Climate and clean air action framework

An emission reduction guide for transport businesses in Nigeria

UK PACT

Published by

Stockholm Environment Institute.

Cite as

Haq, G., Onitekun, O., Medimorec, N. (2026). *Climate and Clean Air Action Framework: An Emission Reduction Guide for Transport Businesses in Nigeria*. Stockholm Environment Institute, Stockholm. https://www.sei.org/publications/climate-clean-air-action-framework-emission-reduction-transport-nigeria

Acknowledgements

This framework was developed under the Nigeria UK PACT (Partnering for Accelerated Climate Transitions) programme's project on Enhancing Private Sector Capacity for Climate and Clean Air Action in Nigeria. The project is funded by the UK Government and supports countries with high emissions-reduction potential to overcome barriers to clean growth and accelerate climate change mitigation by strengthening policy, governance, and market conditions.

The team would like to thank Palladium representatives for their time and support. The team would also like to acknowledge and thank the private sector organisations that participated in the project surveys and stakeholder workshops. Their perspectives and practical insights contributed to the development and refinement of this framework.

The individuals listed below have contributed to the development of the framework. Authors and reviewers participated in their personal capacities, and their affiliations are provided solely for identification purposes.

Lead author

Gary Haq
Stockholm Environment Institute, University of York
Gary.haq@york.ac.uk

Authors

Akshay Jamdade (SLOCAT Partnership on Sustainable, Low Carbon Transport)
Ananya Choudhury (Stockholm Environment Institute, University of York)
Bernard Obika (Consulting Engineers Group UK Ltd)
Chris Malley (Stockholm Environment Institute, University of York)
Genevivie Ankunda (SLOCAT Partnership on Sustainable, Low Carbon Transport)
Gori Olusina Daniel (Africa PPP Advisory Services)
Helen Platt (Escher Silverman Global Ltd)
Nikola Medimorec (SLOCAT Partnership on Sustainable, Low Carbon Transport)
Olumide Onitekun (Africa PPP Advisory Services)

Reviewers

Jennifer Aghaji (Stockholm Environment Institute, University of York)
Jules Vincent (SLOCAT Partnership on Sustainable, Low Carbon Transport)

Implementing partners

This document was developed and prepared by the University of York – Stockholm Environment Institute (SEI), Escher Silverman Global (ESG), Africa PPP Advisory Services (AP3), the Consulting Engineers Group (CEG), and the SLOCAT Partnership on Sustainable, Low Carbon Transport under the Nigeria-UK PACT country programme.

UK PACT

Escher Silverman Global

CEG Engineering Your Vision

AP3

SLOCAT Partnership on Sustainable, Low Carbon Transport

SEI Stockholm Environment Institute

University of York

Project coordination

Borana Resulaj (SLOCAT Partnership on Sustainable, Low Carbon Transport)
Carly Gilbert-Patrick (SLOCAT Partnership on Sustainable, Low Carbon Transport)
Emmanuel Onwodi (Escher Silverman Global Ltd)
Ibiyedi Ruth Dada (Escher Silverman Global Ltd)
Kate O'Reilly (Stockholm Environment Institute, University of York)
Katy Brooke (Stockholm Environment Institute, University of York)
Liza Castillo (SLOCAT Partnership on Sustainable, Low Carbon Transport)
Nifemi Obafemi (Africa PPP Advisory Services)
Wuraola Onigbogi (Africa PPP Advisory Services)

Editing

Tom Gill

Layout/graphics

Tyler Kemp-Benedict

Photo credit

Cover photo: © Folti Technologies

UK PACT

Escher Silverman Global

CEG Engineering Your Vision

AP3

SLOCAT Partnership on Sustainable, Low Carbon Transport

SEI Stockholm Environment Institute

University of York

Contents

Executive summary 6

Introduction 8

Why climate and clean air action is good for business 8
How does the framework help? 9
Who is the framework for? 10
How to use the framework 10
The six steps 11

Step 1. Define scope and emissions sources 13

Key activities 13
Activity 1.1 – Defining the operational scope 14
Activity 1.2 – Classifying emission scopes 14
Activity 1.3 – Identifying emissions sources 16

Step 2. Calculate your emissions 18

Key activities 18
Activity 2.1 – Developing an emissions inventory 19
Activity 2.2 – Collecting activity data 20
Activity 2.3 – Choosing emission factors 20
Activity 2.4 – Calculating emissions 22

Step 3. Identify priority emission sources 24

Key activities 24
Activity 3.1 – Analyse your emissions inventory 25
Activity 3.2 – Use simple performance indicators 25
Activity 3.3 – Identify common emission hotspots 26
Activity 3.4 – Prioritise high-impact actions 26
Activity 3.5 – Set targets 28

Step 4. Take action to reduce emissions 31

Key activities 31
Activity 4.1 – Establish a vision and set objectives 32
Activity 4.2 – Apply the avoid–shift–improve (ASI) framework 33
Activity 4.3 – Implement immediate low-cost actions 34
Activity 4.4 – Plan medium-term efficiency improvements 35
Activity 4.5 – Plan longer-term technology improvements (2–5 years) 36
Activity 4.6 – Develop a phased transition pathway 37
Activity 4.7 – Develop a Climate Action Plan 38
Activity 4.8 – Recognise the wider benefits of reducing emissions 39

Step 5. Develop bankable projects and access climate finance 42

Key activities 42
Activity 5.1 – From climate action planning to investment 43
Activity 5.2 – Develop investment-ready projects 44
Activity 5.3 – Develop a project concept note 45
Activity 5.4 – Demonstrate financial viability and bankability 46
Activity 5.5 – Access climate finance 46
Activity 5.6 – Implementation, monitoring and scaling 48

Step 6. Monitor, report and improve 51

Key activities 51
Activity 6.1 – Why monitoring and reporting matter 52
Activity 6.2 – Monitoring emissions and operational performance 52
Activity 6.3 – Reporting and transparency 53
Activity 6.4 – Climate finance monitoring and MRV requirements 54
Activity 6.5 – Reviewing and updating the Climate Action Plan 54

Expected outcomes of the Climate and Clean Air Action Framework 56

Capacity development for transport businesses 56
Development of company Climate Action Plans 57
Building a pipeline of climate-aligned investments 58
Contribution to Nigeria's climate and clean air goals 58
Conclusion 59

Technical annexes 60

Annex 1. Technical guidance on system boundaries, emission scopes, and inventory development 61

A1.1 Organisational and system boundaries 61
A1.2 Emission scopes 62
A1.3 Transport system boundaries 62
A1.4 Mapping the corporate value chain 63
A1.5 Geographic and time boundaries 63

A1.6 Identifying emission sources 64
A1.7 Lifecycle approaches 65
A1.8 Expanding scope 65
A1.9 Practical templates for Step 1 66

Annex 2. Supporting tools for measuring emissions 67

A2.1 Emissions inventory template 68
A2.2 Inventory boundary checklist 68
A2.3 Template for collecting activity data 69
A2.4 Emissions calculation equations 70
A2.5 Greenhouse gas emission factors 72
A2.6 Air pollutant emission factors 75
A2.7 Worked examples of emissions calculations 78
A2.8 Data quality and uncertainty assessment 79
A2.9 Improving emissions inventories over time 81
A2.10 Further technical resources 82

Annex 3. Supporting tools for identifying priority emission sources 83

A3.1 Worksheet for identifying emissions hotspots 83
A3.2 Emissions hotspot assessment tool 84
A3.3 Operational indicators tool 85
A3.4 Emissions source ranking tool 85
A3.5 Operational efficiency assessment 86
A3.6 Matrix for prioritising among mitigation measures 86
A3.7 Climate action planning template 87
A3.8 Performance monitoring indicators 87
A3.9 Good practice guidance 88

Annex 4. Tools to support action to reduce emissions 89

A4.1 Principles for selecting emission reduction measures 89
A4.2 Mitigation prioritisation matrix 89
A4.3 Eco-driving assessment checklist 90
A4.4 Preventive maintenance checklist 90
A4.5 Route optimisation and logistics worksheet 90
A4.6 Vehicle replacement assessment tool 90
A4.7 Fuel and emissions calculation tool 91
A4.8 Monitoring and performance tracking template 91
A4.9 Climate Action Plan template 92
A4.10 Emissions reduction targets worksheet 92
A4.11 Total cost of ownership assessment 93
A4.12 Review and updating checklist 93
A4.13 Good practice for implementing emissions reduction measures 94

Annex 5. Climate finance and investment readiness toolkit 95

A5.1 From project idea to financing proposal 95
A5.2 Project overview 98
A5.3 Practical considerations 98
A5.4 Project context 99
A5.5 Project alignment with national climate commitments 99
A5.6 Baseline situation 100
A5.7 Proposed climate intervention 101
A5.8 Estimated emissions reductions 102
A5.9 Financial analysis 103
A5.10 Potential sources of climate finance 104
A5.11 Project preparation and capacity needs 105
A5.12 Monitoring, reporting and verification 106
A5.13 Social and environmental considerations 107
A5.14 Climate finance resources and templates 108
A5.15 Implementation plan 109
A5.16 Indicative climate-aligned transport measures from national strategies 109
A5.17 Climate finance readiness checklist 110

Executive summary

Nigeria's transport sector sits at the heart of the country's economic life. It also comprises a significant and increasing share of the country's greenhouse gas emissions and air pollution. As Nigeria works to honour its commitments under its Nationally Determined Contribution (NDC) and the Energy Transition Plan, private transport businesses face a difficult set of pressures: limited technical knowledge, constrained finances, and uncertainty about where to start. Adding to this is the combined effect of rising fuel costs, subsidy reforms, and currency instability, which is putting traditional business models under strain, making operational proficiency not simply desirable but essential.

The Climate and Clean Air Action Framework was developed in direct reaction to these realities. It brings together practical tools, guidance, and resources into a single reference that transport firms can use. Developed under the UK PACT-funded Enhancing Private Sector Capacity for Climate and Clean Air Action in Nigeria project, the Framework provides transport businesses with the grounding and practical steps needed to move towards cleaner, better-run operations.

A central principle of the framework is that emissions management need not be regarded as a compliance burden. When approached strategically, climate and clean air action offers a genuine business opportunity.

The framework presents a six-step roadmap enabling transport, freight, and logistics businesses to cut their emissions while simultaneously improving operational and financial health. Through increased fuel efficiency, smarter fleet management, and a more intentional approach to climate considerations in business planning, organisations can reduce operating costs, enhance resilience, boost competitiveness, and contribute to a more sustainable transport sector.

The six steps guide organisations to:

1. Define the scope of emissions throughout their operations.
2. Measure greenhouse gas and air pollutant emissions.
3. Identify priority areas for reduction.
4. Develop practical, cost-effective mitigation measures.
5. Prepare investment-ready projects that can attract climate finance.
6. Observe progress and sustain performance improvement.

The framework is flexible. Organisations can begin with whatever operational data they have and build on it, gradually enhancing their emissions management and climate action planning as their capacity grows.

Businesses that adopt the framework will be better equipped to measure and manage their emissions, identify operational weaknesses, cut fuel and operating costs, and develop projects aligned with Nigeria's broader climate goals. More than a technical document, the framework serves as a practical roadmap; one that promotes long-term business resilience, helps unlock access to climate finance, and positions the private sector to play a significant role in creating a cleaner, more inclusive, competitive and low-carbon transport system for Nigeria.

Climate and clean air action framework for transport businesses in Nigeria

A structured approach to improving efficiency, reducing emissions, costs, and accessing climate finance for a competitive and resilient transport business

From action to impact

The six steps

ANALYSIS → **PLANNING** → **FINANCING & IMPLEMENTATION** → **MONITORING & IMPROVEMENT**

1 — Define scope and emission sources
Identify where emissions occur across transport operations and facilities.

2 — Calculate emissions
Collect data and calculate emissions from identified sources.

3 — Identify priority emissions sources
Determine which sources contribute most to overall emissions.

4 — Take action to reduce emissions
Select and implement practical emission reduction measures.

5 — Develop bankable projects and access climate finance
Prepare investment-ready projects and explore funding opportunities.

6 — Monitor, report and improve
Track results and refine actions to achieve greater impact.

CROSS-CUTTING ENABLERS – INTEGRATED ACROSS ALL STEPS

Operational efficiency
Improve vehicle use, maintenance, routing and asset management.

Cost reduction
Lower fuel use, maintenance costs and downtime; improve profit margins.

Climate finance readiness
Build data, governance and bankability to access finance.

GEDSI* integration
Promite inclusive employment, accessible services and equitable benefits.

Continuous improvement
Embed learning, innovation and adaptative management in business practices.

Continuous improvement loop

Use data and lessons learned to refine actions, strengthen decisions and improve performance.

Reduced greenhouse gas emissions and air pollutant emissions
Lower greenhouse gas emissions and reduced pollution from vehicles and operations

Cleaner air and climate benefits
Improved public health and better air quality and positive contributions to the climate

Lower operating costs
Reduced fuel consumption, maintenance costs and downtime

Improved business performance
Higher efficiency, reliability and customer satisfaction leading to stronger financial performance

Greater business resilience
Stronger ability to manage risks, adapt to change and ensure business continuity

Enhanced access to finance
Improved eligibility for financing, investment and better financial terms and conditions

Contributes to Nigeria's climate and clean air goals
Supports national commitments to reduce emissions, improve air quality and achieve sustainable development

Environmental outcomes

Better air, lower emissions, healthier communities

Business outcomes

Stronger, more competitive, future-ready businesses

National impact

Support national commitments to climate and clean air goals and sustainable development

*GEDSI: gender equality, disability, and social inclusion

Introduction

Why climate and clean air action is good for business

Nigeria's transport sector plays an important role in supporting economic activity, but it is also a growing source of greenhouse gas emissions and air pollution, particularly caused by fuel combustion in vehicles. Transport accounts for around 18% of national greenhouse gas emissions, with road transport responsible for almost all of this total.[1] Emissions from the sector have nearly tripled since 2000, reflecting the rapid growth in vehicle use and mobility demand. Road transport is also a significant source of air pollutants, including fine particulate matter ($PM_{2.5}$) and nitrogen oxides (NO_x), particularly in urban areas. As a result, poor air quality remains a major public health challenge and is linked to more than 200 000 premature deaths each year in Nigeria.[2]

Alongside these environmental and health challenges, transport businesses are operating in an increasingly difficult economic environment. The removal of fossil fuel subsidies in May 2023,[3] exchange rate unification, and geopolitical tensions that have increased global oil price volatility have driven fuel prices to record highs. For most transport businesses, fuel is the largest operating expense.

Fuel is the main reason climate action and business performance are now closely connected. Measures that improve fuel efficiency, reduce vehicle idling, modernise fleets, improve maintenance, or switch to cleaner fuels can lower greenhouse gas emissions. They can also improve air quality, reduce health impacts, lower fuel consumption, and reduce operating costs. Every inefficiency in vehicle performance, maintenance, or route planning not only adds to emissions but also erodes profit margins. As a result, actions that reduce fuel use can deliver both environmental and business benefits.

1 European Commission Joint Research Centre (2025). EDGAR dataset on greenhouse gas emissions (GHG2025). https://edgar.jrc.ec.europa.eu/dataset_ghg2025

2 Health Effects Institute (2020). State of Global Air Report. https://www.stateofglobalair.org/sites/default/files/documents/2021-01/soga-country-profile-nigeria-c.pdf

3 KPMG. Removing Nigeria's PMS Fuel Subsidies (2023). https://assets.kpmg.com/content/dam/kpmg/ng/pdf/removing-nigerias-pms-fuel-subsidies23.pdf

The need for businesses to act is reinforced and supported by Nigeria's wider climate and energy policies. Nigeria has responded to the challenges of rising emissions and climate change through a range of initiatives, including its updated Nationally Determined Contribution (NDC 3.0),[4] which sets out the country's commitments to reducing emissions, and its Energy Transition Plan. Together, these policies identify transport as a priority sector and promote measures such as cleaner fuels, improved public transport, and the adoption of alternative technologies, including battery-electric and plug-in hybrid vehicles.

The private sector has a central role to play, and emissions reduction offers transport businesses large, cost-effective opportunities, yet engagement remains low. Many companies often face technical, financial, and regulatory barriers that make it difficult to identify and implement solutions.

The business case for climate action

Climate and clean air action is not only about reducing emissions. It is also a practical business strategy that can improve operational performance and strengthen long term competitiveness. For transport businesses in Nigeria, climate action can help to:

- Improve operational efficiency through better fleet management, route optimisation and reduced vehicle idling.
- Reduce operating costs by lowering fuel consumption, maintenance requirements and vehicle downtime.
- Strengthen competitiveness through more reliable services, improved customer confidence and enhanced business reputation.
- Increase resilience by reducing exposure to rising fuel prices, supply disruptions and future regulatory changes.
- Improve access to finance by demonstrating robust business planning, emissions reductions and investment readiness.

By integrating climate and clean air action into everyday business operations, transport businesses can improve profitability while contributing to cleaner air, lower emissions and a more sustainable transport sector.

How does the framework help?

This Climate and Clean Air Action Framework has been developed to help transport businesses address these challenges. It provides a practical six-step approach to identifying sources of greenhouse gas and air pollutant emissions, improving operational efficiency, and implementing measures that reduce both emissions and fuel costs.

Through this process, businesses develop a Climate Action Plan that identifies priority actions, investment needs, financing opportunities, and arrangements for monitoring and continuous improvement. The framework also highlights sources of climate finance that may support investment in cleaner technologies and practices. For many businesses, adopting a structured approach is also becoming important for accessing finance, as financial institutions and investors place greater emphasis on measurable outcomes, credible plans, and evidence of performance improvement.

Ultimately, the framework helps businesses contribute to clean air goals while improving operational performance, competitiveness, and long-term resilience.

4 Nigeria (2025, September). Nigeria's third nationally determined contribution (NDC 3.0) – Transmission Version 2. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/2025-09/Nigeria%20NDC%203.0%20-%20Transimission%20Version%202.pdf

Who is the framework for?

This framework is intended for private transport businesses operating in Nigeria, including freight and logistics companies, trucking operators, passenger transport providers, ride-hailing services, delivery companies, and fleet management businesses. It is designed for organisations at different stages of experience, from those beginning to assess their environmental impacts to those seeking to strengthen existing climate and clean air initiatives.

Although the framework follows the same six step process for all transport businesses, different types of transport businesses will apply it in different ways depending on the nature of their operations. Passenger transport operators may place greater emphasis on improving service efficiency, fleet performance and reducing emissions on high demand routes. Freight and logistics companies may focus on vehicle utilisation, route optimisation, load consolidation and fuel efficiency. Businesses operating their own vehicle fleets may use the framework to strengthen fleet management, identify emissions reduction opportunities, improve operational performance and inform investment decisions. The framework should be applied in a manner that reflects each organisation's operational priorities, available data, organisational capacity and business objectives.

The framework supports businesses to:

- identify where greenhouse gas and air pollutant emissions arise within their operations
- calculate and estimate greenhouse gas and air pollutant emissions
- identify opportunities to improve fuel efficiency and operational performance
- develop Climate Action Plans to reduce emissions and support business objectives
- assess investment opportunities in cleaner vehicles, technologies, and operating practices
- prepare investment ready and bankable projects aligned with financing opportunities.

How to use the framework

Climate and clean air action should not be viewed as a one-off exercise or a compliance requirement. It is an ongoing management process that supports better decision-making, helps prioritise investments, and improves operational efficiency.

The framework follows a six-step process that takes businesses from initial assessment through to implementation and continuous improvement. Together, the six steps help businesses develop a practical Climate Action Plan by identifying emission sources, establishing a baseline, prioritising actions, implementing mitigation measures, identifying financing opportunities, and monitoring progress. It also integrates gender equality, disability, and social inclusion (GEDSI) considerations into assessments, mitigation measures, investment planning, stakeholder engagement, and progress monitoring.

What is a Climate Action Plan?

A Climate Action Plan is a practical business document that sets out how a company will reduce greenhouse gas and air pollutant emissions, improve operational efficiency, implement priority actions, monitor progress, and identify investment needs. Within this framework, the Climate Action Plan is developed through six steps and represents the main output of the process. It serves as a roadmap for implementation, monitoring, investment planning, and continuous improvement.

Gender equality, disability, and social inclusion (GEDSI)

GEDSI is an approach that helps ensure that climate and clean air actions are accessible, equitable, and beneficial to all users, employees, customers, and communities. It encourages businesses to consider how decisions may affect different groups, including women, persons with disabilities, older people, low-income groups, and other potentially vulnerable or underrepresented populations.

Integrating GEDSI considerations can improve accessibility, workforce participation, customer satisfaction, service quality, and readiness for climate finance and investment opportunities.

Note that GEDSI considerations are not a separate step; they are woven throughout the whole process.

The six steps

The six-step approach outlined in this framework is flexible and applicable across different transport businesses, including freight, passenger transport, and logistics services. It can be applied using readily available data and refined as data quality, availability, and organisational capacity improve.

Businesses do not need complete datasets or advanced systems to begin. Most will start by focusing on core operations, particularly vehicle fleets, where fuel consumption, emissions and operating costs are often highest. Several of the steps are supported by an annex that provides more technical guidance on how to undertake key activities.

Preparing your organisation for climate action

Before beginning the six-step process, transport businesses should ensure that the necessary organisational arrangements are in place to support successful implementation. The level of preparation will vary depending on the size and structure of the business, but organisations should consider:

- Leadership commitment to support climate and clean air action across the organisation.
- Clear roles and responsibilities for coordinating implementation, monitoring progress and reporting outcomes.
- Staff engagement and awareness to ensure employees understand their roles and contribute to identifying improvement opportunities.
- Data and information systems to establish a baseline and monitor progress over time.
- Resources and technical capacity to implement priority actions and integrate climate action into day-to-day business operations.

The six steps at a glance:

Step 1. Define scope and emission sources

Identify where emissions occur across transport operations and facilities.

Step 2. Calculate emissions

Collect data and calculate emissions from identified sources.

Step 3. Identify priority emissions sources

Determine which sources contribute most to overall emissions.

Step 4. Take action to reduce emissions

Select and implement practical emission reduction measures.

Step 5. Develop bankable projects and access climate finance

Prepare investment-ready projects and explore funding opportunities.

Step 6. Monitor, report and improve

Track results and refine actions to achieve greater impact.

Outcome: The six-step process helps businesses measure, prioritise, finance, and improve emissions management over time.

Chisom Transport Ltd – an illustrative scenario

To show how a typical business might apply the six steps, we have developed a fictional business owner called Chisom. She runs Chisom Transport Ltd in Enugu, a medium-sized passenger and freight transport business operating 14 diesel buses and six delivery trucks. Her routes connect Enugu city centre with Onitsha and Abuja.

Like many transport operators, Chisom faces rising fuel costs, ageing vehicles, and increasing pressure to improve operational efficiency while reducing emissions. She has heard about climate finance opportunities and growing emphasis on sustainable transport but is uncertain about where to start.

At each step of the framework, we show how Chisom might apply the guidance in practice. Her experience shows how transport businesses can develop an emissions baseline, identify opportunities for improvement, and prepare for climate finance, meet sustainability reporting requirements, and take part in low-emission transport initiatives.

Step 1.

Define scope and emissions sources

Key activities

- **Identify which transport activities and parts of the business to include in the assessment.**
- **Classify emission sources using recognised emissions accounting frameworks.**
- **Identify the main sources of greenhouse gas and air pollutant emissions.**
- **Keep the scope practical and expand coverage as data availability and organisational capacity improve.**

The first step in managing greenhouse gas and air pollutant emissions is to define which business activities and transport operations are included in the assessment. This is often referred to as defining the operational scope or boundary.

For most transport businesses, vehicle fleets are the major source of fuel use, operating costs, greenhouse gas and air pollutant emissions, and are therefore the logical starting point. However, emissions may also arise from supporting activities such as depots, warehouses, generators, refrigeration equipment, and outsourced transport services. Depending on the business, other sources may also be important, including electricity use, waste management, and supply chain activities.

By defining the scope, businesses ensure the consistent calculation and estimation of emissions and focus mitigation efforts on areas that offer the greatest operational, financial, and environmental benefits. It also supports reporting, helps identify fuel-saving opportunities, facilitates regulatory compliance, and shows a commitment to sustainable development and cleaner transport operations.

For many businesses, particularly small- and medium-sized operators, the initial approach should be practical and manageable. Businesses should start with the activities responsible for the highest fuel use, costs, and emissions, and then improve coverage and data quality.

This step provides guidance on defining the operational scope and identifying emission sources. Annex A1 provides additional technical guidance to support deeper understanding of this step. The annex also includes guidance on value-chains mapping, organisational and transport system boundaries, emission scopes, emission source identification, lifecycle approaches, and emissions inventory development.

Activity 1.1 – Defining the operational scope

Businesses should define their operational scope by identifying the primary activities that generate emissions. The scope is usually based on operational control, meaning the activities or assets that a business owns, operates, or directly manages.

These commonly include:

- vehicle fleets used for passenger or freight transport
- depots, warehouses, and offices
- fuel use in generators or auxiliary equipment
- refrigeration units in logistics operations
- outsourced or subcontracted transport services, where relevant
- electricity use in facilities and infrastructure for electric vehicle charging.

For many transport businesses, vehicle fleets are the primary source of fuel use, operating costs, greenhouse gas emissions, and air pollutant emissions, making them the logical starting point for emissions management. Data on fuel consumption, mileage and vehicle activity is also often more readily available than for other business activities.

The scope should be documented, and include:

- the activities that are included in the assessment
- those activities excluded from the assessment
- the reporting period
- the geographic area covered
- the assumptions used where data is unavailable.

Clear documentation improves transparency and helps ensure consistency in future reporting. As data availability and monitoring systems improve, businesses can expand the scope to include additional activities across their operations and value chain.

Activity 1.2 – Classifying emission scopes

Once the operational scope has been defined, businesses should classify emissions using recognised accounting frameworks. This helps determine which emissions fall within the plan and identify the areas of the business that should be prioritised. The most widely used framework is the Greenhouse Gas Protocol (GHG Protocol), which categorises emissions into three scopes:

- **Scope 1:** Direct emissions from owned or controlled vehicles and equipment.
- **Scope 2:** Indirect emissions from purchased electricity.
- **Scope 3:** Other indirect emissions arising across the value chain, including outsourced transport and upstream and downstream activities.

GHG Protocol emission scopes and transport examples

Scope	What it covers	Transport examples
Scope 1: Direct emissions	Fuel combustion in owned or controlled vehicles and equipment.	• Diesel used in buses and trucks • Petrol used in staff vehicles • Fuel used in depot generators
Scope 2: Indirect emissions	Purchased electricity	• Depot lighting • Electric vehicle charging • Office air conditioning
Scope 3: Value chain emissions	Indirect emissions across the wider value chain	• Subcontracted logistics • Fuel production • Vehicle manufacturing • Employee travel

Businesses can begin with Scope 1 emissions because they are typically the largest source of emissions and the easiest to measure and manage. Scope 2 and Scope 3 emissions can be added as data availability and reporting capacity improve.

Although emissions inventories are often developed for greenhouse gas reporting, the same operational scope can also be applied to air pollutant emissions, because many of the underlying sources are the same. This allows businesses to integrate air pollutant management into existing greenhouse gas inventory systems where appropriate.

Classifying emission sources using the GHG Protocol

Once the operational boundary is defined, businesses should classify emissions sources using internationally recognised accounting frameworks.

The Greenhouse Gas Protocol (GHG Protocol) groups emissions into three scopes.

Scope 1: Direct emissions

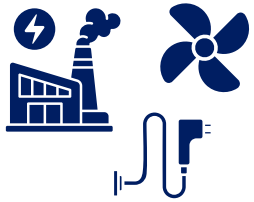
Emissions from owned or controlled vehicles and equipment.

Transport examples

Fuel combustion in petrol, diesel or CNG vehicles, generators,and auxiliary equipment.

Scope 2: Indirect electricity emissions

Emissions from purchased electricity.



Transport examples

Electric vehicle charging, warehouses, depots, offices, and cooling systems.

Scope 3: Value chain emissions

Other indirect emissions arising across the value chain.

Transport examples

Outsourced logistics, subcontracted transport, fuel production, vehicle manufacturing, employee travel, waste management, and purchased goods and services.

Why this matters

Using these categories helps businesses organise emissions data consistently and align with international reporting practices.

Also relevant for air pollutants

The same operational and transport system boundaries can also be applied to air pollutant emissions because many underlying emission sources are the same.

This provides a practical basis for integrating greenhouse gas and air pollutant emissions into one management system where relevant.

Activity 1.3 – Identifying emissions sources

Once emissions have been classified into Scopes 1, 2, and 3, the next step is to identify the specific activities, vehicles, facilities, and processes that generate emissions within business operations.

In most road transport businesses, fuel combustion in vehicle engines is the primary source of emissions. Petrol, diesel, and compressed natural gas (CNG) vehicles generate both greenhouse gases (primarily CO_2) and harmful air pollutants, including particulate matter (PM), nitrogen oxides (NO_x), sulphur oxides (SO_x), and carbon monoxide (CO). The type and quantity of emissions generated vary depending on vehicle type and age, engine technology, fuel quality, vehicle maintenance, driving behaviour, traffic congestion, route conditions and load factors.

Issues such as older vehicles, poor maintenance, low fuel quality, and prolonged vehicle idling can contribute disproportionately to air pollutant emissions, particularly PM and NO_x, and should receive attention during assessments.

Other common emission sources include:

- electricity use in depots, warehouses, offices, and electric vehicle charging infrastructure
- fuel used in generators and auxiliary equipment
- refrigeration units in logistics operations
- emissions from subcontracted transport services
- vehicle idling and inefficient operations.

Understanding where emissions occur helps businesses identify the specific sources and activities that contribute most to fuel consumption, operational inefficiency, and environmental impacts. This provides the foundation for prioritising mitigation measures and allocating resources effectively. In many cases, a relatively small number of vehicles, routes, or operational practices account for a large proportion of total emissions.

Keep the approach practical

The most effective approach is to keep the initial scope simple and manageable. Start with the major sources of emissions, use existing operational and fuel data, apply the same scope consistently over time, and document what is included and excluded. Avoid unnecessary complexity in the early stages. As monitoring and reporting systems improve, the scope can be refined to provide a more complete understanding of emissions.

GEDSI considerations

When defining the scope, consider whether routes or services specifically serve women, people with disabilities, older people, or low-income communities. Emissions reductions on- these routes may generate wider social, health, and accessibility benefits that strengthen business cases, investment proposals and applications for climate finance.

How does Chisom Transport Ltd apply Step 1? An illustrative scenario

Activity 1.1 – Defining the operational scope
Chisom begins by identifying the main activities that generate emissions across her business. She includes her 14 buses and 6 delivery trucks, the diesel generator at her Enugu depot, and the electricity used in her office. She excludes subcontracted haulage services for the time being because reliable data are not yet available. Chisom records what is included and excluded, the reporting period, and the geographic coverage of her operations in a simple operational scope record. By documenting these decisions and applying the same scope consistently over time, she creates a reliable basis for future reporting and comparison.

Activity 1.2 – Classifying emission scopes
With her operational scope defined, Chisom classifies her emission sources using the GHG Protocol framework. Emissions from her buses, trucks and depot generators are classified as Scope 1 because they arise from fuel combustion in assets under her operational control. Electricity purchased for her office is classified as Scope 2. She notes that subcontracted haulage services would be classified as Scope 3 if they are included in future assessments. The exercise confirms that Scope 1 emissions account for most of the fuel use and emissions within her business and should therefore be her initial priority.

Activity 1.3 – Identifying emission sources
Chisom then examines where emissions occur within her operations. She identifies fuel combustion in vehicle engines as the largest source of both greenhouse gas and air pollutant emissions. Chisom observes that several of her older buses are likely to generate disproportionately higher emissions because of their age, maintenance condition, and fuel efficiency. She notes that several buses are being used in highly populated areas used frequently by people from low-income households. Chisom also identifies the depot generator as a secondary emission source, particularly during periods of unreliable electricity supply. These findings provide an initial indication of where emission hotspots may exist and help focus future analysis and mitigation efforts.

Step 2.

Calculate your emissions

Key activities

- **Use available operational data to estimate emissions.**
- **Develop tools that link emissions directly to fuel use, operational efficiency, and business performance.**
- **Start with simple estimates and improve accuracy as data quality improves.**
- **Use consistent methods for estimating greenhouse gas and air pollutant emissions.**

In Step 1, businesses define the operational scope of the assessment and identify the main sources of greenhouse gas and air pollutant emissions. The next step is to estimate how much these sources emit.

For transport businesses, emissions are closely linked to vehicle activity, fuel consumption, freight movement, passenger transport, electricity use, and logistics performance. Calculating emissions therefore provides more than an environmental assessment. It helps businesses understand where fuel is consumed, where costs are incurred, and where operational improvements can increase efficiency and reduce emissions. Actions that improve fuel efficiency can also reduce greenhouse gas emissions and air pollution, creating operational, financial, environmental, and health benefits. Other actions, such as fuel switching or modal shift (the movement of passengers or freight from higher-emission to lower-emission transport modes) can drive further reductions in emissions.

Businesses do not require complex systems or highly detailed data to begin. Practical estimates based on existing operational records can provide a credible starting point. As monitoring systems, data quality, and organisational capacity improve, emissions estimates can become more comprehensive and accurate.

This step provides guidance on developing an emissions inventory, collecting activity data, selecting emission factors, and estimating greenhouse gas and air pollutant emissions. Annex A2 provides additional technical guidance on greenhouse gas and air pollutant estimation methodologies, emission factors, and transport mode-specific approaches.

What is an emissions inventory?

An emissions inventory is a structured estimate of greenhouse gas and air pollutant emissions generated by business activities. It combines operational activity data, such as fuel consumption, distance travelled, freight activity, passenger activity, or electricity use, with emission factors that convert those activities into emissions estimates.

An emissions inventory provides a baseline against which future performance can be assessed and supports emissions management, operational improvement, reporting and climate action planning. Updating emission inventories over time allows trends in emissions to be assessed.

Activity 2.1 – Developing an emissions inventory

Once the operational scope has been defined and emission sources identified, the next task is to quantify them by developing an emissions inventory.

The emissions inventory helps businesses to:

- identify major emission sources
- understand fuel consumption patterns
- identify operational inefficiencies
- compare fleet performance
- establish an emissions baseline
- prioritise mitigation measures
- track progress over time
- support sustainability reporting and disclosure
- strengthen applications for climate and sustainable finance.

For transport businesses, inventories are commonly developed for vehicle fleets, freight and passenger operations, depots, generators, and refrigeration systems. The inventory should cover at least the activities and emission sources identified in Step 1 and use the same operational scope and reporting period. This ensures consistency and allows emissions performance to be compared over time.

Although inventories are often initially developed for greenhouse gas reporting, air pollutant emissions can often be incorporated into the same inventory process because many of the underlying emission sources and activity data requirements are similar. This enables businesses to address climate and air quality objectives using a shared evidence base.

Emissions inventories are commonly developed using internationally recognised methodologies, including:

- Greenhouse Gas Protocol, developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD)
- Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories
- The International Organization for Standardization's ISO 14083: Greenhouse gases – Quantification and reporting of greenhouse gas emissions arising from transport chain operations
- European Monitoring and Evaluation Programme/European Environment Agency (EMEP/EEA) air pollutant emission inventory guidebook.

More detail on these inventories and methods can be found in Annex 1.

These methods provide "tiered" approaches which differ in methodological complexity, and which allow those entities with limited data to develop a simple inventory that can be improved as more data becomes available. A simple inventory based on available operational data can provide a credible baseline and valuable insights into where emissions occur across operations.

Activity 2.2 – Collecting activity data

The quality of an emissions inventory depends on the quality of the underlying activity data and emission factors. Activity data describes the transport activities that generate emissions and provides the information needed to estimate greenhouse gas and air pollutant emissions.

For most transport businesses, much of this information may already be collected for operational, financial, or maintenance purposes. Developing an emissions inventory therefore often involves organising and using existing records rather than creating entirely new monitoring systems.

Examples of common activity data

Data type	Typical source
Fuel purchased (litres)	Fuel receipts, supplier invoices
Distance travelled (km)	Odometer readings, GPS systems, driver logs
Vehicle numbers and types	Fleet register
Vehicle age and fuel type	Maintenance and procurement records
Generator fuel consumption	Depot fuel records
Electricity use	Utility bills
Freight activity	Freight manifests and delivery records
Passenger activity	Ticketing systems and trip records

Fuel consumption data is often a useful starting point because it is directly linked to operating costs, vehicle activity, and greenhouse gas emissions. For many transport businesses, fuel expenditure represents one of the largest operational costs, making fuel data particularly valuable for both emissions management and operational efficiency.

The level of detail available will influence the accuracy of the inventory. However, businesses should not delay doing emissions assessments because detailed data are unavailable. Reasonable estimates based on available information can provide a credible baseline and help identify major emission sources and opportunities for improvement.

Businesses should document the data sources used, any assumptions made, and any known limitations in the data. This improves transparency and helps ensure consistency in future reporting.

As data collection and monitoring systems improve, businesses can increase the coverage, accuracy, and level of detail of their emissions inventories.

Activity 2.3 – Choosing emission factors

Emission factors convert operational activity into emission estimates. They represent the quantity of emissions generated per unit of activity, such as a litre of fuel consumed, a kilometre travelled, or a kilowatt-hour of electricity used.

Two approaches are commonly used in transport emissions inventories are **fuel-based** and **distance-based** methods.

Fuel-based approach (recommended)

The fuel-based approach uses actual fuel consumption records and applies standard emission factors for the fuel consumed.

Because fuel use is directly linked to both emissions and operating costs, this approach provides reliable and useful results for business decision-making. Most transport businesses already maintain fuel purchase records for financial and operational purposes, making this approach relatively straightforward to implement.

Distance-based approach

Where fuel consumption data are unavailable, emissions can be estimated using vehicle kilometres travelled and standard distance-based emission factors.

This approach provides a useful starting point but relies on assumptions about vehicle efficiency, loading, maintenance condition, driving behaviour, and operating conditions. As fuel consumption records become available, businesses should transition to fuel-based calculations where possible.

This approach is also consistent with national greenhouse gas inventory methodologies, which typically use fuel consumption as the primary activity data source for estimating transport emissions.

Greenhouse gas emission factors are often based primarily on fuel consumption and are widely available. Air pollutant emission factors typically require additional information, such as vehicle type, age, engine technology, fuel quality, and operating conditions. Carbon dioxide (CO_2), the principal greenhouse gas emitted by vehicles, is directly related to fuel consumption, meaning emissions can usually be estimated using relatively simple data.

In contrast, emissions of other greenhouse gases, such as methane (CH_4) and nitrous oxide (N_2O), as well as air pollutants, are influenced by additional factors, including engine characteristics and emission control technologies such as catalytic converters and particulate filters. As a result, greenhouse gas emissions can generally be estimated with lower initial data requirements, while more accurate air pollutant emission estimates depend on more detailed operational and vehicle information.

Typical greenhouse gas emission factors

Fuel-based factors

Fuel type	Emission factor
Diesel	2.68 kg CO_2/litre
Petrol	2.31 kg CO_2/litre
CNG	Approximately 2.0 kg CO_2/kg
Grid electricity	0.43 kg CO_2/kWh

Distance-based factors

Vehicle type	Emission factor	Typical application
Heavy diesel truck	0.8–1.2 kg CO_2/km	Freight transport
Intercity diesel bus	0.6–0.9 kg CO_2/km	Long-distance passenger services
Urban diesel bus	0.7–1.0 kg CO_2/km	Urban passenger services
Light delivery van	0.2–0.35 kg CO_2/km	Urban deliveries
Motorcycle	0.07–0.12 kg CO_2/km	Passenger and courier services

While the factors presented here are for greenhouse gas emissions, similar approaches can estimate air pollutant emissions using pollutant-specific emission factors. These factors provide a practical starting point for estimating emissions. Additional greenhouse gas and air pollutant emission factors are provided in Annex 2.

Where businesses wish to quantify both greenhouse gas and air pollutant emissions using an integrated approach, they may refer to the CCAC/SEI Integrated Guide for Business Greenhouse Gas and Air Pollution Emissions Assessment, which provides practical methodologies for developing integrated emissions inventories.

Keep the approach practical

The most effective approach is to keep emissions calculations simple and manageable.

Start by focusing on the major sources of fuel use and emissions. Use existing operational records, apply consistent assumptions, and clearly document the data sources and methods used.

Businesses should avoid unnecessary complexity in the early stages. Initial estimates are often sufficient to establish an emissions baseline, support operational decision-making, and identify opportunities for improvement.

As data quality and monitoring systems improve, businesses can introduce:

- telematics systems
- fuel management systems
- GPS tracking
- digital fleet management tools
- automated reporting systems
- more detailed inventory methodologies.

Over time, improved data collection and monitoring will strengthen emissions reporting, support more accurate decision-making, improve operational efficiency, and provide a stronger evidence base for emissions reduction planning and climate finance applications.

Activity 2.4 – Calculating emissions

Once activity data have been collected, emissions can be estimated by applying appropriate emission factors.

The basic calculation is:
Emissions = activity data × emission factor

For example:
68 400 litres diesel × 2.68 kg CO_2/litre = 183 tonnes CO_2

Activity data describes the level of transport activity generating emissions. It may include fuel consumption, distance travelled, freight activity (measured in tonne-kilometres, representing the movement of one tonne of goods over one kilometre) passenger activity (measured in passenger-kilometres, representing the movement of one passenger over one kilometre), and electricity consumption.

Emission factors represent the quantity of emissions generated per unit of activity and vary according to fuel type, vehicle technology, engine characteristics, transport mode, operating conditions, and emission standards.

For most transport businesses, fuel consumption data provides a reliable basis for estimating greenhouse gas emissions because it is directly linked to fuel use and operating costs. Where fuel consumption data are available, fuel-based approaches provide more accurate emissions estimates than distance-based methods.

The same calculation approach can estimate both greenhouse gas and air pollutant emissions, although different emission factors are required for different pollutants.

GEDSI considerations

When analysing emissions, consider whether particular routes or services operate in densely populated, low-income, or otherwise vulnerable communities.

Air pollutant emissions such as particulate matter (PM) and nitrogen oxides (NO_x) can have disproportionate impacts on human health, particularly among children, older people, and individuals with existing health conditions. Reducing emissions on these routes may therefore deliver wider health, social, and environmental benefits besides reducing greenhouse gas emissions.

Demonstrating these co-benefits can strengthen business cases for cleaner vehicles and support applications for climate and sustainable finance.

Illustrative scenario – how does Chisom Transport apply Step 2?

Chisom uses three months of fuel receipts to develop an emissions inventory covering her bus fleet, delivery vehicles, depot generator, and office electricity use. Using fuel-based emission factors, she estimates total emissions of approximately **183 tonnes CO_2 per month** from vehicle operations.

She also calculates emissions from her depot generator, which contributes approximately **4 tonnes CO_2 per month** because of frequent electricity outages.

These estimates provide Chisom with her first emissions baseline, creating a reference point against which future performance and emissions reduction efforts can be measured. The results will be analysed in Step 3 to identify the vehicles, routes, and activities responsible for the largest share of emissions.

Step 3.

Identify priority emission sources

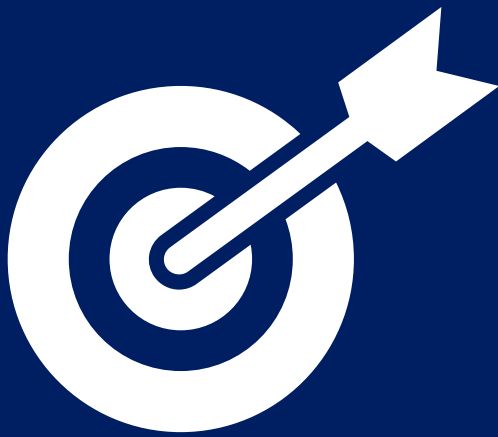
Key activities

- **Analyse your emissions inventory to understand how emissions are distributed across operations.**
- **Identify the vehicles, routes, facilities, and activities responsible for the largest share of greenhouse gas and air pollutant emissions.**
- **Use simple performance indicators to compare operational efficiency.**
- **Prioritise actions where improvements will deliver the greatest climate, clean air, and operational benefits.**
- **Establish measurable targets linked to your findings.**

Once emissions have been estimated, the next step is to identify the sources that contribute most to greenhouse gas emissions, air pollutant emissions, fuel consumption, and operational costs.

In most transport businesses, a relatively small number of vehicles, routes, facilities, or activities account for a large share of total emissions and fuel use. These priority emission sources, often referred to as emission hotspots, should be the focus of further analysis and action.

This approach is consistent with internationally recognised emissions management frameworks, including key category analysis developed by the Intergovernmental Panel on Climate Change (IPCC), as well as approaches used by the International Energy Agency (IEA) and the Climate and Clean Air Coalition (CCAC), which emphasise prioritising the most significant sources of emissions.



The aim is not to analyse every activity in detail, but to focus on those areas where action can most effectively reduce emissions, improve air quality, lower fuel consumption, and strengthen operational performance.

Activity 3.1 – Analyse your emissions inventory

Businesses should review the emissions inventory developed in Step 2 to understand how greenhouse gas and air pollutant emissions are distributed across operations.

Emissions may be grouped according to:

- vehicle type
- route or service
- operational activity
- facility or depot
- fuel type
- vehicle age and maintenance history.

For most transport businesses, fuel consumption from vehicle fleets represents the largest source of emissions. Within fleets, a relatively small number of vehicles, routes, or activities often account for a disproportionate share of total emissions and fuel use. Examples may include:

- long-distance freight operations
- intercity passenger services
- older vehicles
- poorly maintained vehicles
- high-utilisation vehicles
- heavily used generators or refrigeration systems.

Identifying these priority emission sources helps businesses focus resources on areas where improvements are likely to deliver the greatest climate, clean air, operational, and financial benefits.

Where sufficient data are available, businesses should consider both greenhouse gas emissions and air pollutant emissions when analysing emissions sources. Some activities may contribute disproportionately to emissions of particulate matter ($PM_{2.5}$), black carbon (BC), or nitrogen oxides (NO_x), even where their contribution to total greenhouse gas emissions is relatively small.

Businesses may use the Emissions Hotspot Identification Worksheet in Annex A3 to support this analysis.

Activity 3.2 – Use simple performance indicators

Performance indicators can help businesses identify operational inefficiencies, compare performance across vehicles, routes, and services, and identify priority emission sources.

Performance indicators

Indicator	What it indicates
Litres per 100 km	Fuel efficiency of vehicles
CO_2 per kilometre (kg CO_2/km)	Greenhouse gas emissions intensity of routes or services
Emissions per tonne-kilometre	Freight transport efficiency
Emissions per passenger-kilometre	Passenger transport efficiency
Idle time (hours per vehicle)	Unnecessary fuel consumption and emissions
Empty return trips (%)	Inefficient vehicle utilisation
Vehicle utilisation rate (%)	Operational efficiency
Maintenance frequency	Potential operational and emissions performance issues

Additional operational indicators and assessment tools are provided in Annex A3.

Activity 3.3 – Identify common emission hotspots

The purpose of hotspot identification is to focus management attention on the relatively small number of sources that account for the largest share of emissions and fuel consumption. Common emission hotspots in Nigerian transport operations include:

- older diesel vehicles
- high-mileage vehicles
- poorly maintained vehicles
- excessive vehicle idling
- congested urban routes
- inefficient route planning
- empty return trips
- underutilised vehicle capacity
- heavily used depot generators
- refrigeration systems with high energy consumption.

Businesses should consider both climate and clean air impacts when identifying priorities. Air pollutant hotspots do not always correspond to greenhouse gas hotspots. Older diesel vehicles, poorly maintained engines, excessive idling, generator use, and operations in congested urban areas may contribute disproportionately to emissions of particulate matter ($PM_{2.5}$), black carbon (BC), and nitrogen oxides (NO_x), even where their contribution to total greenhouse gas emissions is relatively small. Actions that reduce fuel consumption often provide benefits for both greenhouse gas emissions and air quality, but some measures may be important for reducing harmful air pollutants and improving public health.

Annex A3 provides tools for hotspot assessment and emissions source ranking.

Activity 3.4 – Prioritise high-impact actions

Not every emissions reduction measure can be implemented at the same time. Businesses should focus first on activities that provide the greatest benefits relative to cost and effort.

Prioritisation should consider:

- total fuel consumption
- greenhouse gas emissions
- air pollutant emissions
- exposure of workers and nearby communities to air pollution
- potential emissions reduction
- implementation cost
- operational feasibility
- expected fuel savings
- implementation timeframe.

Low-cost operational improvements often deliver immediate benefits, including:

- improved vehicle maintenance
- reduced idling
- tyre pressure management
- eco-driving
- route optimisation.

Larger reductions may require investment in:

- fleet management systems
- newer vehicles
- cleaner fuels
- electric vehicles
- charging or refuelling infrastructure.

The table below provides an indicative guide to prioritising common mitigation measures. The priority ratings should be used as a guide rather than a rigid rule, as the suitability and effectiveness of measures will vary between businesses.

Prioritisation of actions

Mitigation action	Description	Potential climate and clean air benefit	Relative cost	Typical timeframe	Priority
Improved vehicle maintenance	Regular servicing of engines, filters, injectors, tyres, and other components to improve efficiency and reduce excessive emissions.	Medium (up to 10% reduction in fuel use; significant reduction in smoke and pollutant emissions)	Low	Immediate	★★★ Do first
Anti-idling policy	Require drivers to switch off engines during extended stops and waiting periods.	Low–medium (typically 3–8% reduction in fuel use; substantial reduction in local air pollution)	Very low	Immediate	★★★ Do first
Tyre pressure management	Maintain tyres at recommended pressures through routine inspections and maintenance.	Low (typically 1–3% reduction in fuel use and emissions)	Very low	Immediate	★★★ Do first
Route optimisation	Reduce unnecessary kilometres travelled, minimise congestion exposure, and improve scheduling efficiency.	Medium–high	Low–medium	1–6 months	★★ Plan now
Load and backhaul consolidation	Increase vehicle utilisation and reduce empty return trips through improved logistics planning and coordination.	High	Low	1–6 months	★★ Plan now
Fleet management and telematics systems	Monitor fuel consumption, driver behaviour, idling, route efficiency, and vehicle utilisation using digital systems.	Medium	Medium	3–12 months	★★ Plan now
Generator efficiency improvements	Improve maintenance, sizing, operation, or replacement of heavily used generators.	Medium	Medium	3–12 months	★★ Plan now
Fleet renewal (oldest vehicles first)	Replace older, less efficient vehicles with newer and lower-emission alternatives meeting EURO VI or above. Prioritise vehicles identified as major emission hotspots.	High	High	1–3 years	★ Long-term
Cleaner fuels (e.g. plug-in hybrids, low-sulphur fuels)	Transition to lower-emission fuels where operationally and economically feasible.	High	High	1–5 years	★ Long-term
Electric vehicles	Introduce electric vehicles on suitable routes and applications, supported by charging infrastructure where required.	Very high	Very high	2–5 years	★ Long-term

Businesses should begin with low-cost operational measures that can be implemented quickly and deliver immediate fuel savings. These actions often provide a firm foundation for more substantial investments in vehicle replacement, cleaner fuels, and advanced technologies.

The Mitigation Prioritisation Matrix and Climate Action Planning Template in Annex A3 can be used to support decision-making.

Activity 3.5 – Set targets

Once emission hotspots have been identified and priority actions selected, businesses should establish clear and measurable targets to guide implementation and monitor progress over time.

Targets should focus on the most significant sources of greenhouse gas emissions, air pollutant emissions, fuel consumption, and operational inefficiencies identified through the hotspot analysis.

In addition to supporting business objectives, targets should align where possible with relevant national climate policies, air quality strategies, transport decarbonisation plans, and corporate sustainability commitments. Alignment with national and sectoral priorities can strengthen sustainability reporting, stakeholder engagement, and future climate finance applications.

Climate targets

Examples include:

- reduce total greenhouse gas emissions by a specified percentage
- reduce fuel consumption per kilometre travelled
- improve fleet fuel efficiency
- increase the share of lower-emission vehicles
- reduce emissions per tonne-kilometre of freight transported
- reduce emissions per passenger-kilometre of passenger transport services.

Clean air targets

Examples include:

- reduce particulate matter ($PM_{2.5}$) emissions
- reduce black carbon (BC) emissions
- reduce nitrogen oxide (NO_x) emissions
- reduce vehicle smoke emissions
- reduce emissions from generators and other high-polluting equipment.

Operational targets

Examples include:

- reduce vehicle idling time
- reduce empty return trips
- improve vehicle utilisation rates
- improve load factors
- reduce fuel consumption per vehicle
- improve route efficiency.

Types of targets

Two broad categories of targets are commonly used.

Absolute targets measure total emissions reductions over time and are most suitable where transport activity is relatively stable.

Examples include:

- reduce total greenhouse gas emissions by 15% by 2030
- reduce $PM_{2.5}$ emissions by 20% within three years.

Intensity-based targets measure emissions relative to a unit of transport activity and are often more suitable for growing businesses where overall activity may increase.

Examples include:

- reduce fuel consumption from 38 litres per 100 km to 32 litres per 100 km by 2028
- reduce emissions per tonne-kilometre by 10% within two years
- reduce emissions per passenger-kilometre by 10% within two years.

Target design principles

Targets should be:

- measurable
- realistic
- time-bound
- aligned with business operations
- supported by available data and monitoring systems.

Examples of targets

Target type	Example
Greenhouse gas emissions	Reduce fleet greenhouse gas emissions by 15% within three years
Fuel efficiency	Reduce fuel consumption from 38 litres per 100 km to 32 litres per 100 km by 2028
Freight efficiency	Reduce emissions per tonne-kilometre by 10% within two years
Passenger transport efficiency	Reduce emissions per passenger-kilometre by 10% within two years
Air quality	Reduce $PM_{2.5}$ and NO_x emissions from older diesel vehicles by 20% within three years
Operational performance	Reduce average vehicle idling time by 50% within one year
Fleet transition	Increase the proportion of lower-emission vehicles to 25% of the fleet by 2030

Well-designed targets help businesses track progress, demonstrate commitment to customers and stakeholders, support sustainability reporting, strengthen investment readiness, and provide a basis for future action on climate and clean air.

Annex A3 includes templates for action planning and performance monitoring.

GEDSI considerations

When identifying emission hotspots, businesses should consider whether high-emission routes, facilities, or activities affect communities that may be particularly vulnerable to poor air quality, including women, children, older people, people with disabilities, and those with pre-existing health conditions.

Attention should be given to routes serving schools, hospitals, markets, transport terminals, and densely populated residential areas, where vehicle emissions can have significant health impacts.

Prioritising cleaner operations in these locations can deliver both climate and clean air benefits while contributing to more inclusive and equitable transport systems. These wider social benefits may also strengthen sustainability reporting and improve the attractiveness of future climate and sustainable finance proposals.

Illustrative example – how would Chisom Transport apply Step 3?

Chisom's hotspot analysis revealed that her four oldest buses (over 13 years old) accounted for 34% of total fuel consumption despite undertaking only 18% of total vehicle kilometres travelled. The Enugu–Abuja route generated 41% of total greenhouse gas emissions, while drivers operating from Ogbete Terminus averaged 3.8 hours of vehicle idling per day.

Based on these findings, Chisom establishes three priority targets:

- reduce fuel consumption per kilometre for the oldest buses by 15% through eco-driving and improved maintenance
- reduce average vehicle idling time at Ogbete Terminus by 60%
- eliminate at least three empty return trips per week on the Enugu–Abuja route through improved scheduling and load consolidation.

By focusing on the largest sources of fuel consumption, emissions, and operational inefficiency, Chisom can achieve measurable improvements while minimising implementation costs.

Step 4.

Take action to reduce emissions

Key activities

- **Define a vision, targets, responsibilities, timelines, and resource requirements.**
- **Start with low-cost operational improvements, including vehicle maintenance and eco-driving.**
- **Target high fuel-consuming vehicles and inefficient routes first.**
- **Combine quick wins with medium- and long-term efficiency improvements.**
- **Develop and implement a Climate Action Plan.**

This step focuses on identifying, prioritising, and implementing measures that reduce fuel consumption, improve operational efficiency, and lower emissions of both greenhouse gases and air pollutants. Many transport businesses can achieve immediate improvements through relatively simple operational measures, while larger technological changes require longer-term planning and investment.

Measures often require a combination of different approaches, but because fuel consumption is linked to greenhouse gas emissions, air pollutant emissions, and operating costs, improving fuel efficiency is often the most practical and cost-effective starting point for transport businesses.

International evidence shows that measures such as eco-driving, vehicle maintenance, route optimisation, and logistics efficiency improvements can reduce fuel consumption by approximately 5–15%. Fleet modernisation, alternative fuels, and vehicle electrification can deliver larger emissions reductions over longer timeframes.

The most effective approach combines:

- short-term operational improvements
- medium-term efficiency measures
- longer-term fleet and technology transitions.

This phased approach enables businesses to achieve immediate fuel savings while progressively moving towards cleaner, more efficient and lower-emission transport operations.

Activity 4.1 – Establish a vision and set objectives

Any Climate Action Plan developed by a business should be guided by a clear vision of how transport operations can become more fuel efficient, lower emitting, cost-effective, and resilient.

Objectives may include:

- reducing fuel consumption
- improving vehicle utilisation
- reducing idling time
- lowering greenhouse gas emissions
- reducing emissions of $PM_{2.5}$, black carbon, and NOx
- increasing the use of cleaner vehicle technologies.

Objectives should be:

- realistic
- measurable
- time-bound
- aligned with business operations.

Clear objectives help businesses measure progress, improve accountability, support decision-making, demonstrate commitment to customers and regulators, and prepare for future reporting requirements.

Practical tools for setting objectives, selecting mitigation measures, and developing implementation roadmaps are provided in Annex A4.

Aligning with Nigeria's climate vision

The vision should support both business objectives and Nigeria's wider climate and transport goals. Aligning business plans with national priorities can help strengthen regulatory compliance, support access to finance, improve operational performance, and show commitment to sustainable transport.

Relevant national policies include Nigeria's Nationally Determined Contribution (NDC 3.0), the Energy Transition Plan (ETP), the Climate Change Act (2021), the National Vehicular Emission Control Programme (NVECP), National Environmental Standards and Regulations Enforcement Agency (NESREA) regulations, and transport reforms being implemented in major cities.

Key transport-related national objectives include:

- reducing economy-wide greenhouse gas emissions by 29.3% by 2030 and 32.2% by 2035
- introducing Euro IV vehicle standards by 2030
- accelerating the adoption of compressed natural gas (CNG) vehicles
- improving public transport systems and transport efficiency
- increasing the use of electric vehicles and supporting charging infrastructure
- transitioning towards lower-emission transport systems
- achieving net-zero emissions across all sectors by 2060.

While individual transport businesses are not expected to achieve these national objectives alone, aligning business plans with broader policy directions can support long-term competitiveness and future investment opportunities.

Activity 4.2 – Apply the avoid–shift–improve (ASI) framework

The avoid–shift–improve (ASI) framework is widely used in transport planning and climate mitigation to identify comprehensive and balanced opportunities for advancing sustainable, energy-efficient and low-carbon transport measures. It provides a simple way of organising emissions reduction measures and can be applied by transport businesses of all sizes.

The framework recognises emissions can be reduced by:

- **avoiding** unnecessary motorised transport activity and fuel consumption
- **shifting** towards more efficient transport services and operational practices
- **improving** vehicle technologies, fuels, and operational performance.

In practice, the most effective Climate Action Plans combine measures from all three components.

Overview and examples of the avoid–shift–improve (ASI) framework

Principle	What It means	Examples for transport businesses	Questions to ask
Avoid	Reduce unnecessary motorised vehicle trips, mileage, and fuel consumption	• Eliminate empty return trips reduce vehicle idling • Improve scheduling • Consolidate deliveries • Reduce unnecessary travel	Can unnecessary motorised vehicle movements be reduced? Can deliveries or passenger services be better coordinated? Can idling time be reduced?
Shift	Move towards more efficient transport services, operations, or modes where feasible	• Improve load factors • Consolidate freight movements • Improve backhauling • Encourage shared transport services • Use rail for long-distance freight where available	Can vehicle occupancy or load factors be increased? Can freight movements be consolidated? Are alternative transport modes available?
Improve	Improve vehicle efficiency, fuels, technologies, and operational performance	• Eco-driving • Preventive maintenance • Fleet renewal • Euro IV/V vehicles • Electric vehicles • Fleet management systems	Can fuel efficiency be improved? Are older vehicles contributing disproportionately to emissions? Are cleaner vehicle technologies or fuels feasible?

The ASI framework can also be used to organise mitigation measures within the Climate Action Plan and support prioritisation of actions.

Additional examples of avoid–shift–improve measures are provided in Annex A4.

Activity 4.3 – Implement immediate low-cost actions

Many transport businesses can achieve emissions reductions quickly through operational improvements that require little or no capital investment. These measures often provide immediate fuel savings while improving operational efficiency and reducing greenhouse gas and air pollutant emissions.

Priority should generally be given to actions that can be implemented immediately and deliver measurable benefits within a short period. Examples include eco-driving, preventive maintenance, and reducing unnecessary engine idling.

Eco-driving and driver behaviour

Driver behaviour has a significant influence on fuel consumption and emissions. Aggressive acceleration, harsh braking, excessive speed, and unnecessary idling all increase fuel use and operating costs.

Eco-driving involves adopting driving practices that improve fuel efficiency and reduce vehicle wear. International evidence suggests that eco-driving measures can reduce fuel consumption by approximately 5–15%, depending on vehicle type, route conditions, and driving practices.

Overview of eco-driving measures

Eco-driving measure	What to do
Smooth acceleration	Avoid harsh acceleration and sudden braking
Reduced idling	Switch off engines when stationary for more than two minutes where safe and practical
Speed management	Maintain efficient cruising speeds and avoid excessive speeding
Tyre pressure checks	Check and correct tyre pressure regularly
Gear optimisation	Use appropriate gears and avoid over-revving

Driver training programmes and telematics systems can reinforce efficient driving behaviour through monitoring and feedback.

Besides reducing greenhouse gas emissions, smoother driving can reduce:

- brake wear
- tyre wear
- maintenance costs
- non-exhaust particulate emissions.

Preventive maintenance

Poorly maintained vehicles often consume more fuel and produce higher emissions than well-maintained vehicles. Regular servicing is one of the most cost-effective measures available to transport businesses.

Preventive maintenance improves fuel efficiency, reduces vehicle downtime, and helps ensure compliance with emissions standards.

Overview of preventive maintenance activities

Maintenance activity	Purpose	Emission benefit
Oil changes	Reduce engine friction	Improved fuel efficiency
Air filter replacement	Improve combustion efficiency	Lower particulate emissions
Injector cleaning	Improve fuel atomisation	Lower smoke and particulate emissions
Tyre alignment	Reduce rolling resistance	Reduced fuel consumption
Engine tuning	Improve combustion efficiency	Reduced carbon dioxide (CO_2) and nitrogen oxide (NO_x) emissions

In many fleets, a relatively small number of poorly maintained vehicles contribute disproportionately to fuel consumption and emissions. Maintenance records can help identify vehicles that should be prioritised for servicing or replacement.

Reducing idling

Unnecessary engine idling consumes fuel without providing transport services. Idling commonly occurs during loading and unloading, waiting periods, depot operations, and traffic congestion.

Reducing unnecessary idling can provide immediate fuel savings and lower emissions of:

- carbon dioxide (CO_2)
- nitrogen oxides (NO_x)
- particulate matter ($PM_{2.5}$)
- black carbon.

Simple measures include:

- introducing anti-idling policies
- raising driver awareness
- improving scheduling and dispatching
- reducing waiting times at depots and terminals.

Additional technical guidance on eco-driving, preventive maintenance, fuel efficiency measures, and operational improvements is provided in Annex A4.

Activity 4.4 – Plan medium-term efficiency improvements

Once immediate low-cost actions have been implemented, businesses should consider measures that improve operational efficiency over the medium term. These measures often require modest investment but can deliver substantial fuel savings, emissions reductions, and productivity improvements.

Priority should be given to actions that reduce unnecessary vehicle kilometres, improve vehicle utilisation, and strengthen operational management.

Route optimisation and logistics efficiency

Poor route planning, low vehicle utilisation, and empty return trips can increase fuel consumption, operating costs, and emissions. Improving logistics efficiency is often one of the most effective ways to reduce emissions while improving service performance.

Selected measures for route optimisation and logistics efficiency

Logistics measure	Benefit	Examples
GPS route planning	Reduced travel distance	Identify shorter and more efficient routes
Backhauling and load coordination	Reduced empty trips	Coordinate return loads and reduce empty running
Freight consolidation	Higher load factors	Increase vehicle utilisation and reduce trip frequency
Congestion avoidance and time scheduling	Reduced idling and fuel waste	Schedule operations to avoid peak traffic periods

Businesses do not necessarily require sophisticated software to begin improving logistics efficiency. Many improvements can be achieved through better scheduling, coordination between drivers and dispatchers, and improved planning of vehicle movements.

Improving logistics efficiency can deliver multiple benefits, including:

- reduced fuel consumption
- lower greenhouse gas emissions
- reduced air pollutant emissions
- lower operating costs
- improved vehicle utilisation.

Fleet management systems

Fleet management systems provide businesses with information on vehicle performance, fuel consumption, route efficiency, driver behaviour, and vehicle utilisation.

Examples include:

- GPS tracking systems
- telematics systems
- fuel monitoring systems
- digital maintenance management systems.

These tools can help identify inefficiencies, improve maintenance scheduling, support route optimisation, and strengthen operational decision-making.

For many businesses, fleet management systems also provide valuable operational data that can support emissions monitoring, reporting, access to finance, and future investment planning.

The choice of system should be appropriate to the size of the fleet, operational needs, available resources, and technical capacity of the business.

Additional guidance on route optimisation, logistics management, fleet management systems, and digital tools is provided in Annex A4.

Activity 4.5 – Plan longer-term technology improvements (2–5 years)

While operational improvements often deliver immediate emissions reductions, larger reductions require longer-term investment in vehicle technologies, fuels and fleet renewal. Businesses should plan these investments progressively, considering operational needs, availability of infrastructure, financing options, and expected emissions benefits.

Fleet renewal: replace the oldest vehicles first

Older vehicles are less fuel-efficient and produce higher levels of air pollutant emissions than newer vehicles. In many fleets, a relatively small number of older vehicles account for a disproportionate share of fuel consumption, maintenance costs, and emissions.

A phased fleet renewal programme can help businesses improve fuel efficiency, reduce operating costs and lower emissions.

Businesses should consider:

- prioritising vehicles with the highest fuel consumption per kilometre
- replacing vehicles with poor reliability or high maintenance costs
- adopting vehicles that meet current emissions and fuel-efficiency standards
- considering leasing or other financing arrangements to reduce upfront capital costs
- exploring climate finance opportunities to support fleet upgrades (see Step 5)
- prioritising vehicles that are more likely to affect communities that may be particularly vulnerable to poor air quality, including women, children, older people, people with disabilities, and those with pre-existing health conditions.

Where feasible, businesses should align fleet replacement plans with Nigeria's vehicle emissions standards and longer-term transport decarbonisation objectives.

Alternative fuels and electrification
Alternative fuels and vehicle electrification can provide deeper long-term reductions in greenhouse gas and air pollutant emissions.

Electric vehicles eliminate exhaust pipe emissions and can significantly improve urban air quality. However, their overall climate benefits depend on factors such as electricity generation sources, vehicle utilisation, charging infrastructure, and battery production impacts.

When evaluating vehicle replacement options, businesses should consider:
- vehicle purchase costs
- fuel or electricity costs
- maintenance requirements
- operational suitability
- infrastructure availability
- total cost of ownership over the vehicle lifetime.

Because these technologies often require significant investment, they are typically implemented as part of a longer-term transition strategy supported by business planning and financing mechanisms.

Special consideration: addressing non-exhaust emissions
Transport emissions are not limited to exhaust emissions from fuel combustion. Vehicles also generate non-exhaust emissions from tyre wear, brake wear, road surface abrasion, and the re-suspension of road dust. These emissions are increasingly recognised as an important source of particulate air pollution, particularly in urban areas.

Non-exhaust emissions are influenced by:
- vehicle weight
- driving behaviour
- braking frequency
- traffic congestion
- road conditions
- vehicle speed.

Although electric vehicles eliminate exhaust pipe emissions, they continue to generate non-exhaust particulate emissions through tyre and brake wear. Addressing non-exhaust emissions therefore remains important regardless of vehicle technology.

Businesses can help reduce non-exhaust emissions by:
- promoting smoother driving and eco-driving practices
- reducing harsh braking and rapid acceleration
- minimising unnecessary vehicle movements
- improving route planning and traffic flow
- maintaining appropriate vehicle weights and load distribution
- ensuring tyres and braking systems are properly maintained.

Many of these measures also improve fuel efficiency, reduce vehicle wear and lower operating costs.

While exhaust emissions remain the primary focus of most transport emissions reduction strategies, businesses should consider non-exhaust emissions as part of a broader approach to improving air quality and reducing environmental impacts.

Activity 4.6 – Develop a phased transition pathway

Reducing emissions is typically a gradual process rather than a single intervention. Most transport businesses achieve the greatest success by implementing measures progressively over time, beginning with low-cost operational improvements before moving towards larger investments in vehicle technologies and infrastructure.

A phased transition pathway can help businesses prioritise actions, allocate resources effectively, and align investment decisions with operational needs and business objectives.

Potential actions in a phased transition pathway

Phase	Typical actions
Short-term (0–2 years)	Eco-driving training Improved maintenance schedules Anti-idling policies Tyre pressure management Fuel monitoring Operational data collection
Medium-term (2–5 years)	Fleet management systems Route optimisation tools Backhaul coordination Freight consolidation Fleet renewal for older vehicles
Long-term (5–15 years)	Fleet modernisation Wider adoption of low-emission vehicles Electrification of suitable operations Charging infrastructure Advanced logistics systems Renewable energy integration where feasible

Businesses should adapt the pathway to their own operational circumstances, financial resources, and fleet characteristics. Not all businesses will follow the same transition route, and some measures may be implemented earlier or later depending on opportunities and constraints.

The phased transition pathway should inform the development of the Climate Action Plan and provide a framework for monitoring progress.

Activity 4.7 – Develop a Climate Action Plan

The framework has already introduced the development of a Climate Action Plan. At this stage, it should consolidate the actions identified throughout Step 4 into a structured implementation roadmap. The Climate Action Plan provides a practical framework for reducing emissions, improving operational efficiency, assigning responsibilities, and monitoring progress.

The Climate Action Plan should be a living document that is reviewed and updated regularly as new information becomes available and actions are implemented.

The plan should include:

- the emissions baseline established in Step 2
- priority emission sources identified in Step 3
- mitigation measures selected in Step 4
- targets and implementation timelines
- staff responsibilities
- resource requirements
- monitoring and reporting arrangements.

The Climate Action Plan should focus on achievable actions that support both business performance and emissions reduction objectives.

Typical actions in a Climate Action Plan

Action	Target	Timeline	Responsible person	Expected outcome
Eco-driving training	Reduce fuel consumption per kilometre by 10%	Months 1–2	Fleet manager	Improved fuel efficiency
Preventive maintenance programme	All vehicles serviced quarterly	Month 1 onwards	Workshop supervisor	Reduced fuel use and downtime
Anti-idling policy	Reduce idling time to less than 30 minutes per vehicle per day	Month 1 onwards	Drivers and supervisors	Reduced fuel consumption and emissions
Route optimisation	Reduce empty trips and unnecessary mileage	Months 3–6	Logistics coordinator	Improved vehicle utilisation
Fleet renewal	Reduce average fleet age	Years 1–3	Managing director	Lower fuel consumption and emissions

The level of detail included in the Climate Action Plan should reflect the size and complexity of the business. Smaller operators may require only a simple action table, while larger organisations may develop more detailed implementation plans.

Regular reviews of the Climate Action Plan help ensure that actions remain aligned with operational priorities, available resources, and business objectives.

Templates and additional guidance for developing implementation plans, monitoring progress, and prioritising mitigation measures are provided in Annex A4.

Activity 4.8 – Recognise the wider benefits of reducing emissions

Reducing transport emissions provides benefits that extend beyond climate mitigation. Many emissions reduction measures also improve operational efficiency, reduce costs, and strengthen business performance.

Potential benefits include:

- lower fuel consumption and operating costs
- improved fuel efficiency
- reduced vehicle maintenance requirements
- improved vehicle reliability and reduced downtime
- improved air quality and public health
- improved workforce health and safety
- enhanced compliance with environmental regulations
- improved business reputation with customers, investors, and supply-chain partners
- improved access to finance and investment opportunities
- greater resilience to fuel price volatility and future carbon pricing policies.

Reducing emissions of particulate matter, black carbon and nitrogen oxides is important in urban areas where transport emissions can contribute significantly to poor air quality and associated negative health effects.

Businesses that integrate emissions management into routine operations are often better positioned to respond to changing market conditions, regulatory requirements, and customer expectations.

GEDSI considerations

When implementing emissions reduction measures, businesses should consider how actions may affect different workers and transport users.

Key considerations include:

- ensuring eco-driving and skills development programmes are accessible to women drivers, younger workers, and workers from informal transport backgrounds
- providing training materials in local languages where necessary
- considering the needs of older people, pregnant women, and persons with disabilities when upgrading vehicles or improving transport services
- ensuring that workforce changes associated with new technologies are supported through appropriate training and transition measures
- promoting equal opportunities for women and underrepresented groups in fleet management, logistics coordination, vehicle maintenance, and technical roles
- engaging workers and affected stakeholders when introducing operational or technological changes.

Inclusive implementation can help strengthen workforce capacity, improve operational performance, support social inclusion, and enhance the long-term sustainability of emissions reduction measures.

Illustrative scenario – how does Chisom Transport apply Step 4?

Following the emissions hotspot analysis undertaken in Step 3, Chisom Transport Ltd identified driver behaviour, vehicle maintenance, and idling as priority areas for action.

The company began by implementing several low-cost operational measures. A one-day eco-driving workshop was organised for all drivers, covering smooth acceleration, speed management, gear optimisation, and reducing unnecessary idling. Anti-idling guidance was introduced at the Ogbete Motor Park terminus, and scheduling procedures were reviewed to reduce waiting times with engines running.

The company also undertook preventive maintenance on its four oldest buses. Vehicle inspections identified several issues affecting fuel efficiency, including clogged air filters, poor wheel alignment, and a faulty fuel injector. These issues were corrected during routine servicing.

Within three months, fuel consumption had fallen and operating costs had decreased. The company also established a system for recording fuel purchases, vehicle mileage, maintenance activities, and operational performance indicators.

The actions provided immediate fuel savings, reduced emissions, and improved vehicle reliability. Just as importantly, they generated operational data that could monitor progress, support future investment decisions, and show the effectiveness of emissions reduction measures.

The Climate Action Plan is reviewed regularly and updated as actions are completed, new opportunities are identified, and operational priorities evolve.

Illustrative example: Chisom Transport Ltd Climate Action Plan

Action	Target	Timeline	Responsible person	Expected outcome
Eco-driving training	Reduce fuel consumption per kilometre by 10%	Month 1	Fleet manager	Improved fuel efficiency
Anti-idling policy	Reduce vehicle idling time	Month 1	Drivers and supervisors	Reduced fuel consumption and emissions
Preventive maintenance programme	Service all vehicles quarterly	Months 1–12	Workshop supervisor	Improved vehicle performance
Fuel and mileage monitoring	Establish a consistent operational baseline	Ongoing	Fleet manager	Improved performance tracking
Route optimisation and backhaul coordination	Reduce empty trips and unnecessary mileage	Months 3–6	Logistics coordinator	Improved vehicle utilisation
Fleet renewal programme	Introduce electric vehicles	Years 2–4	Managing director	Reduced fuel consumption and emissions

Step 5.

Develop bankable projects and access climate finance

Key activities

- **Translate Climate Action Plan priorities into practical, investment-ready projects.**
- **Prioritise measures that reduce fuel consumption, operating costs, greenhouse gas emissions, and air pollutant emissions.**
- **Demonstrate clear operational, financial, climate, and clean air benefits.**
- **Identify appropriate sources of finance and technical support.**
- **Implement projects progressively while monitoring performance.**

The next step is to move from planning towards implementation by developing projects capable of attracting finance and delivering measurable operational, financial, and environmental improvements.

For transport businesses, climate finance is not only about environmental performance. Many climate-aligned investments are linked to reduced fuel consumption, improved operational efficiency, strengthened fleet reliability, lower operating costs, and improved long-term business resilience. Measures that reduce fuel use often reduce greenhouse gas and air pollutant emissions simultaneously, while creating important benefits for businesses, workers, passengers, and urban air quality.

Not all mitigation measures require external finance. Many operational improvements, such as eco-driving, improved maintenance, anti-idling measures, and route optimisation, can often be implemented using existing resources. Climate finance is most relevant where significant capital investment, infrastructure development, or technology deployment is required.

This step explains how businesses can convert Climate Action Plan priorities into investment-ready projects, assess financial viability, identify sources of finance and technical support, implement mitigation measures progressively, and establish monitoring systems to support continual improvement and scaling.

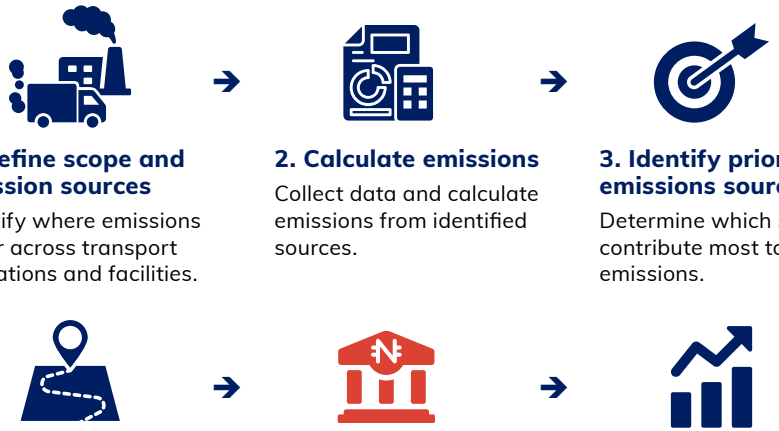
Activity 5.1 – From climate action planning to investment

Climate Action Plans identify major emission sources, operational inefficiencies, priority mitigation measures, implementation timelines, and expected emissions reductions. The next stage is to convert these priorities into clearly structured projects capable of attracting finance and supporting implementation.

The practical pathway for accessing climate finance follows the framework steps, as illustrated in the diagram below.

Practical pathway for accessing climate finance

A step-by-step pathway from initial assessment to investment-ready climate action and continuous improvement



Each step builds on the previous one, helping businesses move from emissions management to climate finance access and long-term scaling.

Transport businesses generally access climate finance through the following stages:

1. Identify priority mitigation measures within the Climate Action Plan.
2. Identify potential finance sources and understand their requirements.
3. Convert priority measures into clearly defined projects.
4. Establish baseline fuel use, costs, and emissions.
5. Quantify expected fuel savings and emissions reductions.
6. Assess financial viability and implementation requirements.
7. Prepare an investment-ready proposal.
8. Engage financial institutions, leasing providers, development finance institutions, or climate finance facilities.
9. Implement projects progressively while monitoring performance.

Typical climate-aligned transport investments include:

- fleet modernisation
- electric vehicle manufacturing or deployment
- charging infrastructure
- telematics and fleet management systems
- route optimisation technologies
- logistics efficiency improvements.

Projects that combine fuel savings, operational efficiency improvements, greenhouse gas emissions reductions, air pollutant emissions reductions, and air quality benefits are often more attractive to financiers because they show both environmental and financial value while improving long-term operational sustainability.

Practical considerations

In Nigeria, and many other low- and middle-income countries, transport services are often provided by small and fragmented operators with limited financial and technical capacity. Such operators may face difficulties accessing commercial finance individually because projects are often considered too small, too risky, or insufficiently developed by lenders and investors.

Aggregation approaches can improve investment readiness and access to finance by increasing project scale, reducing transaction costs, strengthening operational coordination and improving investment attractiveness.

Examples include:
- fleet aggregation through cooperatives or operator associations
- shared charging infrastructure
- pooled procurement of vehicles or technologies
- leasing arrangements
- corridor-based infrastructure partnerships
- public-private partnerships
- digital fleet management platforms serving multiple operators.

Public-private partnerships

Public-private partnerships (PPPs) can play an important role in advancing clean and low-carbon transport. These arrangements enable public and private stakeholders to develop, finance, implement, and operate transport projects while sharing risks, responsibilities, and benefits.

Transport applications may include:
- electric bus systems
- charging infrastructure networks
- logistics hubs
- transport terminals
- intelligent transport systems.

Public-private partnerships can improve project scale, strengthen investment attractiveness, mobilise additional finance, and support wider implementation of climate and clean air solutions.

Where appropriate, transport businesses should explore opportunities to collaborate with local authorities, transport agencies, development finance institutions, infrastructure providers, and private investors to support project development and implementation.

Activity 5.2 – Develop investment-ready projects

Access to climate finance is dependent on project quality and investment readiness. An investment-ready project contains sufficient technical, financial, operational and institutional information to allow financiers to assess whether it can be successfully implemented, managed and financed.

Climate finance institutions and commercial lenders expect projects to show:
- a clear operational rationale
- measurable emissions reductions
- financial viability
- implementation feasibility
- credible arrangements for risk management
- monitoring, reporting and verification systems.

Businesses should engage with financial institutions, regulators, technical partners, and climate finance facilities early during project development to understand eligibility criteria, proposal requirements, financing conditions, safeguard requirements and monitoring obligations.

Project preparation pathway

Developing investment-ready transport projects involves the following steps:
1. Identifying mitigation opportunities.
2. Establishing operational and emissions baselines.
3. Assessing technical and financial feasibility.
4. Quantifying emissions reductions and wider benefits.
5. Assessing risks and mitigation measures.
6. Developing a financing strategy.
7. Engaging financing institutions and technical partners.
8. Implementing, monitoring and reporting project performance.

This phased approach includes the steps already covered in this framework, and helps businesses improve project quality, strengthen institutional capacity, reduce implementation risks, and improve financing readiness.

Projects seeking finance should clearly define:
- the proposed intervention
- implementation requirements
- expected operational benefits
- expected fuel savings
- expected emissions reductions
- investment and operating costs
- implementation timelines
- organisational responsibilities.

Where possible, emissions estimation should follow recognised methodologies such as the IPCC Guidelines, Greenhouse Gas Protocol, ISO 14083 and EMEP/EEA methodologies (see Annex 1 for details).

Projects should also identify wider benefits where relevant, including:
- improved air quality
- reduced congestion
- lower maintenance costs
- improved logistics performance
- improved public health outcomes
- job creation and skills development
- gender equality and social inclusion benefits.

Common barriers to investment readiness

Projects frequently struggle to secure climate finance because:
- emissions reductions are not clearly quantified
- operational and financial baselines are weak
- project benefits are insufficiently demonstrated
- implementation responsibilities are unclear
- monitoring systems are absent or incomplete
- projects are too small or fragmented
- regulatory alignment is weak
- financial assumptions are unrealistic.

Early project preparation, robust baseline data, realistic implementation planning and credible monitoring arrangements can significantly improve financing readiness.

Considering the cost of inaction

In addition to estimating the costs and benefits of climate actions, businesses should consider the potential costs of maintaining business-as-usual operations. Comparing a business-as-usual scenario with a climate-aligned investment scenario provides a more comprehensive assessment of long-term financial viability and investment risk.

The cost of inaction may include:
- increasing fuel expenditure;
- higher maintenance costs for ageing vehicle fleets;
- more frequent operational disruptions caused by extreme weather;
- future environmental compliance costs;
- declining competitiveness; and
- reduced access to climate finance or sustainable procurement opportunities.

Activity 5.3 – Develop a project concept note

A project concept note is a two- to three-page note that can serve as the basis for engagement with climate finance institutions, development banks, government funding programmes or private investors.

Typically, a concept note answers the following key questions:
- What mobility or transport problem are you solving?
- How does your project directly contribute to Nigeria's Nationally Determined Contribution (NDC) climate targets for transport?

- What is the primary climate benefit, expressed as estimated tonnes of CO_2 equivalent (CO_2eq) per year, and what are at least two co-benefits, for example jobs, air quality improvement, gender inclusion, or reduced congestion?
- What are the three to five core project activities, for example vehicle procurement, infrastructure installation, driver training and MRV setup?
- What technical assistance, studies, or capacity building is needed before the project is fully bankable?

Such projects need to utilise the detailed templates for project development provided by the financier. Examples of key aspects and points are provided in Annex A5.

Activity 5.4 – Demonstrate financial viability and bankability

Climate aligned projects must demonstrate financial viability alongside environmental benefits.

Financial viability refers to whether a project can generate sufficient operational savings, revenues or economic benefits to justify investment. A bankable project is one that is sufficiently credible, structured and financially viable to attract financing from lenders, investors or climate finance institutions.

Businesses should assess:
- capital investment requirements
- fuel savings
- operating cost savings
- maintenance savings
- expected revenues
- payback periods
- affordability
- cash-flow implications.

Identifying indirect operational costs and benefits

A robust financial assessment should extend beyond direct capital expenditure (CAPEX) and operating expenditure (OPEX) to consider indirect operational costs and wider business benefits. These may include improved operational efficiency, reduced vehicle downtime, enhanced reliability, lower business risks and increased competitiveness. Considering these factors provides a more comprehensive assessment of the long term financial value of climate actions (see Annex 5).

Financial analysis should also consider risks such as:
- fuel price volatility
- foreign exchange exposure
- electricity reliability
- technology performance
- infrastructure constraints
- regulatory uncertainty.

Projects showing phased implementation, realistic operational requirements, measurable cost savings and credible management arrangements are attractive to financiers.

Activity 5.5 – Access climate finance

Climate finance refers to financing that supports activities that reduce greenhouse gas emissions and/or improve climate resilience.

Potential financing mechanisms include:
- commercial loans
- concessional finance
- leasing arrangements
- blended finance

- green bonds
- guarantees and de-risking instruments
- grants for pilot projects and technical assistance
- public-private partnerships.

Relevant institutions may include:

- Development Bank of Nigeria
- Bank of Industry
- National Council on Climate Change
- African Development Bank
- World Bank
- Green Climate Fund
- Climate Investment Funds
- Nigeria Sovereign Investment Authority
- Infrastructure Credit Guarantee Company
- Ministry of Finance Incorporated
- Commercial banks: First City Monument Bank, Wema Bank, Sterling Bank, First Bank, Zenith Bank, Access Bank, United Bank for Africa (UBA)
- Infrastructure Debt Fund managers: United Capital, Chapel Hill Denham, Coronation Bank, Stanbic IBTC Capital.

Alignment with national climate priorities, including Nigeria's Climate Change Act, NDC, National Development Plan and transport decarbonisation objectives, can strengthen project credibility and financing opportunities.

Access to climate finance depends not only on the potential for emissions reductions but also on project quality, implementation readiness, financial sustainability, and monitoring arrangements.

Businesses may wish to consult additional guidance and readiness tools before approaching financiers.

Example 1. Accessing national climate finance

Transport businesses seeking national climate finance should:

1. Assess alignment with Nigeria's Energy Transition Plan, Nationally Determined Contributions (NDCs) and other relevant national priorities.
2. Engage the National Council on Climate Change (NCCC) to seek guidance, endorsement and registration where appropriate.
3. Prepare the project by undertaking feasibility studies, emissions and financial analysis, environmental and social impact assessment, and stakeholder engagement.
4. Structure the finance by exploring suitable funding mechanisms, including blended finance where appropriate.
5. Apply for funding and develop partnerships, including transport-specific support through initiatives such as Pi-CNG where relevant.

Challenges and mitigation actions include:

- high upfront investment costs: explore guarantees, concessional finance and other de-risking instruments
- regulatory uncertainty: engage early with the NCCC and relevant government agencies
- limited monitoring, reporting and verification (MRV) capacity: seek technical assistance where available.

Success factors include:

- aggregating smaller fleets or projects to increase scale
- demonstrating measurable climate, air quality and social benefits
- developing partnerships with institutions such as the Development Bank of Nigeria, Nigeria Sovereign Investment Authority, Bank of Industry and local financial institutions.

Example 2. Accessing global climate finance (Green Climate Fund)

Transport businesses seeking support through the Green Climate Fund (GCF) should take the steps set out below.

1. Understand GCF requirements, including funding windows, investment criteria and eligibility requirements.
2. Engage with the national GCF focal point and explore support available through the GCF Project Preparation Facility (PPF).
3. Identify an Accredited Entity or partner with an existing Accredited Entity to develop the funding proposal.
4. Prepare a funding proposal, including technical, financial, environmental and social information demonstrating climate impacts and project viability.
5. Submit the proposal through the Accredited Entity in close coordination with the national GCF focal point.

Key considerations

- Developing a GCF proposal is a resource-intensive process and may take several months.
- Early engagement with the national GCF focal point and Accredited Entity can improve proposal quality and increase the likelihood of success.
- Strong evidence of climate benefits, financial viability and alignment with national priorities is essential.

Additional resource

Businesses seeking to access climate finance in Nigeria may find the *PACE Guide to Accessing Climate Finance (2025)*[5] a useful complementary resource. The guide identifies priority domestic and international climate finance sources and provides practical guidance on climate finance readiness, project preparation, eligibility requirements, proposal development, and financing opportunities. It also includes a Climate Finance Readiness Assessment Checklist that can help businesses identify capacity gaps and improve investment readiness before approaching financiers.

Activity 5.6 – Implementation, monitoring and scaling

Implementation should remain practical, phased and proportionate to organisational capacity.

Businesses should begin with:

- high fuel-consuming vehicles and routes
- priority emission sources identified in Step 3
- rapid payback opportunities identified in the Climate Action Plan
- operational efficiency measures.

In many cases, low-cost measures such as eco-driving, improved maintenance, anti-idling policies, tyre-pressure management and route optimisation can deliver immediate benefits.

Medium-term measures may include:

- telematics systems
- logistics optimisation
- fleet renewal
- improved load management.

Longer-term investments may include:

- electric vehicles
- alternative fuels
- charging infrastructure
- renewable energy integration.

5 Partnership for Agile Governance and Climate Engagement (PACE) (2025), *Guide to Accessing Climate Finance 2025*, https://pacenigeria.org/gacf25/

A phased approach helps spread investment costs over time, reduce risks in implementation, strengthen organisational capacity and support gradual operational transition.

Monitoring systems are essential for tracking fuel savings, emissions reductions, operational performance and implementation progress. Businesses should continue building on the monitoring systems established in Step 6 and ensure that reporting requirements of financiers are incorporated where relevant.

Successful pilot projects can subsequently support scaling across larger fleets, additional routes, logistics hubs and wider regional operations.

The overall objective is to support a gradual transition towards lower-emission, more fuel-efficient, cleaner and more resilient transport operations while strengthening long-term business performance and contributing to national climate, clean air and sustainable development objectives.

GEDSI considerations

Climate finance projects should consider how investments affect different groups within society and seek to ensure that the benefits of climate action are shared equitably.

Businesses should consider:

- accessibility for passengers with disabilities
- mobility needs of older people
- workforce participation and leadership opportunities for women
- employment and training opportunities for underrepresented groups
- affordability of transport services for low-income users
- safety and security for women, children and vulnerable road users
- access to transport services in underserved communities
- barriers affecting participation by people with disabilities
- impacts on informal transport workers and small operators
- opportunities to support local job creation and skills development.

Where appropriate, businesses should engage affected groups during project planning and implementation to better understand their needs and priorities.

Projects that demonstrate positive social outcomes alongside climate and clean air benefits are often better aligned with the requirements of development finance institutions, climate finance providers and sustainable development frameworks.

Potential co-benefits may include:

- improved access to employment, education and healthcare
- enhanced mobility for older people and people with disabilities
- increased economic opportunities for women
- improved road safety and personal security
- reduced transport costs for vulnerable households
- strengthened social inclusion and community resilience.

Integrating GEDSI considerations into project design can improve project effectiveness, strengthen stakeholder support and increase the attractiveness of projects to climate and development finance providers.

Illustrative example: Chisom Transport Ltd, Enugu

Chisom identified four older diesel buses as priority emission sources because they accounted for a disproportionate share of fuel consumption and greenhouse gas emissions. Using the emissions inventory and baseline assessment developed in Steps 1 to 4, she determined that replacing these vehicles would offer the greatest opportunity for emissions reductions and fuel savings.

As part of her Climate Action Plan, Chisom developed a project to replace the buses with lower-emission alternatives, introduce telematics systems to improve fleet management, and strengthen driver training through eco-driving programmes. She made sure to consider that replacement buses will be fully accessible to people with disabilities.

To demonstrate investment readiness, she prepared a project concept note outlining the proposed interventions, implementation schedule, expected costs, operational requirements and anticipated benefits. Using baseline data, she estimated annual fuel savings, reduced maintenance costs, lower greenhouse gas emissions and improved operational efficiency.

She then undertook a financial assessment, calculating expected investment costs, annual savings and the estimated payback period. The analysis showed that fuel and maintenance savings would help offset the initial investment over time, strengthening the project's financial viability.

Based on these findings, Chisom explored potential financing options, including commercial lending, concessional finance and climate-related funding programmes. She aligned the project with national climate and transport objectives and prepared supporting documentation for potential financiers.

To support implementation, she developed a phased delivery plan that prioritised the replacement of the oldest vehicles first, followed by telematics installation and staff training.

A monitoring system was established to track fuel consumption, emissions reductions, operational performance and project progress.

By combining strong baseline data, a clear implementation strategy, financial analysis and monitoring arrangements, Chisom developed a bankable climate project that supported both business performance and emissions reduction objectives.

Step 6.

Monitor, report and improve

Key activities

- **Monitor fuel consumption, greenhouse gas emissions, air pollutant emissions, and operational performance.**
- **Assess progress against targets in the Climate Action Plan.**
- **Report results to management, financiers, regulators, and other stakeholders.**
- **Identify opportunities for further operational, environmental, and resilience improvements.**
- **Update and strengthen the Climate Action Plan based on monitoring results.**

Implementing climate and clean air actions is only the beginning of the improvement process. Transport businesses, project funders, and stakeholders need to understand whether actions are delivering the intended environmental, operational, financial, and resilience outcomes. Monitoring, reporting, and reviews provide the evidence needed to assess progress, support decision-making, demonstrate accountability, and identify opportunities for continual improvement.

Monitoring provides the evidence needed to evaluate progress against targets established in the Climate Action Plan. It also supports compliance with climate finance requirements and helps businesses demonstrate environmental, operational, and financial benefits to lenders, investors, regulators, customers, and partners.

This step completes the climate and clean air action process by linking implementation with learning and continuous improvement.

Activity 6.1 – Why monitoring and reporting matter

Monitoring helps businesses to:

- track fuel consumption, greenhouse gas emissions, and air pollutant emissions
- assess whether actions are reducing environmental impacts and improving operational efficiency
- measure progress against targets established in the Climate Action Plan
- identify opportunities to reduce operating costs and improve performance
- provide evidence to support financing applications and reporting requirements.

Robust emissions data and a credible Climate Action Plan are increasingly important for accessing climate finance and securing favourable financing terms. Monitoring systems are therefore vital for providing the data required to demonstrate project performance and support future investment.

Monitoring should not be viewed solely as a reporting requirement. It is a management tool that helps businesses strengthen operational performance, improve resilience, reduce costs, and support long-term sustainability.

Activity 6.2 – Monitoring emissions and operational performance

Monitoring systems do not need to be complex. Businesses can begin with a small number of practical indicators and improve data collection over time as capacity and resources increase. The table below shows a list of important common indicators.

Examples of core indicators:

Indicator	How to measure it
Total fuel consumption (litres per month)	Fuel purchase records
Fuel efficiency (litres per 100 km)	Fuel records and odometer readings
Total CO_2 emissions (tonnes per month)	Fuel consumption × emission factor
Average idle time per vehicle (hours per day)	GPS, telematics, or driver logbooks
Vehicle load factor (%)	Trip logs compared with vehicle capacity
Maintenance compliance (%)	Service records compared with scheduled maintenance
Share of low-emission or electric vehicles	Fleet register

Where relevant, businesses should also monitor climate resilience indicators, including:

- weather-related service disruptions
- vehicle downtime associated with flooding, storms, or extreme heat
- operational impacts resulting from climate hazards.

Monitoring these indicators can help businesses strengthen resilience and adapt to increasing climate risks.

Businesses should prioritise indicators that can be measured consistently over time using available data sources and organisational capacity.

Suggested monitoring frequency

Activity	Suggested frequency
Fuel consumption tracking	Monthly
Fleet efficiency review	Monthly
Driver behaviour review	Monthly
Greenhouse gas emissions calculation	Quarterly or annually
Climate Action Plan review	Annually
Target review and updating	Every 1–2 years

Example monthly monitoring dashboard

Indicator	Baseline	Current	Change
Monthly fuel consumption (litres)	68 400	–	–
Fuel efficiency (litres per 100 km)	38	–	–
Total CO_2 emissions (tonnes per month)	183	–	–
Average idle time (hours per vehicle per day)	3.8	–	–
Vehicle load factor (%)	61%	–	–
Low-emission or electric vehicles in fleet	0	–	–

Data may be obtained from fuel purchase records, maintenance logs, fleet management systems, telematics platforms, vehicle tracking systems, and other operational records.

Activity 6.3 – Reporting and transparency

Reporting helps businesses communicate progress, support decision-making, and demonstrate accountability.

Transport businesses may report:

- greenhouse gas emissions and air pollutant emissions
- actions implemented
- progress against targets
- fuel savings and operational improvements
- cost savings linked to efficiency measures
- climate resilience outcomes (where relevant).

Reporting may be required by:

- investors and financial institutions
- regulators and government agencies
- customers and supply chain partners
- climate finance providers.

Reporting can be aligned with recognised frameworks such as:

- The Greenhouse Gas Protocol
- ESG (Environmental, Social and Governance) reporting approaches
- IFRS Sustainability Disclosure Standards.

More detail on these frameworks can be found in Annex 1.

Businesses should also comply with any specific reporting requirements established by lenders, investors, or climate finance providers.

Transparent reporting demonstrates that a business is actively managing climate and clean air impacts. This can improve access to finance, strengthen partnerships, and support future investment opportunities.

Activity 6.4 – Climate finance monitoring and MRV requirements

Businesses implementing climate finance-supported projects may be required to establish Measurement, Reporting and Verification (MRV) systems.

MRV systems provide evidence that funded activities are delivering expected greenhouse gas emissions reductions, air quality improvements, operational benefits and resilience outcomes. Monitoring data is often required by development finance institutions, commercial lenders, and climate finance facilities as part of ongoing reporting obligations.

Maintaining robust monitoring systems can improve project credibility and strengthen access to future climate finance opportunities.

Activity 6.5 – Reviewing and updating the Climate Action Plan

Climate Action Plans should be reviewed regularly to ensure they remain relevant, realistic, and effective.

Businesses should:

1. Monitor key indicators
2. Review progress against targets
3. Identify operational challenges and opportunities
4. Update actions and priorities
5. Repeat the process regularly

This continuous improvement cycle helps businesses strengthen operational efficiency, reduce emissions, improve resilience, and enhance long-term financial performance.

GEDSI considerations

Monitoring frameworks should include relevant gender equality, disability and social inclusion (GEDSI) indicators where possible.

Examples of indicators include:

Workforce indicators

- percentage of women employed
- number of staff trained
- workplace safety incidents by gender.

Services indicators

- percentage of accessible vehicles within the fleet
- passenger complaints related to accessibility.

Community indicators

- air quality improvements along routes serving residential areas, schools, healthcare facilities, and other sensitive locations.

These indicators demonstrate social accountability and are increasingly required by development finance institutions and institutional investors.

Illustrative example: how does Chisom Transport work with monitoring and reporting?

Six months after implementing its Climate Action Plan, Chisom Transport Ltd undertakes its first monitoring review.

Monthly fuel consumption has fallen from 68 400 litres to 61 500 litres, representing a reduction of approximately 10%. The company estimates fuel cost savings of approximately ₦9.8 million over the six-month period. Operational data also show reduced vehicle idling, improved maintenance compliance, and increased fleet reliability.

The replacement of several older diesel buses with newer vehicles has improved fuel efficiency and reduced emissions of particulate matter and other harmful air pollutants along routes serving densely populated areas of Enugu. Monitoring data indicate improved local air quality outcomes and a reduction in visible exhaust emissions. The company also assesses greenhouse gas emissions using the monitoring framework established in Step 2 and reports the results as part of its annual performance review.

As required by its financing agreement, Chisom submits a performance report to the Development Bank of Nigeria (DBN). The report demonstrates measurable operational, financial, climate, and clean air benefits resulting from the project. Based on these results, the company updates its Climate Action Plan, establishes new Year 2 targets, and develops a second-phase proposal to further modernise its fleet and improve operational efficiency.

The monitoring process also helps Chisom identify additional opportunities for route optimisation, driver training, and low-emission vehicle deployment, strengthening the company's long-term business resilience and environmental performance.

Expected outcomes of the Climate and Clean Air Action Framework

The Climate and Clean Air Action Framework provides transport businesses with a practical and structured approach for integrating climate and clean air considerations into business operations, investment planning, and long-term organisational development. By applying the framework, businesses can better understand the greenhouse gas emissions and air pollutant emissions associated with their operations, identify opportunities for improvement, and implement measures that support both environmental and business objectives.

The framework supports a phased approach to implementation, recognising that transport businesses operate with varying levels of technical capacity, operational maturity and financial resources. As businesses progressively strengthen their emissions measurement, monitoring, reporting and management practices, they can improve environmental performance, enhance operational efficiency, reduce operating costs, and strengthen organisational resilience.

Implementation of the framework can also support broader sectoral and national objectives by contributing to cleaner air, reduced greenhouse gas emissions, improved public health outcomes, and more sustainable transport systems. The following sections outline the key outcomes that can be achieved through effective application of the framework.

Capacity development for transport businesses

Effective climate and clean air action requires technical knowledge, operational data, institutional capacity, and long-term organisational commitment. Many transport businesses are still at an early stage in understanding and managing the greenhouse gas emissions and air pollutant emissions associated with their operations.

The framework provides practical guidance that supports businesses in developing the capacity required to:

- calculate and monitor emissions
- analyse business and fleet performance
- identify emissions hotspots and mitigation opportunities
- integrate climate and clean air considerations into planning and management processes
- strengthen monitoring, reporting, and review systems.

Businesses can strengthen capacity progressively through:

- staff training and awareness raising
- improved operational data collection and management
- integration of emissions monitoring into existing management systems
- adoption of improved fleet management and reporting practices
- regular review of Climate Action Plan implementation
- collaboration with industry associations, regulators, financial institutions, and technical partners (where relevant).

Over time, the adoption of improved monitoring systems, operational data management practices, and emissions reporting processes can strengthen environmental management across transport operations.

Capacity development is therefore a critical enabler of effective implementation, allowing businesses to progressively improve:

- availability and quality of data
- management and investment decision-making
- investment planning
- regulatory compliance readiness
- organisational resilience and performance.

Capacity development can also strengthen engagement with:

- financial institutions
- climate finance mechanisms
- regulators and government agencies
- development partners and investors.

This can improve the ability of transport businesses to participate in climate-related investment programmes and low-emission transport initiatives.

Development of company Climate Action Plans

A central outcome of applying this framework is the development of company-level Climate Action Plans. These plans enable transport businesses to establish emissions baselines, identify mitigation priorities, and define practical implementation pathways for reducing greenhouse gas emissions and air pollutant emissions.

Climate Action Plans provide a structured approach for integrating emissions reduction objectives into:

- business operations and service planning
- fleet management
- logistics and route optimisation
- investment decision-making
- workforce and organisational planning.

The plans translate emissions analysis into practical implementation measures by linking:

- emissions data
- hotspot identification
- mitigation actions
- responsibilities and timelines
- investment priorities
- monitoring and reporting processes.

Integrating Climate Action Plans into routine business planning processes helps ensure that climate and clean air measures are incorporated into operational, financial, procurement, and investment decision-making.

Businesses can implement mitigation measures progressively by:

- prioritising high-impact and low-cost actions
- aligning mitigation measures with planned fleet and infrastructure upgrades
- strengthening maintenance and fuel management practices
- improving logistics and route planning systems
- reviewing progress on implementation regularly, and updating plans where necessary.

As businesses collect improved operational data and gain experience implementing mitigation measures, Climate Action Plans can be reviewed, updated, and strengthened over time.

Through this process, Climate Action Plans become practical management tools that support:

- continuous improvement in environmental performance
- efficiency improvements and cost savings
- improved air quality outcomes
- stronger organisational resilience
- long-term business sustainability.

Building a pipeline of climate-aligned investments

The framework supports the development of climate-aligned investment projects within the transport sector. By linking emissions measurement with mitigation strategies, operational planning, and investment prioritisation, transport businesses can identify projects that contribute to both environmental improvements and business efficiency.

Prioritising investments based on emissions hotspot analysis, performance data, and business needs can help businesses identify measures that deliver the greatest environmental and operational benefits.

Examples of climate and clean air investment projects may include:

- vehicle fleet upgrades
- adoption of cleaner fuels and technologies
- investments in electric or lower-emission vehicles
- logistics optimisation systems
- driver training and fuel efficiency programmes
- maintenance improvements that reduce emissions and fuel consumption
- digital systems that improve efficiency and monitoring.

These investments can contribute to:

- lower greenhouse gas emissions
- reduced transport-related air pollution
- improved fuel efficiency
- reduced operating costs
- improved service reliability and performance
- healthier urban environments and improved air quality.

Developing well-structured investment projects can strengthen the ability of transport businesses to engage with:

- financial institutions
- climate finance mechanisms
- green investment programmes
- development finance institutions
- public and private sector funding initiatives.

This supports the transition from planning to implementation by creating a pipeline of bankable projects aligned with climate, clean air, and business objectives.

Contribution to Nigeria's climate and clean air goals

The transition to cleaner, lower-emission, and more efficient transport systems requires coordinated action across government, industry, financial institutions and transport operators. Private transport

businesses play an important role because their operational decisions directly influence fuel consumption, vehicle technologies, logistics systems, emissions performance, and urban air quality outcomes.

By applying the approaches outlined in this framework, transport businesses can help to:

- reduce greenhouse gas emissions
- improve urban and roadside air quality
- reduce exposure to harmful transport-related air pollutants
- support more efficient and sustainable mobility systems
- strengthen resilience within the transport sector.

These contributions support Nigeria's broader climate and environmental policy objectives, including implementation of its Nationally Determined Contribution and the transition towards a lower-emission transport sector.

Wider adoption of climate and clean air action planning across the transport sector can also contribute to:

- stronger environmental governance
- increased investment in cleaner transport systems
- improved public health outcomes
- more sustainable urban development
- improved energy and transport efficiency
- greater private sector participation in climate action.

As more businesses integrate emissions management, monitoring, and mitigation practices into routine operations and investment planning, climate and clean air action can become progressively embedded within the transport sector. In this way, company-level action can contribute to sector-wide transformation while supporting national and international objectives for climate, clean air and sustainable development.

Conclusion

The Climate and Clean Air Action Framework provides transport businesses with a practical pathway for measuring and managing emissions, improving operational efficiency, identifying investment opportunities, and strengthening long-term business resilience through continuous improvement.

The framework supports businesses in strengthening environmental management, reducing greenhouse gas and air pollutant emissions, improving fleet performance, and enhancing long-term sustainability.

The framework recognises that progress will occur incrementally, and it supports businesses in adopting climate and clean air measures in line with their operational circumstances and available resources. As organisational capacity develops, businesses can progressively strengthen systems for emissions management, implement more ambitious mitigation measures, improve decision-making, and identify opportunities for climate-aligned investment.

Wider adoption of the framework across Nigeria's transport sector can contribute to reduced emissions, improved air quality and public health, greater private sector engagement in climate action, and increased investment in cleaner transport solutions.

Overall, the framework provides a structured and practical approach to climate and clean air management, supporting the transition to a more efficient, resilient, inclusive, and sustainable transport sector while contributing to national climate and clean air objectives and delivering environmental, social, and economic benefits.

Technical annexes

Annex 1. Technical guidance on system boundaries, emission scopes, and inventory development.....61

Annex 2. Supporting tools for measuring emissions.....67

Annex 3. Supporting tools for identifying priority emission sources.....83

Annex 4. Tools to support action to reduce emissions.....89

Annex 5. Climate finance and investment readiness toolkit.....95

Annex 1. Technical guidance on system boundaries, emission scopes, and inventory development

This annex provides additional technical guidance to support **Step 1: Defining the operational scope and identifying emission sources**.

It is intended for businesses, consultants, regulators, and technical practitioners seeking more detailed information on developing emissions inventories, mapping value chains, system boundaries, and methods for quantifying emissions.

Businesses with limited technical capacity may begin with the simplified guidance presented in Step 1 and progressively apply the approaches described in this annex as data availability, organisational capacity, and reporting requirements improve.

The approaches described in this annex draw on internationally recognised frameworks and methodologies, including:

- Greenhouse Gas Protocol, developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD)
- Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories
- The International Organization for Standardization's ISO 14083: Greenhouse gases – Quantification and reporting of greenhouse gas emissions arising from transport chain operations
- European Monitoring and Evaluation Programme/European Environment Agency (EMEP/EEA) air pollutant emission inventory guidebook
- The Integrated Guide for Business Greenhouse Gas and Air Pollution Emissions Assessment developed by the Climate and Clean Air Coalition (CCAC) and the Stockholm Environment Institute (SEI).

A1.1 Organisational and system boundaries

Organisational boundaries define which business activities are included within the emissions inventory.

For most transport businesses, operational control is the most practical approach because emissions are accounted for from activities that the company operates or directly manages. Under the GHG Protocol, organisational boundaries are commonly defined using:

- operational control
- financial control
- equity share.

Once organisational boundaries have been established, businesses should define the activities, transport operations, and value chain elements that will be included in the assessment. These additional boundaries help determine the scope of emissions reporting and identify relevant emission sources.

Organisational boundary approaches

Boundary approach	Description	Typical application
Operational control	Activities operated or managed by the company	Transport operators
Financial control	Activities financially controlled by the company	Corporate reporting
Equity share	Emissions allocated according to ownership share	Joint ventures

Different types of boundaries

Boundary type	Description	Example
Operational boundary	Defines the business activities and emission sources included in the assessment	Vehicle fleets, depots, warehouses, and offices
Transport system boundary	Defines which parts of the transport chain are included	First-mile, long-haul, and last-mile transport
Value chain boundary	Considers upstream and downstream activities associated with transport services	Fuel suppliers, subcontracted logistics, and warehousing

A1.2 Emission scopes

The GHG Protocol categorises emissions into three scopes:

- Scope 1. Direct emissions from owned or controlled vehicles and equipment
- Scope 2. Indirect emissions from purchased electricity
- Scope 3. Other indirect emissions arising across the value chain.

GHG Protocol emission scopes in transport operations

Scope	Description	Examples
Scope 1	Direct emissions from owned or controlled sources	Fuel combustion in vehicles, generators, and equipment
Scope 2	Indirect emissions from purchased energy	Electricity use in depots, offices, warehouses, and EV charging
Scope 3	Other indirect emissions across the value chain	Outsourced logistics, fuel production, waste management, and employee travel

For many logistics operators and freight businesses, Scope 3 emissions may account for a substantial proportion of total emissions, particularly where subcontracted transport services are widely used. Although Scope 3 emissions are often more difficult to quantify due to data limitations, they can reveal important opportunities to improve efficiency, reduce fuel consumption, and strengthen collaboration with suppliers and logistics partners.

A1.3 Transport system boundaries

Transport businesses may define transport system boundaries to better understand emissions across transport operations.

This may include:

- first-mile transport operations
- long-haul freight or passenger movements
- last-mile delivery activities
- intermodal freight transfers
- warehousing and logistics hubs
- empty vehicle running.

Transport system boundaries

Transport stage	Description
First-mile transport	Movement from suppliers or production facilities to logistics hubs
Long-haul transport	Regional or national transport operations
Last-mile delivery	Final movement to customers or destinations

Understanding emissions across these transport stages can help identify inefficiencies, delays, fuel consumption and emission hotspots.

First-mile transport refers to the movement of goods from suppliers, production facilities, or warehouses to the next logistics hub or distribution centre. In passenger transport systems, it may refer to travel between a passenger's origin and the nearest public transport connection.

Long-haul transport refers to freight or passenger movements over longer regional or national distances.

Last-mile delivery refers to the final stage of the transport chain between a logistics hub and the end user or destination.

A1.4 Mapping the corporate value chain

Value-chain mapping helps businesses understand where greenhouse gas and air pollutant emissions occur across their operations and wider business activities.

Transport-related emissions may occur across multiple stages of the value chain, including:

- raw material extraction
- manufacturing and processing
- warehousing and storage
- freight distribution and logistics
- retail operations
- end-of-life waste collection and recycling.

The value chain includes all activities required to deliver transport services, including operations, facilities, suppliers, contractors, and outsourced logistics. The supply chain is a narrower concept that refers to the movement of goods between suppliers and customers.

Mapping the value chain helps businesses understand where emissions occur and where mitigation opportunities exist.

Typical emission sources through the transport value chain

Value chain activity	Typical emission source	Typical emissions
Freight transport	Diesel combustion	CO_2, NO_x, PM, BC
Warehousing	Electricity use	CO_2e emissions from electricity use
Cold-chain logistics	Refrigerants and electricity	HFCs, CO_2
Shipping	Marine fuel combustion	CO_2, SO_2, NO_x
Aviation	Jet fuel combustion	CO_2, NO_x
Non-road machinery	Diesel equipment use	CO_2, PM, BC
Generators	Diesel combustion	CO_2, NO_x, PM, BC

Note: CO_2 = carbon dioxide; CO_2e = CO_2 equivalent; NO_x = nitrogen oxides; PM = particulate matter; BC = black carbon; HFCs = hydrofluorocarbons; SO_2 = sulphur dioxide.

Businesses may collect activity data separately across different parts of the value chain and aggregate emissions by source category, such as road transport, rail transport, warehousing, or non-road mobile machinery. This bottom-up approach helps identify major emission sources, emission hotspots, and potential mitigation opportunities.

The same general approaches used to quantify greenhouse gas emissions can also be applied to air pollutant emissions because many of the underlying emission sources are the same. However, different pollutants require different emission factors and calculation methodologies.

Where businesses already maintain a greenhouse gas inventory, this can provide a useful foundation for integrating air pollutant emissions into existing reporting systems. Integrating greenhouse gas and air pollutant inventories can help businesses identify climate, air quality, health and fuel-efficiency co-benefits associated with mitigation measures.

A1.5 Geographic and time boundaries

In addition to defining organisational and transport system boundaries, businesses should specify the geographic and time boundaries used for emissions reporting. Clearly defined boundaries improve consistency, transparency, and comparability over time.

Geographic boundaries

Geographic boundaries define the area covered by the emissions inventory. Depending on the nature of operations, businesses may report emissions at different spatial scales, such as cities, regions, transport corridors, or national operations.

Examples of geographic boundaries

Geographic boundary	Example
City-level	Lagos metropolitan operations
Regional corridor	Northern freight corridor
National	Nigeria-wide operations
Facility-level	Depot or warehouse operations

Time boundaries

Time boundaries define the reporting period used for emissions accounting. This is typically based on a calendar year, financial year, or another defined operational reporting period. Applying consistent time boundaries helps avoid miscounting or double counting of emissions and enables meaningful comparisons.

Examples of reporting periods

Reporting period type	Example
Calendar year	January–December
Financial year	April–March
Operational reporting cycle	Quarterly or annual reporting

Businesses should document both geographic and time boundaries clearly within their emissions inventory to ensure transparency and consistency in reporting.

A1.6 Identifying emission sources

In most road transport businesses, fuel combustion in vehicle engines is the primary source of emissions. Petrol, diesel, and compressed natural gas (CNG) vehicles generate both greenhouse gases and air pollutants, including particulate matter (PM), nitrogen oxides (NOx), sulphur oxides (SOx), and carbon monoxide (CO).

Other common emission sources include:

- electricity use in depots, warehouses, offices, and electric vehicle (EV) charging infrastructure
- fuel used in generators and auxiliary equipment
- refrigeration units in logistics operations
- emissions from subcontracted transport services
- vehicle idling and inefficient operations.

Identifying emission sources helps businesses understand where emissions occur and provides the foundation for hotspot analysis, mitigation planning and investment prioritisation.

The same transport activity may be classified under different emission scopes depending on whether it is owned, controlled, or contracted. For example, fuel use in company-owned vehicles is generally reported as Scope 1, while emissions from subcontracted transport services are typically reported as Scope 3.

Typical scope allocation of emission sources

Emission source	Typical scope
Company-owned vehicles	Scope 1
Depot generators	Scope 1
Purchased electricity	Scope 2
EV charging electricity	Scope 2
Subcontracted transport	Scope 3
Employee business travel	Scope 3

A1.7 Lifecycle approaches

Lifecycle approaches provide a broader understanding of the environmental impacts associated with transport fuels and technologies. Three commonly used lifecycle approaches are:

- tank-to-wheel (TTW): emissions generated directly during vehicle operation
- well-to-tank (WTT): emissions generated during fuel extraction, processing, and distribution
- well-to-wheel (WTW): emissions generated across the entire fuel lifecycle and vehicle operation.

Lifecycle approaches are particularly useful when comparing conventional fuels with lower-emission alternatives such as electricity, biofuels, compressed natural gas (CNG), hydrogen, and hybrid technologies.

Comparison of lifecycle approaches

Approach	Emissions included
Tank-to-wheel (TTW)	Direct vehicle operation emissions
Well-to-tank (WTT)	Fuel extraction, processing, and distribution
Well-to-wheel (WTW)	Entire fuel lifecycle plus vehicle operation

A1.8 Expanding scope

Businesses should expand inventory coverage gradually as data availability, organisational capacity and reporting requirements evolve. The objective should be continual improvement rather than complete coverage from the outset.

Expansion may include:

- electricity use in facilities
- emissions from subcontracted services
- upstream fuel emissions
- supply chain and value chain emissions
- lifecycle emissions associated with vehicles and fuels
- additional air pollutant emissions
- broader logistics and distribution activities.

The pace of expansion should be guided by:

- data availability
- operational relevance
- business priorities
- reporting requirements
- customer expectations
- regulatory obligations
- organisational capacity.

The aim should be continual improvement in inventory completeness, consistency, transparency, and accuracy rather than perfection from the outset.

A1.9 Practical templates for Step 1

These templates are intended to support the practical implementation of Step 1 and may be adapted to suit the size, complexity, and reporting requirements of individual businesses.

1. Operational scope record

Item	Description
Organisation name	
Reporting period	
Geographic coverage	
Activities included	
Activities excluded	
Facilities included	
Vehicle fleets included	
Assumptions made	
Data limitations	
Date of review	

2. Emission scope classification worksheet

Emission source	Scope 1	Scope 2	Scope 3
Company vehicles	✓		
Depot generator	✓		
Office electricity		✓	
Subcontracted transport			✓
Employee travel			✓
Other			

3. Emission source inventory

Emission source	Activity data available? (yes/no)	Importance (high/medium/low)	Included in inventory (yes/no)?
Vehicle fuel use			
Electricity use			
Generator fuel use			
Refrigeration units			
Subcontracted transport			
Other			

4. Initial hotspot screening tool

Activity	Estimated fuel use (high/medium/low)	Estimated emissions importance (high/medium/low)	Priority for action? (yes/no)
Fleet vehicles			
Generators			
Warehousing			
Subcontracted transport			

Annex 2. Supporting tools for measuring emissions

Annex 2 provides practical guidance, tools, templates, and examples to support **Step 2: Measure your emissions**.

The purpose of Step 2 is to help businesses estimate greenhouse gas emissions, which contribute to climate change, and air pollutant emissions, which affect air quality, human health, and ecosystems. Building on the operational scope and emission sources identified in Step 1, Annex 2 provides additional guidance on developing an emissions inventory, collecting activity data, selecting emission factors, and calculating emissions using recognised approaches.

Businesses do not need detailed monitoring systems or specialist expertise to calculate emissions. Practical estimates based on available operational data can provide a credible emissions baseline and support informed decision-making. As data quality, monitoring systems and organisational capacity improve, emissions inventories can become more comprehensive and accurate.

The annex includes:

- emissions inventory templates
- activity data collection tools
- emissions calculation equations
- greenhouse gas emission factors
- air pollutant emission factors
- worked examples
- guidance on data quality and uncertainty
- approaches for improving inventories over time.

The guidance draws on internationally recognised methodologies, including the Greenhouse Gas Protocol, IPCC Guidelines, ISO 14083, and EMEP/EEA air pollutant methodologies (see Annex 1).

The tools can be applied across a range of transport operations, including road, rail, shipping, aviation, logistics facilities, generators, refrigeration systems, and other transport-related activities where relevant.

Practical tools supporting emission inventory development in transport

- The MobiliseYourCity Emissions Calculator allows users to conduct an inventory of current greenhouse gas emissions and to calculate both business-as-usual and alternative climate-friendly mobility scenarios. It is a tool for cities and countries to understand the impact of Sustainable Urban Mobility Plans. Related to this activity, this detailed guiding document can be of value for stakeholders.

- **Transport Inventory and Greenhouse Gas Emissions Reporting Tool (TrIGGER)** - TrIGGER is a bottom-up spreadsheet model to calculate national transport GHG inventories which can be easily adapted to any country's needs.

The approaches presented support the estimation of greenhouse gases and key air pollutants, including particulate matter (PM), nitrogen oxides (NOx), sulphur oxides (SOx), and carbon monoxide (CO). The aim is not to produce a perfect inventory at the outset, but to establish a credible baseline that supports operational efficiency, emissions management, sustainability reporting, climate action planning, air quality improvement, and future emissions reduction efforts.

A2.1 Emissions inventory template

This template supports the development of an emissions inventory for the greenhouse gas and air pollutant emission sources identified in Step 1 and quantified in Step 2.

For each emission source, businesses should record the activity generating emissions, the activity data used, the emission factor applied, the estimated emissions, the source of the data, and any assumptions used in the calculation. Recording this information consistently improves transparency, supports future updates, and helps ensure comparability between reporting periods.

Where complete data are unavailable, reasonable estimates may be used, if assumptions and data limitations are clearly documented. The inventory should use a consistent reporting period, such as a month or year, to enable performance tracking over time, to support future emissions reduction planning, and provide a baseline against which progress can be assessed.

Emission source	Activity data	Unit	Emission factor	Estimated emissions	Data source	Assumptions/ comments

A2.2 Inventory boundary checklist

When developing an emissions inventory, businesses should confirm that the inventory covers the transport activities and emission sources identified within the operational scope defined in Step 1.

This checklist ensures that all significant sources of greenhouse gas and air pollutant emissions are considered and that inventory boundaries remain consistent over time. Consistent boundaries improve the reliability of emissions estimates and allow meaningful comparisons between reporting periods.

Businesses should indicate how whether each source is included in the inventory and provide justification where sources are excluded.

Emission source	Included in inventory? (yes/no)	Comments
Vehicle fleet		
Freight operations		
Passenger transport operations		
Depots and logistics facilities		
Generators		
Refrigeration systems		
Office electricity use		
Contractor or subcontracted transport services		
Other significant emission sources		

When defining inventory boundaries, businesses should begin with activities under their direct operational control. As data availability and organisational capacity improve, additional emission sources can be incorporated to provide a more comprehensive assessment of emissions across operations.

The same inventory boundary should be used for both greenhouse gas and air pollutant emissions wherever possible to support consistency in reporting and analysis. Where inventory boundaries change over time, businesses should document the reasons for the change to maintain transparency and support comparison between reporting periods.

A2.3 Template for collecting activity data

Activity data provides the information required to estimate greenhouse gas and air pollutant emissions. For most transport businesses, much of this information is already collected for operational, financial, maintenance, or reporting purposes.

This template helps businesses organise activity data in a consistent format before emissions calculations are undertaken. The quality of emissions estimates depends on the quality and completeness of the activity data collected.

While fuel consumption data is often sufficient for estimating greenhouse gas emissions, additional information such as vehicle type, fuel type, vehicle age, and engine technology may be required for estimating certain air pollutant emissions.

Businesses should record activity data for the reporting period selected for the emissions inventory and clearly identify the source of the information.

Activity type	Unit	Activity data	Data source	Reporting period	Comments
Fuel purchased	Litres				
Distance travelled	Kilometres				
Freight activity	Tonne-kilometres (tkm)				
Passenger activity	Passenger-kilometres (pkm)				
Electricity consumption	Kilowatt-hours (kWh)				
Generator fuel use	Litres				
Refrigeration fuel or electricity use	Litres/kWh				
Vehicle type and fuel type	Number/category				
Vehicle age or engine standard	Years/standard				
Other activity data					

Common sources of activity data include:

- fuel receipts and supplier invoices
- vehicle logbooks and odometer readings
- GPS and telematics systems
- fleet management records
- maintenance records
- freight manifests and delivery records
- passenger ticketing systems
- electricity bills
- generator fuel purchase records.

Where complete records are unavailable, businesses may use reasonable estimates based on available operational information. Any assumptions, estimates or data limitations should be documented to support transparency, consistency and future improvement of the inventory.

A2.4 Emissions calculation equations

Emissions are estimated by combining activity data with emission factors. The choice of calculation approach depends on the activity data available and the type of emission source being assessed.

The equations presented in this section can estimate both greenhouse gas emissions and air pollutant emissions from transport operations, facilities and other transport-related activities.

Equation 1. General emissions equation

Emissions are estimated using the following equation:

Emissions = activity data × emission factor

Where:

- Activity data = quantity of activity generating emissions
- Emission factor = emissions generated per unit of activity
- Emissions = estimated greenhouse gas or air pollutant emissions

This equation forms the basis of most internationally recognised emissions inventory methodologies.

Equation 2. Fuel-based emissions calculation

Where fuel consumption data are available:
Emissions = fuel consumed × fuel emission factor

Where:

- Fuel consumed = litres or kilograms of fuel used
- Fuel emission Factor = emissions per unit of fuel consumed

Example:
68 400 litres diesel × 2.68 kg CO_2/litre
= 183 312 kg CO_2
= 183 tonnes CO_2

Fuel-based calculations are commonly used for vehicle fleets, generators, refrigeration equipment, shipping, rail operations, aviation, and other fuel-consuming activities. Where reliable fuel consumption data are available, fuel-based approaches generally provide the most accurate estimates of direct greenhouse gas emissions.

Equation 3. Distance-based emissions calculation

Where fuel consumption data are unavailable:

Emissions = distance travelled × distance-based emission factor

Where:

- Distance travelled = total kilometres travelled
- Distance-based emission factor = emissions per kilometre travelled

Example (illustrative):
130 000 km × 0.7 kg CO_2/km
= 91 000 kg CO_2

Distance-based approaches are commonly applied where vehicle mileage data are available, but fuel consumption data are unavailable. The accuracy of distance-based methods depends on the suitability of the emission factors used and assumptions regarding vehicle type, loading, operating conditions, and fuel efficiency.

Equation 4. Electricity-related emissions

For electricity consumption:

Emissions = electricity consumed × electricity emission factor

Where:

- Electricity consumed = kilowatt-hours (kWh) used
- Electricity emission factor = emissions per kWh consumed

Example:
2300 kWh × 0.43 kg CO_2/kWh
= 989 kg CO_2
≈ 1 tonne CO_2

This approach can be used for offices, depots, warehouses, refrigeration systems, electric vehicle charging infrastructure, and other electricity-consuming facilities. Nationally approved grid emission factors should be used where available.

Equation 5. Freight transport emissions

Where freight activity data are available:
Emissions = tonne-kilometres × freight emission factor

Where:

- Tonne-kilometres = tonnes of freight transported × distance travelled
- Freight emission factor = emissions per tonne-kilometre

Example:
250 000 tonne-km × 0.08 kg CO_2/tonne-km= 20 000 kg CO_2
= 20 tonnes CO_2

Freight activity data can be used to compare freight efficiency across vehicles, routes, customers, and logistics operations. Where possible, actual load factors should be used to improve the accuracy of freight emissions estimates.

Equation 6. Passenger transport emissions

Where passenger activity data are available:
Emissions = passenger-kilometres × passenger emission factor

Where:

- Passenger-kilometres = number of passengers × distance travelled
- Passenger emission factor = emissions per passenger-kilometre

Example:
120 000 passenger-km × 0.06 kg CO_2/passenger-km
= 7200 kg CO_2
= 7.2 tonnes CO_2

Passenger activity data are commonly used to assess the emissions performance of passenger transport services and compare the efficiency of different transport modes and routes.

The emission factors used in the examples above are illustrative. Businesses should use nationally approved, technology-specific, or mode-specific emission factors where available.

Equation 7. Air pollutant emissions

The same calculation approach can estimate air pollutant emissions.

Air pollutant emissions = activity data × pollutant emission factor

Air pollutants commonly estimated in transport inventories include:

- particulate matter ($PM_{2.5}$ and PM_{10})
- nitrogen oxides (NO_x)
- sulphur oxides (SO_x)
- carbon monoxide (CO)
- volatile organic compounds (VOCs).

Example:
68 400 litres diesel × 0.015 kg NOx/litre
= 1026 kg NOx

Different pollutants require different emission factors. Air pollutant emission factors may also require additional information on vehicle type, fuel type, vehicle age, engine technology, fuel quality, operating conditions, and emission standards.

Tiered approaches to estimating emissions

Many internationally recognised methodologies use tiered approaches that reflect different levels of data availability and methodological complexity.

Tier	Description	Typical data requirement
Tier 1	Default emission factors and basic activity data	Low
Tier 2	Technology-specific emission factors and disaggregated activity data	Medium
Tier 3	Detailed operational data, modelling systems, or direct monitoring	High

Most businesses begin with Tier 1 approaches and progressively improve inventory quality as data availability and organisational capacity increase.

A2.5 Greenhouse gas emission factors

Emission factors convert operational activity data into greenhouse gas emissions estimates. They represent the quantity of greenhouse gas emissions generated per unit of activity, such as a litre of fuel consumed, a kilometre travelled, a tonne-kilometre of freight transported, a passenger-kilometre travelled, or a kilowatt-hour of electricity used.

Emission factors are derived from fuel characteristics, combustion chemistry, energy content, and empirical measurements. They provide a practical means of estimating emissions where direct measurement is not feasible and form the basis of most greenhouse gas inventory methodologies used internationally.

Greenhouse gas emission factors may be expressed as carbon dioxide (CO_2) or carbon dioxide equivalent (CO_2e). CO_2e factors incorporate the effects of other greenhouse gases, such as methane (CH_4) and nitrous oxide (N_2O), using their global warming potentials. For most transport activities, carbon dioxide from fuel combustion represents the dominant greenhouse gas and therefore provides a suitable basis for initial emissions estimation.

Sources of emission factors

Emission factors should be obtained from recognised and credible sources. The table below shows some common sources and how they are typically applied.

Note that where nationally approved emission factors are available, these should normally be used in preference to international default values.

Source	Typical application
Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories	National greenhouse gas inventories
Greenhouse Gas Protocol	Corporate greenhouse gas inventories
ISO 14083	Transport and logistics emissions reporting
UK Government GHG Conversion Factors (DEFRA/DESNZ)	Organisational reporting and benchmarking
Global Logistics Emissions Council (GLEC) Framework	Freight and logistics emissions accounting
National greenhouse gas inventory agencies	Country-specific reporting and compliance

Selecting appropriate emission factors

The preferred hierarchy for selecting emission factors is:

1. Nationally approved emission factors
2. Sector-specific emission factors
3. Internationally recognised default emission factors
4. Published factors from recognised technical sources

Businesses should use the most relevant and up-to-date emission factors available and apply them consistently throughout the reporting period.

Illustrative fuel-based greenhouse gas emission factors

Fuel-based factors are preferred because they are directly linked to actual fuel consumption and typically provide the most reliable estimates of greenhouse gas emissions.

The factors presented in the table below are illustrative values suitable for initial estimates of emissions. Businesses should use nationally approved or country-specific emission factors where available.

These factors can be applied to vehicle fleets, generators, refrigeration equipment, shipping, rail operations, and other fuel-consuming activities where appropriate.

The factors represent direct combustion emissions and do not normally include upstream emissions associated with fuel extraction, processing, transport, or distribution.

Fuel type	Emission factor	Unit
Diesel	2.68	kg CO_2/litre
Petrol (gasoline)	2.31	kg CO_2/litre
CNG	Approximately 2.0	kg CO_2/kg
LPG	1.51	kg CO_2/litre

Electricity emission factors

Electricity-related emissions depend on the carbon intensity of the electricity grid supplying the facility.

Energy source	Emission factor
Grid electricity	Country-specific (kg CO_2/kWh)

Electricity emission factors vary significantly between countries and over time because of differences in electricity generation technologies and fuel mixes. Businesses should use nationally approved electricity emission factors where available.

Electricity emission factors should be reviewed periodically because changes in the electricity generation mix may alter the carbon intensity of the grid.

Indicative distance-based greenhouse gas emission factors

Distance-based factors may be used where fuel consumption data are unavailable.

Vehicle type	Emission factor	Unit
Heavy diesel truck	0.8–1.2	kg CO_2/km
Intercity diesel bus	0.6–0.9	kg CO_2/km
Urban diesel bus	0.7–1.0	kg CO_2/km
Light delivery van	0.2–0.35	kg CO_2/km
Motorcycle	0.07–0.12	kg CO_2/km

These factors are indicative values only and may vary considerably according to:

- vehicle age and technology
- vehicle maintenance condition
- fuel quality
- loading and occupancy levels
- road conditions
- driving behaviour
- congestion levels.

Distance-based approaches should not replace fuel-based approaches where fuel consumption data are available, because they generally involve greater uncertainty.

Activity data and emission factors by mode of transport

Different modes of transport use different activity data and emission factor formats. The table below provides a guide to the most commonly used approaches.

Businesses should select activity data and emission factors that best reflect their operations and reporting requirements.

Transport mode	Preferred activity data	Typical emission factor unit
Road transport	Fuel consumed	kg CO_2/litre fuel
Rail transport	Fuel consumed or tonne-km	kg CO_2/litre fuel or kg CO_2/tonne-km
Shipping	Fuel consumed or tonne-km	kg CO_2/tonne fuel or kg CO_2/tonne-km
Aviation	Fuel consumed or tonne-km	kg CO_2/tonne fuel or kg CO_2/tonne-km
Freight transport	Tonne-km	kg CO_2/tonne-km
Passenger transport	Passenger-km	kg CO_2/passenger-km
Facilities and depots	Electricity consumed	kg CO_2/kWh

Freight and passenger activity factors

Where tonne-kilometre or passenger-kilometre data are available, businesses may use activity-based emission factors appropriate to the transport mode being assessed.

Examples include:

- kg CO_2 per tonne-kilometre for freight transport
- kg CO_2 per passenger-kilometre for passenger transport.

Such factors are commonly used for benchmarking transport efficiency, comparing routes, evaluating operational performance, and allocating emissions across customers, services, or supply chains.

Businesses should obtain these factors from recognised sources appropriate to the transport mode and geographical context.

Emission factor documentation template

Businesses should maintain a record of all emission factors used within the emissions inventory.

Activity	Emission factor used	Source	Year	Comments
Diesel fuel				
Petrol fuel				
Electricity				
Freight transport				
Passenger transport				
Rail transport				
Shipping				
Aviation				
Other sources				

Maintaining this record improves transparency, supports future inventory updates, and helps ensure consistency between reporting periods.

Good practice for using emission factors

To improve the reliability and comparability of emissions estimates, businesses should:

- use the most recent and relevant emission factors
- use nationally approved factors where available
- apply emission factors consistently throughout the reporting period
- document all sources and assumptions
- avoid mixing incompatible emission factor sources within the same inventory
- review emission factors periodically and update them where appropriate
- retain records of previous emission factors used for comparison purposes.

Limitations and uncertainty

Emission factors provide estimates rather than direct measurements of emissions. Actual emissions may vary according to vehicle condition, fuel quality, maintenance practices, operating environment, climatic conditions, loading, occupancy, and driver behaviour.

Distance-based, tonne-kilometre, and passenger-kilometre approaches generally involve greater uncertainty than fuel-based approaches because they rely on assumptions regarding vehicle efficiency and operating conditions.

Emissions inventories should be regarded as estimates rather than exact measurements. When applied consistently and transparently, emission factors provide a robust basis for emissions assessment, performance monitoring, emissions reduction planning, sustainability reporting, climate finance applications and climate action planning.

For most businesses, the objective should be to establish a credible and transparent emissions baseline and over time progressively improve data quality, collection of activity data, and selection of emission factors.

A2.6 Air pollutant emission factors

Air pollutant emission factors are used to estimate emissions that affect local air quality, human health and ecosystems. Common transport-related air pollutants include particulate matter (PM), nitrogen oxides (NO_x), sulphur oxides (SO_x), carbon monoxide (CO), volatile organic compounds (VOCs), ammonia (NH_3), and black carbon (BC).

Unlike greenhouse gas emissions, which are closely related to fuel consumption, air pollutant emissions are influenced by additional factors, including:

- vehicle type and age
- engine technology
- fuel quality
- emission standards
- vehicle maintenance
- driving conditions
- traffic congestion
- load factors
- emission control technologies.

As a result, estimating air pollutant emissions often requires more detailed operational information than greenhouse gas estimation.

Common air pollutants from transport

Pollutant	Description	Main impacts
$PM_{2.5}$	Fine particulate matter	Respiratory and cardiovascular disease
PM_{10}	Coarse particulate matter	Respiratory irritation and reduced air quality
NO_x	Nitrogen oxides	Smog formation, ozone formation, respiratory impacts
SO_x	Sulphur oxides	Acid deposition and respiratory impacts
CO	Carbon monoxide	Reduced oxygen transport in the body
Black Carbon (BC)	Incomplete combustion particles	Climate warming and health impacts
VOCs	Volatile organic compounds	Ozone formation and smog
NH_3	Ammonia	Secondary particulate formation

Air-pollutant emissions equation

The same general equation used to estimate greenhouse gas emissions applies:

Emissions = activity data × emission factor

Where:

- activity data = quantity of fuel consumed, distance travelled, tonne-kilometres, passenger-kilometres, or other operational activity
- emission factor = pollutant-specific emission factor
- emissions = estimated emissions of the pollutant being assessed.

Separate calculations should be undertaken for each pollutant of interest.

Selecting air pollutant emission factors

Businesses should use nationally approved emission factors where available. Where such factors are unavailable, internationally recognised sources (see Annex 1 for further details) may be used, including:

- EMEP/EEA Air Pollutant Emission Inventory Guidebook
- COPERT methodologies
- national emissions inventory guidance
- IPCC Guidelines
- national environmental protection agencies.

Because air pollutant emission factors vary significantly between vehicle technologies and operating conditions, businesses should clearly document:

- emission factor sources
- vehicle classifications used
- fuel types
- assumptions applied
- data limitations.

Activity data requirements by mode of transport

Mode	Tier 1 data	Tier 2 data
Road transport	Fuel consumed, fuel type	Distance travelled, vehicle category, load factor, vehicle age or emission standard
Rail transport	Fuel consumed	Locomotive type, tonne-km
Shipping	Fuel consumed	Vessel type, engine type, tonne-km
Aviation	Fuel consumed	Aircraft type, payload, flight distance
Non-road mobile machinery	Fuel consumed	Engine type, machinery category, emission standard

Tier 1 approaches use aggregated fuel consumption data and default emission factors and are suitable for initial inventories. Tier 2 approaches use more detailed information on vehicle type, engine technology, emission standard, operating conditions, or equipment characteristics, and generally provide more accurate estimates.

Indicative Tier 1 road transport air pollutant emission factors

The following factors are adapted from the EMEP/EEA Air Pollutant Emission Inventory Guidebook and are suitable for screening-level assessments where more detailed vehicle information is unavailable.

Vehicle category	Fuel	CO (g/kg fuel)	NO_x (g/kg fuel)	PM_{10} (g/kg fuel)	$PM_{2.5}$ (g/kg fuel)	BC (g/kg fuel)
Light commercial vehicle	Petrol	118.7	5.93	0.02	0.02	0.001
Light commercial vehicle	Diesel	6.81	13.48	1.22	1.22	0.671
Heavy-duty vehicle	Diesel	6.10	25.95	0.55	0.55	0.292
CNG bus	CNG	3.98	17.10	0.02	0.02	Not available

Rail transport air pollutant emission factors

Tier 1 rail emission factors are typically based on fuel consumption.

Fuel	PM_{10} (kg/tonne fuel)	$PM_{2.5}$ (kg/tonne fuel)	BC (kg/tonne fuel)
Diesel/gas oil	1.44	1.37	0.94

Shipping air pollutant emission factors

Fuel	CO	NO_x	PM_{10}	SO_2
Bunker fuel oil	3.67	69.1	5.2	19.2
Marine diesel oil	3.84	72.2	1.07	1.82
LNG	13.8	4.92	0.001	0

Units: kg pollutant per tonne of fuel consumed

Aviation air pollutant emission factors

Aviation air pollutant emissions are influenced by aircraft type, engine technology, fuel characteristics, operating conditions, payload, flight distance and flight phase. Emissions during taxiing, take-off, climb, cruise, descent and landing may differ significantly.

For most businesses, aviation emissions are most commonly estimated using fuel consumption data and greenhouse gas emission factors. Estimating air pollutant emissions from aviation generally requires more detailed operational information and specialised emission factors than are typically available to transport operators.

Businesses requiring aviation air pollutant estimates should use nationally approved methodologies or internationally recognised guidance, such as:

- the EMEP/EEA Air Pollutant Emission Inventory Guidebook
- the International Civil Aviation Organization (ICAO) environmental guidance
- national aviation emissions inventory methodologies.

Where aviation activities represent a significant component of operations, specialist aviation emissions methodologies may be required to produce robust estimates of air pollutant emissions.

Non-road mobile machinery emission factors

This table shows indicative Tier 1 factors for diesel-powered machinery. Additional technology-specific factors for agricultural, forestry, industrial, construction, and other non-road machinery are available in the EMEP/EEA Guidebook.

Fuel	Pollutant	Emission factor (grams per tonne of fuel)
Diesel	NO_x	34 457
Diesel	PM_{10}	1913
Diesel	$PM_{2.5}$	1913
Diesel	CO	11 469
Diesel	BC	1111

Good practice for estimating air pollutant emissions

To improve the reliability of air pollutant inventories, businesses should:

- prioritise fuel consumption data where available
- collect vehicle type and fuel information
- document all assumptions and data sources
- use nationally approved factors where available
- apply factors consistently throughout the reporting period
- progressively improve data quality and inventory detail over time.

For many businesses, greenhouse gas estimation provides a practical starting point. Air pollutant estimation can then be incorporated progressively as data availability and technical capacity improve. Using a common activity dataset for estimating both greenhouse gas and air pollutant emissions improves consistency and reduces reporting effort.

Many air pollutant emission factors are derived from European vehicle fleets and fuel specifications. Businesses operating in other regions should use nationally approved emission factors where available and document any assumptions regarding vehicle technologies, fuel quality, emission standards and operating conditions.

A2.7 Worked examples of emissions calculations

The examples below illustrate how greenhouse gas and air pollutant emissions can be estimated using the methods described in Step 2 and this annex. The examples are illustrative only. Businesses should use actual activity data and nationally approved emission factors where available.

Example 1: Fuel-based vehicle fleet emissions

A bus company consumes 68 400 litres of diesel during a reporting period.

Activity data

- Fuel consumed = 68 400 litres diesel

Emission factor

- Diesel = 2.68 kg CO_2/litre

Calculation

Emissions = fuel consumed × fuel emission factor
Emissions = 68 400 × 2.68
Emissions = 183 312 kg CO_2 (= 183.3 tonnes CO_2)

This approach is generally preferred because it is based on actual fuel consumption.

Example 2: Distance-based vehicle emissions

A transport operator records total fleet mileage of 130 000 km during the reporting period.

Activity data

Distance travelled = 130 000 km

Emission factor

Diesel bus = 0.7 kg CO_2/km

Calculation

Emissions = distance travelled × distance-based emission factor
Emissions = 130 000 × 0.7
Emissions = 91 000 kg CO_2
= 91 tonnes CO_2

Distance-based methods may be useful where fuel consumption data are unavailable, although they generally involve greater uncertainty.

Example 3: Electricity consumption emissions

A depot consumes 2300 kWh of electricity during a reporting month.

Activity data

- Electricity consumption = 2300 kWh

Emission factor

- Grid electricity = 0.43 kg CO_2/kWh

Calculation

Emissions = electricity consumed × electricity emission factor
Emissions = 2300 × 0.43
Emissions = 989 kg CO_2 (≈ 1.0 tonne CO_2)

Businesses should use nationally approved grid emission factors where available.

Example 4: Freight transport emissions

A freight operator transports 500 tonnes of goods over an average distance of 200 km.

Activity data

- Freight activity = 100 000 tonne-km
  (500 tonnes × 200 km)

Emission factor

- Freight emission factor = 0.12 kg CO_2/tonne-km

Calculation

Emissions = tonne-kilometres × freight emission factor
Emissions = 100 000 × 0.12
Emissions = 12 000 kg CO_2
= 12 tonnes CO_2

Tonne-kilometre indicators are useful for comparing freight efficiency across routes, customers, and logistics operations.

Example 5: Passenger transport emissions

A bus operator carries 40 000 passengers over an average distance of 15 km.

Activity data

- Passenger activity = 600 000 passenger-km
  (40 000 passengers × 15 km)

Emission factor

- Passenger emission factor = 0.05 kg CO_2/passenger-km

Calculation

Emissions = passenger-kilometres × passenger emission factor
Emissions = 600 000 × 0.05
Emissions = 30 000 kg CO_2
= 30 tonnes CO_2

Passenger-kilometre indicators support assessment of service efficiency and comparison between transport modes.

Example 6: Air pollutant emissions

A fleet consumes 68 400 litres of diesel during a reporting period.

Activity data

- Fuel consumed = 68 400 litres diesel

Emission factor

- NO_x emission factor = 0.015 kg NO_x/litre diesel

Calculation

Air pollutant emissions = activity data × pollutant emission factor
Emissions = 68 400 × 0.015
Emissions = 1026 kg NO_x
= 1.03 tonnes NO_x

The same approach can be applied to other pollutants such as $PM_{2.5}$, PM_{10}, SO_x, CO, VOCs, and black carbon, using the appropriate pollutant-specific emission factors.

A2.8 Data quality and uncertainty assessment

The accuracy of an emissions inventory depends on the quality of the underlying activity data, emission factors, and assumptions used in the calculations. While all emissions estimates contain some degree of uncertainty, businesses should aim to use the best available information and clearly document any limitations.

For most transport businesses, the objective is not to eliminate uncertainty completely but to develop estimates that are sufficiently reliable to support decision-making, operational improvement, emissions management, sustainability reporting, and climate action planning.

Common sources of uncertainty include:

- incomplete fuel consumption records
- missing mileage or activity data
- estimated operational activity levels
- use of generic or default emission factors
- limited information on vehicle characteristics
- uncertainty regarding fuel quality
- incomplete information on vehicle technologies or emission standards
- inconsistent reporting practices
- gaps in operational records
- assumptions regarding loading, occupancy, or operating conditions.

Data quality assessment checklist

The checklist below can be used to assess data quality and identify opportunities for improvement.

Assessment question	Yes	No	Comments
Are fuel consumption records available?			
Are activity data recorded consistently?			
Are data sources documented?			
Are assumptions clearly recorded?			
Are emission factors documented?			
Is the reporting period clearly defined?			
Are major greenhouse gas emission sources included?			
Are major air pollutant emission sources included?			
Have data limitations been identified?			
Are calculation methods documented?			

Documenting uncertainty

Where uncertainty exists, businesses should document:

- data sources used
- assumptions applied
- estimation methods
- emission factor sources
- known limitations
- excluded emission sources
- opportunities for future improvement.

Transparent documentation improves the credibility of emissions estimates and supports future updates and verification.

Improving data quality

Businesses can improve inventory quality over time by:

- collecting fuel consumption data directly from invoices, fuel cards, or fuel management systems
- improving vehicle mileage and activity monitoring
- collecting information on vehicle types, engine technologies, and emission standards
- using nationally approved emission factors where available
- improving record keeping and documentation practices
- expanding inventory coverage to include additional emission sources.

As data quality improves, businesses can progressively increase the accuracy, coverage, and detail of both greenhouse gas and air pollutant emissions inventories.

Although uncertainty is unavoidable, transparency around data quality, assumptions and limitations is often more important than achieving a high degree of precision in the early stages of developing an emissions inventory. A clearly documented inventory provides a robust basis for future improvement, managing emissions, reporting, and planning for emissions reduction.

A2.9 Improving emissions inventories over time

Many transport businesses face data limitations when developing their first emissions inventory. Common challenges include incomplete fuel records, limited vehicle tracking systems, fragmented operational data, insufficient information on vehicle technologies, and inconsistent reporting practices.

Businesses should not delay emissions measurement because of a lack of detailed data. A practical approach is to begin with available information, develop an initial emissions baseline, and progressively improve data quality, inventory coverage, and methodological detail over time.

A phased approach is often the most effective.

Phase 1: Establish a baseline
Focus on:
- identifying greenhouse gas and air pollutant emission sources within the operational scope defined in Step 1
- collecting available activity data
- applying standard emission factors
- developing an initial emissions inventory.

At this stage, estimates may rely on aggregated operational data, default emission factors, and reasonable assumptions.

Phase 2: Improve data quality
Focus on:
- improving fuel consumption records
- strengthening vehicle activity monitoring
- collecting more detailed operational data
- improving documentation of assumptions and data sources
- collecting information on vehicle types, fuel types, engine technologies, and emission standards
- incorporating additional emission sources where appropriate.

These improvements increase the accuracy and reliability of both greenhouse gas and air pollutant emissions estimates.

Phase 3: Strengthen monitoring systems
As organisational capacity develops, businesses may introduce:
- telematics systems
- fuel management systems
- GPS tracking
- digital fleet management tools
- automated reporting systems
- more detailed inventory methodologies.

These systems can make data collection more efficient, reduce uncertainty, and support more frequent emissions monitoring and reporting.

Benefits of progressive improvement
Improved emissions inventories can help businesses:
- monitor operational performance
- identify opportunities for fuel savings and efficiency improvements
- evaluate emissions reduction measures
- benchmark fleet and service performance
- strengthen sustainability reporting
- support climate action planning and air quality management
- improve access to climate and sustainable finance
- demonstrate progress towards emissions reduction targets.

As inventory systems mature, businesses may progress from Tier 1 approaches based on default emission factors towards Tier 2 approaches that incorporate more detailed operational and technology-specific information.

The aim is continual improvement rather than perfection. Even relatively simple emissions inventories can provide valuable insights into fuel consumption, operational efficiency, greenhouse gas emissions and air pollutant emissions, creating a firm foundation for future efforts to manage, report on and reduce emissions.

A2.10 Further technical resources

The tools and examples provided in this annex are intended to support the development of practical emissions inventories. Businesses requiring more detailed methodologies, technology-specific emission factors, higher-tier calculations or sector-specific guidance should consult the following resources.

Key greenhouse gas emissions resources

Resource	Purpose	Website
IPCC Guidelines for National Greenhouse Gas Inventories	International methodologies for greenhouse gas emissions estimation	www.ipcc-nggip.iges.or.jp/public/2006gl
2019 Refinement to the 2006 IPCC Guidelines	Updated greenhouse gas inventory methodologies	www.ipcc-nggip.iges.or.jp/public/2019rf
Greenhouse Gas Protocol Corporate Accounting and Reporting Standard	Organisational greenhouse gas accounting and reporting	ghgprotocol.org/corporate-standard
ISO 14083	Quantification and reporting of greenhouse gas emissions from transport chain operations	www.iso.org/standard/78864.html
Global Logistics Emissions Council Framework	Freight and logistics emissions accounting	smart-freight-centre-media.s3.amazonaws.com/documents/GLEC_FRAMEWORK_v3.2_21_10_25_1.pdf
UK government greenhouse gas conversion factors	Annual greenhouse gas emission factors for fuels, transport, and electricity	www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

Key air pollutant emissions resources

Resource	Purpose	Website
EMEP/EEA Air Pollutant Emission Inventory Guidebook	Detailed methodologies and emission factors for transport and other sectors	www.eea.europa.eu/publications/emep-eea-guidebook-2023
COPERT Methodology	Road transport emissions calculation tool and methodology	copert.emisia.com
European Environment Agency (EEA)	Air pollutant inventory guidance and supporting resources	www.eea.europa.eu/en/analysis/publications/emep-eea-guidebook-2023
United Nations Economic Commission for Europe (UNECE) Air Convention	International air pollution guidance and inventories	unece.org/environmental-policy/air/emission-inventories-and-projections
National environmental protection agencies	Country-specific emission factors and reporting requirements	Country-specific sources

Transport emissions reporting resources

Resource	Purpose	Website
Smart Freight Centre	Freight emissions accounting and reporting guidance	www.smartfreightcentre.org
International Transport Forum (ITF)	Transport emissions analysis and policy guidance	www.itf-oecd.org
International Civil Aviation Organization (ICAO)	Aviation emissions guidance and calculators	www.icao.int/environmental-protection
International Maritime Organization (IMO)	Shipping emissions guidance and reporting frameworks	https://www.imo.org

Businesses should use nationally approved emission factors and methodologies where available. The resources listed above provide additional guidance for organisations seeking to improve the accuracy, completeness, and consistency of greenhouse gas and air pollutant emissions inventories over time.

Annex 3. Supporting tools for identifying priority emission sources

Annex 3 provides practical tools to support the implementation of **Step 3: Identify priority emission sources**.

The tools help transport businesses to:

- analyse emissions inventories
- identify vehicles, routes, facilities, and operational activities responsible for the largest share of greenhouse gas and air pollutant emissions
- identify operational inefficiencies contributing to fuel consumption and emissions
- prioritise opportunities for improvement
- develop mitigation actions
- establish measurable targets
- monitor progress over time.

The approaches presented are aligned with:

- Intergovernmental Panel on Climate Change (IPCC) key category analysis principles
- International Energy Agency (IEA) operational efficiency approaches
- Climate and Clean Air Coalition (CCAC) mitigation prioritisation approaches
- Smart Freight Centre (SFC) freight emissions management frameworks.

The aim is to focus effort where it can achieve the greatest benefits for climate, clean air, operations and finance.

The tools in this annex correspond to Activities 3.1–3.5 and may support implementation of the analytical and decision-making processes described in Step 3.

A3.1 Worksheet for identifying emissions hotspots

Purpose

This worksheet helps businesses identify the vehicles, routes, facilities, and operational activities responsible for the largest share of greenhouse gas emissions, air pollutant emissions, fuel consumption and operating costs. The approach is consistent with key category analysis methods commonly used in greenhouse gas inventories, whereby attention is focused on the most significant emission sources.

In most transport businesses, a relatively small number of emission sources account for a large proportion of total emissions.

How to use this worksheet

1. Review the emissions inventory developed in Step 2.
2. List the major vehicles, routes, facilities, or activities contributing to emissions in the **emission source** column.
3. Record fuel consumption in the **fuel use** column and estimated emissions in the **greenhouse gas emissions** and **air pollutant emissions** columns.
4. Describe operational characteristics that may explain higher emissions in the **operational characteristics** column, such as high mileage, congestion exposure, excessive idling, poor maintenance, or heavy loads.
5. In the **potential priority** column, indicate whether each emission source should be considered a priority for action based on its contribution to emissions, fuel use, or operational costs.

Worksheet for identifying emissions hotspots

Emission source	Fuel use	Greenhouse gas emissions	Air pollutant emissions	Operational characteristics	Potential priority

Note: Priority emission sources are those that contribute significantly to overall emissions, fuel consumption or operational costs.

A3.2 Emissions hotspot assessment tool

Purpose

This tool helps businesses examine identified hotspots in greater detail and understand why they generate significant emissions.

How to use this tool

1. Transfer the major emission sources identified in A3.1.
2. Record estimated fuel use and emissions.
3. Describe the operational characteristics associated with each source.
4. Assign an indicative priority level based on the significance of emissions and operational importance.

Assessment table

Operational activity	Fuel use	Estimated GHG emissions	Estimated air pollutant emissions	Operational characteristics	Potential priority
Long-distance freight trucks				High mileage	High
Urban delivery fleet				Frequent stop-start driving	High
Older diesel vehicles				Older engine technology	High
Refrigerated transport				Additional fuel demand	Medium
Warehousing operations				Electricity use	Medium
Generator use				Stationary combustion	Medium
Subcontracted transport				Limited operational control	Medium

Note: Emission hotspots often arise from a combination of high activity levels, inefficient operations, older technologies, and poor maintenance practices.

A3.3 Operational indicators tool

Purpose

Operational indicators help businesses compare vehicles, routes, and services and identify inefficiencies contributing to elevated emissions.

How to use this tool

1. Collect operational data from vehicles, routes, or services.
2. Calculate the indicators shown below.
3. Compare results across vehicles and operations.
4. Investigate unusually high values.
5. Identify opportunities for improvement.

Operational indicators

Indicator	Purpose
Fuel consumption per vehicle	Identify inefficient vehicles
Emissions per kilometre	Compare route efficiency
Emissions per tonne-km	Assess freight efficiency
Fuel use per trip	Compare operational performance
Vehicle utilisation rate	Identify underused vehicles
Average load factor	Assess freight efficiency
Idle time	Identify operational waste

Note: Vehicles or routes with relatively high fuel consumption, emissions intensity, or idle time may represent priority emission sources.

A3.4 Emissions source ranking tool

Purpose

This tool helps businesses rank emission sources according to their contribution to total emissions and operational costs.

How to use this tool

1. List the major emission sources identified during hotspot analysis.
2. Record annual fuel consumption and emissions.
3. Estimate the percentage contribution of each source to total emissions.
4. Consider the operational importance of each source.
5. Rank sources from highest to lowest priority. Businesses may assign numerical scores where sufficient data are available to support a more systematic comparison of emission sources.

Ranking table

Emissions source	Annual fuel use	Annual GHG emissions	Annual air pollutant emissions	Share of total emissions (%)	Operational importance	Priority ranking
HDV fleet						
Urban delivery vehicles						
Warehousing electricity use						
Generators						
Refrigeration units						
Subcontracted logistics						

Note: The highest-ranked sources should generally be prioritised for mitigation planning.

A3.5 Operational efficiency assessment

Purpose

Operational inefficiencies frequently drive both fuel consumption and emissions.

How to use this tool

1. Review operations and indicate whether the issues below are present.
2. Where issues are identified, investigate possible corrective actions.

Assessment checklist

Operational Issue	Observed?	Potential Impact
Excessive idling		Increased fuel use and emissions
Poor vehicle maintenance		Reduced efficiency
Overloaded vehicles		Higher fuel consumption
Underutilised vehicles		Higher emissions intensity
Poor route planning		Increased mileage
Congestion exposure		Increased emissions
Driver behaviour issues		Reduced fuel efficiency
Inappropriate vehicle allocation		Operational inefficiency

Driver behaviour indicators

Driver behaviour can significantly influence fuel consumption and emissions.

Indicators may include:

- harsh acceleration
- excessive braking
- speeding
- prolonged idling
- inconsistent driving patterns.

Eco-driving programmes often provide immediate fuel savings and emissions reductions.

A3.6 Matrix for prioritising among mitigation measures

Purpose

This tool helps businesses prioritise mitigation measures according to expected benefits, costs and implementation feasibility.

How to use this tool

1. List potential mitigation measures.
2. Assess expected emissions reduction potential.
3. Consider implementation cost and operational feasibility.
4. Assign a priority level.

Prioritisation matrix

Mitigation action	Emissions reduction potential	Cost	Operational feasibility	Implementation timeframe	Priority level
Eco-driving training	Medium	Low	High	Short-term	High
Vehicle maintenance programme	Medium	Low	High	Short-term	High
Route optimisation	Medium	Medium	High	Short-term	High
Fleet management systems	Medium	Medium	Medium	Medium-term	Medium
Fleet renewal	High	High	Medium	Long-term	Medium
Alternative fuels	High	High	Medium	Long-term	Medium
Electric vehicles	High	High	Low-medium	Long-term	Medium
Modal shift	High	Medium	Medium	Medium-term	Medium

Note: Businesses should generally begin with low-cost, high-impact measures before progressing to larger investments.

A3.7 Climate action planning template

Purpose
This template helps businesses convert hotspot analysis into a practical action plan.

How to use this tool
1. Select priority emission sources identified during **Step 3. Identify priority emission sources**
2. Identify mitigation measures.
3. Estimate expected benefits and costs.
4. Establish implementation timelines.

Use this template to identify, assess, and prioritise mitigation measures. Complete the table for each action being considered, drawing on the priority emission sources identified in the previous worksheet.

Climate action planning template

Mitigation measure	Target emissions source	Expected benefit	Estimated cost	Expected fuel savings	Expected emissions reduction	Timeline
Eco-driving training	HDV fleet	Reduced fuel consumption				
Maintenance programme	Older vehicles	Improved efficiency				
Route optimisation	Urban deliveries	Reduced mileage				
Fleet renewal	Ageing fleet	Lower emissions				
EV pilot programme	Urban fleet	Reduced tailpipe emissions				

A3.8 Performance monitoring indicators

Purpose
Monitoring helps businesses track progress and evaluate whether mitigation measures are delivering expected results.

How to use this tool
1. Select indicators relevant to business operations.
2. Establish baseline values.
3. Monitor performance regularly.
4. Compare results against targets.
5. Adjust actions where necessary.

Recommended monitoring indicators

Indicator	Unit	Monitoring frequency
Total fuel consumption	Litres/year	Monthly
Fleet fuel efficiency	km/litre	Monthly
Total GHG emissions	tCO_2e/year	Annual
NO_x emissions	kg/year	Annual
$PM_{2.5}$ emissions	kg/year	Annual
Vehicle utilisation	%	Monthly
Average load factor	%	Monthly
Share of low-emission vehicles	%	Annual

A3.9 Good practice guidance

Businesses should:

- focus first on the largest sources of fuel consumption and emissions
- prioritise actions that deliver both environmental and operational benefits
- begin with low-cost operational improvements where possible
- progressively improve data quality over time
- integrate emissions management into routine operational planning
- establish measurable targets and monitor performance regularly.

The aim is continual improvement rather than perfect data or immediate large-scale investment. Even relatively simple operational measures can deliver fuel savings, reduce emissions, improve air quality and strengthen overall business performance.

The highest-priority emission sources identified through this process should form the primary focus of mitigation measures developed in Step 4.

Annex 4. Tools to support action to reduce emissions

Annex 4 provides practical tools to assist transport businesses in implementing **Step 4. Take action to reduce emissions.**

The purpose of this annex is to help transport businesses identify, prioritise, implement, monitor, and evaluate measures that reduce greenhouse gas emissions, air pollutant emissions, fuel consumption, and operating costs.

The tools presented can be adapted to different transport modes, fleet sizes, and business contexts. They are intended to support practical decision-making, implementation planning, performance monitoring, and continuous improvement.

A4.1 Principles for selecting emission reduction measures

Businesses should prioritise emission reduction measures based on operational, financial, environmental, and technical considerations.

Measures that provide multiple benefits should generally be prioritised.

Selection criteria	Key questions
Operational feasibility	Can the measure be implemented within existing operations?
Financial affordability	Is the investment cost manageable?
Technical feasibility	Are the necessary skills and resources available?
Infrastructure requirements	Is supporting infrastructure available?
Emissions reduction potential	Will the measure significantly reduce emissions?
Air quality benefits	Will the measure reduce air pollutant emissions?
Fuel-saving potential	Will the measure reduce fuel consumption?
Maintenance implications	Can the measure be maintained effectively?
Business benefits	Will the measure improve efficiency or competitiveness?

A4.2 Mitigation prioritisation matrix

This matrix helps businesses compare potential mitigation actions.

Mitigation action	Climate benefit	Air quality benefit	Cost	Operational feasibility	Priority
Eco-driving					
Preventive maintenance					
Route optimisation					
Fleet management system					
Fleet renewal					
CNG conversion					
Electric vehicles					

Businesses should generally prioritise actions that are technically feasible, affordable, and capable of delivering measurable emissions reductions and operational benefits.

A4.3 Eco-driving assessment checklist

This checklist helps identify opportunities to improve driver behaviour and reduce fuel consumption.

Where several responses are marked 'No', eco-driving improvements may provide immediate benefits.

Assessment question	Yes	No
Drivers have received eco-driving training		
Driver performance is monitored		
Vehicle idling is minimised		
Speed management policies are in place		
Fuel consumption is monitored by vehicle		
Driver feedback is provided regularly		
Tyre pressure is checked routinely		

A4.4 Preventive maintenance checklist

Preventive maintenance can improve fuel efficiency, reduce emissions, and extend vehicle life.

Maintenance activity	Weekly	Monthly	Quarterly
Tyre pressure checks			
Oil and fluid checks			
Air filter inspection			
Fuel injector inspection			
Brake system inspection			
Engine tuning			
Exhaust system inspection			

Maintenance records should be retained to support fleet management and performance monitoring.

A4.5 Route optimisation and logistics worksheet

This worksheet helps identify opportunities to improve logistics efficiency and reduce unnecessary fuel consumption.

Route or service	Distance travelled	Fuel use	Empty return trip?	Improvement opportunity

Potential improvement opportunities include:

- route optimisation
- delivery consolidation
- backhaul coordination
- improved scheduling
- congestion avoidance
- increased load factors.

A4.6 Vehicle replacement assessment tool

This tool helps businesses identify vehicles that should be prioritised for replacement.

Vehicle	Age	Annual fuel use	Annual maintenance cost	Reliability issues	Replacement priority

Vehicles with high fuel consumption, high maintenance costs, and poor reliability should generally be prioritised for replacement.

A4.7 Fuel and emissions calculation tool

Fuel consumption can be used to estimate greenhouse gas emissions, as follows:

CO_2 emissions = fuel consumption × emission factor

Where:

- fuel consumption is measured in litres
- the emission factor represents kilograms of CO_2 emitted per litre of fuel.

Example:
10 000 litres diesel × 2.68 kg CO_2/litre = 26 800 kg CO_2
= 26.8 tonnes CO_2

Emission factors should be obtained from nationally approved sources or internationally recognised methodologies, such as the IPCC Guidelines for National Greenhouse Gas Inventories.

Fuel Intensity

Fuel intensity = fuel used ÷ distance travelled

Fuel intensity indicators enable businesses to compare performance over time and between vehicles.

A4.8 Monitoring and performance tracking template

Monitoring helps businesses evaluate the effectiveness of emissions reduction measures.

Indicator	Baseline	Current value	Target	Monitoring frequency
Fuel consumption				Monthly
Fuel efficiency				Monthly
CO_2 emissions				Annual
$PM_{2.5}$ emissions				Annual
NO_x emissions				Annual
Black carbon emissions				Annual
Vehicle utilisation				Monthly
Average load factor				Monthly
Fleet age				Annual

Regular monitoring supports continual improvement and informed decision-making.

A4.9 Climate Action Plan template

The Climate Action Plan should bring together the actions identified in Step 4 and provide a roadmap for implementation.

Company information

Information	Description
Company name	
Business type	Freight/passenger/logistics/delivery/fleet management
Location of operations	
Number of employees	
Number of vehicles	
Reporting period	

Climate Action Plan

Action	Objective	Timeline	Responsible person	Resources required	Monitoring indicator

The Climate Action Plan should be reviewed regularly and updated as actions are completed and new opportunities are identified.

A4.10 Emissions reduction targets worksheet

Businesses should establish measurable and realistic targets linked to priority emission sources.

Target area	Baseline	Target	Target year	Responsible person
Fuel consumption				
Fuel efficiency				
CO_2 emissions				
$PM_{2.5}$ emissions				
NO_x emissions				
Black carbon emissions				
Vehicle utilisation				
Load factor				

Targets should be measurable, realistic, time-bound, and linked to business objectives.

A4.11 Total cost of ownership assessment

When considering fleet renewal, alternative fuels or electrification, businesses should evaluate the total cost of ownership rather than purchase price alone.

Factors to consider include:

- vehicle purchase cost
- fuel or electricity costs
- maintenance costs
- vehicle utilisation
- infrastructure requirements
- vehicle lifetime
- residual value.

Total cost of ownership (TCO) assessment tools

Tool	Organisation	Purpose	URL
C40 Electric Freight TCO Tool	C40 Cities	Assesses the economic viability of electric freight vehicles and compares operating costs with conventional vehicles.	www.c40knowledgehub.org/s/article/Total-cost-of-ownership-TCO-tool-for-electric-freight
ICCT TCO Calculator	International Council on Clean Transportation (ICCT)	Compares total cost of ownership for diesel, electric, and other commercial vehicle technologies.	theicct.org/tco-calculator
IEA Electric Vehicle Total Cost of Ownership Tool	International Energy Agency (IEA)	Compares lifetime costs of conventional and electric vehicles under different operating conditions.	www.iea.org/data-and-statistics/data-tools/electric-vehicles-total-cost-of-ownership-tool
Freight Electrification Toolkit and TCO Model	Smart Freight Centre	Supports fleet operators in assessing the cost competitiveness of electric freight vehicles.	smartfreightcentre.org/en/skills/fec-electrification-toolkit

How to use these tools

These tools can help businesses:

- compare vehicle technologies on a whole-life cost basis
- assess fuel and maintenance cost savings
- evaluate electrification and alternative fuel options
- estimate investment requirements
- support fleet renewal planning
- strengthen business cases for financing and investment decisions.

A4.12 Review and updating checklist

Climate Action Plans should be reviewed periodically to reflect changing operational circumstances.

Review question	Yes	No
Has the emissions inventory been updated?		
Have targets been reviewed?		
Have mitigation measures been implemented?		
Have new emission hotspots emerged?		
Have fuel consumption trends been analysed?		
Have monitoring indicators been updated?		
Have new technologies or opportunities been assessed?		

Regular reviews help maintain implementation momentum and support continual improvement.

A4.13 Good practice for implementing emissions reduction measures

Businesses should:

- begin with low-cost operational improvements
- focus first on major fuel-consuming activities
- implement measures progressively over time
- monitor performance regularly
- maintain accurate operational records
- use data to support decision-making
- integrate climate and air quality objectives
- review and update Climate Action Plans periodically
- consider workforce and user needs when implementing changes.

The aim is continual improvement rather than immediate perfection. Even relatively simple actions can reduce fuel consumption, lower emissions, improve air quality, reduce operating costs and strengthen long-term business performance.

The approaches and tools presented in this annex are informed by internationally recognised frameworks and guidance, including IPCC mitigation guidance, International Energy Agency transport efficiency approaches, Climate and Clean Air Coalition clean transport guidance, Smart Freight Centre freight emissions management frameworks, and the Avoid–Shift–Improve (ASI) framework for sustainable transport planning.

Framework/ guidance	Organisation	Purpose	URL
IPCC Mitigation Guidance	Intergovernmental Panel on Climate Change (IPCC)	Scientific assessment of greenhouse gas mitigation options across sectors, including transport.	www.ipcc.ch/report/ar6/wg3
Road Transport: Net Zero Emissions Guide	International Energy Agency (IEA)	Guidance on improving transport efficiency and reducing transport emissions.	www.iea.org/topics/transport
Air Pollutant Emission Assessment	Climate and Clean Air Coalition (CCAC)	Guidance on reducing greenhouse gases and short-lived climate pollutants from transport.	www.ccacoalition.org/sites/default/files/resources/files/CCAC SEI - A Practical Guide For Business - Updated_Final 2023.pdf
GLEC Framework for Logistics Emissions Accounting and Reporting	Smart Freight Centre (SFC)	International framework for measuring and managing freight and logistics emissions.	www.smartfreightcentre.org/en/our-programs/global-logistics-emissions-council/
Avoid–Shift–Improve (ASI) Framework	German Agency for International Cooperation (GIZ) / Sustainable Urban Transport Project (SUTP)	Widely used framework for transport planning and emissions reduction.	www.transformative-mobility.org/wp-content/uploads/2023/03/ASI_TUMI_SUTP_iNUA_No-9_April-2019-Mykme0.pdf

Annex 5. Climate finance and investment readiness toolkit

This annex should be used alongside **Step 5 of the Climate and Clean Air Action Framework: Develop Bankable Projects and Access Climate Finance**.

It provides practical guidance and templates to help transport businesses convert Climate Action Plan priorities into investment-ready projects capable of attracting finance and supporting implementation.

The annex supports project development, financial assessment, implementation planning, monitoring and reporting, and engagement with potential financiers. It is aligned with Nigeria's climate and transport priorities, including the Nationally Determined Contribution (NDC 3.0), Long-Term Low Emissions Development Strategy (LT-LEDS), Energy Transition Plan (ETP), and Climate Change Act (2021).

The following section outlines the typical stages involved in developing a bankable climate project, from project identification through to financing and implementation. This section highlights that organisational readiness is a key prerequisite for developing a successful bankable project. Effective project implementation requires appropriate governance arrangements, clearly defined institutional responsibilities and adequate technical capacity. Project Preparation Facilities can, to some extent, support the strengthening of these elements to ensure they are aligned with the project's objectives and implementation requirements.

For an illustrative example of how a transport business can develop an investment-ready climate project, see the Chisom Transport Ltd case study in Step 5.

A5.1 From project idea to financing proposal

Successfully securing finance for a climate project requires a structured approach. Most projects do not become investment-ready immediately. Instead, they progress through a series of stages that gradually strengthen the technical, financial, operational, environmental and institutional foundations required by lenders, investors and climate finance providers.

The process begins with identifying a transport challenge or opportunity and concludes with preparing a complete financing package that can be submitted to financial institutions, development banks, climate finance facilities or investors.

The seven stages outlined below provide a practical pathway for developing bankable climate projects.

Stage 1. Scan for ideas and opportunities
The first stage involves identifying the transport problem or opportunity that the project seeks to address. This may include excessive fuel consumption, ageing vehicles, poor fleet efficiency, congestion, high operating costs, poor air quality, or growing greenhouse gas emissions.

Businesses should be aware of the potential cost savings associated with implementing climate projects. Maintaining fossil fuel-dependent operations is likely to increase operating costs over the long term due to factors such as fuel price volatility, subsidy reforms, and carbon pricing, reducing competitiveness and increasing the cost of doing business in the future. In addition, businesses may miss opportunities to access climate finance and other sources of concessional or dedicated funding for low-carbon investments.

At this stage, businesses should review the findings from their Climate Action Plan, identify priority emission sources and operational inefficiencies, assess market demand, and consider how climate action can improve business performance.

For users of this framework, much of this work has already been completed through Steps 1 to 4.

Stage 2. Project concept note
The project concept note (PCN) is the first formal description of the proposed investment. It translates a mitigation opportunity into a clearly defined project that can be discussed with financiers and project partners.

A project concept note should describe:
- the problem being addressed
- the proposed intervention
- expected greenhouse gas emissions reductions
- expected clean air benefits
- expected operational and financial benefits
- implementation requirements
- indicative costs and financing needs.

The concept note forms the foundation for all subsequent project development activities.

Stage 3. Stakeholder and regulatory mapping
Climate projects often require collaboration between multiple organisations and compliance with regulatory requirements.

This stage identifies:
- government agencies and regulators
- financing institutions and investors
- project delivery partners
- infrastructure providers
- local authorities
- affected communities and transport users.

Early engagement helps identify potential barriers, clarify approval requirements, reduce implementation risks, and strengthen project credibility.

Stage 4. Business case development
The business case demonstrates why the project should proceed. At this stage, the business identifies and quantifies the costs and benefits of the project, ideally expressing them in monetary terms, by assessing both capital and operating expenditures.

It assesses:
- strategic alignment with business objectives and national climate priorities
- expected environmental benefits
- operational improvements
- financial viability
- implementation arrangements
- project risks and mitigation measures.

The business should also consider the indirect operating costs associated with the project. These may include:
- workforce training and capacity building to operate and maintain new technologies
- temporary operational disruptions during project implementation
- additional operation and maintenance requirements
- compliance costs associated with reporting obligations and environmental permitting requirements.

The business case should demonstrate that the project is technically feasible, financially realistic and capable of delivering measurable climate, clean air and business benefits.

Stage 5. Environmental and social assessment
Many financiers require evidence that projects have considered potential environmental and social impacts.

Environmental and Social Impact Assessments (ESIAs) or Environmental and Social Management Plans (ESMPs) typically examine:

- environmental risks and mitigation measures
- community impacts
- worker health and safety
- accessibility and inclusion considerations
- gender equality and social inclusion issues
- stakeholder consultation processes.

Projects that demonstrate positive social outcomes alongside emissions reductions are often more attractive to development finance institutions and climate finance providers.

Stage 6. Monitoring, reporting and verification framework
Monitoring, reporting and verification (MRV) systems provide the evidence required to demonstrate project performance.

An MRV framework typically defines:

- baseline fuel use and emissions
- performance indicators
- data collection procedures
- reporting arrangements
- verification requirements.

Monitoring systems should track fuel savings, greenhouse gas emissions reductions, air pollutant emissions reductions, operational performance and other project benefits.

Robust monitoring arrangements increase project credibility and support future scaling opportunities.

Stage 7. Financing package and submission
The final stage combines all project information into a complete financing package suitable for submission to lenders, investors or climate finance institutions.

Typical components include:

- project concept note
- business case
- environmental and social management plan
- monitoring, reporting and verification framework
- financial model and supporting calculations
- baseline emissions data
- implementation plan
- supporting legal and organisational documentation.

Once completed, the financing package can be submitted to commercial lenders, development banks, climate finance facilities, public funding programmes or private investors.

By progressing systematically through these seven stages, transport businesses can strengthen project quality, improve investment readiness, increase access to finance, and maximise climate, clean air and operational benefits.

The templates provided in Annex A5 support the development of information required at each stage of the project preparation process.

A5.2 Project overview

The project overview summarizes the proposed climate investment project. It should clearly describe the nature of the investment, the transport operations affected, and the intended outcomes. This information helps financiers, project partners and decision-makers quickly understand the purpose and scope of the project.

Item	Description
Project title	
Company name	
Location of operations	
Project type	Fleet upgrade/electric vehicles/logistics optimisation/ infrastructure
Project duration	
Implementation partners	

The project overview should describe the proposed investment and the transport operations affected.

Typical project categories may include:

- fleet modernisation
- electric vehicle deployment
- compressed natural gas conversion
- charging infrastructure
- telematics and fleet management systems
- route optimisation technologies
- logistics efficiency improvements
- public transport upgrades
- depot energy efficiency improvements.

Projects should explain how the proposed investment contributes to:

- greenhouse gas emissions reductions
- fuel savings
- operational efficiency improvements
- improved air quality
- reduced operating costs
- enhanced service reliability
- long-term operational resilience.

Where possible, projects should provide a brief explanation of the problem being addressed, the proposed solution, and the expected benefits. This will help establish a clear rationale for investment and support subsequent project development activities.

A5.3 Practical considerations

In Nigeria and many other low- and middle-income countries, transport services are often provided by small and fragmented operators with limited financial and technical capacity. Such operators may face difficulties accessing commercial finance individually because projects are often considered too small, too risky, or insufficiently developed by lenders and investors.

Aggregation approaches can improve investment readiness and access to finance by increasing project scale, reducing transaction costs, strengthening operational coordination, and improving investment attractiveness.

Examples include:

- fleet aggregation through cooperatives or operator associations
- shared charging or refuelling infrastructure
- pooled procurement of vehicles or technologies
- leasing arrangements
- corridor-based infrastructure partnerships
- public-private partnerships
- digital fleet management platforms serving multiple operators.

Public-private partnerships

Public-private partnerships (PPPs) can play an important role in advancing clean and low-carbon transport. These arrangements enable public and private stakeholders to jointly develop, finance, implement, and operate transport projects while sharing risks, responsibilities, and benefits.

Transport applications may include:

- electric bus systems
- charging infrastructure networks
- logistics hubs
- transport terminals
- intelligent transport systems.

Public–private partnerships can improve project scale, strengthen investment attractiveness, mobilise additional finance, and support wider implementation of climate and clean air solutions.

Where appropriate, transport businesses should explore opportunities to collaborate with local authorities, transport agencies, development finance institutions, infrastructure providers, and private investors to support project development and implementation.

A5.4 Project context

This section should describe the operational, financial, environmental and organisational challenges that the project seeks to address.

Examples may include:

- rising fuel costs
- ageing vehicle fleets
- poor fuel efficiency
- increasing greenhouse gas emissions
- poor air quality
- congestion and unreliable journey times
- increasing environmental reporting requirements
- limited access to lower-emission technologies
- electricity reliability constraints.

Projects should explain:

- the current situation
- the problem being addressed
- why intervention is required
- the expected consequences of continuing the inaction including the direct and indirect costs.

A clear project context helps establish the rationale for investment and supports subsequent assessments of project benefits and financing needs.

A5.5 Project alignment with national climate commitments

Projects should demonstrate alignment with national climate and transport policies.

Relevant national frameworks for Nigeria include:

- Nigeria's Nationally Determined Contribution (NDC 3.0)
- Long-Term Low Emissions Development Strategy (LT-LEDS)
- Energy Transition Plan (ETP)
- Climate Change Act (2021)
- national electric vehicle policies
- National Vehicular Emission Control Programme (NVECP).

Projects should explain how the investment supports Nigeria's climate mitigation and transport decarbonisation objectives.

Examples of relevant national transport priorities

NDC 3.0 priorities
Nigeria's NDC identifies several transport mitigation priorities, including:

- adoption of cleaner fuels
- transition to electric and CNG vehicles
- EURO IV vehicle standards
- Bus Rapid Transit (BRT) expansion
- lower-carbon aviation fuels.

LT-LEDS priorities
The LT-LEDS identifies:

- large-scale electric vehicle deployment
- charging infrastructure expansion
- increased use of ethanol and CNG vehicles
- intelligent transport systems
- modal shift towards public transport and non-motorised transport
- low-carbon logistics systems.

Energy Transition Plan priorities
The ETP prioritises:

- large-scale EV deployment
- natural gas vehicle expansion
- public transport enhancement
- biofuel blending
- electric two- and three-wheelers
- charging infrastructure
- grid reliability improvements.

Projects aligned with these national priorities may have stronger access to climate finance opportunities.

Relevant policy documents can be accessed at:

- **Nigeria NDC:** https://unfccc.int/documents/497790
- **Nigeria LT-LEDS:** https://unfccc.int/documents/638193
- **Nigeria Energy Transition Plan:** www.energytransition.gov.ng
- **Climate Change Act:** https://climatechange.gov.ng/climate-change-act/

A5.6 Baseline situation

The baseline describes the operational situation before project implementation and provides the reference point against which future improvements can be measured. Establishing a credible baseline is an important step in project development because climate finance providers require evidence of current performance before they can assess potential project benefits.

The baseline should describe existing transport operations, fuel consumption, operating costs and emissions. Where complete data are not available, reasonable estimates may be used, if assumptions and data sources are clearly documented.

Baseline indicator	Current situation
Number of vehicles	
Vehicle types	
Average vehicle age	
Annual fuel consumption	
Annual distance travelled	
Annual operating costs	
Estimated greenhouse gas emissions	
Estimated air pollutant emissions (if available)	

The baseline provides the reference point against which future project improvements can be measured. It also enables companies to estimate fuel savings, emissions reductions and other benefits arising from project implementation.

Most importantly, a baseline assessment helps demonstrate the cost of inaction by comparing the current business-as-usual scenario with a climate-aligned alternative. In most cases, the assessment will show that the climate-aligned approach reduces operating costs through lower energy consumption, improved operational efficiency, and reduced fuel use.

Baseline emissions may be estimated using:

- fuel consumption records
- mileage and operational data
- fleet management systems
- vehicle specifications
- recognised emission factors.

Where possible, companies should use recognised methodologies such as:

- Intergovernmental Panel on Climate Change (IPCC) methodologies
- Greenhouse Gas Protocol
- ISO 14083
- EMEP/EEA emission methodologies.

Smaller operators may not have access to detailed emissions inventories. In such cases, fuel consumption records and basic vehicle activity data can often provide a sufficient basis for estimating emissions and assessing potential project benefits.

Relevant resources include:

- **IPCC Guidelines:** www.ipcc-nggip.iges.or.jp/public/2006gl
- **Greenhouse Gas Protocol:** ghgprotocol.org
- **ISO 14083:** www.iso.org/standard/78832.html
- **EMEP/EEA Air Pollutant Emission Inventory Guidebook:** www.eea.europa.eu/publications/emep-eea-guidebook-2023

A5.7 Proposed climate intervention

This section describes the investment, technology or operational change being proposed. The intervention forms the core of the project and should clearly explain what will be implemented, where it will be implemented, and how it will improve environmental and operational performance.

Climate finance providers require a clear description of the proposed intervention so that they can assess its technical feasibility, implementation requirements, expected benefits and potential risks.

Examples of interventions relevant to Nigerian transport businesses include:

- replacement of older diesel vehicles with more fuel-efficient vehicles
- electric vehicle deployment
- installation of charging infrastructure
- telematics and digital fleet management systems
- route optimisation technologies
- improved maintenance programmes
- depot energy efficiency improvements
- logistics consolidation systems
- renewable energy systems supporting transport operations.

Intervention component	Description
Technology or measure	
Scale of implementation	
Geographic coverage	
Implementation timeline	
Operational changes required	

Projects should explain how the intervention:

- reduces fuel consumption
- improves operational efficiency
- reduces greenhouse gas emissions
- improves air quality

- reduces operating costs
- improves service reliability
- strengthens operational resilience.

Where possible, projects should also describe any supporting activities required for successful implementation, such as staff training, infrastructure upgrades, maintenance arrangements, digital systems, or changes to operational procedures.

A clear description of the intervention will help demonstrate project feasibility and support subsequent assessments of emissions reductions, financial viability and climate finance readiness.

A5.8 Estimated emissions reductions

Climate finance providers require evidence that projects will deliver measurable greenhouse gas emissions reductions. Estimating emissions reductions is therefore an important part of developing an investment-ready project and demonstrating its climate benefits.

Projects should compare:
- baseline emissions (without the project)
- project emissions (after implementation).

The difference between these two estimates represents the emissions reductions or avoided emissions that can be attributed to the project.

Where detailed emissions modelling is not available, companies may use fuel consumption data, vehicle activity data and recognised emission factors to develop reasonable estimates. Where possible, assumptions, data sources and calculation methods should be documented.

Indicator	Estimate
Baseline emissions	
Project emissions	
Annual emissions reduction	
Lifetime emissions reduction	

Estimated emissions reductions may be calculated using:
- fuel consumption reductions
- recognised emission factors
- fleet efficiency improvements
- projected operational changes
- vehicle technology improvements.

Projects should provide the most robust estimates possible using available data. Even simplified estimates can help demonstrate climate benefits and support financing discussions.

Where possible, projects should also identify air quality co-benefits including reductions in:
- particulate matter ($PM_{2.5}$)
- nitrogen oxides (NO_x)
- sulphur oxides (SO_x)
- black carbon.

These pollutants are associated with adverse health outcomes and poor air quality, particularly in urban areas and along major transport corridors.

Projects demonstrating both climate and clean air benefits may be more attractive to climate finance providers, development finance institutions and sustainable investment programmes.

Where recognised methodologies are used, projects should briefly describe the approach adopted and reference the relevant methodology, such as the IPCC Guidelines, Greenhouse Gas Protocol, ISO 14083 or EMEP/EEA methodologies (see Annex 1).

A5.9 Financial analysis

Projects should demonstrate financial viability alongside environmental benefits. Financial viability refers to whether a project can generate sufficient operational savings, revenues or economic benefits to justify the required investment. Climate finance providers, development finance institutions and commercial lenders generally assess both environmental performance and financial sustainability when evaluating investment proposals.

For many transport projects, fuel savings represent the most significant financial benefit. Additional benefits may include lower maintenance costs, improved vehicle reliability, reduced downtime, increased operational efficiency and enhanced service performance.

The financial analysis does not need to be highly complex. Even a simple assessment of investment costs, expected savings and payback periods can help demonstrate whether a project is financially attractive and suitable for further development.

Estimated project costs

Cost category	Estimated cost
Vehicle purchase or upgrade	
Infrastructure investment	
Technology systems	
Training and capacity building	
Operational costs	
Maintenance costs	

Projects should estimate all major costs associated with implementation, including equipment, infrastructure, training, installation and ongoing operation where relevant.

Estimated financial benefits

Financial indicator	Estimate
Expected annual fuel cost savings	
Estimated maintenance savings	
Estimated operational savings	
Payback period	
Return on investment	

Projects should also estimate expected operational benefits.

Operational savings, particularly fuel savings, often represent the strongest financial benefit of transport mitigation projects. Where possible, projects should also identify additional benefits such as improved productivity, reduced vehicle downtime, enhanced service reliability and lower operating risks.

Projects should assess potential financial and operational risks including:

- fuel price volatility
- exchange rate exposure
- electricity reliability
- infrastructure constraints
- technology performance risks
- regulatory or policy changes
- supply chain disruptions.

Projects demonstrating strong operational savings, realistic implementation assumptions and credible risk management arrangements are generally considered more bankable and may have stronger access to climate finance opportunities.

Where detailed financial analysis is not possible, companies should clearly document assumptions used in estimating costs, savings and payback periods.

A5.10 Potential sources of climate finance

Transport businesses may access financing through multiple channels depending on project size, investment requirements, risk profile and organisational capacity. Different financing mechanisms may be suitable for different transport investments. For example, vehicle replacement projects may be financed through leasing or commercial loans, while larger infrastructure projects may require blended finance, concessional finance or public-private partnerships.

Climate finance providers generally expect projects to demonstrate clear environmental benefits, financial viability, implementation readiness and appropriate monitoring arrangements before financing is approved.

Potential financing sources include:

- commercial bank loans
- concessional finance
- leasing arrangements
- blended finance
- climate finance facilities
- green investment funds
- public-private partnerships
- carbon finance mechanisms.

Key Nigerian sources of climate finance sources

Fund/institution	What it offers	How to access
Development Bank of Nigeria (DBN)	Concessional loans through partner commercial banks; GCF-accredited, providing access to international climate finance in local currency	Apply through Fidelity, Access, GTBank, and other partner banks; present fleet baseline and Climate Action Plan
Bank of Industry (BOI)	Long-term loans for transport and manufacturing at lower interest rates	Direct application or through BOI state offices in Enugu and Abuja
Presidential Initiative on CNG and Electric Vehicles (Pi-CNG & EV)	Fleet conversion to CNG and electric vehicles; subsidies, conversion centres, financing partnerships; 100 000+ vehicles converted by early 2026	Contact Pi-CNG & EV directly; available to all public and commercial transport operators
National Climate Change Fund (NCCF)	USD 2 billion capitalisation target; catalytic, innovation, and technical assistance windows; blended finance	Register project with National Council on Climate Change (NCCC); align to NDC 3.0 and ETP targets
National Carbon Market (NCMAP)	Article 6 and voluntary carbon markets; potential USD 2.5–3 billion annual revenue over next decade	Sell carbon credits via National Carbon Registry; requires MRV-compliant baseline
InfraCredit Nigeria	Naira-denominated credit guarantees; helps banks lend locally without dollar exchange rate risk	Works with partner commercial banks; reach out through your primary bank
Nigeria Sovereign Green Bond	₦50 billion Series III (2025) oversubscribed; ₦1.5 trillion planned for 2026	Indirect access via PPP with public entities or via eligible project co-financing
NSIA Infrastructure Guarantee Facility	Four windows: project prep fund; viability gap funding; credit guarantee; risk capital	NSIA and World Bank partnership; watch for public launch in 2026

International sources of climate finance

Fund	What it offers	Scale and private sector access
Green Climate Fund (GCF)	Paris Agreement's key financial instrument; funds both mitigation and adaptation; DBN is an Accredited Entity meaning Nigerian businesses access GCF through DBN in local currency	Micro: up to USD 10M; Small: USD 10–50M; Medium: USD 50–250M; Large: above USD 250M. Private sector access via Accredited Entities, de-risking instruments, PPPs
African Development Bank	Loans, grants, and technical assistance for transport infrastructure; private sector window available	Larger projects; PPP structures; aligned with Nigeria's NDC and ETP priorities
Climate Investment Funds (CIF)	Concessional climate finance for developing countries; transport and clean energy focus	Via multilateral development banks including AfDB and World Bank
Africa Finance Corporation	Infrastructure finance across Africa; debt and equity instruments	Large-scale projects; corridors; logistics infrastructure
PACE Nigeria	Assessment toolkit for private sector climate finance readiness; detailed guide to national and international opportunities	Free resource: pacenigeria.org/gacf25 recommended starting point for any Nigerian transport business

Relevant institutions may include:

- **African Development Bank** www.afdb.org
- **World Bank** www.worldbank.org
- **Green Climate Fund** www.greenclimate.fund
- **Climate Investment Funds** www.climateinvestmentfunds.org
- **Bank of Industry Nigeria** www.boi.ng
- **Development Bank of Nigeria** www.devbankng.com
- **National Council on Climate Change** climatecouncil.gov.ng

Projects should explain:

- proposed financing structure
- expected financing sources
- whether blended finance or concessional support is required
- expected private sector participation
- co-financing requirements, where applicable.
- expected repayment arrangements.

Indicative financing strategy

Financing source	Potential use	Relevance to project
Commercial loan		
Concessional finance		
Leasing arrangement		
Climate finance facility		
Public-private partnership		
Other		

Projects may use a combination of financing sources. For example, climate grants or concessional finance may support project preparation and technical assistance, while commercial finance or leasing arrangements may support vehicle procurement and infrastructure deployment.

A clear financing strategy can help demonstrate project readiness and improve access to climate and sustainable finance opportunities.

A5.11 Project preparation and capacity needs

Developing an investment-ready climate project often requires technical, financial and institutional expertise that may not be available within the organisation. Project preparation is therefore an important stage in the climate finance process and can significantly improve the quality, credibility and bankability of a project.

Many climate finance providers require supporting studies, technical assessments and implementation plans before financing decisions can be made. Early investment in project preparation can help strengthen project design, improve risk management and increase access to financing opportunities.

Companies should identify the technical and institutional support required to prepare and implement the project.

This may include:

- feasibility studies
- emissions modelling
- financial analysis and financial modelling
- business case development
- proposal preparation
- engineering design
- procurement support
- technical training
- monitoring, reporting and verification (MRV) system development
- environmental and social assessments.

Project preparation facilities

Many transport businesses require technical support to develop investment-ready projects. Project Preparation Facilities (PPFs) can assist with feasibility studies, business case development, environmental and social assessments, financial modelling and climate finance applications.

Facility	Typical support
GCF Project Preparation Facility (GCF-PPF) www.greenclimate.fund/access-funding/project-preparation-facility	Proposal development and project preparation for Green Climate Fund applications
NEPAD Infrastructure PPF www.au-pida.org/pida/nepad-ippf/	Infrastructure project development and feasibility studies
Private Infrastructure Development Group (PIDG) www.pidg.org	Technical assistance and project de-risking
C40 Cities Finance Facility www.c40cff.org	Urban transport project preparation and capacity building
Public-Private Infrastructure Advisory Facility (PPIAF) www.ppiaf.org	Public-private partnership development and project structuring
Africa50 www.africa50.com	Infrastructure project preparation and investment support
Catalytic Climate Finance Facility www.ccfacility.org	Early-stage project development and investment readiness

Project preparation needs assessment

Capacity need	Support required	Potential provider
Feasibility studies		
Emissions modelling		
Financial analysis		
Engineering design		
Proposal preparation		
Technical training		
Monitoring and MRV systems		
Environmental and social assessments		

Smaller operators may require additional support in project preparation and financial structuring. In some cases, project aggregation, operator cooperatives, shared infrastructure arrangements or public-private partnerships may help improve project viability and access to finance.

Identifying capacity needs early can help organisations access technical assistance, strengthen project preparation and improve the likelihood of securing climate and sustainable finance.

A5.12 Monitoring, reporting and verification

Climate finance providers generally require projects to demonstrate environmental performance through monitoring, reporting and verification (MRV) systems. Monitoring helps organisations assess whether projects are achieving their intended objectives and provides evidence of fuel savings, emissions reductions and operational improvements.

Monitoring systems do not need to be complex. In many cases, existing fuel records, maintenance records, operational data and fleet management systems can provide much of the information required. The level of monitoring should be proportionate to the scale and complexity of the project.

Monitoring and reporting can help organisations:

- verify emissions reductions
- demonstrate operational improvements
- track fuel savings and cost reductions
- support investor and lender reporting requirements
- identify implementation challenges
- strengthen future financing opportunities.

The following table provides examples of indicators and monitoring methods that may be used to assess project performance.

Indicator	Monitoring method
Fuel consumption	Fuel purchase records
Fleet fuel efficiency	Fleet management systems
Greenhouse gas emissions	Updated emissions inventories
Operational efficiency	Logistics and route data
Vehicle utilisation	Fleet monitoring systems
Maintenance performance	Maintenance records
Air pollutant emissions ($PM_{2.5}$, NO_x, BC where feasible)	Emissions calculations, vehicle testing, fleet data

Projects should identify:

- the indicators to be monitored
- the source of monitoring data
- reporting responsibilities
- reporting frequency
- any requirements specified by financiers or funding providers.

Where possible, monitoring arrangements should build upon existing organisational systems to minimise costs and administrative burdens.

Projects that demonstrate credible monitoring and reporting arrangements are often viewed more favourably by climate finance providers because they provide greater confidence that environmental and operational benefits can be measured and verified over time.

A5.13 Social and environmental considerations

Climate investment projects should consider broader environmental and social outcomes alongside emissions reductions and financial performance. Many climate finance providers, development finance institutions and investors assess social and environmental impacts as part of project appraisal and due diligence processes.

Projects that demonstrate positive social outcomes in addition to climate and clean air benefits are often better aligned with sustainable development objectives and may have stronger access to climate finance opportunities.

Projects may consider:

- accessibility of transport services
- mobility needs of older people
- road safety
- workforce training and skills development
- impacts on local communities
- job creation and local economic development
- gender equality and social inclusion
- disability inclusion
- affordability of transport services
- local air quality improvements.

Integrating gender equality, disability and social inclusion (GEDSI) considerations into project design can strengthen both social and environmental outcomes. Where appropriate, projects should consider how different groups may experience the benefits and impacts of transport investments and seek opportunities to improve accessibility, inclusion and participation.

Projects should also consider climate resilience risks that may affect long-term project performance, including:

- flooding
- heat stress
- extreme weather events
- infrastructure disruption
- energy supply reliability
- supply chain disruptions.

The table below can be used to identify key social and environmental considerations. Considering these issues early in project development can improve project quality, reduce implementation risks and strengthen investor confidence.

Identify key social and environmental considerations

Consideration	Potential impact	Mitigation or enhancement measure
Accessibility		
Gender equality		
Disability inclusion		
Local communities		
Road safety		
Air quality		
Climate resilience		

A5.14 Climate finance resources and templates

The following resources provide guidance, templates and supporting information that may assist organisations in preparing climate investment projects and financing applications.

Finance opportunity	Resources and templates
Clean Investment Funds (CIF)	CIF resource collection hub; African Development Bank (AfDB) CIF page; World Bank Clean Technology Fund page
Green Climate Fund (GCF)	Project cycle; funding proposal template; simplified approval process resources; project preparation facility resources
Global Environment Facility (GEF)	Project database; project templates
Private Infrastructure Development Group (PIDG)	Technical assistance; project development support; debt solutions; credit enhancement facilities
Public-Private Infrastructure Advisory Facility (PPIAF)	Guide to applying for PPIAF Funding

Relevant websites include:

- **Clean Investment Funds** (CIF): www.climateinvestmentfunds.org
- **Green Climate Fund** (GCF): www.greenclimate.fund
- **Global Environment Facility** (GEF): www.thegef.org
- **Private Infrastructure Development Group** (PIDG): www.pidg.org
- **Public-Private Infrastructure Advisory Facility** (PPIAF): www.ppiaf.org.

These resources can help organisations understand financing requirements, prepare project proposals and access technical assistance during project development.

A5.15 Implementation plan

Projects should include a realistic implementation plan describing the activities, responsibilities and timelines required for delivery.

Implementation step	Responsible party	Timeline
Project preparation		
Financing arrangements		
Procurement		
Technology deployment		
Capacity building		
Monitoring and reporting		

A clear implementation plan demonstrates project readiness and strengthens investor confidence.

Implementation should generally follow a phased approach beginning with:

- operational efficiency improvements
- rapid payback measures
- high fuel-consuming operations
- pilot implementation where appropriate.

Projects may subsequently scale across larger fleets, additional routes, logistics hubs or wider operational regions.

A5.16 Indicative climate-aligned transport measures from national strategies

The following examples are drawn from Nigeria's Nationally Determined Contribution (NDC 3.0), Long-Term Low Emissions Development Strategy (LT-LEDS) and Energy Transition Plan (ETP). They illustrate the types of transport measures that may support climate aligned investment projects and contribute to national climate and transport objectives.

The examples should guide project development and help organisations identify interventions that may be eligible for climate and sustainable finance. Projects do not need to be limited to the measures listed below; however, alignment with national priorities can strengthen project credibility and improve financing opportunities.

Indicative mitigation measures

- electric vehicle deployment
- compressed natural gas (CNG) vehicle conversion
- electric buses and freight vehicles
- EURO IV vehicle standards
- Bus Rapid Transit (BRT) systems
- intelligent transport systems
- route optimisation technologies
- public transport expansion
- charging and refuelling infrastructure
- logistics optimisation
- non-motorised transport infrastructure
- biofuel blending
- electric two- and three-wheelers
- fleet efficiency improvements.

Potential project benefits

These measures can contribute to:

- greenhouse gas emissions reductions
- improved fuel efficiency
- reduced operating costs
- reduced air pollution
- improved air quality and public health
- enhanced transport system efficiency
- increased energy security
- job creation and skills development
- long-term transport decarbonisation.

Projects aligned with national climate priorities are generally more likely to attract climate and sustainable finance because they contribute to wider national development, climate and clean air objectives.

When developing investment proposals, organisations should explain how the proposed intervention contributes to relevant national policies and strategies, including the NDC, LT-LEDS and Energy Transition Plan.

The measures presented in this annex should be viewed as illustrative examples rather than a comprehensive list. Organisations are encouraged to identify additional mitigation opportunities that are appropriate to their operational circumstances, investment needs and local conditions.

A5.17 Climate finance readiness checklist

Before approaching financiers, organisations should consider whether the project demonstrates the characteristics outlined in the table below.

Projects meeting most or all of these criteria are generally better positioned to attract climate and sustainable finance.

Requirement	Completed
Project objectives clearly defined	
Baseline established	
Emissions reductions estimated	
Financial analysis completed	
Financing strategy developed	
Risks assessed	
Stakeholder engagement completed	
Monitoring arrangements developed	
Social and environmental considerations assessed	
Implementation responsibilities assigned	
Alignment with national climate policies demonstrated	

UK PACT

www.ukpact.co.uk

UK Partnering for Accelerated Climate Transitions (UK PACT) is a programme funded by the UK Government. UK PACT supports countries that strive to overcome barriers to clean growth and have high emissions reduction potential to accelerate their climate change mitigation efforts.

For any enquiries, please get in touch via email at communications@ukpact.co.uk