Diesel	TJ/t
CO2 emission factor of Diesel - Diesel	t-CO2/TJ

Baseline emissions attributed to the Introduce cordon pricing for Colombo Metropolitan are given in Table.

Table Baseline emissions of Introduce cordon pricing for Colombo Metropolitan

Year	Emissions (MtCO2e)

Year	Emissions (MtCO2e)
2023	29

Project Scenario

With

Table: Data required to assess project emissions of Introduce cordon pricing for Colombo Metropolitan

Key indicators	Unit

Direct project emissions attributed to the Introduce cordon pricing for Colombo Metropolitan are given in Table 6.

Table: Direct project emissions attributed to Introduce cordon pricing for Colombo Metropolitan

Year	Emissions (MtCO2e)
2023	6

Emissions estimated for 2023 are summarized in Table 9. According to the table, Introduce cordon pricing for Colombo Metropolitan reduce 23 tCO2e in the 2023.

Table Emissions reduction due to Introduce cordon pricing for Colombo Metropolitan

Scenario	2023 Emissions (MtCO2)
Baseline emissions	29
Project emissions	6
Lekage reductions	N/A
Emission reductions	23

Introduce distance based charges to Katunayaka to Colombo road

Introduce distance based charges to Katunayaka to Colombo road Ministry of Transport by Government to Emission reduction. Action includes Introduce distance based charges to Katunayaka to Colombo road. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will Emission reduction. In addition, mitigation action has various sustainable development benefits such as null and null

Generic enabling activities

Implement a national fuel levy (5%) on gasoline and diesel cars by 2025

Implement a national fuel levy (5%) on gasoline and diesel cars by 2025 Ministry of Transport by Government to Implement a national fuel levy (5%) on gasoline and diesel cars by 2025. Action includes Implement a national fuel levy (5%) on gasoline and diesel cars by 2025. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will Emission reduction. In addition, mitigation action has various sustainable development benefits such as null and null

Implement a national fuel levy (5%) on gasoline cars by 2025

Implement a national fuel levy (5%) on gasoline cars by 2025 Ministry of Transport by Government to Emission reduction. Action includes Implement a national fuel levy (5%) on gasoline cars by 2025. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will Emission reduction. In addition, mitigation action has various sustainable development benefits such as null and null

Passenger modal shift from private vehicle to train

Passenger modal shift from private vehicle to train Ministry of Transport by Government to Emission reduction. Action includes Emission reduction. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

unfccc-90

unfccc-90 test by Government to ssssss. Action includes sssssss. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030 Ministry of Transport by Government to Emission reduction. Action includes Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will Emission reduction. In addition, mitigation action has various sustainable development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Boundary elements	Description

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2022 - 2023
Transport subsector	Not specified
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-post
Base Year	2022
Assessment year(s)	2023
Methodology	ICAT methodology for fuel subsidy removal and increased fuel tax or levy _Approach B (top-down energy-use data_Gasoline & Diesel)

Baseline Scenario

Without

Table Data required to assess baseline emissions of Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Key indicators	Unit
Net calorific value - Diesel	TJ/t
CO2 emission factor - Diesel	t-CO2/TJ
Net calorific value - Petrol	TJ/t
CO2 emission factor - Petrol	t-CO2/TJ
Total Diesel used for ground transport (Gg) - Diesel	Gg
Total Petrol used for ground transport (Gg) - Petrol	Gg

Baseline emissions attributed to the Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030 are given in Table.

Table Baseline emissions of Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Year	Emissions (MtCO2e)
2023	49620521

Project Scenario

With

Table: Data required to assess project emissions of Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Key indicators	Unit
Relative fuel price increase - Petrol	%
Relative fuel price increase - Diesel	%
Diesel own-price elasticity - Diesel	N/A
Petrol own-price elasticity - Petrol	N/A

Direct project emissions attributed to the Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030 are given in Table 6.

Table: Direct project emissions attributed to Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Year	Emissions (MtCO2e)
2023	48919376

Emissions estimated for 2023 are summarized in Table 9. According to the table, Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030 reduce 701146 tCO2e in the 2023.

Table Emissions reduction due to Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Scenario	2023 Emissions (MtCO2)
Baseline emissions	49620521
Project emissions	48919376
Lekage reductions	N/A
Emission reductions	701146

Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030 Ministry of Environment by Government to Emission reduction. Action includes Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030. The geographical boundary of the project includes null, null, null. Implemented It is expected that the project will Emission reduction. In addition, mitigation action has various sustainable development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2022 - 2023
Transport subsector	Not specified
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-post
Base Year	2022
Assessment year(s)	2023
Methodology	ICAT methodology for fuel subsidy removal and increased fuel tax or levy Approach A (top-down energy-use data_Fuel mix)

Baseline Scenario

Without

Table Data required to assess baseline emissions of Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Key indicators	Unit
Share of fuel - Petrol	%
Total fuel used for ground transport(Fuel mix) - Common	TJ
CO2 emission factor - Petrol	t-CO2/TJ
Share of fuel type - Diesel	%
CO2 emission factor - Diesel	t-CO2/TJ

Baseline emissions attributed to the Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030 are given in Table.

Table Baseline emissions of Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Year	Emissions (MtCO2e)
2023	56069400

Project Scenario

With

Table: Data required to assess project emissions of Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Key indicators	Unit
Fuel mix own - price elasticity - Fuel Mix	N/A
Relative fuel mix price increase - Fuel Mix	%

Direct project emissions attributed to the Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030 are given in Table 6.

Table: Direct project emissions attributed to Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Year	Emissions (MtCO2e)
2023	55504220

Emissions estimated for 2023 are summarized in Table 9. According to the table, Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030 reduce 565180 tCO2e in the 2023.

Table Emissions reduction due to Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Scenario	2023 Emissions (MtCO2)
Baseline emissions	56069400
Project emissions	55504220
Lekage reductions	N/A
Emission reductions	565180

Promote public passenger transport

Shift passengers from motor cars to 50 buses in Kandy

Shift passengers from motor cars to 50 buses in Kandy Ministry Of Finance by Private to Improve the modal share of the public buses, reduce the traffic congestion. Action includes Shift passengers from motor cars to 50 buses in Kandy. The geographical boundary of the project includes Central, Kandy, Kandy. Planned It is expected that the project will Reduce traffic congestion, reduce air pollution, increase the average speed of transport modes, and reduce private automobiles. In addition, mitigation action has various sustainable development benefits such as Goal 11 sustainable cities, and communities and Goal 13 climate actions, Goal 5 gender equity

Shift passengers from private vehicles to public buses

Shift passengers from private vehicles to public buses Ministry of Transport by Government to Objective. Action includes In the colombo city. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

Shift passenger from private vehicles to public vehicles

Shift passenger from private vehicles to public vehicles Ministry of transport by Government to emission reduction. Action includes Emission reduction. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will . In addition, mitigation action has various sustainable development benefits such as and

30% trucks and buses using CNG by 2040

KHtest

KHtest asdas by Government to axdasd. Action includes test. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

Test CA

Test CA Ministry of Finance by Government to null. Action includes test. The geographical boundary of the project includes null, null, null. Adopted It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

Passenger Shift from multiple modes (Motor car, Motor bike) to multiple mode (Bus, Van)

Passenger Shift from multiple modes (Motor car, Motor bike) to multiple mode (Bus, Van) Ministry of Transport by Government to improve public transportation. Action includes improve public transportation. The geographical boundary of the project includes Western, Colombo, Battaramulla. Planned It is expected that the project will emission reduction. In addition, mitigation action has various sustainable development benefits such as Climate change and Climate change - Goal 13

Shift fossil fuel freight vehicle-(YY0001) to CNG

Shift fossil fuel freight vehicle-(YY0001) to CNG Ministry of Industry by Government to reduce the emissions. Action includes Reduce the emissions. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will null. In addition, mitigation action has various sustainable development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Shift fossil fuel freight vehicle-(YY0001) to CNG

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2022 - 2023
Transport subsector	Frieght
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-ante
Base Year	2022
Assessment year(s)	2023
Methodology	AMS-III.S - Introduction of low-emission vehicles/technologies to commercial vehicle fleets (Freight)

Baseline Scenario

Fossil fuel used truck

Table Data required to assess baseline emissions of Shift fossil fuel freight vehicle-(YY0001) to CNG

Key indicators	Unit
Fuel efficiency - Diesel-Truck - AB Route	fuel/km
CO2 emission factor - Diesel	t-CO2/TJ
Net calorific value - Diesel	TJ/t
The annual average distance of transportation per tonnes of freight - Diesel-Truck - AB Route	km
Total annual tonnes of goods transported - Diesel-Truck - AB Route	tons
Total annual distance - Diesel-Truck - AB Route	km

Baseline emissions attributed to the Shift fossil fuel freight vehicle-(YY0001) to CNG are given in Table.

Table Baseline emissions of Shift fossil fuel freight vehicle-(YY0001) to CNG

Year	Emissions (MtCO2e)
2023	770

Project Scenario

CNG used trucks

Table: Data required to assess project emissions of Shift fossil fuel freight vehicle-(YY0001) to CNG

Key indicators	Unit
Fuel efficiency - CNG-Truck - AB Route	fuel/km
Total annual tonnes of goods transported - CNG-Truck - AB Route	tons
Net calorific value - CNG	TJ/t
CO2 emission factor - CNG	t-CO2/TJ
Total annual distance - CNG-Truck - AB Route	km
The annual average distance of transportation per tonnes of freight - CNG-Truck - AB Route	km
Consumption of fuel - CNG-Truck - AB Route	t/y

Direct project emissions attributed to the Shift fossil fuel freight vehicle-(YY0001) to CNG are given in Table 6.

Table: Direct project emissions attributed to Shift fossil fuel freight vehicle-(YY0001) to CNG

Year	Emissions (MtCO2e)
2023	586

Emissions estimated for 2023 are summarized in Table 9. According to the table, Shift fossil fuel freight vehicle-(YY0001) to CNG reduce 184 tCO2e in the 2023.

Table Emissions reduction due to Shift fossil fuel freight vehicle-(YY0001) to CNG

Scenario	2023 Emissions (MtCO2)
Baseline emissions	770
Project emissions	586
Lekage reductions	N/A
Emission reductions	184

Projection of GHG Emissions

GHG emissions attributed to the Shift fossil fuel freight vehicle-(YY0001) to CNG are projected to undefined considering the 2023 based on the Population Growth (POP). Figure 3 illustrates the BAU and project emissions of the Shift fossil fuel freight vehicle-(YY0001) to CNG.

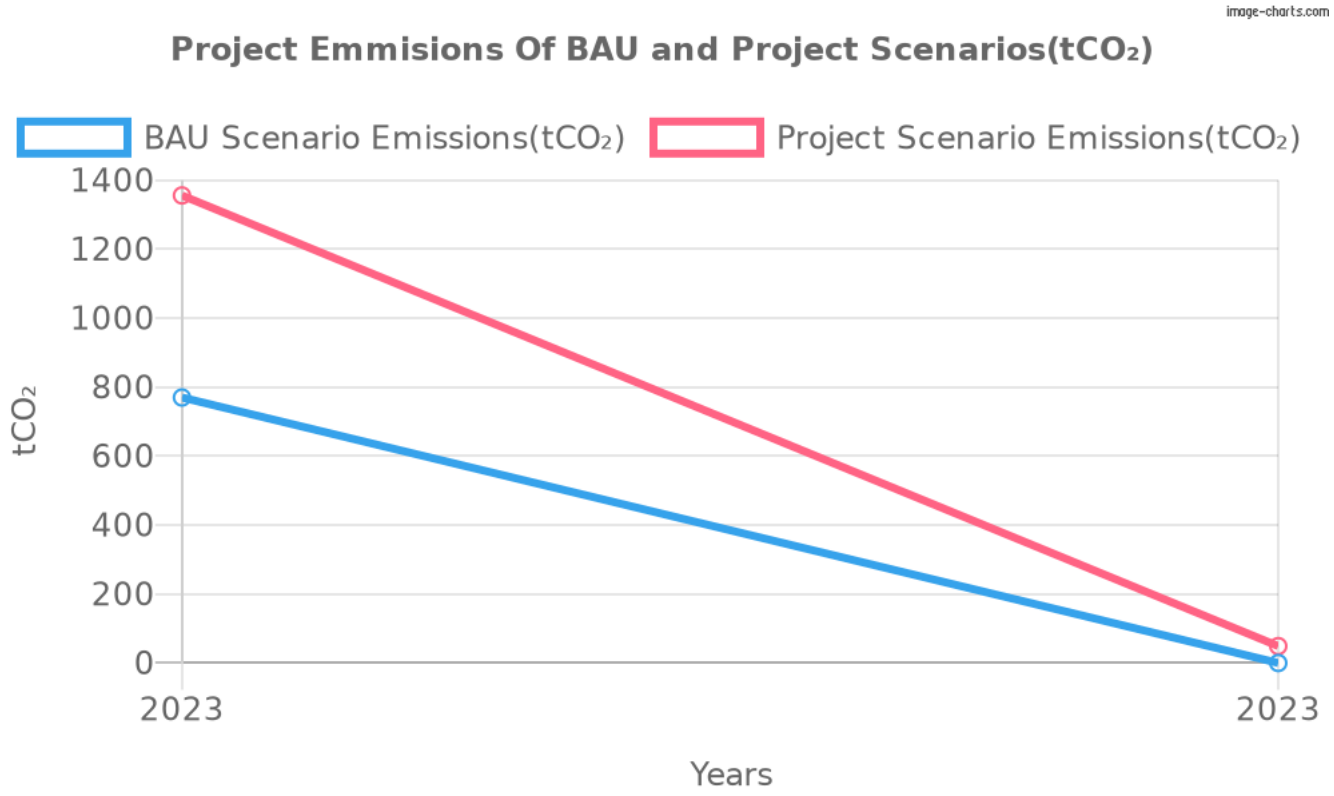

Figure 3: BAU and project emissions of Shift fossil fuel freight vehicle-(YY0001) to CNG

Switch back to rail from road transport

shift in transportation of cargo from road transportation to water or rail transportation

shift in transportation of cargo from road transportation to water or rail transportation ClimateSI by Private to 1. shift in transportation of cargo from road transportation to water or rail transportation. Action includes shift in transportation of cargo from road transportation to water or rail transportation. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will . In addition, mitigation action has various sustainable development benefits such as null and null

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of shift in transportation of cargo from road transportation to water or rail transportation

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2022 - 2014

Boundary elements	Description
Transport subsector	Freight
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-post
Base Year	2010
Assessment year(s)	2014
Methodology	UNFCCC_AM0090 - Modal shift in transportation of cargo from road transportation to water or rail transportation

Baseline Scenario

Baseline

Table Data required to assess baseline emissions of shift in transportation of cargo from road transportation to water or rail transportation

Key indicators	Unit
Distance of the baseline trip route - Diesel-truck	Km
Amount of cargo transported by the project transportation mode - Diesel-truck	tonne
Net calorific value of Diesel - Diesel	GJ/mass
CO2 emission factor of Diesel - Diesel	tCO2/GJ
Baseline emission factor(EFBL) - Diesel-truck	gCO2
Amount of fuel consumption - Diesel-truck	litter
Amount of cargo transported in trucks - Diesel-truck	tonne
Factor to account for non-empty return trips - Diesel-truck	fraction
Amount of cargo transported in trucks in the return trips - Diesel-truck	tonne
Distance of the return trip route - Diesel-truck	Km

Baseline emissions attributed to the shift in transportation of cargo from road transportation to water or rail transportation are given in Table.

Table Baseline emissions of shift in transportation of cargo from road transportation to water or rail transportation

Year	Emissions (MtCO2e)
2014	1

Project Scenario

Project

Table: Data required to assess project emissions of shift in transportation of cargo from road transportation to water or rail transportation

Key indicators	Unit
Amount of cargo transported by the project transportation mode - Gasolin-ships	tonne
Quantity of fuel combusted - Gasolin-ships	mass
Amount of cargo transported by the project transportation mode in the return trips - Gasolin-ships	tonne
CO2 emission coefficient of Gasolin - Gasolin	tCO2
Weighted average CO2 emission factor Diesel - Gasolin	tCO2/GJ
Weighted average net calorific value Gasolin - Gasolin	GJ
Weighted average mass fraction of carbon in Gasolin - Gasolin	tc

Key indicators	Unit
Weighted average density of Gasolin - Gasolin	mass unit

Direct project emissions attributed to the shift in transportation of cargo from road transportation to water or rail transportation are given in Table 6.

Table: Direct project emissions attributed to shift in transportation of cargo from road transportation to water or rail transportation

Year	Emissions (MtCO2e)
2014	252

Emissions estimated for 2014 are summarized in Table 9. According to the table, shift in transportation of cargo from road transportation to water or rail transportation reduce -251 tCO2e in the 2014.

Table Emissions reduction due to shift in transportation of cargo from road transportation to water or rail transportation

Scenario	2014 Emissions (MtCO2)
Baseline emissions	1
Project emissions	252
Lekage reductions	0
Emission reductions	-251

Activity data

Test SCA for testing

Parameter	Unit	2018
Consumption of (blended) biofuel - powerplant	t	8000
CO2 emission factor - Diesel	tCO2/GJ	75.243
Net calorific value of biofuel produced in year - powerplant	GJ/t	34.4
Production of biofuel - powerplant	t	10000
Quantity of biofuel consumed - powerplant	t	1000
Quantity of biofuel produced with other alcohols - powerplant	t	300
Fraction of blending - powerplant		
Blending fraction of fuel - powerplant		
CO2 emission factor - Sugarcrane - Van	t CO2/GJ	0.25
Return trip distance - Sugarcrane - Van	km	75000
Total mass of freight transported - Sugarcrane - Van	t	1000
Project emissions from combustion - Sugarcrane - Diesel	tCO2	100
Project emissions from the consumptions - Sugarcrane - Diesel	tCO2e	200
Quantity of methanol consumed - Sugarcrane - Methanol	t	100
Carbon emission factor of methanol - Sugarcrane - Methanol	tC/t MeOH	0.375
Project emissions from electricity consumption - Sugarcrane - Electricity	tCO2	15
Area in which feedstock is cultivated - Sugarcrane	ha	5
Deafault emmission factor - Sugarcrane	tCO2e/ha	0.7
Project emissions from anaerobic treatment of waste/waste water - Sugarcrane	tCO2	10
Length of the first crediting period of the project - Sugarcrane	Years	7
Rate of nitrogen applied - Sugarcrane	t N/ha	0.1
Area of land subjected to soil fertilization and management - Sugarcrane	ha	5
Aggregate emission factor for N2O and CO2 emissions - Sugarcrane	t CO2e/(t N)	10
Allocation factor for the land cultivation of feedstock - Sugarcrane		5
Amount of biofuel produced with feedstock - Sugarcrane	t	6000
Market price per ton of main product - Sugarcrane	$/tonne	586
Mass of main product - Sugarcrane	t	1.05
Market price per ton of dry co-product - Sugarcrane	$/tonne	332

Parameter	Unit	2018
Mass of co-product - Sugarcrane	t	0.25
Reference SOC stock applicable - Sugarcrane - stratum	t C/ha	5
Reletive stock change factor for land-use in the basline in stratum - Sugarcrane - stratum		
Area of land stratum - Sugarcrane - stratum	ha	10
Relative stock change factor for land management in the baseline stratum - Sugarcrane - stratum		
Relative stock change factor for input in the baseline stratum - Sugarcrane - stratum		
Reletive stock change factor for land-use in the project in stratum - Sugarcrane - stratum		
Relative stock change factor for land management in the project stratum - Sugarcrane - stratum		
Relative stock change factor for input in the project stratum - Sugarcrane - stratum		
Area of stratum of land subjected to clearance or fire - Sugarcrane - stratum		0.1
Fuel biomass consumption per hectare in sratum - Sugarcrane - stratum		0.1
Root-shoot ratio for sratum - Sugarcrane - stratum		0.1
CO2 emission factor for most carbon intensive fossil fuel - Common		
Net calorific value of biofuel produced in year - Common		
Emission factor - Diesel	t CO2e/TJ	74
Pre-combustion emissons factor - Methanol		
Quantity of methanol consumed - Methanol	t	300
Quantity of biomass residues - Agricultural crop residues	t	2000
NCV of the biomass residues - Agricultural crop residues	GJ/t	15

Introduction of new electric buses in Colomobo Distric

Parameter	Unit	2020			
Total distance - Common	km	4050323	45050323	51200	51200
Specific fuel consumption - Diesel-Lorry	g/km	265.44			
Number of operational vehicles - Diesel-Lorry		9			
Technology improvement factor - Common		0.99	0.99		
CO2 emission factor - Diesel	gCO2/J	0.00074			
Net calorific value - Diesel	J/g	4300			
Number of operational vehicles - Electricity-Lorry		9			
Specific fuel consumption - Electricity-Lorry	g/km	1.23			
Average technical transmission and distribution losses - Electricity-Lorry	%	8.45			
CO2 emission factor - Electricity	kgCO2/kwh	0.5684			

Shift passengers from motor cars to buses in Sri Lanka

Parameter	Unit	2034
Project Scenario Annual O&M	$	543270
Discount Rate	%	
Reduction	null	
Baseline Scenario Total Investment	$	150000
Baseline Scenario Annual O&M	$	
Baseline Scenario Project Life	null	
Baseline Scenario Other Annual Cost	$	0
Baseline Scenario Annual Fuel	$	
Project Scenario Total Investment	$	250000
Project Scenario Other Annual Cost	$	24300
Project Scenario Project Life	null	
Project Scenario Annual Fuel	$	

5 diesel powered trucks convered to CNG in 2023

Parameter	Unit	2023
Total annual distance - Diesel-Truck - YY0001	km	33698
Fuel efficiency - CNG-Truck - YY0001	fuel/km	0.005865057
Total annual tonnes of goods transported - Diesel-Truck - YY0001	tons	45000
The annual average distance of transportation per tonnes of freight - Diesel-Truck - YY0001	km	0.7488
Total annual tonnes of goods transported - CNG-Truck - YY0001	tons	50000
Fuel efficiency - Diesel-Truck - YY0001	fuel/km	0.0068
CO2 emission factor - Diesel	t-CO2/TJ	75.243
Net calorific value - Diesel	TJ/t	0.043
Total annual distance - CNG-Truck - YY0001	km	35000
The annual average distance of transportation per tonnes of freight - CNG-Truck - YY0001	km	0.70
Net calorific value - CNG	TJ/t	0.048
CO2 emission factor - CNG	t-CO2/TJ	59.471
Consumption of fuel - CNG-Truck - YY0001	t/y	205.28
Projection Base Year 2023	GDP	2
Projection Year GDP 2030	GDP	5

Introduce cordon pricing for Colombo Metropolitan

Parameter	Unit	2023
Density of Diesel - Diesel	Kg/m3	835
Specific fuel consumption - Diesel-Other	L per VKT	0.5
Vehicle kilometres travelled - Diesel-Other	VKT	21538400
Vehicle travel reduction percentage - Diesel-Other	%	20
Net calorific value of Diesel - Diesel	TJ/t	0.043
CO2 emission factor of Diesel - Diesel	t-CO2/TJ	74.1

Implement national fuel levy on gasoline (5%) and diesel (4%) by 2030

Parameter	Unit	2023
Relative fuel price increase - Petrol	%	5
Net calorific value - Diesel	TJ/t	0.043
CO2 emission factor - Diesel	t-CO2/TJ	74.1
Net calorific value - Petrol	TJ/t	0.0443
CO2 emission factor - Petrol	t-CO2/TJ	69.3
Relative fuel price increase - Diesel	%	4
Total Diesel used for ground transport (Gg) - Diesel	Gg	8000
Total Petrol used for ground transport (Gg) - Petrol	Gg	7860
Diesel own-price elasticity - Diesel		-0.38
Petrol own-price elasticity - Petrol		-0.26

Implement a national fuel levy (4.2%) on gasoline and diesel cars by 2030

Parameter	Unit	2023
Share of fuel - Petrol	%	50
Total fuel used for ground transport(Fuel mix) - Common	TJ	782000
Fuel mix own - price elasticity - Fuel Mix		-0.24
CO2 emission factor - Petrol	t-CO2/TJ	69.3
Share of fuel type - Diesel	%	50
CO2 emission factor - Diesel	t-CO2/TJ	74.1

Parameter	Unit	2023
Relative fuel mix price increase - Fuel Mix	%	4.2

Shift fossil fuel freight vehicle-(YY0001) to CNG

Parameter	Unit	2023
Fuel efficiency - CNG-Truck - AB Route	fuel/km	0.005865
Fuel efficiency - Diesel-Truck - AB Route	fuel/km	0.0068
CO2 emission factor - Diesel	t-CO2/TJ	75.243
Net calorific value - Diesel	TJ/t	0.043
Projection Year POP 2023	population	50000
Total annual tonnes of goods transported - CNG-Truck - AB Route	tons	50000
Net calorific value - CNG	TJ/t	0.048
CO2 emission factor - CNG	t-CO2/TJ	59.471
The annual average distance of transportation per tonnes of freight - Diesel-Truck - AB Route	km	0.748844
Projection Base Year 2023	population	600000
Total annual distance - CNG-Truck - AB Route	km	35000
Total annual tonnes of goods transported - Diesel-Truck - AB Route	tons	
Total annual distance - Diesel-Truck - AB Route	km	
The annual average distance of transportation per tonnes of freight - CNG-Truck - AB Route	km	
Consumption of fuel - CNG-Truck - AB Route	t/y	

shift in transportation of cargo from road transportation to water or rail transportation

Parameter	Unit	2014
Amount of cargo transported by the project transportation mode - Gasolin-ships	tonne	1231521
Distance of the baseline trip route - Diesel-truck	Km	43
Amount of cargo transported by the project transportation mode - Diesel-truck	tonne	250000
Net calorific value of Diesel - Diesel	GJ/mass	69.3
CO2 emission factor of Diesel - Diesel	tCO2/GJ	69.3
Quantity of fuel combusted - Gasolin-ships	mass	231231
Amount of cargo transported by the project transportation mode in the return trips - Gasolin-ships	tonne	123123
Baseline emission factor(EFBL) - Diesel-truck	gCO2	0.123
CO2 emission coefficient of Gasolin - Gasolin	tCO2	0.0012
Amount of fuel consumption - Diesel-truck	litter	
Amount of cargo transported in trucks - Diesel-truck	tonne	
Factor to account for non-empty return trips - Diesel-truck	fraction	
Amount of cargo transported in trucks in the return trips - Diesel-truck	tonne	
Weighted average CO2 emission factor Diesel - Gasolin	tCO2/GJ	
Weighted average net calorific value Gasolin - Gasolin	GJ	
Weighted average mass fraction of carbon in Gasolin - Gasolin	tc	
Weighted average density of Gasolin - Gasolin	mass unit	
Distance of the return trip route - Diesel-truck	Km	