



Country scoping of research priorities on low carbon transport in Zambia

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Acronyms

AfDB	African Development Bank
BOTAZ	Bus and Taxis Owners Association of Zambia
CSO	Central Statistics Office
DFID	Department for International Development
EIA	Environmental Impact Assessment
FFTUZ	Federation of Free Trade Unions
MEDNP	Ministry of Economic Development and National Planning
MHID	Ministry of Housing and Infrastructure
MLG	Ministry of Local Government
MoE	Ministry of Energy
MoF	Ministry of Finance
MoTC	Ministry of Transport and Communication
NGOCC	Non-Governmental Organization Coordinating Committee



RTSA	Road Traffic and Safety Agency
RDA	Road Development Agency
7 th NDP	Seventh National Development Plan
TAZARA	Tanzania Zambia Railways Authority
TAZ	Truckers Association of Zambia
UNZA	University of Zambia
WB	World Bank
ZCTU	Zambia Congress of Trade Unions
ZEMA	Zambia Environmental Management Agency
ZIPAR	Zambia Institute for Policy and Research
ZRA	Zambia Revenue Authority
ZRL	Zambia Railways Limited



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Abstract	
<p>The UK Department for International Development initiated under its Energy and Economic Growth and High Volume Transport applied research programmes scoping studies to determine research priorities in low-carbon transport in low- and middle-income countries in Asia and Sub-Saharan Africa, including Zambia.</p> <p>The overall objective of these scoping studies was to identify priority research projects that could help advance the transition to a low-carbon transport system in low-and middle-income countries, including Zambia. The studies identified key challenges in transport and energy and research gaps in the target countries and determined a prioritised research agenda that can facilitate the transition to low-carbon transport.</p>	
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EXECUTIVE SUMMARY

The objective of this scoping study is to identify key challenges and research gaps in transport in Zambia and determine a prioritised research agenda that can facilitate the transition to low-carbon transport.

Climate change is a reality in Zambia. Since 2015, the country has experienced intermittent but severe scheduled power cuts as a result of decreased hydro generation output, caused by reduced rainfall. In addition, drought has adversely affected the southern, western and central provinces resulting in decreased agricultural production. In this context, the government is committed to promoting low-carbon pathways that reduce greenhouse gas (GHG) emissions.

Regarding the transport sector, there is scope to reduce GHG emissions by using alternative means of transport, including electric vehicles. Lusaka and other Zambian cities are experiencing increasing traffic congestion, particularly during peak hours. Rising traffic congestion is impeding economic growth. Although less of a problem than in other countries covered under this programme, such as Uganda, reducing traffic congestion and greening transport remains a priority in Zambia.

Zambia aims to create an intermodal transport system, which will provide interlinkages among the four transport modes (road, rail, air and water) and to transform Zambia into a regional transport hub by 2028. With a forward-looking national transport policy in place as well as a non-motorised transport strategy, there is an opportunity for Zambia to learn lessons from other countries and make the transition to low-carbon transport.

This scoping report recommends four research themes, including relevant research questions. The themes are listed below in order of priority, together with the relevant research questions.

Introduction of an efficient public transport system (Theme 1)

The levels of traffic congestion in Lusaka city have become a major concern not only for the Government but all road users at large. Congestion increases travel time, the amount of fuel used by vehicles and emissions. The ongoing project to reduce traffic congestion in Lusaka has made provisions for BRT. One potential option to reduce transport emission in Zambia is to replace the current minibuses (Toyota Hiace) with lower polluting buses. Research is needed to help support the design of policies and fiscal incentives for an efficient public transport system.

This research will interest potential bus operators as well as policy makers in the design of supportive policies and fiscal incentives for an efficient public transport system.

Relevant questions to be addressed under this theme include:

- What measures should be put in place to ensure that public transport is sustainable and low carbon?
- How can Lusaka and other major cities' transport systems be decongested in favour of greener public transport?
- What are the opportunities for disposal of scrap metals and recycling of motor vehicles?

Incorporating climate change into national transport policies (Theme 2)

Zambia is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC). Under the 2015 Paris Agreement, all parties committed to submitting nationally determined contributions (NDCs) to reduce GHG emissions. However, there is a disconnect between transport planning at the national level and the commitments that Zambia has made globally and nationally on climate change. The National Transport Policy in its current form does not include issues of GHG emission regulations. Hitherto, transport has not been viewed as a big contributor to emissions. Research can provide the evidence-based for a green transport policies and strategies.



This research will help Zambia set climate-related baselines and targets to be integrated into the National Transport Policy Implementation Plan (2019-2028) and the NDC.

Relevant questions to be addressed under this theme include:

- What is the vision and strategy for the transition to low carbon transport in Zambia?
- What are the legal and policy framework gaps that need to be filled for the effective control of GHG emissions and the incentives required to support the transition to low-carbon transport?
- How can the implementation of NDCs accelerate the decarbonisation of the transport sector in Zambia?

Enabling electric mobility (Theme 3)

The Minister of Transport and Communications, Hon. Mutotwe Kafwaya, tabled a Cabinet Memorandum in 2019 outlining intentions to introduce electric vehicles to deal with the upward trend in fuel prices and to reduce transport related air pollution. Research is required to support efforts to create an enabling environment for electric vehicles in Zambia.

This research will benefit policy makers in the design of supportive policies and fiscal incentives for environmentally friendly vehicles.

Relevant questions to be addressed under this theme include:

- What is the potential penetration of electric vehicles in Zambia?
- What enabling infrastructure is required for the charging and parking of electric vehicles in Lusaka and other major towns and locations on the inter-urban roads?
- What policy incentives are required to support the uptake of electric vehicles in Zambia?

Quantifying transport emissions (Theme 4)

A key priority is the need to conduct research focusing on the level of GHG emissions across the country to inform policy and legislation on restriction of the age of motor vehicles on the Zambia roads and the control of emissions from all modes of transport. The National Transport Policy in its current form does not include a situational analysis of the impact of transport on climate change, nor the policy and legal framework for regulating GHG emissions in the sector. Information exists on the emissions from light duty vehicles of less than 3.5 tonnes, derived from a United Nations Environment Programme (UNEP) study carried out in collaboration with the Zambia Environmental Management Agency (ZEMA). However, there is limited information on emissions from other categories of vehicles in particular the heavy goods vehicles that emit more polluting emissions due to the advanced age of the fleet and the poor diesel quality on the market.

Improved emission data will assist monitoring and emission control measures, such as mandatory checks on emissions from motor vehicles, trucks, aircraft and trains by regulatory bodies such as ZEMA and Road Transport & Safety Agency Zambia (RTSA). It will also facilitate integration of low-carbon transport targets in national policies and international climate agreements such as Zambia's Intended Nationally Determined Contribution (INDC) to the 2015 Paris Climate Agreement.

The Ministry of Transport and Communication intends to use this research to inform policy and legislation concerning the restriction of the age of motor vehicles on Zambian roads, mandatory checks on emissions from all forms of transport, as well as decisions regarding the promotion of multi-modal transport including a greater use of rail transport and maritime transport.

Relevant questions to be addressed under this theme include:

- To what extent does the movement of heavy goods vehicles contribute to carbon emission in Zambia?
- What are the most effective ways of controlling emissions for all modes of transport?



1. Introduction

1.1 Background

The United Kingdom's Department for International Development (DFID)'s High Volume Transport (HVT) and Energy and Economic Growth (EEG) applied research programmes share common elements regarding transport and energy. IMC Worldwide (IMC) leads the HVT programme, while Oxford Policy Management (OPM) leads the EEG programme.

The EEG research programme examines links between energy and economic growth, working closely with policy makers in Sub-Saharan Africa and South Asia to build more sustainable, efficient, reliable and equitable energy systems. EEG research areas cover efficient and productive energy use, reliability, renewable energy and grid access.

In contrast, the HVT research programme aims to make transport safer, greener, more affordable, accessible and inclusive in low-income countries (LIC). The HVT research priority areas include climate mitigation and adaptation, inclusion, gender and road safety, policy and regulation, technology and innovation, fragile and conflict-affected states and research uptake and capacity building.

The two programmes have joined forces to undertake a scoping exercise to examine low carbon transport (LCT) and energy research priorities in the low- and middle-income (LIC/MIC) countries of Bangladesh, Nepal, Pakistan Uganda and Zambia. This joint IMC/OPM scoping exercise will maximise commonalities between the HVT and EEG programmes.

1.2 Objectives

The overall objective of the transport scoping exercise is to contribute to the transition to LCT in LIC/MIC in Asia and Sub-Saharan Africa by meeting research needs and enhancing knowledge and capacity in the areas of transport.

The transport scoping exercise will identify key challenges in transport and energy, research gaps in the target country and determine a prioritised research agenda that can facilitate the transition to LCT.

The following key questions will guide the scoping exercise in each country.

1. What are the key challenges to LCT in each country?
2. What type of research activities are being undertaken to assist address these challenges?
3. Which actors/organisations/research institutes are best placed to undertake this research?
4. Who are the main beneficiaries of such knowledge/research?

1.3 Research needs matrix

Sustainable mobility can be defined as **Accessible, Affordable, Safe, Green and Inclusive (AASGI)**. The HVT Programme developed a matrix based on these key elements which lists the main actions or 'enablers' that allow these to be achieved in practice.

The AASGI matrix (see Table 1) is used in this scoping exercise to categorise transport knowledge gaps and prioritise transport research needs in the five countries. It identifies which key elements of sustainable mobility require further research and capacity building.



Table 1: AASGI matrix

Key Enablers	Accessible	Affordable efficient	Safe	Green	Inclusive
Policy, planning and regulations <i>Evidence based policy formulation and promulgation. Proactive, equitable and informed planning, and regulation of transport services.</i>					
Finance and economics <i>Access to infrastructure finance including private finance through Public-Private Partnerships (PPP) and similar structures. Understanding of economics around specific transport challenges</i>					
Governance and Institutions <i>Institutional changes that lead to improved capacity and efficiency, understanding and improving governance structures, and influencing behavioural change e.g. through the anthropology perspective.</i>					
Technology <i>Access to innovation and technology, and their impact on transport.</i>					
Data <i>Application, sources, and importance of big data in providing evidence for improved transport services.</i>					
Operations, service and management <i>Including day to day activities in public transport provision excluding construction of capital infrastructure.</i>					
Infrastructure <i>Including provision of physical assets, construction and engineering.</i>					

1.4 Country focus

The HVT/EEG collaboration will focus on Bangladesh, Nepal, Pakistan, Uganda, and Zambia. In addition, work will be undertaken in China and India that will complement this study.

The current report relates to the scoping carried out in Zambia in December 2019.



2. Transport sector context

Zambia is a landlocked country situated in Central and Southern Africa, neighbouring Angola, Democratic Republic of Congo, Tanzania, Malawi, Zimbabwe, Mozambique, Namibia and Botswana. Zambia has an overall land mass of 752,614 square kilometres (sq km), with an estimated population of 16 million people, which is projected to increase to 27 million by 2035. The country's central geographic position and deliberate government policy has transformed Zambia into a land-linked country, exposing it to multiple import and export trade routes.

According to an analysis of the 2020 National Budget (ZIPAR, 2019), economic growth is expected to slow down to 2.6% in 2019 and to reduce further in 2020 and 2021. This is due to the frequent power cuts and the impact of the ongoing drought on agricultural production. In addition, Zambia is experiencing rising debt service and dwindling foreign exchange reserves.

Zambia is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC). Under the 2015 Paris Agreement, all parties have committed to submitting nationally determined contributions (NDCs) to reduce GHG.

Figure 1: Zambia's road network



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2.1 Economic trends

Zambia is a lower middle-income country with gross domestic product (GDP) estimated at USD \$20 billion. The country grew at an average rate of 7% between 2010 and 2014. However, global and domestic pressures have affected the Zambian economy (MoNDP, 2017) and growth in 2015 fell to an



estimated 3% (compared to 4.9% in 2014). This was due to a six-year low in copper prices, low rainfall causing increased power outages and El Nino–related poor harvests.

It is estimated that 46% of the Zambian population live in urban areas making it one of the most urbanised countries in Africa (WPR, 2020).

2.2 Key sector entities

Ministry of Transport and Communication (MoTC)

The MoTC is responsible for formulating and administering policies in the transport, communication and meteorological sectors in order to enhance their contribution to sustainable socio-economic development for the people of Zambia. Further, MoTC is responsible for policy and regulation for civil aviation, airways, railways, transport communication, information and communication technology, roads and traffic, railway and ports, harbours and shipping.

Other Ministries, Departments and Agencies with responsibilities in the Transport Sector

There are various other Ministries and agencies that intervene in the transport sector. They are listed below together with their respective roles, as detailed in the National Transport Policy and the different Acts establishing the agencies:

- The Road Development Agency (RDA) is responsible for the maintenance and construction of public roads in Zambia (RDA, 2018).
- The National Road Agency (NRFA) plays a fiduciary oversight role on all road sector finances in Zambia including the mobilisation, administration and management of all finances in the roads sector.
- The Road Traffic and Safety Agency (RTSA) is responsible for licensing drivers and vehicles and regulating traffic in ways that enhance road safety and reduce accidents (RTSA, 2018).
- The Ministry of Finance (MoF) oversees resource mobilisation for sector projects including facilitating public private partnerships where applicable. The Ministry also manages grants and loans related to the transport sector.
- The Ministry of Housing and Infrastructure Development (MoHID) has overall responsibility for aviation, maritime, railway and road infrastructure.
- Zambia Railways Limited (ZRL) is a parastatal company owned by the Zambian government with the mandate to offer secure and environmentally friendly cargo and passenger rail transport.
- TAZARA Railways is a statutory institution jointly owned by the governments of the United Republic of Tanzania and the Republic of Zambia on a 50-50 basis. The TAZARA railway line links the southern Africa regional railway network to East Africa, Asia and the Far East through the seaport of Dar-es-Salaam in Tanzania.
- The Ministry of Home Affairs (MoHA) provides security to transport infrastructure and ensures compliance to road safety regulations.
- The Ministry of National Development Planning (MoNDP) evaluates transport projects earmarked for investments in collaboration with the MoTC and is responsible for long-term plans for the sector.
- The Ministry of Local Government (MoLG) manages local road authorities and is responsible for transport management. The MoLG also coordinates district motor vehicle licensing and management of district aerodromes.
- The Ministry of Justice (MoJ) reviews legal frameworks relating to transport and facilitates the amendments and enactment of laws relating to the transport sector.



2.3 Policy context

The Seventh National Development Plan (7NDP)

The Seventh National Development Plan (7NDP) for the period 2017-2021 (MoNDP, 2017) is Zambia's blueprint for development. It envisions a prosperous middle-income economy that offers decent employment opportunities for all Zambians with different skills and backgrounds and will be achieved by harnessing opportunities for economic diversification and growth.

The 7NDP is based on five strategic development areas: (1) economic diversification and job creation; (2) poverty and vulnerability reduction; (3) reducing development inequalities; (4) enhancing human development; and (5) creating a conducive governance environment for a diversified economy.

Under the economic diversification and job creation pillar, one of the objectives is to improve access to domestic, regional and international markets. Another is to achieve improved transport systems and infrastructure.

According to the 7NDP, a well-functioning transport system has the potential to reduce the overall cost of doing business in the country, thereby contributing to the attainment of a diversified and resilient economy for sustained growth and socio-economic transformation. An improved transport system and infrastructure will enable efficiency in the movement of goods and people within Zambia. Furthermore, as a land-linked country, with eight neighbouring countries, Zambia requires its transport infrastructure to be in a good state to link to principal ports and serve as a hub for goods in transit.

The National Transport Policy

The Zambia National Transport Policy (MoTC, 2019) aims to facilitate the role of the national transport sector in social and economic development. The policy seeks to promote private sector participation in infrastructure development and service provision under a regulated environment. Challenges in the sector include weak capacity to implement the national transport policy and financial capacity to enhance policy implementation. The vision of the National Transport Policy of 2019 is to have an efficient and integrated transport system in Zambia by 2028 (MoTC, 2019).

The Transport Policy has a ten-year implementation period starting from 2019 (MoTC, 2019). The framework for the implementation plan includes policy measures, annual targets, responsible institutions and cost estimates. The policy will be reinforced by a new National Transport Master Plan that is awaiting official approval by Cabinet.

Non-Motorised Transport Strategy

The MoTC has developed a non-motorized transport (NMT) strategy to guide the implementation of high quality NMT systems in Zambia (MoTC, UNEP, 2019). The strategy aims to improve access through sustainable transport modes including walking, cycling and public transport. The NMT strategy for Zambia is consistent with the National Transport Policy and the National Road Traffic and Safety Policy.

National Road Traffic and Safety Policy

The National Road Traffic and Safety Policy is an effort by the Government of Zambia to raise awareness about road safety in all its aspects so as to enable the population and road users to play a meaningful role in promoting safety. The Policy envisions a safe road network for all road users in line with the United Nation's Decade of Action for Road Safety.



3. Transport supply and demand

Zambia's transport system is divided into four sub-sectors: roads and road transport; rail transport; aviation; and maritime and inland waterways. These modes collectively comprise the country's transport system.

3.1 Transport supply

Road transport and infrastructure

The road sub-sector has a well-developed network of infrastructure in the country and is the most used mode of transport in Zambia. The total road network in Zambia covers 67,671 km (RDA, 2018). Owing to the size of the network, and limited resources, the government's maintenance and rehabilitation efforts have been concentrated on a network of 40,554 km deemed as the core road network.

About 85% of the paved trunk, main and district roads are in good condition, while 12% of the primary feeder roads are in relatively good condition. Approximately 49% of the urban roads network in Zambia is in good condition. Road freight costs are high, adding up to 30% of the final cost of the product, which negatively influences price levels and makes Zambia products uncompetitive on the international market. Other factors include the long distances covered by bulk cargo, and traffic congestion (supported by the high number of motor vehicles being registered annually by RTSA) on the road network in urban areas, and particularly along the central corridor of the country.

Air transport

Air transport is regulated by the Zambian Civil Aviation Authority (ZCAA). Zambia has four international airports: Kenneth Kaunda, Harry Mwanga, Simon Mwansa Kapwepwe, and Mfuwe. These are managed by the Zambia Airports Corporation Limited (ZACL). The National Transport Policy (2019) indicates that airports are underutilised resulting in low revenue compared to operational costs. However, the government intends to develop aviation infrastructure and operations with a focus on the construction and upgrading of airport infrastructure to provide modern equipment and facilities. This will enable the country to handle higher volumes of traffic, passengers and cargo. The rehabilitation and capacity upgrading shall include seven provincial airports (Solwezi, Kasama, Mansa, Mongu, Kabwe, Chipata and Chinsali) and the four strategic international airports.

As a way of diversifying the economy, the establishment of a national airline will be critical to the transport of passengers and cargo. The plan of reviving the national airline is reflected in the National Transport Policy Implementation Plan and 7NDP.

Rail transport

There are two railway operators in Zambia: ZRL and TAZARA. The total ZRL network is 1,248 km. The TAZARA railway network stretches from the port of Dar-es-Salaam in Tanzania to Kapiri Mposhi in Central Zambia, over a distance of 1,860 km. The TAZARA railway line is designed with a 1,067 millimetre gauge, which allows connection with other southern African railways¹ such as Spoornet of South Africa, Botswana Railways, National Railways of Zimbabwe and ZRL.

ZRL connects with TAZARA at Kapiri Mposhi. It also connects to Malawi and Mozambique via the

¹ Nine member countries of SADC namely South Africa, Swaziland, Botswana, Namibia, Zimbabwe, Zambia, Mozambique, Malawi and the Democratic Republic of Congo are linked with an uninterrupted rail network of the 'Cape gauge' of 1,067 mm. TAZARA having the same gauge is seamlessly connected to the rest of the SADC network.



Nacala corridor over a total rail distance of 1,150 km from Chipata in the Eastern Province of Zambia to Nacala port in Mozambique, which is a natural deep sea port on the Indian Ocean.

The share of rail transport for both passengers and goods has steadily declined over the decades in favour of road transport. According to the National Transport Policy, TAZARA's performance has decreased from 0.5 million tonnes in 2011 to 0.09 million tonnes in 2014. ZRL has dropped from 1.8 million tonnes in 2003 to 0.96 million tonnes in 2014. Both ZRL and TAZARA share just about 8% market share for freight and 7% for passengers.

The main constraints facing the sector have been the poor state of the track, inadequate rolling stock and poor telecommunication systems. Investment in the railway sector has been minimal compared to the road sector. In accordance with the provisions contained in Statutory Instrument No. 7 of 2018, the MoTC plans to reverse this trend by developing an investment programme for the railway sector and adopting policies that will encourage a modal shift, given that rail has a cost advantage for bulk and heavy products such as minerals and agricultural products. Specifically, it compels transporters of heavy cargo to move 30% of bulk cargo from road to railway. Implementation of the quota system was aimed at the preservation of road infrastructure, guaranteed volumes of cargo for the railway companies and increased revenue and efficiency in railway operations. In addition, rail transport is environmentally friendly as it generates less GHG emissions compared to road transport.

Maritime transport and inland waterways

Zambia has an extensive network of inland waterways consisting of lakes, rivers and canals, however, the development of infrastructure lags behind other modes. The main port is situated at Mpulungu on the southern tip of Lake Tanganyika and serves as Zambia's gateway to the Great Lakes region and beyond. Feasibility studies completed in 2018 will pave the way for the modernisation and upgrading of Mpulungu port. Other ports include Mulamba on the Zambezi River, Siavonga on Lake Kariba, Nchelenge on Lake Mweru, and Samfya on Lake Bangweulu. Most of these ports are privately owned and operated and require repairs.

The MoTC acknowledges that the maritime and inland waterways sector has had no major investment except for the procurement of dredging equipment and water vessels. MoTC also points out that the ports and harbours need significant investments owing to increasing demand for maritime transport. From an interview with the official responsible for maritime transport in MoTC there was an expressed need to conduct a feasibility study to establish the viability of this transport mode.

3.2 Transport demand

Road transport

The government is currently implementing four key sector investment programmes (SIPs) in the roads sector, which include Link Zambia 8000, Pave Zambia, Feeder Road Rehabilitation, and Lusaka 400. The projects which the government of Zambia intend to implement in the road sub-sector under the SIPs include road construction, road maintenance, road infrastructure upgrading and rehabilitation and road revenue, and safety enhancement. The projects collectively form the Road Sector Annual Work Plan (RSAWP). The NRFA manages the resource envelope and makes the required disbursements for projects under the plan.

Over the last 10 years, the government has focused on the construction and maintenance of road infrastructure to ensure enhanced and safe connectivity across the country, and to preserve road asset investments. Additionally, the focus is on upgrading and rehabilitating roads and bridges to foster trade and development, facilitate movement of goods and services, and reduce travel times and costs.

The government has continued to develop tolls to collect road-user charges to finance its programmes in the road sub-sector, as well as pursuing PPP as an alternative financing mechanism for road construction and maintenance. The Policy Framework for the Implementation of PPPs in Zambia was



approved in 2008. This was followed by the PPP Act No. 14 of 2009 and the Tolls Act of 2011. The three provide the policy and legal framework for PPPs in Zambia and the operation of toll roads. There is an ongoing Toll Roads Programme under NRFA which comprises the construction of toll gates on selected roads and operations for collecting the tolls. According to the NFRA Annual Report for 2018, total toll revenue collections for the five-year period ending 31 December 2018 peaked at K2.7 billion (equivalent to US \$184 million), representing an annual average contribution of 18% to the local resources component of the road sector infrastructure financing requirements. As at the end of 2018, the number of operational toll stations stood at 16, with a further 9 ports of entry.

The law provides for road projects to be structured as PPPs. Examples of ongoing PPPs include the Lusaka – Livingstone project that is nearing completion as a BOOT and the Kasomeno – Mwenda project linking Zambia and the DRC, which is at an early stage and which will be structured as a BOT (and includes a bridge on the border at Luapula).

Rail transport

According to 7NDP, Zambia's rail network enables the population and freight to travel within Zambia and between countries. The government will prioritize construction of new railway spurs and the rehabilitation of existing lines. The focus will be to undertake a comprehensive rehabilitation of the ZRL mainline (including inter-mine lines) and to revitalize TAZARA to increase operational efficiency, reduce the cost of freight, and increase the tonnage being carried.

The government intends to migrate the rail gauge from the existing Cape Gauge to Standard gauge², which will enable higher speeds and higher tonnage of freight. The intention to migrate to standard gauge is essential for international corridor development and in line with Zambia's ambition of becoming a transportation hub.

Further, focus will be on the development of attendant infrastructure, acquisition of rolling stock and other equipment as well as improving the management of the rail systems.

Programmes planned for the rail subsector, according to the 7NDP, include sector reform implementation. The objective being to review and repeal pieces of legislation governing the railway sector in order to support transformation of the sector

Air transport/aviation sector

The Zambian air transport sector has grown strongly over the period of 2008 to 2018 according to the Zambia Aviation Sector Business Environment Assessment that was undertaken by the Business Environment Reform Facility in 2018. Traffic at the country's four largest airports (which represent over 98% of all the traffic in the country) rose from 1.1 million passengers in 2010 to 1.62 million passengers in 2016. This represents annual average growth of 6.9% p.a. The increase in traffic is due partly to an increase in the number of flights by non-Zambian airlines including Kenya Airways, Ethiopian Airlines, Rwanda Air, Emirates, South African Airways and SA Airlink, facilitated by Zambia's 'open skies' policy in line with the Yamoussoukro Decision (YD).

According to the National Transport Policy (2019), Zambia is a signatory to the YD that was signed by 44 member states of the African Union in 1988. The YD aspired to create a liberalised air transport market across Africa by 2002, superseding bilateral agreements. Furthermore, the aviation sector is projected to grow further by 13% p.a. in the short-to-medium term. The implementation plan for the policy includes the establishment of a national airline among the activities required to facilitate the development of reliable, frequent, affordable, safe and secure domestic and international air

² A standard-gauge railway is a [railway](#) with a [track gauge](#) of 1,435 mm compared to the Cape Gauge which is 1,067 and widely used in the SADC region. The standard gauge is the most common in the world.



transportation that meets international standards. The business plan for the establishment of the new airline is targeted for completion by 2020, with MoTC in the lead.

Maritime and inland waterways transport

The current use of water transport in Zambia is low despite the country's extensive network of canals and waterways. This is in large part due to a lack of infrastructure maintenance. Furthermore, there is a lack of data on the current use of inland waterways. This makes it difficult to project future demand and to design appropriate policies for the sub-sector.

According to the 7NDP, the government plans to construct and rehabilitate maritime and inland waterways. Attention will be focused on the expansion and modernisation of the inland port of Mpulungu, in order to increase access to the Great Lakes Region markets. Canals and harbours which service rural communities will also be rehabilitated and developed. During the 7NDP plan period, studies will be undertaken to determine the feasibility of developing the Kafue River into a navigable channel for bulk goods and tourism. MoTC also plans to develop mechanisms to enhance data collection and management in the sub-sector. Activities will include capacity building for maritime staff and the upgrade of the national vessel registry.

Urban transport

Currently, most of the urban population depends on public transport for their daily transit, but the service is of low quality and expensive compared to other countries in the region. As a result, cities in Zambia have experienced increased usage of motorised private vehicles leading to traffic congestion and road safety concerns. Traffic congestion has in turn increased polluting vehicle emissions which contribute to respiratory illnesses and climate change.

Approved public transport operations are limited. For transit, passengers largely depend on trucks, pick-ups, and at times non-motorized transport like ox carts and bicycles. Currently, road infrastructure provides little or no facilities for non-motorized road users. This increases the risk of fatalities in the event of road accidents and inhibits growth.

Regional transport

A key trend is the emergence of Zambia as a regional transport hub in the Southern African Development Community (SADC) region. With its geographical position at the intersection of different transport corridors, Zambia has a number of options for accessing the seaports of the region. At the same time Zambia serves as a transit country for its neighbours to the west, east and north.



4. Key international development programmes

Donor coordination in Zambia takes place at the national and sectoral levels. At the sectoral level, there is a Transport Sector Working Group that has been chaired by AfDB since 2014. The previous chair was the European Union. The key partners and programmes are summarised in Table 2.

Table 2: The key programmes supported by development partners

	Development Partner	Type of Support to the Transport Sector
1	World Bank	Feeder Roads Programme to promote agriculture. This is a US\$ 200 million programme approved in 2017 to improve selected rural roads in six of Zambia's ten provinces.
2	African Development Bank	Kazungula Bridge Project – a US\$ 240 million regional project linking Zambia to Botswana. Project started in 2012 and expected completion date is 2020. Project co-financed with JICA. North South Corridor Rehabilitation Project Great East Road (Nacala Corridor) – US\$105 million
3	DFID, AfDB	Lusaka decongestion project – Technical Assistance
4	AfDB	Feasibility study for Mpulungu port development (Maritime)
5	EXIM Bank of China	Engineering, design, rehabilitation and construction/upgrading of selected Lusaka urban roads – US\$ 402 million
6	EU/EIB	North South Corridor Rehabilitation Project Rehabilitation of the Great East Road (Nacala Corridor) – EUR 100 million
7	JICA	Bridges Maintenance Technical Assistance Kazungula Bridge Project co-financed with the Africa Development Bank
8	EXIM Bank of India	Lusaka Decongestion Project financed with a US\$ 250 million loan. Project started in 2018 and scheduled for completion in 2021



5. Challenges and opportunities

5.1 Greening of long distance transport

As a landlocked country, Zambia has a large volume of transit traffic using its road and rail infrastructure compared to other countries in the region. This presents a number of challenges, including increased vehicle emissions from the diesel truck fleet using the road network. There are also impacts on road safety and deterioration of roads, and increased consumption of fuel arising from the overloading of vehicles.

One of the measures undertaken by the government that directly benefits LCT is contained in a Statutory Instrument Number 7 (2018) providing for a modal shift of freight cargo from road to rail. Haulage companies have committed to shift 30% of their cargo to rail. The modal shift presents an opportunity for greening long distance transport given that rail has lower emissions compared with road transport.

5.2 Use of alternative means of transport for passengers and public transport

Zambia has an ageing stock of more than 750,000 vehicles. The average age of Zambia's motor vehicle fleet is 12.5 years and is increasing. A fuel economy study undertaken by ZEMA and UNEP in 2018 revealed that 73% of vehicles imported into Zambia were older than five years. Researchers at ZIPAR have found that the number of vehicles which are not roadworthy has increased over the period of the study (2006 to 2014). This demonstrates the need for incentives to buy newer vehicles. The interviews suggested research could explore opportunities for the disposal of scrap metals and recycling of motor vehicles.

GoRZ has two tax systems to incentivise the import of cleaner vehicles. Vehicles more than five years old are required to pay a one-off flat tax called the Motor Vehicle Surtax. This tax is added to import duty. In addition, an annual charge on emissions called the Carbon Emissions Surcharge is applied to all vehicles. The ZEMA/UNEP fuel economy study showed that the two tax systems have not been effective in promoting a shift to cleaner vehicles. This was also the view of stakeholders interviewed during the scoping mission. A revision of both taxes has been proposed to encourage the importation or purchase of locally assembled cleaner and more fuel-efficient vehicles.

In a related development, the Minister of the MoTC, Hon. Mutotwe Kafwaya, tabled a Cabinet Memorandum in 2019 outlining the introduction of electric vehicles as a way of dealing with the upward trend in fuel prices and to reduce transport-related air pollution. Given that Zambia's electricity generation is mostly hydro, there is an opportunity for electric mobility to be developed and powered by renewables. As an incentive, GoRZ has zero-rated excise duty for electric vehicles and halved their customs duty. Despite this effort, electric vehicles have not yet been registered in the country. It is considered as work-in-progress and the way forward for the country.

In addition, the government has seen the need for public transport reforms and is promoting bus rapid transit (BRT) to progressively replace the inefficient and highly polluting taxi fleet with higher occupancy vehicles (ZIPAR, 2019).

5.3 Upgrading of infrastructure to support the transition to LCT

The ongoing Lusaka Decongestion Project is aimed at reducing traffic congestion in Lusaka Province, where 60% of the overall vehicle fleet is found. The project includes road widening, grade separation, provision of lanes for the future BRT, and the addition of bicycle lanes and walkways. The project started in 2018, will take three years to complete and will be replicated in other cities, such as Ndola in the Copper Belt, upon its successful completion. In addition, the RDA, with assistance from AfDB, is implementing climate resilient infrastructure improvement projects in Dundumwezi (in the southern province) in areas that are affected by climatic change-related weather events, such as floods and



droughts. The designs take into account current and projected temperatures and rainfall and include adequate flood protection and drainage structures.

5.4 Availability of Data on GHG emissions in Zambia

Information exists on the emissions from light duty vehicles of less than 3.5 tonnes (ZEMA, UNEP, 2019), derived from a United Nations Environment Programme (UNEP) study carried out in collaboration with ZEMA. However, there is limited information on emissions from other categories of vehicles, in particular the heavy goods vehicles that emit significant levels of emissions due to their age and the poor quality of diesel used. Improved emissions data will assist both monitoring and emissions control measures. It will also facilitate the integration of LCT targets into national policies and international climate agreements, such as Zambia's NDC to the 2015 Paris Climate Agreement.

5.5 Mind-set change for transitioning to LCT

It is clear from stakeholder interviews and press coverage that climate change is beginning to attract the attention of policy makers and the public at large. In part, this is due to the adverse impacts felt from the prolonged drought and associated interruptions of power supply from the hydro generation plants. This is an opportunity to sensitise the population on the need to reduce GHG emissions and to transition to LCT, with all the associated benefits, such as reduced health risks from air pollution. Additionally, sensitisation on the utility and importance of the carbon tax would be advisable.

Hitherto, transport has not been viewed as a big contributor to emissions. It is encouraging to note that in 2019, government developed and disseminated an NMT Strategy (see Section 2.3). The aim is to ensure that all segments of society are catered for in terms of their travel needs.



6. Overview of the methodological approach

6.1 Interviews

The specific objective of the scoping study in Zambia was to identify key challenges and research gaps in transport, and to determine a prioritised research agenda that can facilitate the transition to LCT. A total of 15 interviews were conducted between 2 and 5 December 2019. Table 3 outlines the principal stakeholders consulted during interviews. The sample of interviewees was drawn from government, research institutions, development partners, industry and civil society. Relevant technical staff attended the interviews. The prompts that were used to get interviewees to share their views, from which research questions can be identified were as follows:

- What are the key challenges that are making the implementation of low carbon transport difficult to achieve in your country, and what research is needed to overcome these challenges?
- What priority is given to reducing GHG in national/ local decisions that affect transport?
- How desirable is it to promote low carbon transport over the coming years? Why is it important (or not) to promote this?
- What knowledge is needed to overcome these challenges (e.g. developing capacity, and sharing knowledge/good practice/tools)?

Table 3: List of interviewees

Institution	Name and Position
Ministry of Transport and Communications	Eng. Misheck Lungu, Permanent Secretary
Ministry of Housing and Infrastructure Development	Mr. Charles Mushota, Permanent Secretary
Road Development Agency	Mr. Nonde Musawa, Senior Manager Planning
Road Transport and Safety Agency	Mr. Moses Mwale, Statistical Officer
Ministry of Energy	Mr. Agnelli Kafuwe, Senior Energy Officer
Zambia Environmental Management Agency	Mr. Maxwell Nkoya, Director, Planning, Information and Research
University of Zambia	Dr. Jacob Musa, Lecturer, School of Mechanical Engineering
Zambia Institute for Policy Analysis and Research	Mr. John Mututwa, Associate Researcher, Transport and Infrastructure Development
UK Department for International Development	Ms. Magdalena Johansson, Regional Infrastructure and Cities Adviser
African Development Bank (AfDB)	Ms. Liezl Harmse, Officer-in-Charge
Truckers Association of Zambia	Mr. Robert Mtonga, Chief Executive Officer
Bus and Taxi Owners Association of Zambia	Mr. Mathew Nkoma, Treasurer, Lusaka
NGO Gender Organisations' Coordinating Council	Ms. Chilufya Siwale, Programme Manager
Federation of Free Trade Unions of Zambia	Mr. Lewis Mwape, Director of Research and Strategy
Green Enviro Watch	Mr. Abel Musumali, Executive Director

6.2 Workshop

As part of the scoping study, a workshop was organised and attended by key stakeholders from across the transport sector. The workshop was held on Friday 6th December 2019, from 9am to 1pm at the Southern Sun Hotel in Lusaka, Zambia.



The objective of the workshop was to prioritise research questions, identify key projects/programmes and to understand the capacity of the academic community to undertake LCT Research. The workshop was attended by 22 participants as listed in Appendix A.

The representative of the Permanent Secretary (PS) of the MoTC delivered an opening statement. In his statement, the PS reiterated the government's strong commitment to the transition to low-carbon transport, in line with the aspirations and vision of the National Transport Policy and 7NDP. The PS cited the ongoing project to reduce traffic congestion in the Lusaka province as an example of what is being done to make travel safer, more efficient, and with an increased use of modern public transport. The PS thanked development partners for their support to the sector.

Following the opening session, a scene-setting presentation was made on the HVT programme and the rationale for scoping research needs for LCT. Participants were then divided into four groups and tasked with undertaking two exercises (see Workshop Documents in Annex C). In Exercise 1 participants discussed the set exercise questions, which were the same prompts that had been used in the interviews, and produced three key research questions considering challenges, research question/methodology and the main beneficiaries. The rapporteurs for each group shared the questions in a plenary. The objective of Exercise 2 was the prioritisation of the key research questions according to the AASGI matrix and a voting exercise. The completed research matrix is presented in Table 4 while the outcome of the prioritisation of research themes is presented in Section 7.

Table 4: AASGI matrix completed with workshop results

	Accessible	Affordable & efficient	Safe	Green	Inclusive
Policy, planning and regulations	1	1		5	1
Finance and economics	1	2		2	1
Governance and Institutions		1		2	
Technology	1	3		3	1
Data				1	1
Operations, service and management	1	2	1	6	2
Infrastructure	1			2	

At the end of the workshop participants were invited to complete an evaluation form. Feedback was received from 17 of the 22 participants. Of the 17 respondents, 14 were male and 3 female. The outcome of the evaluation is summarised below under the different questions posed.

1. **Reaction.** How would you rate the overall content of the workshop in the following areas? – 94% of participants scored the workshop as either very good or excellent against usefulness. 100% of participants scored the workshop as very good or excellent against relevance and 77% of participants scored the workshop as very good or excellent in respect of methods used.
2. **Learning.** Thinking about the overall topic of the workshop how much have you learned about understanding the research gaps in low carbon transport in your country? – 76% of the participants said that they learned more than they expected.



3. **Outputs from the Workshop.** 82% of participants agreed that the outputs from the workshop address LCT needs and priorities in Zambia.
4. **Behaviour.** How likely are you to submit a research proposal for any of the suggested topics?
- 94% of participants said that they were highly likely or guaranteed to submit a research proposal. For those that responded in the affirmative, participants indicated areas of interest in table 5 below.
5. **How likely are you to continue your relationship with the HVT programme in your research proposal/work?** - 92% of respondents said that they were highly likely or guaranteed to continue their relationship with the HVT programme.
6. **Reflection. What can we improve to make this process better in the future research scoping?**
The majority of participants suggested that more time be allowed for discussion in future workshops. They also called for widening participation to bring in all relevant stakeholders.

Table 5: Responses to Areas of Interest in LCT Research

- Public Transport
- Regulation/Policy on emissions from mobile sources i.e. road/rail/aviation
- Electric Vehicle Infrastructure
- Reducing significantly the use of personal vehicles for greener public transport
- Research from a gender perspective
- Fuel quality regulation
- Urban transport
- Particular area of interest on the use of alternative fuels on existing motor vehicles to address low carbon transport
- Methods of enforcing laws and regulation in monitoring LCT
- Policy, regulations and implementation
- Resilient infrastructure
- Determining the reduction of carbon emission with the introduction of electric vehicles
- Policy gaps



7. Final research themes

This section outlines the research themes and relevant questions that emerged from the interviews and stakeholder workshop. A total of four themes emerged from the fourteen research questions from the workshop as reproduced in Appendix C. The prioritisation of questions was done through a voting exercise. The four themes are presented below in order of priority, starting with the theme that received the most votes.

7.1 Introduction of an efficient public transport system (Theme 1)

The levels of traffic congestion in Lusaka city have become a major concern not only for the Government but all road users at large. It increases travel time, the amount of fuel used by vehicles and emissions. One solution to achieving LCT in Zambia is replacing the current minibuses (Toyota Hiace) with lower-polluting buses. The ongoing project to reduce traffic congestion in Lusaka has made provisions for BRT.

This research will interest potential bus operators as well as policy makers in the design of supportive policies and fiscal incentives for an efficient public transport system.

Relevant questions to be addressed under this theme include:

- What measures should be put in place to ensure that public transport is sustainable and low carbon?
- How can Lusaka and other major cities' transport systems be decongested in favour of greener public transport?
- What are the opportunities for disposal of scrap metals and recycling of motor vehicles?

7.2 Incorporating climate change into national transport policies (Theme 2)

Zambia is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC). Under the 2015 Paris Agreement, all parties committed to submitting nationally determined contributions (NDCs) to reduce GHG emissions. However, there is a disconnect between transport planning at the national level and the commitments that Zambia has made globally and nationally on climate change.

This research will help Zambia set climate-related baselines and targets to be integrated into the National Transport Policy Implementation Plan (2019-2028) and the NDC.

Relevant questions to be addressed under this theme include:

- Is the right strategy in place for environmentally friendly transport?
- What are the legal and policy framework gaps that need to be filled to support the transition to LCT?
- How can the implementation of NDCs accelerate the decarbonisation of the transport sector in Zambia?

7.3 Introduction of electric vehicles (Theme 3)

Given the challenge an ageing and high-polluting vehicle fleet in Zambia, there is need for the introduction of alternative and greener means of transport. This research will interest potential investors in the assembly of electric vehicles through possible public private partnership arrangements. It will also benefit policy makers in the design of supportive policies and fiscal incentives for environmentally friendly vehicles.

Relevant questions to be addressed under this theme include:

- What is the potential penetration of electric vehicles in Zambia?



- What enabling infrastructure is required for the charging and parking of electric vehicles in Lusaka and other major towns and locations on the inter-urban roads?
- What policy incentives are required to support the uptake of electric vehicles in Zambia?

7.4 Quantification and control of the vehicle's emissions (Theme 4)

A key priority is the need to conduct research on the level of GHG emissions across the country. The National Transport Policy in its current form does not include a situational analysis of the impact of transport on climate change, nor the policy and legal framework for regulating GHG emissions in the sector.

The MoTC intends to use this research to inform policy and legislation concerning the restriction of the age of motor vehicles on Zambian roads, mandatory checks on emissions from all forms of transport, as well as the promotion of multi-modal transport through a greater use of rail and maritime transport.

Relevant questions to be addressed under this theme include:

- To what extent does the movement of heavy goods vehicles contribute to carbon emission in Zambia?
- What are the most effective ways of controlling emissions for all modes of transport?



8. Local capacity for research on LCT in Zambia

In the course of carrying out the study, two institutions with capabilities of conducting research in LCT were identified. These are the ZIPAR³ and the ZEMA⁴. A brief description of their mandates and areas of focus is given below:

ZIPAR

ZIPAR is a leading think tank in Zambia with the mandate of conducting research and policy analysis to inform public policy. It was established in 2006 and became operational in 2009. The Institute supports government, the Private Sector, Civil Society Organisations and other stakeholders by providing evidence-based policy advice. ZIPAR also promotes policy dialogue between the government and a wide range of stakeholders, facilitating an inclusive process in the planning and management of economic affairs.

From the findings of the scoping mission, ZIPAR possesses the requisite logistical infrastructure and systems to undertake research. In addition, it has built a pool of senior research fellows and university graduates who serve as enumerators. In terms of relevant experience, ZIPAR is currently part of a consortium advising on reducing traffic congestion in Lusaka City. It has also carried out a number of relevant studies, including:

- Institutional Preparedness for Urban Transport Reforms in Zambia
- Trip Modelling and Cost Analysis for Public Transport Reforms in Zambia
- Used Motor Vehicle Imports and the Impact on Transportation in Zambia

ZEMA

ZEMA is an independent environmental regulator and coordinating agency, established through an Act of Parliament (the Environmental Management Act no 12 of 2011). It is mandated to do all such things as are necessary to protect the environment and control pollution, so as to provide for the health and welfare of persons, animals, plants and the environment. The functions of ZEMA include (1) initiating and promoting research, training & investigations in environmental management; and (2) gathering and disseminating information to the public on environmental protection and pollution control.

As part of the scoping exercise, a meeting was held with the Directorate for Planning and Research of ZEMA in order to assess their capacity to conduct the proposed research. Among other publications, ZEMA produces State of the Environment (SoE) reports which provide an assessment of the environment in the country and environmental trends, including their causes and consequences. Furthermore, they work closely with sector ministries and in particular the Ministry of Water Development, Sanitation and Environmental protection, which has the mandate of providing policy guidance in the environmental sectors. An example of previous research work by ZEMA is the Sustainable Low Emissions Transport Study that was carried out in 2019 in collaboration with the UNEP.

Further engagement with these institutions could be undertaken in the future.

Stakeholder interviews indicated that exposure and knowledge sharing are critical to Zambian policy makers, planners, engineers and other key stakeholders. Lessons learned from other countries with similar conditions could be of particular benefit. Knowledge in the planning, design, promotion, and

³ ZIPAR website: <http://www.zipar.org.zm/>

⁴ ZEMA website: <http://www.zema.org.zm/>



maintenance of low-carbon transport systems was requested, as well as the related behavioural change aspects.

In addition, the proposed research will require the participation of Zambian experts to ensure ownership of findings and to facilitate knowledge transfer. Counterparts would be requested from the relevant ministries and agencies, as well as from the private sector, NGOs and civil society organisations.



9. Summary

This scoping report has identified key challenges in the transport sector in Zambia and proposed a prioritised research agenda that can facilitate the transition to LCT. The methodology employed was a combination of a literature review, structured interviews with relevant stakeholders and a workshop to consider and select the highest ranked research themes.

Using the outcome of the interviews and workshop, it has been possible to identify four recommended research themes as listed below in order of priority:

- Introduction of an efficient public transport system (Theme 1)
- Incorporating climate change in national transport policies (Theme 2)
- Introduction of electric vehicles (Theme 3)
- Quantification of vehicle emissions (Theme 4)

The main takeaway from the scoping exercise is that there is an increasing awareness in Zambia of the importance of mitigating the impacts of climate change. With respect to the transport sector, the country has taken action on reducing congestion in Lusaka and other major cities as well as promoting NMT where possible. In addition, efforts are underway to create an enabling environment for the development of electric vehicles in Zambia. Given its strategic location in the region, the country has an opportunity to green both domestic and international transport, which needs to be seized.

Finally, it will be important to have a capacity building strategy for the institutions that will be responsible for the uptake and implementation of the LCT research findings. The MoTC would be best placed to take a lead role in coordinating research in the transport sector.



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ZEMA, UNEP, 2019. Sustainable Low Emissions Transport Study for Zambia



Appendix A: Workshop Attendees



No.	NAME	ORGANISATION	POSITION
1	Mr. Chomba Sandamuka	Kiran and Musonda Associates	Assistant Resident Engineer
2	Mr. Anderson Haninga	Zambia Congress of Trade Unions (ZCTU)	General Secretary
3	Mr. Abel Musumali	Green Enviro Watch	Director
4	Mr. John Mututwa	Zambia Institute for Policy Analysis and Research (ZIPAR)	Researcher, Transport and Infrastructure Development
5	Mr. Kakoma Kalenge	Road Development Agency (RDA)	Engineer, Urban and Rural Roads
6	Dr. Emmanuel Sampa	Ministry of Transport and Communications	Principal Research Economist
7	Ms. Madalo Minofu	International Finance Corporation (IFC)	Resident Representative
8	Mr. Angelli Kafuwe	Ministry of Energy	Senior Energy Officer
9	Mr. Mundia Sitau	Ministry of Energy	Energy Officer
10	Mr. Muleka Kamanisha	Zambia Congress of Trade Unions (ZCTU)	Researcher
11	Ms. Linda Mweetwa	Ministry of Finance	Economist
12	Dr. Musa Jacob Khatri	University of Zambia	Lecturer
13	Mr. Lewis Mwape	Federation of Free Trade Unions of Zambia (FFTUZ)	Director of Research
14	Mr. Aaron Chindumba	Ministry of Transport and Communications	Acting Director
15	Mr. Moses Mwale	Road Transport and Safety Agency (RTSA)	Statistics Officer
16	Mr. Jimmy Muenda	Road Transport and Safety Agency (RTSA)	Intern
17	Mr. Samuel Mwanakatwe	NGO Coordinating Council	Programme Officer
18	Ms. Liezl Harmse	African Development Bank	Chief Utility Expert
19	Ms. Magdalena Johansson	Department for International Development (DFID)	Infrastructure Advisor
20	Ms. Dalitso Njobvu	Federation of Free Trade Unions of Zambia (FFTUZ)	Research Assistant
21	Mr. Prince Banda	Ministry of Transport and Communications	Senior Engineer, Maritime
22	Mr. Robert Banda	Zambia Environmental Management Agency (ZEMA)	Monitoring and Evaluation Officer
23	Mr. Alex Rugamba	IMC Worldwide	Lead Researcher
24	Mr. Amos Kasongo	IMC Worldwide	Assistant Researcher





Appendix B: Detailed Workshop Agenda



HIGH VOLUME TRANSPORT (HVT) SCOPING WORKSHOP ON

LOW CARBON TRANSPORT CHALLENGES IN ZAMBIA

6TH DECEMBER 2019, LUSAKA

Southern Sun Hotel, Ridgeway – 09h00 to 12h00

AGENDA

- 1. Welcome and introductions**
- 2. Opening Statement – Ministry of Transport and Communications**
- 3. Identifying key research areas**
- 4. Prioritisation of key research questions**
- 5. Summary and future opportunities**

Lunch invitation to all participants



Appendix C: Workshop Documents



Exercise 1

Objective: *To determine research projects that will assist in the transition to low carbon transport in Zambia*

- Divide into four groups of 5-7 individuals per group
- Each groups should:
Nominate a rapporteur
Discuss the exercise questions
Produce 3 key research questions considering: challenges, research question/methodology, beneficiaries.
- Share questions with everyone in a plenary

Exercise 2

–prioritisation and categorisation of research projects/questions

This exercise will focus prioritising the provisional list of research projects:

- *Which project are the most important?*
- *Which project could have the greatest impact?*

The group will be asked to collectively prioritise the provisional list of questions. This will be through an interactive discussion or via an activity (each group ordering list of questions by using stickers on a common chart).

The group will be presented with the AASGI matrix.

Each group will be given three/four questions to consider and to categorise according to the matrix.

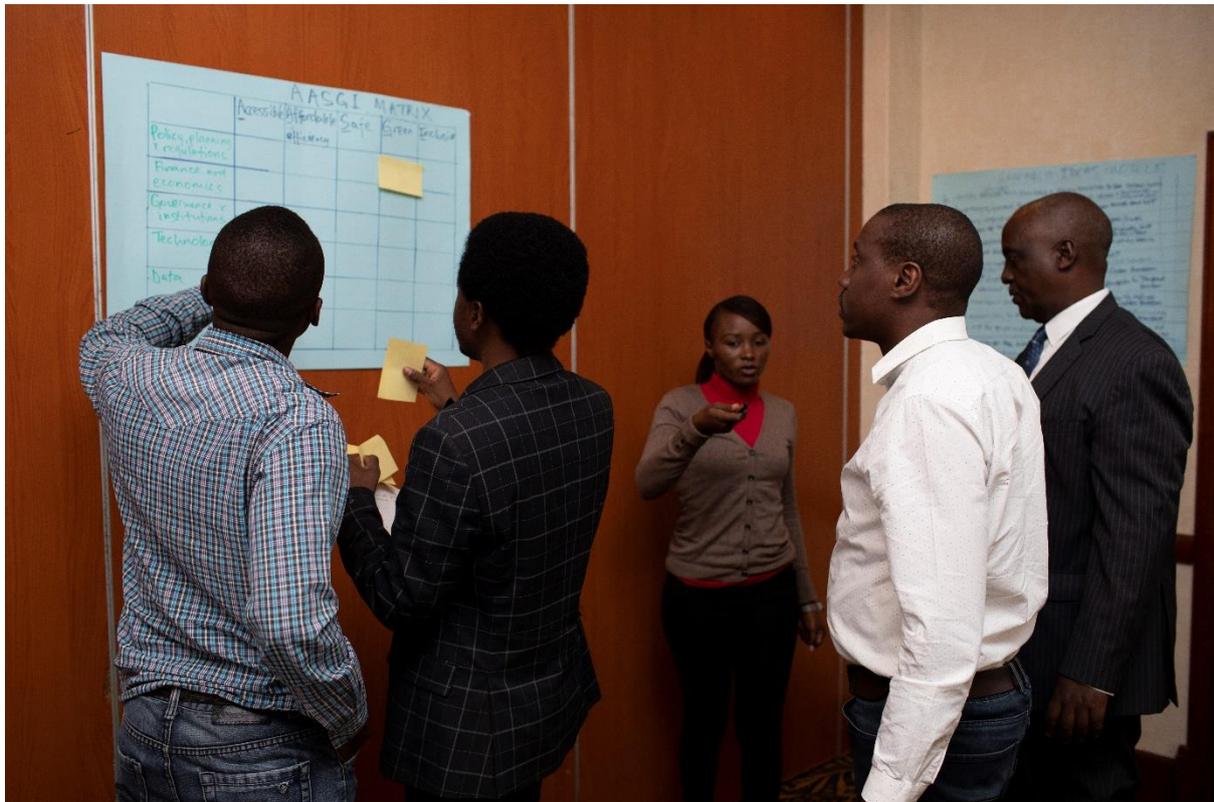
Each group using stickers will then place their stickers on a common matrix each numbered question.

The aim of this exercise is to get an idea of the themes considered in the questions and to generate a 'heat map' of research needs.

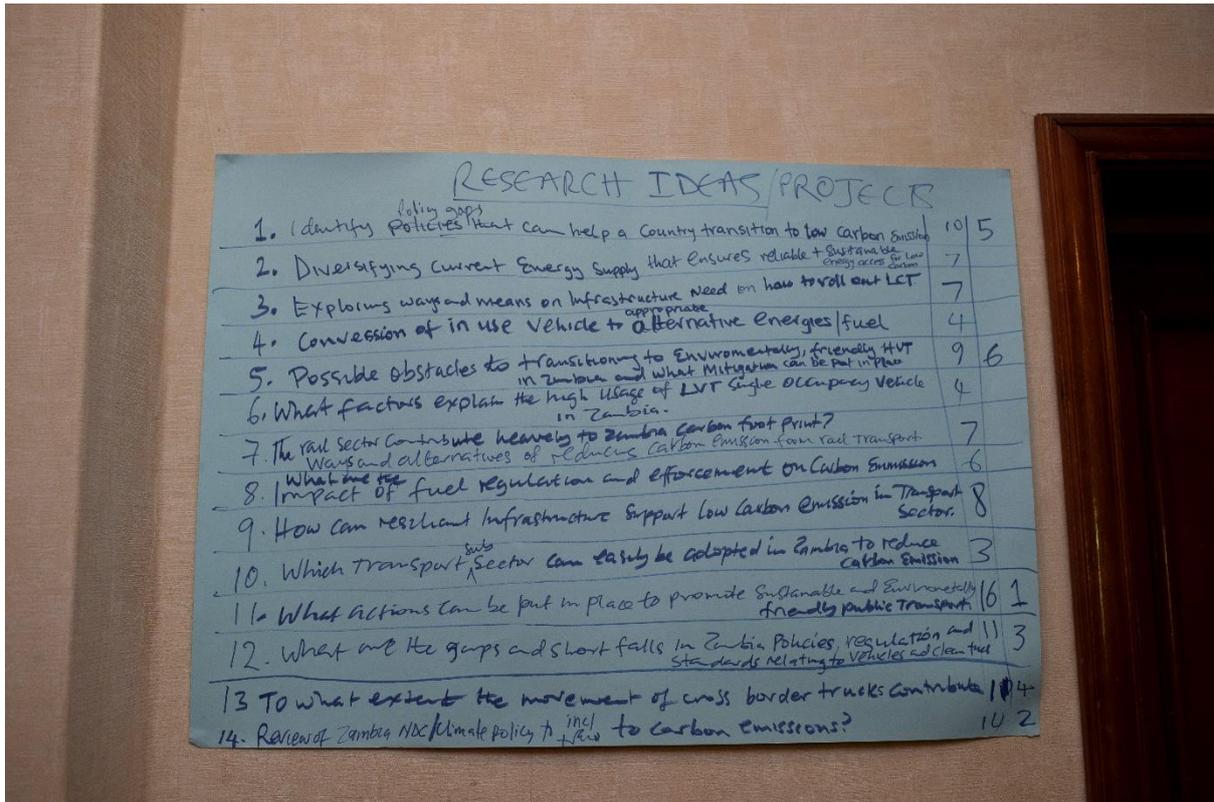


AASGI MATRIX

	Accessible	Affordable efficiency	Safe	Green	Inclusive
Policy, planning regulations	•	•		••••	•
Finance and economics	•	••		••	•
Governance & institutions		•		••	
Technology	•	••••		•••	•
Data				•	•
Operation services and management infrastructure	•••	••	•	•••••	•••



One of the groups mapping their questions to the AASGI matrix



Participants voting on priorities among the list of research questions from the group work



HVT Low Carbon Transport Scoping Study

Workshop Evaluation Form

Male:	
Female:	
Workshop location	Date:
Name of workshop:	

This form is intended for internal use within the HVT programme. The data provided in this form will be treated with strict confidentiality and will be analysed purely towards improving the programme's provision of validation workshops activities.

1. Reaction

How would you rate the overall content of the workshop in the following areas?

1.1. Usefulness:	Poor	1	2	3	4	5	Excellent
1.2. Relevance:	Poor	1	2	3	4	5	Excellent
1.3. Methods:	Poor	1	2	3	4	5	Excellent

2. Learning

Thinking about the overall topic of the workshop how much have you learned about understanding the research gaps in low carbon transport in your country?

Much less than expected	Less than expected	As expected	More than expected	Much more than expected
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Do the outputs from the workshop address low carbon transport needs and priorities in your country? If yes briefly explain

3. Behaviour

How likely are you to submit a research proposal for any of the suggested topics

Never	1	2	3	4	5	Guaranteed
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If yes, please provide any information on particular area of interest (optional)

How likely are you to continue your relationship with the HVT programme in your research proposal/work (optional)

Never	1	2	3	4	5	Guaranteed
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4. Reflection

What can we improve to make this process better in the future research scoping? (optional)
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Thank you for taking the time to provide this valuable feedback!



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