2023///

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Ministry of Transport

Prepared By

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Executive Summary

Report Name:	2023///
Sector(s):	Transport
Year(s):	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)
Changing freight transport models : Restructuring the transport market	Freight shift from diesel train to electric train	2022	GHG Ex-post	166	N/A
Changing freight transport models : Restructuring the transport market	Shift freight transport from diesel train to electric trains	2021	GHG Ex-post	2397	N/A

Figure 1 illustrates the status of achieving emissions reduction targets of Transport sector of Test ICAT. The expected emission reduction of the Transport sector by 2030 year is 25 $MtCO_2e$ conditionally, and 35 $MtCO_2e$ unconditionally. Mitigation actions implemented by year 2030 were able to reduce Transport sector emissions from 2563 tCO2e.

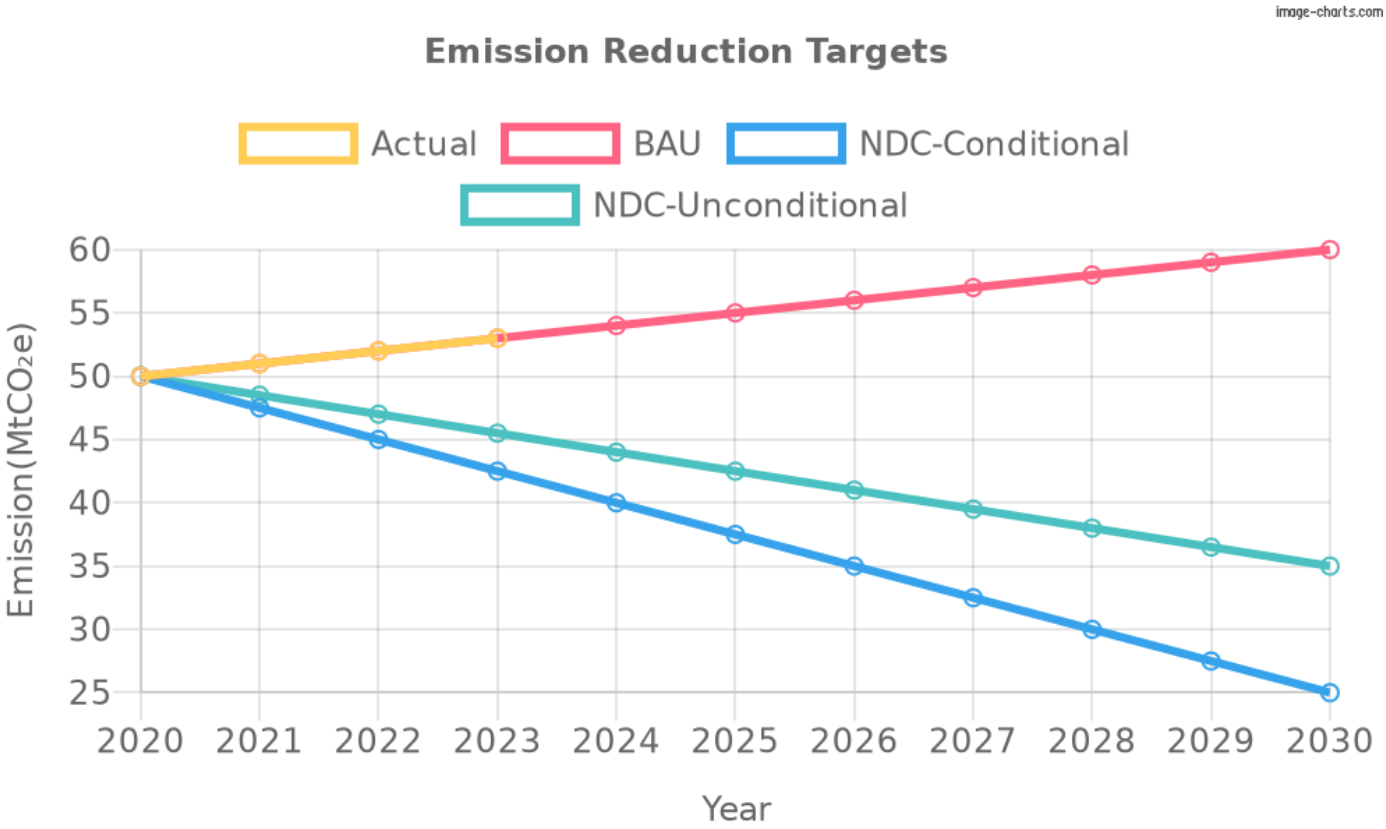

Figure 1 Emissions reduction of Transport sector of Test ICAT

Note: Only the emission reductions of Climate Actions calculated Ex-post using the tool are reflected in the Actual Emissions curve

Shifting from conventional fuel to bio fuel, natural gas and electricity

Changing freight transport models : Restructuring the transport market

Freight shift from diesel train to electric train

Freight shift from diesel train to electric train Ministry of Transport by Government to Reduce the ghg emission. Action includes Freight shift from diesel trains to electric trains. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will Reduce GHG emission. In addition, mitigation action has various sustainable development benefits such as Goal 11 and Goal 13

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Freight shift from diesel train to electric train

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

Measurement

Assessment Approach	Ex-post
Base Year	2019
Assessment year(s)	2022
Methodology	JICA_Railway_Electrification (Freight)

Baseline Scenario

Freight transport from diesel train

Table Data required to assess baseline emissions of Freight shift from diesel train to electric train

Key indicators	Unit
Consumption of fuel - Diesel-Train	t/y
CO_2 emission factor - Diesel	t-CO_2/TJ
Net calorific value - Diesel	TJ/t

Baseline emissions attributed to the Freight shift from diesel train to electric train are given in Table.

Table Baseline emissions of Freight shift from diesel train to electric train

Year	Emissions (MtCO2e)
2022	172

Project Scenario

Freight Transport from Electric trains

Table: Data required to assess project emissions of Freight shift from diesel train to electric train

Key indicators	Unit
Electricity consumption - Electricity-Train	MWh/y
CO_2 emission factor - Electricity	t-CO_2/MWh

Direct project emissions attributed to the Freight shift from diesel train to electric train are given in Table 6.

Table: Direct project emissions attributed to Freight shift from diesel train to electric train

Year	Emissions (MtCO2e)
2022	7

Emissions estimated for 2022 are summarized in Table 9. According to the table, Freight shift from diesel train to electric train reduce 166 tCO2e in the 2022.

Table Emissions reduction due to Freight shift from diesel train to electric train

Scenario	2022 Emissions (MtCO2)
Baseline emissions	172

Scenario	2022 Emissions (MtCO2)
Project emissions	7
Lekage reductions	N/A
Emission reductions	166

Shift freight transport from diesel train to electric trains

Shift freight transport from diesel train to electric trains ClimateSI by Government to Shift freight transport from diesel trains to electric trains. Action includes Shift freight transport from diesel trains to electric trains. The geographical boundary of the project includes null, null, null. Planned It is expected that the project will Shift freight transport from diesel train to electric trains. In addition, mitigation action has various sustainable development benefits such as N/A and N/A

GHG impact assessment

System boundary

Table System boundary of the GHG impact assessment of Shift freight transport from diesel train to electric trains

Boundary elements	Description
Geographic Boundary	N/A, N/A, N/A
Temporal Boundary	2022 - 2021
Transport subsector	Frieght
Upstream/downstream	No
GHGs Included	Only CO2

Measurement

Assessment Approach	Ex-post
Base Year	2018
Assessment year(s)	2021
Methodology	JICA_Railway_Electrification (Freight)

Baseline Scenario

Using diesel train

Table Data required to assess baseline emissions of Shift freight transport from diesel train to electric trains

Key indicators	Unit
Consumption of fuel - Diesel-Train	t/y
CO_2 emission factor - Diesel	t-CO_2/TJ
Net calorific value - Diesel	TJ/t

Baseline emissions attributed to the Shift freight transport from diesel train to electric trains are given in Table.

Table Baseline emissions of Shift freight transport from diesel train to electric trains

Year	Emissions (MtCO2e)
2021	2505

Project Scenario

Using electric trains

Table: Data required to assess project emissions of Shift freight transport from diesel train to electric trains

Key indicators	Unit

Key indicators	Unit
Electricity consumption - Electricity-Train	MWh/y
CO_2 emission factor - Electricity	t-CO_2/MWh

Direct project emissions attributed to the Shift freight transport from diesel train to electric trains are given in Table 6.

Table: Direct project emissions attributed to Shift freight transport from diesel train to electric trains

Year	Emissions (MtCO2e)
2021	108

Emissions estimated for 2021 are summarized in Table 9. According to the table, Shift freight transport from diesel train to electric trains reduce 2397 tCO2e in the 2021.

Table Emissions reduction due to Shift freight transport from diesel train to electric trains

Scenario	2021 Emissions (MtCO2)
Baseline emissions	2505
Project emissions	108
Lekage reductions	N/A
Emission reductions	2397

Shift freight from road to rail by 2019

Shift freight from road to rail by 2019 City Bus Authority by Government to Emission reduction, reduce the traffic congestion. Action includes Shift freight from road to rail by 2019. 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

Activity data

Freight shift from diesel train to electric train

Parameter	Unit	2022
Consumption of fuel - Diesel-Train	t/y	54
CO_2 emission factor - Diesel	t-CO_2/TJ	74.1
Net calorific value - Diesel	TJ/t	0.043
Electricity consumption - Electricity-Train	MWh/y	12
CO_2 emission factor - Electricity	t-CO_2/MWh	0.5422

Shift freight transport from diesel train to electric trains

Parameter	Unit	2021
Consumption of fuel - Diesel-Train	t/y	786.05
CO_2 emission factor - Diesel	t-CO_2/TJ	
Net calorific value - Diesel	TJ/t	
Electricity consumption - Electricity-Train	MWh/y	230
CO_2 emission factor - Electricity	t-CO_2/MWh	0.4694