



# Final Scoping Report

November 2023

HVT/061 - Ghana Transport Scoping Study

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The views expressed in this report do not necessarily reflect the UK government's official policies.

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Lead Organisation/ Consultant	Richard Dietrich
Partner Organisation(s)/ Consultant(s)	Augustus Ababio-Donkor, Theun Elzinga, Charles Anum Adams
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Author(s)	Richard Dietrich, Augustus Ababio-Donkor
Reviewer(s)	Charles Anum Adams, Theun Elzinga, Shelter Lotsu
Lead contact	HVT Programme Management Unit
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<b>Abstract</b>	
Under the FCDO-funded High Volume Transport (HVT) Applied Research Programme, DT Global undertook a limited scoping study to define the needs and scope of potential support within the transport sector by FCDO Ghana or other donors to the Government of Ghana. The study focused on the north-south divide in Ghana, transport and poverty reduction, and the importance of inland water transport (IWT). It considered three transport modes: IWT, rail and road, and comprised a review of relevant key literature and publications, a limited stakeholder consultation, field visits along selected transport routes, a compilation of transport related issues, recommendations for further research or studies, a validation workshop to discuss and prioritise these recommendations, and the development of outline interventions. This document is the final scoping report.	
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## ABBREVIATIONS/ACRONYMS

AASGI	Accessible, Affordable, Safe, Green, and Inclusive
AfDB	African Development Bank
BOST	Bulk Oil Storage and Transportation Company Limited
BRT	Bus Rapid Transit
CCG	Climate Compatible Growth
DFR	Department of Feeder Roads
DT Global	DT Global International Development UK
DUR	Department of Urban Roads
DVLA	Driver and Vehicle Licensing Authority
ECMMTP	East Corridor Multi-Modal Transport Plan
EPA	Environmental Protection Agency
FCDO	Foreign, Commonwealth & Development Office
GHA	Ghana Highway Authority
GIP	Ghana Infrastructure Plan
GIFF	Ghana Institute of Freight Forwarders
GMA	Ghana Maritime Authority
GMU	Ghana Maritime University
GoG	Government of Ghana
GPHA	Ghana Ports and Harbours Authority
GPLTU	Ghana Private Lake Transport Union
GPRTU	Ghana Private Road Transport Union
GRCL	Ghana Railway Company Limited
GRDA	Ghana Railway Development Authority
GRRA	Ghana Railways Regulatory Authority
<b>HGV</b>	Heavy Goods Vehicle
HVT	High Volume Transport
ITP	Integrated Transport Plan



IWT	Inland Water Transport
KNUST	Kwame Nkrumah University of Science and Technology
KTC	Koforidua Training Centre
L.I.	Legislative Instrument – Act of Parliament
LIC	Low Income Country
LMIC	Lower Middle Income Country
MDAs	Ministries, Departments, and Agencies
Metro Rail	Ghana Light Rail
MMT	Metro Mass Transit Limited
MoT	Ministry of Transport
MRH	Ministry of Roads and Highways
MTNDPF	Medium-Term National Development Policy Framework
MTTD	Motor Transport and Traffic Department
N1 to N12	National Highways 1 to 12
NDP	Long-term National Development Plan's
NDPC	National Development and Planning Commission
NRC	National Redemption Council
NRSA	National Road Safety Authority
NRSC	National Road Safety Strategy
NTP	National Transport Policy
PMU	Programme Management Unit
PSP	Private Sector Participation
PWD	People with Disabilities
PNDCL	Ghana National Petroleum Corporation Law
RCC	Regional Co-ordinating Councils
RSDP	Road Sector Development Program
SMTDP	Railway Sector Medium-Term Development Plan



STC	Intercity STC Coaches Limited, formally known as State Transport Company Limited (STC)
TAH 7	Trans Coastal West African Highway
ToR	Terms of Reference
UNOPS	United Nations Office for Project Services
VLTC	Volta Lake Transport Company Limited
VRA	Volta River Authority
WRC	Water Resources Commission





## EXECUTIVE SUMMARY

The High Volume Transport Applied Research Programme (HVT) focused on enhancing the evidence base for accessible, affordable, safe, green, and inclusive transport systems in low and lower-middle income countries of South Asia and Africa. HVT prioritised research uptake, capacity building and knowledge management, with a strong commitment to improving transport for vulnerable communities, including women, children and the elderly. Key research areas encompass climate mitigation and adaptation, gender and inclusion, road safety, policy and regulation, technology and innovation, and fragile and conflict affected states.

Under the HVT Programme, a Ghana Transport Scoping Study was conducted in 2023 in partnership with the Government of Ghana (GoG) and the UK Foreign Commonwealth and Development Office (FCDO) Ghana office. It aimed to contribute to poverty reduction and improved security through enhanced multi-modal transport connectivity and increased knowledge and capacity. The study also defined the needs and scope of potential support to enhance transport connectivity, especially along corridors connecting disadvantaged communities in the north to economic hubs in the south.

This limited transport scoping study focused on the north-south transport corridors of Ghana, transport and poverty reduction, and the importance of inland water transport (IWT). It considered three transport modes: IWT, rail and road, and comprised a review of relevant key literature and publications, a limited stakeholder consultation, field visits along selected transport routes, a compilation of transport related issues, recommendations for further research or studies, a validation workshop to discuss and prioritise these recommendations, and the development of outline interventions for further research or study.

Specific objectives included identifying opportunities and key challenges for north-south multi-modal transport connectivity, addressing research, information or knowledge gaps, and establishing a prioritised research agenda for transitioning to low-carbon, multi-modal long-distance and urban transport.

The study addressed key research questions, such as identifying obstacles and challenges affecting transport in Ghana and their impact on north-south transport connectivity and on inland water transport, querying the importance of the Volta River transport system, examining the role of transport in poverty reduction and in bridging the north-south divide, and exploring quick wins and priority actions to enhance transport efficiency, accessibility, affordability, safety, environmental sustainability and inclusivity.

Following the literature review, stakeholder consultations and field visits, a one-day workshop in Accra brought together stakeholders from government agencies, development partners, private sector organisations, academia, civil society, and NGOs. The workshop discussed the preliminary findings, verified proposed issues and recommendations, and selected priority recommendations for further elaboration. This report presents a ranked list of identified issues affecting transport in Ghana and also outlines areas of research or study ranked by expected impact. Finally, it proposes six outline interventions for consideration by stakeholders and funding agencies. The outcome of this scoping study is expected to lay the foundation for future interventions aimed to enhance transport connectivity, reduce poverty, and improve security in Ghana.

This is a limited scoping study where several issues have been identified and discussed. However, these issues are not necessarily comprehensive and could be open to challenge. Where possible, the authors have tried to clarify or confirm from additional sources in order to corroborate the facts. Equally, there is no claim that the list of identified recommendations for further research or studies is complete and comprehensive. There may be more recommendations that were not picked up during the study, and a change in the focus of the study may result in additional or different recommendations. Furthermore it is highlighted, that this study falls under a wider research programme, therefore the output focusses on more on the research, studies, data or information collection that is needed. It is noted that there may be other needs within the Ghanaian transport sector – some of which have been mentioned as issues and challenges – which are not recommended simply because they relate to funding or the provision of infrastructure or services and are not research related. Finally, it is acknowledged that some of the topics of the proposed outline interventions have been substantially researched and studied in Ghana and elsewhere already, for example, the feeder and access roads. However,





the intention of executing these outline interventions – subject to future funding – is to not to duplicate but build on existing knowledge and lessons learnt and to remove obstacles to allow decision makers and development partners to move forward. As such, the proposed activities always include a comprehensive literature review and consultation on the topic areas to be studied.

The highest ranked issues and challenges that affect the transport sector in Ghana may be categorized as follows:

Infrastructure & Services	<ul style="list-style-type: none"> <li>• Poor feeder and access roads: The state of poor feeder and access roads, particularly in the northern regions, emerged as the highest-ranked concern, impacting poverty, food security and economic development.</li> <li>• Irregular and slow IWT services, poor connectivity and utilisation: Irregular, unreliable, and slow ferry and barge services, along with poor connectivity and utilisation of inland water transport, negatively affect river crossings and north-south inland water transport.</li> </ul>
Institutional	<ul style="list-style-type: none"> <li>• Fragmented institutional landscape and poor coordination: The fragmented institutional structure and inadequate communication within the sector leading to conflicting priorities and inefficient initiatives were identified as the second-highest concern.</li> <li>• Limited development and interest in inland water transport (IWT): The underutilisation of inland water transport due to low political interest and insufficient investment in the sector result in inefficiencies and increased transport costs.</li> </ul>
Financing & Funding	<ul style="list-style-type: none"> <li>• Funding constraints on transport projects: Insufficient funding for transport initiatives lead to delays in project execution and hinder infrastructure development.</li> </ul>
Data & Evidence	<ul style="list-style-type: none"> <li>• Lack of reliable transport demand data: The absence of reliable transport demand data and a centralised information repository hamper decision-making and planning processes.</li> </ul>

The compiled priority list of recommendations for further research, studies, data collection, and information gathering based on relevant literature and stakeholder input include:

- i. Researching the impact of improved transport services on poverty reduction and economic development: The recommended research addresses the link between improved transport services and poverty reduction. It aims to establish a coherent approach to determining the impact of transport sector projects on livelihoods, economic prosperity, and overall well-being.
- ii. Studying feeder and access road rehabilitation projects and their prioritization mechanisms: The recommended study focuses on the approach to and prioritization of feeder and access road rehabilitation projects which are critical for rural poverty reduction. It considers their impact and alternative mechanisms for selecting future projects.
- iii. Investigating climate financing and carbon reduction in the transport sector: The recommended study explores how climate financing can bring positive change to the transport sector in Ghana while reducing carbon emissions and supporting environmental sustainability.
- iv. Studying economic and environmental impacts and opportunities of inland water transport (IWT): The recommended research involves a comprehensive assessment of the economic and environmental effects of inland water transport, understanding its potential to reduce carbon emissions and contribute to economic growth.
- v. Determining passenger transportation demands on inland waterways: The recommended study analyses passenger transportation demands on inland waterways to improve efficiency and identify bottlenecks, vessel types, and strategies for efficiency improvements.



- vi. Comparing successful inland water transport systems: The recommended study compares regulatory frameworks, safety standards, infrastructure development strategies, and private sector participation models in countries with successful inland water transport systems, aiming to draw insights and best practices applicable to Ghana.
- vii. Researching the potential for mini inland water transport systems: The recommended study looks at establishing efficient, safe, and affordable localised inland water transport systems and identifying options for pilot projects in rural Ghana.

Outlined proposed interventions that were designed during the study aim to contribute to the overcoming of critical challenges affecting Ghana's transport sector. They each combine several of the identified recommendations for further studies or research. The proposed interventions encompass a range of activities, including studies, research, data collection, technical advice, capacity development, and more. The outlined interventions recommended for funding and implementation include:

- i. Rural Transport & Poverty (Roads): Study on Improved Approach to Feeder & Access Road Rehabilitation in Rural Ghana.
- ii. Rural Transport & Poverty (IWT): Study on Local Inland Water Transport Connecting Rural Communities along Volta River System of Ghana.
- iii. North-South Transport (Multi-Modal): Study on Multi-modal North-South Freight Transport in Ghana via Volta Lake, Road or Railway to Tema, and Comparison to Existing Road Transport.
- iv. Climate Change, Gender & Inclusion: Study on how to Use Climate Financing and Leverage the Power of the Transport Unions to introduce Positive Change in the Informal Transport Sector in Ghana.
- v. Inland Water Transport Routes: Charting of Volta Lake, Bathymetric Surveys and Marking of its Main Transport Routes.
- vi. North-South Transport (Road): Study on the Economic Cost of Truck Overloading, Axle Load Control & Options for Enforcement and Road Tolling of Freight Transport in Ghana.

The goals and objectives of the outlined interventions are to provide a comprehensive strategy to address crucial challenges in Ghana's transport infrastructure. Collectively, they aim to stimulate economic development, alleviate poverty, reduce carbon emissions, and enhance inclusivity and safety across the transport sector. From improving rural road accessibility, to promoting environmentally sensitive inland water transport and evaluating multi-modal transport links, to promoting gender inclusivity and climate-friendly practices, each goal and objective targets specific facets of Ghana's transport landscape. These initiatives were carefully designed to address pressing issues and provide a clear roadmap for implementation, monitoring, and evaluation, guiding decision-makers and development partners towards a more robust and sustainable transport sector for the nation.

The next steps in the process include dissemination of the findings and proposed interventions among transport stakeholders in Ghana via the HVT website, e-mail, and social media. The report is being shared with the stakeholders who contributed to the scoping study in consultation or who participated in the workshop for further dissemination and discussing with their superiors, colleagues, and peers. Further discussions with specific actors in Ghana, development partners and financing agencies are to identify the willingness and preparedness to take selected interventions forward and provide financing. For interventions that receive sufficient support and interest for implementation and financing, more detailed terms of reference and cost estimations are required. The authors aim to generate sufficient interest to take at least some of these proposed interventions forward.



## 1. Introduction

### 1.1 Background

#### 1.1.1 High Volume Transport Applied Research Programme

The UK Foreign Commonwealth and Development Office (FCDO) appointed DT Global International Development UK Ltd (DT Global) to establish a Programme Management Unit (PMU) with responsibility for the delivery of the High Volume Transport Applied Research Programme (HVT).

The seven-year HVT programme had the high-level objective of improving the evidence base for transport systems that are accessible, affordable, safe, green, and inclusive for lower and lower middle-income countries of South Asia and Africa. The research programme included research uptake, capacity building and knowledge management.

The research programme aimed to update technical best practice for transport infrastructure and operations in LICs and LMICs and actively disseminated it to relevant authorities so that it is understood and used. HVT research emphasized improving transport for women, children, older people and the most vulnerable communities. HVT collaborated with national and international transport stakeholders and has delivered over 40 projects covering over 30 countries. The priority research areas included:

- Climate mitigation and adaptation
- Inclusion, gender, road safety
- Policy and regulation
- Technology and innovation
- Fragile and conflict-affected states
- Research uptake and capacity building

Research produced is available on the HVT website: <https://transport-links.com/>.

#### 1.1.2 Ghana Transport Scoping Study

During 2023 the FCDO Ghana office worked with the government of Ghana (GoG) to develop a transport sector programme which aimed to improve river and road transport along corridors that connect poor communities and regions of the north to the economic hubs and markets of the south.

Under the HVT programme, DT Global undertook a limited study to clearly define the needs and scope of potential support through discussions and consultation with GoG, FCDO Ghana, transport sector stakeholders and the affected communities.

### 1.2 Objectives

#### 1.2.1 Overall Goal

The overall goal of the Transport Scoping Study for Ghana was to contribute to poverty reduction and improved connectivity and security through improved multi-modal transport connectivity, enhancing knowledge and capacity.

#### 1.2.2 Objective of the Scoping Study

The study aimed to identify potential opportunities and key challenges to north-south multi-modal transport connectivity, to highlight research gaps, and to determine a prioritised research agenda that could facilitate the transition to low carbon, multi-modal long distance, and urban transport.



### 1.2.3 Key Research Questions of the Scoping Study

This study aimed to answer these key research questions:

- What are the main obstacles and challenges related to improving north-south road, railway, and water transport connectivity?
- How can transport contribute to poverty reduction in Ghana and overcome the north-south divide? What needs to happen to achieve this?
- What are the quick wins and priority actions needed to make transport more efficient, accessible, affordable, safe, green (including carbon reduction), and inclusive, especially along the north-south routes?
- How important is river transport in the Volta River System and what are the key challenges/barriers to making it more efficient, equitable and inclusive?
- What knowledge or information is needed to remove identified barriers and to overcome challenges, allowing implementation of the quick wins and priority actions?

## 2. Methodological Approach

### 2.1 Overview & Deliverables

The study consisted of the following steps:

- Task 1 Literature Review
- Task 2 Key Informant Interviews
- Task 3 Field Visits
- Task 4 Workshop and Outline Intervention Design
- Task 5 Reporting

Key deliverables produced during this study included a field visit, literature review, stakeholder consultation report and a final scoping report.

### 2.2 Literature Review

At the onset of the study, a literature review was conducted across the transport sector in Ghana which included a review of the transport master plan, drawing insights from its plans and provisions for low carbon, river transport and the north-south transport divide. Appendix A shows the list of references used and Table 3 in Appendix B shows the key literature reviewed. In total, the team reviewed over 50 key documents or publications.

### 2.3 Stakeholder Consultation

During the initial phases of the study, the team consulted a number of stakeholders including representatives from government agencies, development partners, private sector organisations, academia, civil society and NGOs. Structured interviews were held in person or remotely. In total 42 individuals, mostly representatives of organisations, were consulted of which 10 were female as shown in Table 4 in Appendix C. During the interviews, participants were briefed on the background, objectives, and methodological approach of this study. They were asked key questions to identify the transport sector issues and challenges as well as recommended further research or studies or data/information collection they may consider important to move forward or close any knowledge gaps.



Combined with the participants from the workshop, who partly overlap with the individuals consulted during the early phases of the study, in total 67 stakeholders participated in and contributed to this study, of which 19 participants (28.3%) were female.

## 2.4 Field Visits

During the study, the team undertook several field visits to areas of interest to the study. Some of the areas visited include Volta Lake transport zones in the north and south, including Buipe and Akosombo ports as well as the planned new port at Mpakadan; the ferry crossings from Old Makongo to Yeji, from Kpando to Agordeke, and from Ekyiamenfrom to Adowso; and communities along the eastern and western sides of Volta Lake. The authors travelled parts of the central, eastern and coastal highway corridors, stopping in Accra, Tema, Kumasi, Tamale and Takoradi, and saw the Tema and Takoradi maritime port areas as well as Sekondi fishing harbour. Finally, the team visited sections of and stations along the Accra-Tema-Akosombo/Mpakadan and the Takoradi-Sekondi-Manso railway lines under construction or rehabilitation, as well as parts of the disused Accra-Kumasi railway line, and finally the Boankra inland port under construction.

Appendix D and Figure 1 in this appendix provide further details of the field visit sites including a map.

## 2.5 Outline Intervention Design & Workshop

### 2.5.1 Workshop

The outcome of the literature review, stakeholder consultation and field visits, and related report directly fed into a one-day workshop in Accra in October 2023. The participants were furnished with a copy of the executive summary and details of the identified recommendations and issues in advance to review and provide feedback.

The workshop was conducted for stakeholders from government agencies, development partners, private sector organisations, academia, civil society, and NGOs. The purpose of the workshop was to present the preliminary findings of the study to stakeholders. Altogether, 32 persons participated, of which 11 were female. Eleven were from government agencies, 10 from civil society organisations or NGOs, 4 from development partners, 4 from private sector companies / industry, 2 from academia and 1 from a public sector company / industry. Table 4 in Appendix C gives details of the participation.

The aim of the workshop was to verify or refute the proposed issues and recommendations, provide a ranking for them and select some priority recommendations for further discussion. Participants conducted a series of group exercises in this respect and discussed the selected priority recommendations with respect to their likely impact and uptake. The workshop outcome was a ranked list of proposed issues affecting transport in Ghana (ranked by perceived importance) as well as an outline list of proposed areas of research or study (ranked by perceived expected impact). A definition of “impact” was agreed at the onset. The highest-ranked recommendations were then further discussed in group work. The results from the workshop fed into the development of the outline interventions and final scoping report.

Subsequent to the workshop, the literature review, stakeholder consultation, and field visit report were updated where necessary in line with the feedback received during the workshop.

### 2.5.2 Outline Intervention Design

The workshop deliberations, group work and conclusions were analysed and further refined into the outline interventions described in Chapter 5 of this report. The outline interventions usually combine two or more of the proposed recommendations and aim to address partly or in full several of the issues highlighted during the study. The proposed outline interventions may comprise studies, research, data collection, technical advice, or capacity development. The development of the outline interventions considered the ranked issues and recommendations from the workshop and feedback received from the stakeholders.

For each proposed outline intervention, the authors provide the overall goal, main objectives, description, outputs, and a draft workplan. As discussed in Chapter 6, the next steps comprise of dissemination and



development of more detailed ToR and cost estimation, provided that sufficient interest is generated and funding secured.

In addition, Appendix H contains the relation between the outline interventions and both the ranked recommendations (shown in Appendix G) and the ranked issues (shown in Appendix F) .

## 2.6 Reporting

Following the initial phases of the study, the literature review, stakeholder consultation, and field visit report was prepared, which was issued prior to the workshop. The report provided the transport sector context segregated by transport mode, including the institutional arrangements and key regulatory and policy documents, as well as a description of the issues identified during the study and the recommendations provided by stakeholders.

This Final Scoping Report incorporates the outcome of the workshop as well as the outline interventions developed. It was reviewed by independent experts to ensure that the content is consistent with best practices in academic writing and in alignment with the state of practice and knowledge in the transport sector in Ghana. The document aims to aid stakeholders' decisions related to the objectives of the study, especially for funding decisions by development partners and investment decisions in the transport sector.

## 3. Transport Sector Issues and Challenges

### 3.1 Issues Identified

The issues identified during the initial phases of this study were based on observations made during the field visits, engagement with stakeholders, or referenced material extracted from published literature. Any related comments during the validation workshop were also taken into account.

The complete list of identified issues and related details are given in Table 6 and Appendix F. The table also relates the issues to priority areas of this study as well as to the different transport sub-sectors. Since this is a scoping study, there is no claim that all of the observations listed in Appendix F are comprehensively studied and cannot be challenged. Where possible, the authors tried to clarify or confirm from other sources to corroborate the facts.

### 3.2 Ranking of Issues

During the workshop the issues were verified and ranked, as shown in Table 1 below. The ranking was segregated by stakeholder groups as follows: government (G), academia and private sector (A&P), development partners (D), civil society and NGOs (CS). Each group discussed the issues and allocated points according to their perceived importance and correctness. The groups ranked the issues by allocating points as follows:

- 0 unimportant or incorrect
- 1 low importance or largely incorrect
- 2 important and largely correct
- 3 very important and correct

In addition, each group selected their three most important issues in the order of priority and marked them as Priority A, B and C.

The average of the points allocated to an issue by the groups was added to special points allocated to the issue as follows: 1 point if a group considered it its most important issue ("A"), 0.5 points for a "B" and 0.25 points for a "C". The outcome of the ranking is shown in Table 1 below.





### 3.3 Analysis

The workshop highlighted that stakeholders place varying degrees of importance on the issues presented and have different priorities. While this provoked some discussions among participants and groups, it was emphasized that all issues identified during the study were important. It is noted that the objective and focus of the study on the north-south transport corridors of Ghana, transport and poverty reduction, and the importance of inland water transport (IWT), may have influenced the ranking and selection of priority issues by the groups. A different focus may have resulted in different issues highlighted as most important. The divergence in priorities was observed to stem from differing perspectives and roles within the transport sector, and consequently distinct needs.

Presented below is a concise analysis of the rankings of the issues according to the various stakeholder groups. These have been categorised as follows: infrastructure & services; institutional; financing & funding; data & evidence.

#### 3.3.1 Top Six Ranked Issues

This section presents the top-ranked issues according to the rankings of the issues by the stakeholders shaded in colour in the above table.

The top-ranked concern relates to infrastructure & services and was the state of poor feeder and access roads, a priority directly linked to the study's emphasis on poverty reduction. Many stakeholders consulted, highlighted the poor feeder road system as one of the main contributors to rural poverty and lack of rural development. The poor condition of feeder roads in Ghana, particularly in the northern regions, presents a multifaceted challenge with profound implications for rural communities. Not only does it lead to substantial post-harvest losses, especially for perishable goods, but it also drives up food prices in local markets, exacerbating the economic strain. The inadequate road network restricts access to vital social services and economic opportunities, perpetuating a cycle of poverty in these areas. Moreover, farmers' negotiating power is severely hampered by the limited options for transportation, leaving them at the mercy of traders and middlemen. As reasons for this situation, stakeholders mentioned design, execution and/or maintenance problems, lack of funds, lack of political interest in feeder and access road projects (especially their maintenance) or political interference in investment decisions. Notably, both development partners and the government agency representatives identified this issue as their highest and second highest priority, respectively. It is worth noting that while this issue did not feature among the top three priorities for civil society, they still allocated it maximum regular points. For an in-depth exploration of this issue, refer to section 4.2.1 in Appendix F.

The second-highest concern is an institutional one and revolves around the fragmented institutional landscape and inadequate communication and coordination within the sector. This aligns with expectations following the stakeholder consultations and underscores a consistently significant issue in the Ghanaian transport sector that grapples with inadequate coordination and fragmented institutional structures (MRH, 2020). Currently, three distinct ministries are in charge of transport, with – in addition – the Ministry of Energy also having a stake in the transport sector via the Volta Lake Transport Company (VLTC). This situation appears to hamper effective communication and collaboration, leading to competing priorities and potential conflicts of interest, particularly in intermodal transport. Stakeholders consulted claimed that these ministries and the institutions under them work to various degrees in silos with insufficient communication and coordination among them. Priorities of different institutions naturally differ, and, in some cases, interests compete. Additionally, the ambiguity surrounding jurisdiction over Lake Volta between the Volta River Authority and the Water Resource Commission creates interface challenges and stand-alone planning, impeding efficient implementation and modal connectivity. As such, it is not surprising that the private sector (in collaboration with academia) identified this issue as their top priority. Although the government group did not include it among their top three priorities, they did acknowledge its substantial importance by assigning it maximum regular points. For more details on this issue, readers are referred to section 4.1.1 in Appendix F.





Table 1: Ranked Issues

(G=Govern., A=Acad., P=Priv. Sect., D=Dev. Partners, CS=Civil Society)

Issues	Mode	G	A&P	D	CS	Overall	G	A&P	D	CS	Overall Adjusted
4.2.1 Poor Feeder and Access Roads	Road	3	3	3	3	3.00	B		A		4.50
4.1.1 Fragmented Institutional Landscape and Lack of Communication & Coord.	General	3	3	3	3	3.00		A			4.00
4.1.3 Lack of Funding to Implement Transport Sector Projects	General	3	3	2	2	2.50	A				3.50
4.1.5 Lack of Reliable Transport Demand Data	General	3	3	1	3	2.50				A	3.50
4.5.1 Lack of Development of and (Political) Interest in Inland Water Transport	IWT	3	3	3	3	3.00		B			3.50
4.5.3 Irregular and Slow Services, Poor Connectivity and Utilization	IWT	3	3	3	3	3.00			B		3.50
4.6.3 Financial and Investment Constraints within the Railway Sector	Rail	3	3	3	2	2.75		C	C		3.25
4.7.2 Execution, Contract Administration, and Logistics Challenges	Road	3	3	3	3	3.00				C	3.25
4.1.4 Poor Transport Interconnectivity	General	2	3	2	2	2.25	C			B	3.00
4.5.4 Regulatory and Coordination Deficiencies	IWT	1	3	3	3	2.50			B		3.00
4.1.4 Poor Planning, Engineering, Selection and Procurement	General	3	3	3	3	3.00					3.00
4.3.1 The Needs of Women, Children & PWD are not Sufficiently Considered	General	3	3	3	3	3.00					3.00
4.5.5 Maintenance, Safety and Compliance	IWT	3	3	3	3	3.00					3.00
4.6.2 Neglected Infrastructure, Rolling Stock and Encroachment	Rail	3	3	3	3	3.00					3.00
4.6.4 Impact of Lack of Railway Development on Other Modes and Industries	Rail	3	3	3	3	3.00					3.00
4.7.1 Network Expansion and Maintenance Challenges	Road	3	3	3	3	3.00					3.00
4.7.3 Road condition and Overloading	Road	3	3	3	3	3.00					3.00
4.7.4 Road and Traffic Safety	Road	3	3	3	3	3.00					3.00
4.4.4 Inefficiency of Container Transport	All	3	3	3	2	2.75					2.75
4.5.2 Navigational Challenges and IWT Infrastructure Issues	IWT	2	3	3	3	2.75					2.75
4.5.6 Data Limitations and Resource Constraints	IWT	2	3	3	3	2.75					2.75
4.1.2 Issues Related to Transport Regulation	General	2	3	3	2	2.50					2.50
4.4.1 Insufficient Consideration of Paratransit	Road & IWT	2	2	3	3	2.50					2.50
4.4.2 Economics and Regulation of Road Transport Service Providers	General	2	2	3	3	2.50					2.50
4.4.3 Poor Regulation of the Informal Freight Sector	Road & IWT	3	3	1	3	2.50					2.50
4.6.1 Institutional Challenges and Capacity Issues	Rail	1	3	3	3	2.50					2.50
4.2.2 Limited Access to Vehicles	Road & IWT	3	2	1	3	2.25					2.25
4.2.3 Rural River Transport (local)	IWT	3	2	1	3	2.25					2.25
4.1.6 Insufficient Consideration of Environmental and Climate Change Issues	General	2	3	1	2	2.00					2.00



Ranked third are four issues all scoring 3.5 overall from the analysis of the scores of the stakeholders. These issues are: lack of funding to implement transport sector projects (financial), lack of reliable transport demand data (data & evidence), lack of development of and (political) interest in inland water transport (institutional), and irregular and slow IWT services, poor connectivity and utilization (infrastructure & services).

Insufficient funding to implement transport sector projects was selected as the issue of highest importance by the group/participants from government agencies. Stakeholders consulted emphasized a recurring issue of inadequate or lack of implementation of transport initiatives and projects across various modes. Despite the numerous studies and plans, execution is often delayed or disregarded for various reasons. While stakeholders outlined a plethora of causes, insufficient funding for planned initiatives or projects was identified as the major risk factor. Overcommitting budgets and a consistent deficit in the Ghana Road Fund revenue exacerbate the issue with respect to roads (MRH, 2020; MRH and MoT, 2016). This financial strain not only results in many initiatives not being executed but can also lead to contractors running out of funds, resulting in incomplete projects, which in turn leads to claims that tie up available resources and capacities. Lack of adequate financing hinders the development of necessary transport infrastructure to meet the growing demands. For more details on this issue, readers are referred to section 4.1.3 in Appendix F. Despite the overall importance of this issue, it is worth noting that both the representatives from the development partners and civil society / NGOs did not give it highest regular scores. Representatives from both the development partners and academia shared the view that lack of funding is not the priority issue within the transport sector, but that funding will come if other issues are being addressed and everything else is in place.

The absence of reliable transport demand data and a centralised information repository exacerbates decision-making processes of transport projects, potentially leading to ineffective initiatives, non-data-led strategies and, in some cases, duplicated efforts. The availability and accessibility of updated reliable traffic inventory and demand information for transport planning is a challenge which affects planning. While some stakeholders assert a satisfactory grasp of transport requirements, others highlight a scarcity of data linked to a lack of or non-operational automatic counters, non-replacement of equipment, poor and unstructured data collection, storage and retrieval systems which are often attributed to funding constraints. The lack of an integrated traffic management system further compounds the challenge of data collection and analysis. Limited accessibility to this data also poses a hurdle, constraining effective decision-making and planning processes.

The development of inland water transport has faced challenges due to low political interest in the past, leading to insufficient infrastructure and investment in the sector. The Transport Sector Review Report attributes the underutilization of the Volta Lake waterway to a decade of neglect in maintenance, ageing vessels, inadequate handling equipment, lack of hydrographic charts, and navigational hazards (MRH and MoT, 2016). This deficiency leads to inefficiencies, extended transit times, and escalated transport costs. Irregular, unreliable and slow ferry and barge services negatively affect river crossings and north-south inland water transport. This, coupled with insufficient understanding of risks and overall costs of multi-modal transport including reloading, means traders are discouraged from using this mode of transport. The use of aging vessels and engines compounds the problem, although there have been efforts in recent years to improve the situation with new ferries, barges, and plans to upgrade and modernise the fleet. The Trans Volta Project, which was intended to improve the situation, appears to be behind schedule or on hold. While the fact that one of the focus areas of the study is inland water transport may have influenced the choice, undoubtedly these two issues related to IWT are of high importance as they received the highest scores from all participant groups. They were also considered their second highest priority issues by the participants from academia, the private sector and the development partners. Readers are referred to sections 4.5.1 and 4.5.3 in Appendix F for more details on these two issues.

### 3.3.2 Other Relevant Issues

The issue of financial and investment constraints within the railway sector (financial) and execution, contract administration, and logistics challenges within the road sector (infrastructure & services) were both ranked fourth with an overall score of 3.25.



Financial and investment constraints is a major challenge of the rail sector in Ghana as revitalising Ghana's railway industry demands substantial financial commitments, a task made more complex by budgetary limitations. The challenge of financial and investment constraints within railways is more than just a lack of funds for the development of rail infrastructure, as it also involves the difficulty in attracting essential private financing to the sector. That said, to encourage private sector involvement, the Government of Ghana is actively pursuing private funding through public-private partnerships (PPPs), structured on a build, operate, and transfer (BOT) model (NDPC, 2019; MoRD, 2022).

The seamless execution of road projects is frequently impeded by a range of challenges in contract administration and logistics. Issues in contract administration, including ineffective management and inadequate oversight, can result in disputes, project delays, and suboptimal outcomes. Inconsistencies and misinterpretations among contract stakeholders can impede the smooth progression of construction efforts and potentially lead to costly legal conflicts.

Readers are referred to sections 4.6.3 and 4.7.2 in Appendix F for more details on these two issues.

The next 10 issues all received 3.0 points overall, making all of them important issues. Among these, 2 concerns emerged as notable standouts as they were included within the top priority issues by some stakeholder groups: poor transport interconnectivity in general and regulatory and coordination deficiencies within the inland water transport sector.

Readers are referred to Appendix F for more details on all identified issues.

## 4. Recommendations for Further Research & Studies

### 4.1 Recommendations Gathered

The recommendations for further research, studies, or data or information collection were derived from the initial phases of this study including stakeholder consultation, field visit and review of relevant literature. The complete list of recommendations and related details are given in Table 7 and Appendix G. The table lists the assembled recommendations and relates them to priority areas of this study as well as to transport modes and sectors. Since this is only a limited scoping study, there is no claim that the list is complete and comprehensive. There may be more recommendations that were not picked up during the study, and a change in the focus of the study may result in additional or different recommendations. The recommendations relate to general or overarching topics within the transport sector in Ghana, to how transport could contribute towards poverty reduction, to questions of interest to public or freight transport, as well as to (long distance) inland water, rail and road transport.

It is important to highlight that many stakeholders stated that a lot of information and knowledge is already available within the Ghana transport sector and that many studies were done in the past, but what is lacking is follow-up and implementation of initiatives for a variety of reasons (see also the issues section).

### 4.2 Definition of Impact for the Purpose of Ranking Recommendations

Prior to conducting the workshop, the authors suggested the following definition of impact of recommended interventions (such as research, studies, data or information collection), if implemented. This was done in line with the focus and objective of the study and for the purpose of ranking the recommendations gathered during the initial phases of the study. The definition of impact below was presented to the workshop participants for discussion and consideration. It was adopted with no modification.

A recommendation for further research or study (if implemented) is expected to achieve impact, if:

- it addresses one or more of the main issues identified during the study, especially the highly ranked ones;
- it is likely to be supported by key stakeholders involved in it and its uptake is quite likely;
- it is of limited duration and budget.



In addition, participants in the workshop should consider the likely output of an implemented intervention, assuming that such output would subsequently be taken up by stakeholders and that decisionmakers would act accordingly. Would the resulting programmes, actions or works be likely contribute directly or indirectly to poverty reduction, and might they either improve north-south multi-modal transport connectivity or reduces carbon emissions from the transport sector, ideally both?

### 4.3 Ranking of Recommendations

During the workshop, the recommendations were discussed and ranked, as shown in Table 2 below. As for the issues, the ranking was segregated by shareholder groups as follows: government (G), academia and private sector (A&P), development partners (D), civil society and NGOs (CS). Each group discussed the recommendations shown in Table 7 of Appendix G and allocated points in line with the perceived impact each recommendation might achieve if implemented (based on the definition of impact in section 4.2):

- 1 - low impact, limited use, or study/research already exists
- 2 - good impact and useful, even if study/research may partly exist
- 3 - high impact and very useful and study/research is very much needed

In addition, each group selected the three most important recommendations in order of priority and marked them as Priority A, B and C in order of decreasing priority.

The average of the points allocated by each group to a recommendation was taken and, in addition, a recommendation received one point if a group considered it its most important recommendation ("A"), 0.5 points for a "B" and 0.25 points for a "C". The outcome of the ranking is shown in Table 2 below.

### 4.4 Analysis

32 recommendations were presented to the stakeholders to consider and rank according to likely impact. Similar to Section 3.3, different stakeholder groups perceived the recommendations differently. Each of the four stakeholder groups held varying perceptions regarding the level of significance of the recommendations, mirroring the variation seen in their assessment of the issues. The analysis below presents first and foremost the top seven ranked recommendations according to the scores of all four stakeholder groups. These are shaded in green in the table.

#### 4.4.1 Top Seven Ranked Recommendations

The highest-rated recommendation relates to the question of how improved transport services or infrastructure can reduce poverty and increase economic growth, which is a fundamental research area that links directly to the overarching goal of this study. It is however a more general question suggesting a lack of understanding and capacity by stakeholders, and addressing this will be a prerequisite in determining and measuring the impact on poverty reduction of improved transport infrastructure and services. This research should not only establish a coherent approach to determining and measuring the impact on poverty reduction of transport sector projects but also provide an opportunity to consolidate lessons learnt from past initiatives and make these widely available. Examining the intricate relationship between improved transport infrastructure and services, poverty reduction and economic development can offer critical insights into which initiatives should be prioritised. The evaluation of past initiatives will further provide invaluable lessons, informing policymakers on best practices and potential pitfalls to avoid in future projects. This recommendation, therefore, serves as a cornerstone for evidence-based decision-making, ensuring that investments in transport infrastructure lead to tangible improvements in livelihoods, economic prosperity, and overall well-being. In this respect, it is worth noting that, with the exception of the development partners who assigned this a score of 2 (impact but not high impact), all other stakeholder groups assigned this recommendation the highest points. Furthermore, participants from both government agencies and civil society organizations unanimously identified this as their foremost priority, underscoring its paramount importance as a focal point for support and action. For further information, please refer to Recommendation R3 in Appendix G.



Table 2: Ranked Recommendations

(G=Govern., A=Acad., P=Priv. Sect., D=Dev. Partners, CS=Civil Society)

Recommendations		Mode	G	A P	D	CS	Overall	G	A P	D	CS	Overall Adjusted
R3	Study on how improved transport services or infrastructure can reduce poverty and increase production and the impact of, and lessons learnt, from previous initiatives.	General	3	3	2	3	2.75	A			A	4.75
R32	Develop, in cooperation with stakeholders, alternative mechanisms to prioritise feeder road rehabilitation projects and to determine their impact. Review feeder road strategy, programmes, and priorities for the three districts in the Upper West and Savannah Regions. Provide a revised planning, design, costing and cost/benefit analysis for each district.	Rural. Roads	3	3	3	1	2.50	B		A		4.00
R2	Study on how climate financing can be leveraged to introduce positive change into the transport sector in Ghana while reducing its carbon emissions.	General	2	3	3	1	2.25		A	C		3.50
R20	Conduct comprehensive assessments of the economic and environmental impacts of inland water transportation. Analyse the cost-benefit ratio, job creation potential, and carbon footprint reduction achieved through increased utilization of waterways and potential for carbon financing.	IWT	3	3	3	3	3.00		B			3.50
R17	Assess the current and future passenger transportation demands on the inland waterways, utilization rates, bottlenecks, and how different types of vessels could bring improvement. Develop strategies for enhancing usage and connectivity.	IWT	2	3	3	2	2.50			B		3.00
R19	Undertake comparative studies with other countries that have successful inland water transportation systems. Analyse their regulatory frameworks, safety standards, infrastructure development strategies, and private sector participation models to draw insights and best practices applicable to Ghana's context.	IWT	2	2	3	3	2.50				B	3.00
R15	Research into establishing mini IWT systems connecting several communities in close vicinity and design and propose options for pilot projects in three agricultural/fishing areas in rural Ghana, particularly in districts of the Savannah Region which has a high level of poverty and access to the Volta River System.	IWT	3	3	3	3	3.00					3.00
R18	Review the Trans-Volta logistics corridor project, its planning, costing, cost/benefit, risks, and obstacles, and determine required parallel measures. The aim should be to re-evaluate existing studies holistically and highlight the obstacles, update costing and cost/benefits and provide a phased plan forward with the aim to make swift use of the existing IWT on Volta Lake as well as the completed new railway line to Mpakadan.	Multi- Modal	3	3	3	1	2.50	C				2.75
R21.	Evaluate the existing policies, standards and regulations governing inland water transport in Ghana. Identify gaps, inconsistencies, and areas for improvement to develop a more comprehensive and coherent regulatory framework.	IWT	2	2	3	3	2.50				C	2.75



Recommendations		Mode	G	A P	D	CS	Overall	G	A P	D	CS	Overall Adjusted
R7	Study on establishing potential service provision centres in rural Ghana which can rent out to members vehicles and equipment and provide other services including shared transport to its members and even basic feeder road repair and maintenance.	Rural. Roads	3	2	3	3	2.75					2.75
R12	Conduct a detailed market assessment of cargoes and passengers which can be captured by IWT via Volta Lake based on, amongst others, a competitive logistics chain assessment.	IWT	2	3	3	3	2.75					2.75
R13	Conduct detailed hydrological studies of the Volta Lake and river system and develop with stakeholders suggested zoning of the lake and river system.	IWT	2	3	3	3	2.75					2.75
R23	Study to understand the current and projected freight and passenger demands in various regions of Ghana.	Rail	3	3	2	3	2.75					2.75
R1	Study on coordination and communication between different transport ministries and agencies in Ghana.	General	3	3	2	2	2.50					2.50
R6	Study on women in transport in Ghana, how the share of women employed in the formal and informal transport sector can be increased, and how their voices and needs can be heard more clearly and considered during planning, construction, and operation.	General	3	2	2	3	2.50					2.50
R10	Study on which north-south (and south-north) cargo and goods (if any) could or should be forced off the road onto the barges (multi-modal) and how this could be achieved using different tools, interventions, mechanisms, such as law, policy, and subsidies.	General / IWT	2	3	2	3	2.50					2.50
R25	Establish a monitoring & evaluation framework to assess the progress and impact of railway development projects, including aspects such as poverty reduction, improved north-south transport, carbon reduction, environmental considerations, transport safety, gender & inclusion.	Rail	3	3	1	3	2.50					2.50
R27	Study on how carbon emission reduction within the transport sector in Ghana can be achieved by fleet renewal and identify and examine different tools to achieve this. Look at the implications on other sides if fleet renewal is achieved, including fuel quality and vehicle maintenance capacity.	Road	1	3	2	2	2.00		C			2.25
R14	Chart and carry out bathymetric surveys of the main IWT navigation routes and propose and provide updated cost estimates for minimal navigation installations along routes and removal of physical obstacles affecting safe and efficient all-year navigation.	IWT	2	3	3	1	2.25					2.25
R16	Establish a comprehensive data collection system for navigation and safety-related information.	IWT	2	2	2	3	2.25					2.25
R24	Conduct surveys and studies to understand public perceptions and awareness of railway transport in Ghana.	Rail	2	1	3	3	2.25					2.25
R28	Determine the real economic costs to the people of Ghana of overloading of trucks per annum in terms of asset deterioration and maintenance / replacement costs. Estimate the effective “subsidy” the people of Ghana provide to the freight sector, both within and outside Ghana, by providing infrastructure free of charge.	Road	3	3	1	2	2.25					2.25



Recommendations		Mode	G	A P	D	CS	Overall	G	A P	D	CS	Overall Adjusted
R29	Determine the effectiveness of axle load control in preserving road integrity and reducing maintenance costs. Explore technological solutions and enforcement measures to ensure proper load compliance.	Road	1	2	3	3	2.25					2.25
R4	Study on the cost of the agricultural and fisheries supply chains for selected regions of Ghana such as the Upper West and Savannah regions and how much transport or transport related issues contribute to such cost.	General	1	3	1	3	2.00					2.00
R5	Training for drivers and operators especially working within the informal sector (both road and IWT) on aspects of gender, inclusion, health, and safety, first aid, etc.	General	1	2	3	2	2.00					2.00
R8	Study on how the influence and power of the unions dominating paratransit and freight transport can be leveraged and used to introduce positive change such as fleet renewal, emission reduction, and improvement on gender and inclusion.	Road	1	3	2	2	2.00					2.00
R9	Comparison of the real cost of transporting selected cargo and goods from northern Ghana and the border with Burkina Faso to markets and ports in southern Ghana using different transport modes and based on different scenarios.	Multi-Modal	3	2	1	2	2.00					2.00
R11	Study on how container transport across Ghana could be made more effective, attractive, and efficient despite the gap between exports and imports, how this is best organised and supported by policy, subsidy and other interventions.	Multi-Modal	2	2	3	1	2.00					2.00
R22	Assess the training and capacity-building needs of boat operators, crew members, and regulatory authorities to enhance safety practices, knowledge of gender and inclusion issues and best practises, technical skills, and operational efficiency.	IWT	1	2	3	2	2.00					2.00
R26	Undertake comparative studies with countries that have successfully revitalized their railway systems after facing similar challenges. Identify best practices, lessons learned, and strategies for implementation in Ghana's context.	Rail	1	3	1	3	2.00					2.00
R30	Investigate appropriate and alternative tolling schemes that are fair and socially acceptable and take away the unfair advantage of the road sector over the railway and IWT sectors. Include carbon costing and how tolling can be used to introduce positive change, including fleet renewal in line with other measures (incentives).	Road	2	2	2	2	2.00					2.00
R31	Investigate options for and gradual introduction of emissions testing as part of roadworthiness testing and how setting the limits needs to go hand in hand with other measures, such as incentives, tolling, air quality testing (and limits), and Ghana's commitment to reduction of its carbon emission.	Road	1	3	1	1	1.50					1.50





The second highest-ranked recommendation relates to feeder and access road rehabilitation projects, how to determine their impact and alternative mechanisms to prioritize future projects. During the consultation, stakeholders strongly felt that improved feeder and access roads are essential for poverty reduction in rural Ghana. This recommendation overlaps to some extent with the highest-ranked recommendation as it also asks the question of how the impact of such projects can be better determined and measured. It was considered to be of the highest importance by the development partners (same as the related issue) and second most important by the government representatives (again, same as the related issue). This recommendation calls for the development of alternative prioritisation mechanisms in collaboration with stakeholders to determine which roads should receive priority for rehabilitation. It includes a detailed review of existing feeder road strategies, programmes and priorities, with a focus on identifying areas for improvement. Additionally, it emphasizes the importance of providing revised planning, design, and costing, ensuring that resources are allocated efficiently. Lastly, a critical step involves conducting a thorough cost-benefit analysis to assess the anticipated impact of the rehabilitation projects in relation to their estimated costs, ultimately guiding investment into network improvements. For further information, please refer to Recommendation R32 in Appendix G.

Two recommendations share the third place in the ranking by stakeholders as follows: studies on climate financing and carbon reduction and the economic and environmental impacts of inland water transportation.

Although ‘insufficient consideration of environmental and climate change issues’ was not among the highly ranked issues, it was nevertheless acknowledged as a major issue that required attention. An investigation is recommended into how climate financing can be leveraged to introduce positive change into the transport sector in Ghana while reducing its carbon emissions. It is noted that this recommendation also relates to the third-ranked issue, which was the ‘lack of funding to implement transport sector projects’. This stems from the knowledge that the transport sector constitutes a significant contributor to carbon emissions. Such a study would provide a strategic framework to align the sector with climate goals. Also, the objective of this study includes exploring interventions that could lead to a transition to low carbon emissions in the transport sector. Identifying avenues for climate financing would help paving the way for investments in sustainable technologies, infrastructure and practices, thereby steering Ghana towards a greener and more resilient transport system. Furthermore, the emphasis on reducing emissions not only aligns with international climate commitments but also boosts Ghana's efforts to enhance environmental sustainability and combat climate change. Consequently, this proposed study would delve into the strategic utilisation of climate financing with the focus of addressing the shortage of funding and fostering sustainability and curbing carbon emissions. The recommended study should encompass a thorough investigation into how financial resources earmarked for climate-related initiatives can be sourced for developing capacities, transport infrastructure and services. For further information please, refer to Recommendation R2 in Appendix G.

The other recommendation that shares the third place ranking in total scores relates to inland water transport (IWT), especially IWT's economic and environmental impacts, its potential for carbon footprint reduction and for climate financing. It is noteworthy that this recommendation received the highest regular score from all four groups and in addition was considered second the most important recommendation in ranking by the participants from the private sector and academia. This recommendation involves conducting in-depth assessments of both the economic and environmental implications of inland water transport, with the aim of providing a comprehensive understanding of its multifaceted effects. This includes the analysis of the cost-benefit ratio associated with the development and coordination of inland water transport with other modes, such as poor road and railway connections. Moreover, the study should explore the employment potential that can be unlocked through the growth of the inland water transport system. A critical component of this assessment involves the environmental impact, particularly the reduction in carbon footprint achievable through the utilisation of Volta Lake for inland water transport. This recommendation includes quantifying emissions reductions and evaluating the potential for leveraging carbon financing mechanisms discussed above. It is linked to one of the 3<sup>rd</sup> ranked issues, the ‘lack of development of and (political) interest in inland water transport’. For further information, please refer to recommendation R20 in Appendix G.



The next three recommendations all relate to IWT and received three points in the overall score. They all relate directly or indirectly to some of the highest-ranked IWT issues, namely the ‘lack of reliable transport demand data’ (4.1.5), ‘irregular and slow services, poor connectivity and utilization of inland water transport’ (4.5.3), and ‘regulatory and coordination deficiencies’ (4.5.4), as well as the general issue of ‘poor transport interconnectivity’ (4.1.4), all amongst the 10 top voted issues.

The question on passenger transportation demands on the inland waterways, utilization rates, bottlenecks, and how different types of vessels could bring improvement involves investigating both the present and future inland water transport in Ghana, aiming to gain a comprehensive understanding of the potential for transporting specific commodities, such as minerals, charcoal, cement, livestock, and foodstuffs (yams, cereals, vegetables), and petroleum products, by inland water transport. This assessment should encompass an in-depth analysis of utilisation rates, examining the extent to which inland water transport is currently meeting or can meet the demand of passengers and freight forwarders. The study should also identify and assess existing bottlenecks and constraints within the system, pinpointing the types and areas where improvements are most urgently needed. In addition, it should investigate and recommend the types of vessels, such as ferries or modern passenger ships, that could potentially enhance the efficiency and effectiveness of the inland water transport services taking cognisance of local conditions. The recommendation was voted by the development partners as its second-highest recommendation. For further information please refer to Recommendation R17 in Appendix G.

The call for a comparative study with other countries that have successful inland water transportation systems involves the analysis of the regulatory frameworks, safety standards, infrastructure development strategies and private sector participation models in countries that have established successful inland water transport systems. The study should draw on insights and recommend best practices applicable to Ghana's context. It includes an assessment of how the private sector can set up and operate competitive logistics chains. This recommendation was voted second highest by the civil society group. For further information please refer to Recommendation R19 in Appendix G.

The proposed research into establishing mini IWT systems connecting several communities close to each other and related options for pilot projects was the second recommendation overall with the highest regular scores by all four groups. This recommendation aims to look at current practises and opportunities to create efficient, safe, and affordable localized IWT systems. The study should look at examples in other areas within and outside Ghana and consult and involve stakeholders such as women, communities, boat operators and unions. Furthermore, it is recommended that it involves proposing options for pilot projects in three agricultural/fishing areas in rural Ghana. Focus shall be on the sustainability of such mini IWT systems, which should be self-funding from fees and charges following initial investment (CAPEX) by government or development partners. For further information, please refer to Recommendation R15 in Appendix G.

#### 4.4.2 Other Relevant Recommendations

Six further recommendations (all scoring 2.75 points overall) follow the above top seven recommendations, three of which relate to inland water transport (IWT) and one each to multi-modal, road and rail transport. Two of these six were voted as their third most important recommendation by a stakeholder group each. For details, please refer to Appendix G.:

- The proposed review of the multi-modal trans-Volta logistics corridor project, its planning, costing, cost/benefit, risks, and obstacles, and determining required parallel measures received the highest regular scores from government, private sector / academia, and development partners, but the lowest score from civil society. It was also voted the third most important recommendation by the government representatives. It must be noted that this initiative was awarded in mid-2022 to a private consortium, LMI Holdings<sup>1</sup>, and while it is understood that they have commissioned studies, progress is slow. Any

<sup>1</sup> [US\\$450 million Debre Inland Port takes off; first phase operational by 2024 \(ghanaweb.com\)](https://lmi-ghana.com/transvolta/)  
<https://lmi-ghana.com/transvolta/>



initiative in this respect must be done in coordination with them to ensure that there is no duplication or interference in their scope of work, but the study serves an overall goal.

- The evaluation of existing policies, standards and regulations governing inland water transport in Ghana was voted as its 3<sup>rd</sup> most important initiative by the civil society group. All groups believe it will achieve impact, but only development partners and civil society believe that impact will be high.
- The other four recommendations were not voted by any group among their three priority projects but received maximum points by three groups, with the 4<sup>th</sup> group still believing it would achieve impact. These relate to:
  - A study on establishing potential service provision centres in rural Ghana that hire out vehicles, tools or equipment or provide a related service (roads).
  - Conducting a detailed market assessment of cargo which can be captured by IWT.
  - Conducting detailed hydrological studies of the Volta Lake and river system.
  - A study to understand the current and projected railway freight and passenger demands.

The above 13 recommendations, which are all generally considered to achieve high impact (score  $\geq 2.75$ ), are followed by four recommendations achieving in average 2.5 points. These include:

- A study on coordination and communication between different transport ministries and agencies in Ghana, which is related to an issue ranked second overall.
- A study on women in transport in Ghana is the first recommendation with cross-cutting matters at its core.
- A study on which north-south (and south-north) cargo and goods (if any) could or should be forced off the road onto the barges and rail (multi-modal), relates somewhat to the above trans-volta logistics corridor project.
- Establishing a monitoring and evaluation framework to assess the progress and impact of railway development projects. This recommendation received the highest score by the three groups, but the development partners did not consider it to achieve much impact.

From the remaining recommendations, the following was voted as its third most important by the participants from the private sector and academia, but it otherwise did not receive much support. The government representatives especially did not think it would achieve significant impact: A study on how carbon emission reduction within the transport sector in Ghana can be achieved by fleet renewal and identify and examine different tools to achieve this.

Charting and carrying out bathymetric surveys of the main IWT navigation routes on Volta Lake only received 2.25 but is largely the same as the above mentioned recommendation to conduct detailed hydrological studies of the Volta Lake and river system which achieved 2.5 points. The civil society group gave it the lowest points, but a reason for this could be that the term “bathymetric surveys” was not properly understood.

In general, all but one of the recommendations were believed to achieve impact. The one that did not receive a minimum of 2.0 points overall was the investigation of options for gradual introduction of emissions testing as part of roadworthiness testing. All groups but the private sector considered this recommendation to have low impact at best.

## 5. Proposed Outline Interventions

The results of the workshop and the feedback received from stakeholders, either in writing or orally, informed the development of the outline interventions presented below. They are being proposed to decision makers



within government agencies, ministries but also industry, the FCDO Ghana and other development partners for their consideration for financing and implementation. Each outline intervention typically combines two or more recommendations identified during the study and seeks to address several issues highlighted. Each proposed outline intervention comprises studies, research, data collection, technical advice, capacity development, etc.

All proposed interventions should, if implemented, include a comprehensive literature review of relevant research and studies (also to avoid duplication as a significant amount of studies already exist in Ghana and elsewhere); relevant stakeholder consultations, including with government agencies, development partners, private sector organisations, academia, civil society and NGOs; field visits if considered relevant; relevant data collection and surveys; the preparation of a detailed roadmap and work plan to facilitate uptake, implementation and action by relevant stakeholders; research dissemination and capacity development; an explanation of how uptake will achieve impact on poverty reduction and economic development; and a cost-benefit analysis linked to the roadmap and segregated by stakeholder group, also looking at poverty reduction, gender and inclusion, and carbon emissions. The interventions shall also establish a related baseline for and suggest monitoring and evaluation mechanisms.

It is acknowledged that some of the topics of the proposed outline interventions have been substantially researched and studied in Ghana and elsewhere already, for example, the feeder and access roads. The intention however is to not to duplicate but build on existing knowledge and lessons learnt and to remove obstacles to allow decision makers and development partners to move forward. As such, a comprehensive literature review and consultation on the topic areas to be studied are essential, including an analysis of why past efforts may have failed or led to insufficient or undesirable impact.

The outline interventions listed below take into consideration the ranking of the issues and recommendations as per Table 1 and Table 2 as well as the discussions during the workshop and feedback received. Appendix H relates each of the proposed interventions to the identified issues and the proposed recommendations.

## 5.1 Suggested Outline Interventions

The researchers recommend the following outline interventions for further development and consideration:

### A. Rural Transport and Poverty (Roads): Study on Improved Approach to Feeder and Access Road Rehabilitation in Rural Ghana

#### Goal and Main Objective of the Outline Intervention:

The overall goal of the proposed study is to contribute to poverty reduction and economic development within rural Ghana, ultimately ensuring improved, safer, and more inclusive rural transport.

The primary objective is enhancing decision-making for feeder and access road rehabilitation projects in rural Ghana. This involves redefining the selection criteria, as well as the improvement of implementation, monitoring, and evaluation procedures.

Based on the initial findings and recommendations, the study should generate an updated list of priority projects for the Upper West and Savannah regions for potential funding consideration as well as design concepts, cost estimations, cost-benefit analysis, formulation of monitoring and evaluation (M&E) plans, and the procurement documents to facilitate the smooth execution of the rehabilitation and subsequent maintenance efforts for the selected priority roads within the Upper West and Savannah regions.

#### Description and Output of the Outline Intervention:

This intervention relates to issues 4.2.1 (poor feeder and access roads) and 4.1.4 (poor planning, engineering, selection, and procurement) as well as the second-ranked recommendation R32 which proposed the development of alternative prioritisation mechanisms in collaboration with stakeholders to determine which roads should take precedence for rehabilitation.

The proposed outline intervention will:



1. Involve a comprehensive review of the current protocols used for the selection of feeder and access roads for rehabilitation. This shall include, among other, current output performance-based network management projects by the department of feeder roads. This investigation will include an in-depth analysis of the criteria, methodologies, and current decision-making processes based on existing research, reports, and relevant (inter)national studies about rural road rehabilitation from previous projects in Ghana or West Africa. By scrutinising these existing protocols, the research will identify areas of strength, potential gaps, and opportunities for improvement. This review will serve as a foundational step towards refining and optimising the selection process for these critical rural road networks.
2. Undertake a comprehensive data collection to evaluate the current state of feeder and access roads and socio-demographics through on-site assessments, examining traffic characteristics, and engaging local stakeholders to understand economic activities reliant on road accessibility. Additionally, the study will solicit community feedback to shed light on specific transport needs, particularly concerning vital services like health, education, or market access, which are crucial for poverty alleviation.
3. Improve stakeholders' understanding of the process, shortfalls and issues related to project selection and prioritisation, design, procurement, contracting, administration, management, execution, monitoring and evaluation of feeder/access road rehabilitation projects in Ghana or West Africa, considering past successes, shortfalls and lessons learnt, and suggest improved design, procurement, contracting and contract administration and management mechanism within the respective norms and laws that would avoid any identified issues and shortfalls of past projects.
4. Develop or suggest an improved selection process for feeder/access road rehabilitation projects in Ghana, considering past successes, shortfalls and (inter)national best practices, and provide a priority list of feeder road rehabilitation projects within the upper west and savannah regions to be considered for funding.
5. Based on the outcome of the initial study, provide concept design, costing, cost/benefit analysis, M&E plan, and procurement documents for the rehabilitation and maintenance of selected prioritised feeder/access roads within the upper west and savannah regions.

#### Draft Workplan:

No	Activity	Months											
		1	2	3	4	5	6	7	8	9	10	11	12
0.0	Inception & Mobilization												
1.0	Desk study of relevant research, documents, literature, publications, laws, acts, norms, project reports, etc.												
2.0	Consultation of relevant stakeholders in Accra, Tamale, Upper West and Savannah Regions.												
3.0	Field visits to Upper West and Savannah Regions.												
4.0	Data collection in line with the requirements of the study.												
5.0	Workshop in Accra and Tamale: Transport & poverty; impact of improved rural transport; transport & gender/inclusion; road & traffic safety in rural Ghana.												
6.0	Workshop in Accra and Tamale: Feeder & access road selection, design, procurement, contracting, administration, management, execution and closing of feeder/access road rehabilitation and maintenance projects in Ghana.												
7.0	Preparation of guidelines for Ghana on rural transport and poverty, inclusion and safety.												
8.0	Preparation of guidelines for Ghana on feeder/access road rehabilitation & maintenance including selection of projects, design, procurement, contracting, administration, management, execution, maintenance, monitoring & evaluation.												
9.0	Preparation of updated priority feeder road projects for Upper West and Savannah Regions.												
10.0	Dissemination of the guidelines and training of relevant stakeholders in North-Western Ghana (Two 1-day training workshops, each for min. 25 participants from relevant stakeholders).												
11.0	Dissemination of the research outcome.												
12.0	Reporting												
13.0	Possible addition: Concept design, costing, cost/benefit analysis, M&E plan, and procurement documents for the rehabilitation and 3-years maintenance of selected prioritized feeder/access roads within the project area (about 50km).												



## **B. Rural Transport and Poverty (IWT): Study on Local Inland Water Transport Connecting Rural Communities along Volta River System of Ghana**

### Goal and Main Objective of the Outline Intervention:

The overall goal of the proposed study is to contribute to poverty reduction and economic development within the communities bordering Volta Lake in particular, and the Volta river system in general and move to an improved, safer, and more inclusive rural IWT transport system.

The main objective is to develop a concept for local inland water transport systems considering local demand and capacities that result in regular, affordable, safe, inclusive, viable and sustainable transport solutions to clusters of communities along inland waterways.

### Description and Output of the Outline Intervention:

The outline intervention will:

1. Assess demand for and supply of local IWT transport along the Volta Lake and river system, identify related issues, shortfalls, and bottlenecks (including regulatory), determine in particular the demand of women, children and people with disabilities and the roles and capacities of women in relation to IWT.
2. Propose a concept for local inland water transport systems for clusters of communities along inland waterways that allow operators to provide regular, scheduled, affordable, safe and inclusive transport of passengers and limited freight, such as agricultural produce, and merchandise carried by passengers to or from markets. The roles of women will be highlighted in the proposed concept.
3. Demonstrate viability and sustainability of the IWT concept which shall build upon existing capacities where these are available; ensure an adequate oversight function by relevant authorities; propose limited support to ensure financial viability in form of a reasonable upfront grant or in-kind contribution and address any related ownership matters if such contribution was to provide a vessel or equipment, so as not to give any operator or owner an unfair advantage. The proposed concept shall be a win-win solution for transport users and operators.
4. Demonstrate impact on poverty reduction and economic development for targeted communities and the wider region in general and improve stakeholders' understanding of the correlation and interaction between such IWT solutions, poverty and economic development.
5. Design a pilot project for a selected cluster of communities along the Volta River System with a high level of poverty to demonstrate the feasibility, viability, and effectiveness of the concept. Consider districts of the savannah region which has a high level of poverty and access to the Volta River system. Provide all required information to allow decision makers and donors to move forward and implement the pilot, including but not limited to demand and supply analysis, concept including operational details and schedules, cost calculation (CAPEX & OPEX), "green and clean" / carbon credit issues, environmental and social or HSE evaluations, economic and financial feasibility studies, etc. Explore options for private sector participation (PSP) and outline any promising opportunities. Suggest – based on examples from Ghana and elsewhere – adequate operational manuals, guidelines, and policies.
6. Design and provide training for boat owners and IWT operators especially working within the informal sector as well as related authorities on aspects of gender inclusion, health, and navigation safety, first aid, operational best practice, etc. Trainings shall be delivered in the pilot area as well as two economic hubs along the Volta River to ensure a wide reach.

### Draft Workplan:





No	Activity	Months								
		1	2	3	4	5	6	7	8	9
0.0	Inception & Mobilization									
1.0	Desk study of relevant research, documents, literature, publications, laws, acts, norms, project reports, etc.									
2.0	Consultation of relevant stakeholders in Accra and along Volta Lake and Volta River System.									
3.0	Field visits to Volta Lake and Volta River areas, focussing on the Savannah Region and other areas affected by poverty.									
4.0	Assessments and data collection in line with the requirements of the study.									
5.0	Concept development for local IWT Systems for clusters of communities along inland waterways.									
6.0	Concept validation through stakeholder engagement also in form of workshops, demonstrating impact, viability, and sustainability.									
7.0	Pilot project development for a selected cluster of communities along the Volta River System with a high level of poverty.									
8.0	Development of draft operational manuals, guidelines and policies.									
9.0	Training in two economic hubs along the Volta Lake/River System for boat owners and IWT operators and authorities on aspects of gender, inclusion, health and safety, first aid, operational best practise, etc.									
10.0	Dissemination of the research outcome.									
11.0	Reporting									

### C. North-South Transport (Multi-Modal): Study on Multi-modal North-South Freight Transport in Ghana via Volta Lake and Railway Line to Tema, and Comparison to Existing Road Transport.

#### Goal and Main Objective of the Outline Intervention:

The overall goal of the proposed study is to contribute to economic development, especially in the north of Ghana; to carbon reduction within the transport sector; and to improved road conditions and safety on the north-south highway corridors.

The main objective is to clarify the viability, cost, benefits, and opportunities for a multimodal transport link as well as the related risks and shortcomings of the existing road transport, and to provide decision makers from government and development partners a clear way forward as well as clarity for the freight industry and freight transport users on alternatives, benefits, shortfalls, risks and costs in the short and medium term.

#### Description and Output of the Outline Intervention:

The outline intervention will:

1. Study to understand the current and projected north-south freight demands in Ghana including freight to/from Burkina Faso and conduct a market assessment of cargoes and passengers which can be captured by IWT via Volta Lake and the new railway connection to Tema Port, based on – among other – a competitive logistics chain assessment.
2. Assess the economic, environmental and social impacts of the multi modal transport link from northern Ghana and the border with Burkina Faso via Lake Volta and the railway line to Tema, in comparison to the current freight transport via the road corridors and assess the potential contribution to carbon reduction of such a multimodal freight transport link. Include in the comparison the real economic cost of road-based freight transport, including the cost of road maintenance and hidden cost of overloading, informal payments (if any), whilst considering carbon credits.
3. Based on the above, provide recommendations which north-south (and south-north) cargo and goods (if any) could or should be forced off the road onto the barges (multi-modal) and how this could be achieved using different tools, interventions, mechanisms, such as law, policy, and subsidies.
4. Provide recommendations on how container transport in and through Ghana could be made more effective, attractive and efficient despite the gap between exports and imports, how this is best organised and supported by policy, subsidy and other interventions.





5. Provide a comparison for freight transport providers and users of the real cost of transporting selected cargo and goods from Northern Ghana and the border with Burkina Faso to markets and ports in Southern Ghana using different transport modes and based on different scenarios, including current options such as the services offered via VLTC and future options.
6. Provide recommendations to VLTC and other IWT- and railway-based freight service providers on measures to improve services gradually and attract higher demand. Explore options for successful private sector participation (PSP).
7. Assess the options for carbon financing with respect to improving and investing in multimodal freight transport in Ghana using IWT and railway transport and related measures to move freight off the road and provide recommendations to government, development partners and potential investors.
8. Conduct a comprehensive dissemination campaign and/or conduct (inter) national roadshows to enhance uptake of the research findings targeted to different groups including freight transport users, the freight industry, government and development partners.

#### Draft Workplan:

No	Activity	Months								
		1	2	3	4	5	6	7	8	9
0.0	Inception & Mobilization									
1.0	Desk study of relevant research, documents, literature, publications, laws, acts, norms, project reports, etc.									
2.0	Demand study and market assessment.									
3.0	Economic, environmental and social impacts assessments.									
4.0	Consultation of relevant stakeholders in Ghana and also Burkina Faso.									
5.0	Recommendations to government, development partners and freight industry in line with the study.									
6.0	Cost comparison and preparation of guidelines to freight transport users.									
7.0	Reporting									
8.0	Dissemination of the research outcome.									

#### **D. Climate Change, Gender and Inclusion: Study on how to Use Climate Financing and Leverage the Power of the Transport Unions to introduce Positive Change in the Informal Transport Sector in Ghana.**

##### Goal and Main Objective of the Outline Intervention:

The overall goal of the proposed study is to contribute to the economic development of Ghana; to carbon reduction within the transport sector; to improved, safer and more inclusive mass transport; and improved road safety.

The main objective is to identify and qualify potential for carbon emission reduction within the transport sector of Ghana, the potential for climate financing and potential improvements on gender and inclusion within the transport sector in Ghana.

##### Description and Output of the Outline Intervention:

The outline intervention will include:

1. A study of the potential for carbon emission reduction within the transport sector in Ghana including cost-benefit analysis identifying the most economically beneficial measures to achieve measurable impact. Consider the cost-benefit of carbon emissions. This study shall include the fleet renewal, the various options to achieve this, and implications of other aspects, including fuel quality and vehicle maintenance capacity.
2. A study of the ways in which climate financing can be leveraged to introduce positive change into the transport sector in Ghana including reduction of carbon emissions, but potentially other measures, such



as amended policies, regulations, guidelines, training, information campaigns, infrastructure, vehicles, or equipment.

3. A study on gender and inclusion within the transport sector in Ghana, the issues of women, children, and persons with disabilities (PWD), on women in transport and how the number of women and PWD employed in the formal and informal transport sector can be increased, and how their voices and needs can be heard and considered during planning, construction, and operation.
4. A study on how the influence and power of the unions dominating paratransit and freight transport can be leveraged and used to introduce positive change such as fleet renewal, emission reduction and improvement on gender and inclusion.
5. Workshops in three key economic hubs on two aspects each: (1) climate financing and carbon reduction in the transport sector in Ghana, and (2) gender and inclusion in the transport sector.
6. Training and capacity building for stakeholders, decision makers, drivers and operators especially working within the informal sector on aspects of gender, inclusion, health and safety, first aid, etc.

#### Draft Workplan:

No	Activity	Months							
		1	2	3	4	5	6	7	8
0.0	Inception & Mobilization								
1.0	Desk study of relevant research, documents, literature, publications, laws, acts, norms, project reports, etc.								
2.0	Stakeholders Consultations								
3.0	Workshops on climate financing & carbon reduction								
4.0	Workshops on gender & inclusion in the transport sector								
5.0	Reporting								
6.0	Dissemination of the research outcome, training and capacity building								

## **E. Inland Water Transport Routes: Charting of Volta Lake and Bathymetric Surveys along and Marking of its Main Transport Routes.**

### Goal and Main Objective of the Outline Intervention:

The overall goal of the proposed study is to contribute to economic development of Ghana; to carbon reduction within the transport sector; to improved and safer inland water transport on Volta Lake; and to an ecologically and environmentally sensitive and socially fair use of Volta Lake.

The main objective is to identify and map, areas of ecological and environmental interest, as well as different uses of Volta Lake, and to provide proper navigational maps.

A possible additional objective is to provide safe and marked main navigational transport routes.

### Description and Output of the Outline Intervention:

The outline intervention will:

1. Use satellite imaging, available literature, limited bathymetric surveys and comprehensive consultations of stakeholders along the Volta Lake to identify and broadly map areas with navigational constraints, ecologically and environmentally sensitive areas, as well as different uses of Volta Lake. The map will clearly identify all existing and promising navigation routes and classify them.
2. Highlight areas of overlapping use or interest and potential conflicts and provide recommendations to relevant decision makers with a balanced view of ecologic and environmental protection, poverty reduction and economic development of communities along the lake, transport demands and safety, and general economic interest.



3. Carry out bathymetric surveys meeting international hydrographic survey (IHS) standards along main transport routes of Volta Lake, highlight any areas of concerns such as shallows, rock outcrops, or other obstacles affecting safe navigation, and provide proper navigational maps.
4. Possibly include in the study the proper marking of main navigation channels at critical fairway locations to enhance navigational safety. Exploring and propose options for (1) Automatic Identification Systems (AIS) for vessels sailing on Volta Lake for shore-based traffic management, and (2) the use of Electronic Chart Display and Information Systems (ECDIS) to improve safety of navigation on the lake.

#### Draft Workplan:

No	Activity	Months											
		1	2	3	4	5	6	7	8	9	10	11	12
0.0	Inception & Mobilization												
1.0	Desk study of relevant research, documents, literature, publications, laws, acts, norms, project reports, etc.												
2.0	Consultations of stakeholders and communities along the lake.												
3.0	Acquisition, processing, digitalization of satellite imagery of Volta Lake, its outline and features and creation of maps showing its extent at different water levels, its main features, its different areas of usage (such as tourism, fisheries, navigation, industry, etc.) as well as potential and confirmed ecologically and environmentally sensitive areas and other areas of special interest. Clearly outline the navigation channels and classify these.												
4.0	Provide recommendations to relevant decision makers and stakeholders on areas of overlapping usage or interest as well as with respect to potential conflicts and conduct workshops in economic hubs along the lake to discuss these and obtain comments also on the outline map.												
5.0	Carry out Bathymetric Surveys along main transport routes of Volta Lake, highlight any areas of concerns or obstacles, include key obstacles in the above outline map and provide separate proper navigational maps.												
6.0	Reporting												
7.0	Dissemination of the research outcome, training and capacity building												
8.0	Possible addition: Mark the main navigation channels to enhance navigational safety.												

#### **F. North-South Transport (Road): Study on the Economic Cost of Truck Overloading, Axle Load Control and Options for Enforcement and Road Tolling of Freight Transport in Ghana.**

##### Goal and Main Objective of the Outline Intervention:

The overall goal of the proposed study is to contribute to the economic development of Ghana; to carbon reduction within the transport sector and to improved and safer highway infrastructure.

The main objective is to provide understanding and options required to address the problem of truck overloading on the main highway corridors and related road asset deterioration to ensure safe and sustainable highway infrastructure, and for adequately tolling road-based long distance freight transport along the highways in Ghana, so as not to give it an unfair advantage over IWT or railway-based long distance freight transport.

##### Description and Output of the Outline Intervention.

The outline intervention will:

1. Estimate the real economic costs to the people of Ghana of overloading of trucks per annum in terms of asset deterioration and maintenance / replacement costs and hence the effective “subsidy” the people of Ghana provide to the road-based long distance freight sector, both within and through Ghana, by providing highway infrastructure free of charge.
2. Study the effectiveness of axle load control and related issues, obstacles, and shortfalls. Explore alternative technological solutions and enforcement measures to ensure proper load compliance.
3. Investigate appropriate and alternative highway tolling schemes for long-distance freight transport that are fair, economically responsible and socially acceptable, and address the unfair advantage of the road-based freight transport over the railway and IWT by having the required infrastructure supplied to it



free of charge. This will include carbon costing and ways in which tolling can be used to introduce positive change, including fleet renewal in line with other measures (incentives).

#### Draft Workplan:

No	Activity	Months				
		1	2	3	4	5
0.0	Inception & Mobilization					
1.0	Desk study of relevant research, documents, literature, publications, laws, acts, norms, project reports, etc.					
2.0	Consultation of stakeholders in Ghana and also freight and trucking companies from neighbouring countries who use Ghanaian highways and ports.					
3.0	Preparation of outputs and workshops on axle load related asset damage and options for control and benefits and options for tolling to improve road conditions with key stakeholders in adequate locations in the south and north ensuring relevant participation.					
4.0	Reporting					
5.0	Dissemination of the research outcome, training and capacity building					

## 6. Conclusion, Next Steps and Dissemination

The overall objective of this Transport Scoping Study was to contribute to poverty reduction and improved connectivity and security within the transport sector of Ghana. It aimed to identify potential opportunities and key challenges to north-south multi-modal transport connectivity and research gaps, and to determine a prioritised research agenda that could facilitate the transition to low carbon, multi-modal long distance and urban transport.

The outputs of this scoping study are six outline interventions (refer to Section 5 above) proposed for funding and implementation, which were based on the recommendations by the relevant stakeholders consulted in this study. These outline interventions are related to rural transport and poverty reduction; multi-modal north-south transport connectivity; climate change, gender and inclusion in the transport sector; and north-south inland water and road transport. While rural transport was technically not a focus of this study, the findings clearly highlighted that the biggest scope for transport to contribute to poverty reduction lies in rural transport, and the related issues and recommendations were voted highly by stakeholders participating in the workshop.

For each proposed outline intervention, this scoping report provides the goal and objectives, a description of the suggested outputs and a draft workplan. The report, however, does not contain comprehensive terms of references or cost estimations that may be required to take a proposed intervention to procurement. The next steps in the process therefore include:

- Dissemination of the report among transport stakeholders in Ghana via HVT website, e-mail, and social media which is an ongoing process. The report is shared with the stakeholders who contributed to the scoping study in consultation or who participated in the workshop for further dissemination and discussion with their superiors, colleagues, and peers. This will ensure buy-in by relevant decision makers from government agencies and ministries. It will also generate support and interest by local organisations, business, and communities. Any further views and comments will guide the way forward with respect to funding and implementation of the outline interventions. Wide dissemination among all transport sector stakeholders in Ghana and beyond, development partners and funding agencies via the HVT website and social media.
- In depth discussions with specific transport sector stakeholders in Ghana, development partners and financing agencies with respect to the proposed outline interventions to identify the willingness and preparedness to take selected interventions forward and provide financing. While the need for such interventions was established during the scoping study, not all interventions may be aligned with the strategic plans and funding criteria of individual development partners and funding agencies. Such



alignment is required for identification of required funding and, therefore, some adjustments or clarifications may be needed.

- For interventions that receive sufficient interest for implementation and financing, more detailed terms of reference as well as a cost estimations are required. Amendments may be required to align cost with available budgets.
- Monitor and evaluate dissemination efforts: Regularly track the impact of the dissemination efforts using key metrics such as website traffic, downloads, engagements via e-mail or discussions, etc.

This report contributed to identifying the main issues that affect the transport sector in Ghana (as of September 2023) as well as key recommendations for further research, studies, information or data gathering to close related knowledge gaps. Based on this, it proposes a set of outline interventions for funding and implementation for which there is clearly a need. It is the authors' expectation that sufficient interest and funding will be identified to take some of these proposed interventions forward.



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## APPENDIX B: LITERATURE REVIEW

**Table 3: Selected Literature Reviewed During the Study**

No	Title of Document	Source	Publication Date
1	Inland Water Transport: Trade, Economic Development and Security	Triple Line	25/04/23
2	Consultancy Services for Preparation of a Medium-Term Master Plan for Transportation on The Volta Lake and its Surrounding Region- Draft Master Plan	MoT	28/11/14
3	Eastern Corridor Road Development Programme - Phase 1	AfDB	06/2019
4	Preparatory Survey on Eastern Corridor Development Project in The Republic of Ghana-Final Report	MRH	01/2013
5	Consultancy Service for The Review of Railway Master Plan (2013) Of Ghana	GRDA	02/2020
6	The Sustainable Integrated Development of the Volta Basin of Ghana in Ghana	UG	01/1999
7	Pre-Feasibility Study on An Inland Water Container Transport Service at Lake Volta, Ghana	TU Delft	05/07/17
8	Revised National Transport Policy	MoT	08/2020
9	National Transport Policy	MoT	12/2008
10	Transport Infrastructure Framework of the Ghana Infrastructure Plan (2018-2047)	NPDC	09/2017
11	Consulting Services for Study of Freight Transport in Greater Accra Metropolitan Area-Final Report	MoLGRD and NDPC	07/2021
12	Ghana Rising: Sustainable Infrastructure Post COVID-19 (Pipeline of Infrastructure Projects)	MoT	04/2021
13	Transport Infrastructure Sector Profile	GIPC	
14	Ghana Transport Sector Improvement Project: Project Appraisal Document	World Bank	15/05/17
15	Ghana Infrastructure Plan (2018-2047): V1-Infrastructure and Spatial Planning	NDPC	09/2019
16	Integrated Transport Plan for Ghana: V9- The Road Transport Sector in Ghana	MoFEP	07/2010
17	Integrated Transport Plan for Ghana: V11- Pre-feasibility study of the Boankra Dry Port	MoFEP	07/2010
18	Integrated Transport Plan for Ghana: V12- Pre-Feasibility Study on the Rehabilitation of the Eastern Railway and on Service Coordination Between the Eastern and the Western Lines	MoFEP	07/2010
19	National Medium-Term Development Policy Framework 2022-2025 [NMTDPF]: V1- Policy Framework	NDPC	12/2021
20	Long-term National Development Plan of Ghana (2018-2057)	NDPC	09/2017
21	Review of the Implementation Status of the Trans African Highways and the Missing Links: Volume 2 – Description of Corridors	AfDB	August 2003
22	Medium Term Expenditure Framework (MTEF) for 2021-2024	GRDA	2021
23	Inland Waterway Transportation (IWT) in Ghana: A case study of Volta Lake Transport	Solomon, Boadu. et al	2021
24	Transport Sector Review Report	MRH	2020



## APPENDIX C: LIST OF STAKEHOLDERS CONSULTED AND WORKSHOP PARTICIPATION

Table 4: Overview of Stakeholders Consulted (I = Interviewed; W = Participated in Workshop)

No	Type / Sector	Organisation	Name	Designation	Gender	I	W
1	Academia	Ghana Maritime University (GMU)	Dr Capt Nana Ofosu-Boateng	HOD Nautical Studies, GMU	M	X	
2	Academia	Kwame Nkrumah University of Science and Technology (KNUST)	Prof Clifford Amoako	HOD, Department of Planning, KNUST	M	X	
3	Academia	TRECK-KNUST	Prof Charles Anum Adams	Professor at KNUST	M		X
4	Academia & Civil Society / NGO	Univ. of Ghana / Ghana Federation of Disabled (GDF)	Dr Denis Njumo Atehnjia	Lecturer/Board Member (GDF)	M	X	X
5	Civil Society / NGO	Asdev Foundation	Dr. Shaibu Baanni Azumah	Dr. Shaibu Baanni Azumah	M	X	
6	Civil Society / NGO	C40 Cities	Josephine Agbeko	City Advisor; Inclusive Climate Action	F	X	
7	Civil Society / NGO	Cocoa360	Makinin Happy		F		X
8	Civil Society / NGO	Cocoa360	Moro Seidu	Country Director	M	X	X
9	Civil Society / NGO	Cocoa360	Eric Agyepomg		M		X
10	Civil Society / NGO	Compassion Int	Vida Opoku	M & E	F		X
11	Civil Society / NGO	CSO Platform on SDG	Levlyn K. Aseidu	National Coordinator	F		X
12	Civil Society / NGO	DIVA Farms	Abubakari Belawu	CEO	F		X
13	Civil Society / NGO	Fairtrade Africa	Jonathan Lanidune	Program Manager	M		X
14	Civil Society / NGO	Ghana Federation of Disabled (GFD)	Dr Godson Ahotor	Board member (GFD)	M	X	
15	Civil Society / NGO	Gobaith	Roland Ankamah Addo	Founder / CEO	M	X	X
16	Civil Society / NGO	Pure Earth	Blessing Enyonam	Project Officer	F		X
17	Civil Society / NGO	Pure Earth	Esmond Wisdom Quansah	Country Director	M	X	
18	Civil Society / NGO	Vision Spring	Felix Kissiedu-Addi	Country Manager	M		X



19	Development Partner	African Development Bank	Sheila Enyonam Akyea	Senior Transport (Infrastructure) Engineer	F	X	
20	Development Partner	British High Commission Ghana	Magdalena Johnsson	Infrastructure and Climate Finance Adviser	F		X
21	Development Partner	EU	Aguis Dubams	Programme Manager	F		X
22	Development Partner	JICA	Joshua B. Mabe	Snr Prog Specialist	M		X
23	Development Partner	JICA	Prince Bio	Programme Specialist	M		X
24	Development Partner	UNOPS Ghana	Linda AGBESI	Infrastructure Specialist, Accra Office	F	X	
25	Development Partner	World Bank	Negede Lewi	Sr. Highway Engineer, Washington	M	X	
26	Development Partner	World Bank Ghana	Haileyesus Adamtei	Senior Transport Specialist, Accra	M	X	
27	Government	Accra Metropolitan Assembly	Alex Johnson	Head of Department Dept of Transport	M		X
28	Government	Department of Feeder Roads (DFR)	Dr Patrick Amoah Bekoe	Development, planning and research, DFR	M	X	
29	Government	Department of Urban Roads (DUR)	Ing Ewuntomah Iliasu	Regional Maintenance Eng- Northern Region	M	X	
30	Government	Environmental Protection Agency	Julius C. Adamu	Principal Programme Officer	M		X
31	Government	Environmental Protection Agency (EPA)	Jewel Kudjawu	Ag. Director, Intersectoral Network Department	F	X	
32	Government	Ga Central Municipal Assembly	Baffour Awuah Darlington	Head of Department of Transport	M		X
33	Government	Ghana Highway Authority (GHA)	Ruth Afutu-Kotey	Transport Economist-Head Office	F	X	X
34	Government	Ghana Highway Authority (GHA)	Ing Seth Adjemang-Baah	Regional Director-Bono East	M	X	
35	Government	Ghana Highway Authority (GHA)	Ing Victor Tettey Annan	Regional Director-Northern Region	M	X	
36	Government	Ghana Highway Authority (GHA)	Ing Eric Odosu	Director of Planning-Head Office	M	X	
37	Government	Ghana Highways Authority	Lukman B Ibrahim	Snr Tech Eng.	M		X
38	Government	Ghana Ports and Harbour Authority	Nana Esi Quansah-Soderberg	Deputy Marketing and Corporate Affairs Manager	F	X	X
39	Government	Ghana Railway Development Authority (GRDA)	Al-amin Is-Hak Al-Hassan	Director Policy, Planning, Research, Monitoring and Evaluation	M	X	X



40	Government	Ghana Shippers Authority	Basil Bebs Sennor	Officer	M		X
41	Government	Local Government	Isaac Asante Baah	Assemblyman (Adowso)	M	X	
42	Government	Local Government	Harrison Ahorvorvi	Assemblyman (Kpando-Torkor)	M	X	
43	Government	Ministry of Transport (MoT)	Edward Agbodjan	Deputy Director Policy and Planning	M	X	
44	Government	Tema Metropolitan Assembly	Benjamin Bampoh	Metro Roads Engineer Dept of Urban Roads	M		X
45	Government	Water Resource Commission	Cynthia Agyiri	Monitoring Officer	F		X
46	Government	Water Resource Commission	Emerald Ampofo	Monitoring Officer	M		X
47	Government	Water Resources Commission (WRC)	Adwoa Afran	Senior monitoring Officer	F	X	
48	Government	Water Resources Commission (WRC)	Eric Muala	Principal monitoring Officer	M	X	
49	Government / Public Sector / Industry	VLTC	Captain Wilson Tay	Tech Manager	M		X
50	Private Sector / Industry	Boat Union Association- Ekyiamenfrom	Awuku Dzobo	Chairman	M	X	
51	Private Sector / Industry	Boat Union Association- Ekyiamenfrom	Godwin Dakpeson	Deputy Chairman	M	X	
52	Private Sector / Industry	Ghana Institute of Freight Forwarders (GIFF)	Mr Edward Akrong	President (GIFF)	M	X	
53	Private Sector / Industry	Ghana Private Lake Transport Union- Kpando Branch (GPLTU)	Mr Edward Tsifodze	Former Treasurer	M	X	
54	Private Sector / Industry	Ghana Private Lake Transport Union- Kpando Branch (GPLTU)	Kwashie Emmanuel Toku	General Secretary	M	X	
55	Private Sector / Industry	Ghana Private Road Transport Union of TUC	Mr Isaac Esau	Deputy General Secretary Admin	M	X	
56	Private Sector / Industry	Ghana Private Road Transport Union of TUC	Dr Jacob Cobina Odae	1st National Trustee	M	X	
57	Private Sector / Industry	GIBB West Africa	Shelter Lotsu	CEO	M	X	X
58	Private Sector / Industry	GIBB West Africa	Alfred S. Lotsu	Intern	M		X



59	Private Sector / Industry	GPRTU of TUC	Abbas Ibrahim Moro		M		X
60	Private Sector / Industry	Mayiya Invest and Consultancy	Dr Mariam R. Iddrisu	Consultant	F		X
61	Private Sector / Industry	Traders (Kpando-Torkor)	Bless Akadwuro	Fish Seller	F	X	
62	Private Sector / Industry	Traders (Kpando-Torkor)	Abaa Apekura	Fish Seller	F	X	
63	Private Sector / Industry	Vision Consult	Dr John B. Koranteng-Yorke	Managing Director	M	X	
64	Public Sector / Industry	Ghana Maritime Authority (GMA): Kpando-Torkor landing Beach	Mamudo	Chief Officer	M	X	
65	Public Sector / Industry	Ghana Shippers Authority (GSA)	Mr Kwasi Saforo	Senior Research, Monitoring & Evaluation Officer	M	X	
66	Public Sector / Industry	Volta Lake Transport Company Limited (VLTC)	Mrs. Rose Appiah Okyere	Managing Director	F	X	
67	Public Sector / Industry	Volta Lake Transport Company Limited (VLTC)	Ike Souzey	Port manager- Yeji /Makango	M	X	



## APPENDIX D: FIELD VISITS CONDUCTED

During the course of the study the team conducted several field visits to areas of interest to this study. These included:

- 17<sup>th</sup> to 18<sup>th</sup> June 2023: Part of the central corridor and visits to Lake Volta transport zones in the north: The N6 highway from Accra to Kumasi, disused Accra – Kumasi railway line along the route, Boankra Inland Port (under construction), the N10 highway from Kumasi to Tamale, Buipe Port @ Black Volta, Tamale – Salaga – Atebubu Roads to Old Makongo, Lake Volta Ferry Crossing from Old Makongo to Yeji, Salaga – Atebubu – Ejura – Kumasi Roads to Kumasi and back on the N6 highway to Accra.
- 20<sup>th</sup> June 2023: Part of the coastal corridor and Tema Port areas: the N1 highway from Accra to Tema and Tema Maritime Port and Accra – Tema as well as Tema- Akosombo Railway Lines.
- 22<sup>nd</sup> June 2023: Part of the coastal corridor and Lake Volta Transport zones in the south: the N1 and N2 highways from Accra to Akosombo, Tema- Akosombo Railway Line (close to completion), location of planned new port at Mpakadan close to Bisikrom along Volta Lake (end of railway line), current Port at Akosombo.
- 2<sup>nd</sup> August: Part of Central and Coastal Corridors and Takoradi Port Areas: the N8 Kumasi to Coast and the N1 highway to Takoradi, including western railway line project, Takoradi Maritime Port, Sekondi Fishing Harbour, the N1 highway Takoradi to Accra
- 3<sup>rd</sup> to 5<sup>th</sup> August: Part of the eastern corridor and Lake Volta areas: the N2 highway to Kpando, visiting of communities along the eastern side of Lake Volta, lake crossing Kpando – Agordeke, visiting of communities along the eastern side of Lake Volta, Ekyiamenfrom- Donkorkrom Rd and ferry crossing to Adowso, return to Kumasi.



Figure 1: Field Visits carried out during the study (@2023 Google Maps)





## APPENDIX E: WORKSHOP EVALUATION

Table 5: Participants' Evaluations

No of Evaluations Received to date:	20	63%	of 32 participants of which 11 were female (34%)
<u>Reaction</u>			
How would you rate the workshop in the following areas?			
1.1. Overall:	4.0	1 = Poor to 5 = Excellent	
1.2. Usefulness:	4.2	1 = Poor to 5 = Excellent	
1.3. Relevance:	4.3	1 = Poor to 5 = Excellent	
1.4. Conclusiveness:	3.5	1 = Poor to 5 = Excellent	
1.5. Methods:	3.6	1 = Poor to 5 = Excellent	
<u>Statements</u>			
Which of the following statements would you agree with?			
- The event has given me new knowledge in an issue I am interested in.			80%
- The event provided me with ways to increase my capacity /ability to do my work. *)			35%
- The event provided me with an opportunity to build and strengthen my network.			75%
*) Capacity development was not the aim of the workshop			



## APPENDIX F: DETAILS OF TRANSPORT SECTOR ISSUES

Excerpt from Chapter 4 of the Final Field Visit, Literature Review and Stakeholder Consultation Report

### Disclaimer

The below issues were identified during the initial phases of the study. They are presented grouped by transport mode or cross-cutting topics but are listed otherwise in no order of priority and had not been verified at that stage (i.e., pre-workshop). Some of the interpretations might be subjective and based on peoples' perspectives and may not be completely accurate. They also do not necessarily reflect the opinion of the authors, DT Global, or FCDO.

### Issues identified during the initial phases of the study:

**Table 6: Transport Related Issues, Challenges and Opportunities**

Issues	Poverty Reduction	North-South Divide	CC & CO2 Reduction	Gender & Inclusion	Affordability of Transport	Transport Safety	Rural Transport	Public (Urban) Transport	Freight Transport	Inland Water Transport (IWT)	Rail	Road
<b>4.1 Transport in General</b>												
4.1.1 Fragmented Institutional Landscape and Lack of Communication and Coordination						x						
4.1.2 Issues Related to Transport Regulation						x						
4.1.3 Lack of Funding to Implement Transport Sector Projects						x						
4.1.4 Poor Planning, Engineering, Selection and Procurement						x						
4.1.4 Poor Transport Interconnectivity						x						
4.1.5 Lack of Reliable Transport Demand Data						x						
4.1.6 Insufficient Consideration of Environmental and Climate Change Issues						x						
<b>4.2 Rural Transport and Poverty</b>												
4.2.1 Poor Feeder and Access Roads	x	x	x	x	x	x	x		x	x		x
4.2.2 Limited Access to Vehicles	x			x	x		x		x	x		x
4.2.3 Rural River Transport (local)	x		x	x	x	x	x		x	x		x
<b>4.3 Transport and Gender/Inclusion</b>												
4.3.1 The Needs of Women, Children and People with Disabilities are not Sufficiently Considered	x			x		x	x	x		x		x
<b>4.4 Public Transport and Freight Transport</b>												
4.4.1 Insufficient Consideration of Paratransit	x		x	x	x	x	x	x		x		x
4.4.2 Economics and Regulation of Road Transport Service Providers			x	x	x	x	x	x	x			x
4.4.3 Poor Regulation of the Informal Freight Sector		x	x		x	x			x	x		x



4.4.4 Inefficiency of Container Transport		x	x		x				x	x	x	x
<b>4.5 Inland Water Transport (Volta Lake)</b>												
4.5.1 Lack of Development of and (Political) Interest in Inland Water Transport	x	x	x		x	x	x		x	x		
4.5.2 Navigational Challenges and IWT Infrastructure Issues		x	x		x	x	x		x	x		
4.5.3 Irregular and Slow Services, Poor Connectivity and Utilization	x	x	x	x	x		x		x	x		
4.5.4 Regulatory and Coordination Deficiencies	x	x	x	x	x	x	x		x	x		
4.5.5 Maintenance, Safety and Compliance	x	x	x	x	x	x	x		x	x		
4.5.6 Data Limitations and Resource Constraints		x	x		x	x	x		x	x		
<b>4.6 Rail Transport</b>												
4.6.1 Institutional Challenges and Capacity Issues			x				x	x	x		x	
4.6.2 Neglected Infrastructure, Rolling Stock and Encroachment			x			x	x	x	x		x	
4.6.3 Financial and Investment Constraints		x	x				x	x	x		x	
4.6.4 Impact of Lack of Railway Development on Other Modes and Industries			x		x	x	x	x	x		x	
<b>4.7 Road Transport</b>												
4.7.1 Network Expansion and Maintenance Challenges	x	x			x	x	x					x
4.7.2 Execution, Contract Administration, and Logistics Challenges		x	x		x	x	x	x				x
4.7.3 Road condition and Overloading		x	x		x	x						x
4.7.4 Road and Traffic Safety				x		x	x	x	x			x

#### 4.1 Transport in General

Issues listed under this section are cross-cutting or general issues affecting all types or modes of transport.

##### 4.1.1 Fragmented Institutional Landscape and Lack of Communication and Coordination

Coordination and management challenges are prevalent within the transport sector, affecting the efficiency and effectiveness of projects (MRH, 2020). A lack of coordination between road agencies can result in redundant efforts, conflicting priorities or even initiatives, and inefficiencies. Effective communication and collaboration among different road agencies are essential for streamlining efforts, reducing duplication, and optimizing resource utilization (MRH, 2020).

The issue of a fragmented institutional landscape and the related inadequate coordination (inter-modal and even within single transport modes), was the main issue raised by stakeholders that affects the transport sector of Ghana. As shown earlier in this report, currently three ministries oversee the different transport modes, with – in addition – the Ministry of Energy having a stake in the transport sector too via the Volta Lake Transport Company (VLTC). Stakeholders consulted during this study claimed that these ministries, their departments and agencies work to various degrees in silos with insufficient communication and coordination among them. Priorities of distinct institutions naturally differ and, in some cases, interests even compete. The question often raised was: Who is leading coordination and who is responsible for intermodal (transport)? Although the transport sector working group platform was created to resolve this challenge by bringing all ministries, agencies, stakeholders and development partners in the transport sector together, to better communicate, plan, coordinate and take joint decisions, the full implementation of coordinated actions is still delayed.



The National Development and Planning Commission (NDPC), which now falls under the Ministry of Finance, is believed to lack jurisdiction over the other institutions. Stakeholders generally felt it should be given more power to ensure adequate coordination between the institutions and prevent deviations from agreed priorities and planning. NDPC should be able to ensure continuation of projects and priorities, including in the event of a change in government.

This situation leads to interface issues and stand-alone planning. While it was generally felt that the various masterplans prepared by different transport institutions do not quite contradict each other, stakeholders claimed that they remain to a great extent stand-alone documents lacking coordination. This contributes to inefficient implementation and poor modal interconnectivity.

It was also observed that stakeholders were not always sure who leads on an initiative, and who oversees an intervention or initiative which may affect several sectors such as urban transport in cities. For example, while most actors claimed that the Volta River Authority (VRA), under the Ministry of Energy, oversees Lake Volta, the Water Resource Commission (WRC) claimed that all inland water bodies, including Lake Volta, fall under their sole jurisdiction. They further explained that both VRA and VLTC should have applied for user licenses within 12 months of the gazetting of Act 522 that established the WRC, as did other actors that existed before the creation of the WRC.

Furthermore, it was observed that some information is not known by or not accessible to all stakeholders, which may affect their decision making, make implementation of initiatives less effective, and may in some cases even lead to duplication of efforts. There appears to be no central database of data, information, studies, research or planning for the transport sector in Ghana.

What became clear during the initial scoping exercise is that there is a dire need for more clarity with respect to roles and responsibilities, including for interfaces, a stronger lead in coordination and planning by NDPC with the power to enforce such policies, planning during implementation, and improved communication and coordination at all levels. The transport sector in Ghana must become more transparent and clearer to all stakeholders involved, at all levels. It is already recommended for the establishment of an inter-ministerial committee between the transport sector agencies and all land use related agencies (MRH, 2020).

#### **4.1.2 Issues Related to Transport Regulation**

Another general matter, communicated by various stakeholders, that affects the transport sector in general, is poor governance and lack of regulation. This may relate to missing aspects of the regulations, missing or insufficient implementation, or lack of enforcement. It is beyond the scope of this study to verify all claims and carry out a thorough review of the entire regulatory framework of the transport sector in Ghana, its gaps and state of implementation and enforcement, but the fact that stakeholders continuously mentioned this matter shows that there is an issue that requires attention.

The matter of transport regulation is to some extent a consequence of the fragmented institutional landscape and contributes to several other issues, including lack of implementation.

Specific regulatory matters listed included Inland Water Transport (especially IWT provided by private boat owners); vehicle registration, licensing and roadworthiness; regulation of unions; local government and policing; public transport including paratransit; private sector involvement also in operations; environmental aspects and emissions; disability and inclusion; ride hailing (albeit it was said that a regulation is under development); environmental matters including pollution and oil spill and right of way.

IWT in Ghana is underdeveloped and its potential not at all used. This is also reflected by the lack of IWT regulation, especially of transport provision on lakes or rivers by private boat owners, which was raised by multiple stakeholders. The safety issues and accidents on the lakes (albeit by no means comparable to the amount of road accidents) are largely blamed on such lack of regulation.



Many actors stated that there are gaps in, and inadequate enforcement of, the evaluation of roadworthiness. Some stakeholders claimed that it can or could in the past be obtained without having to physically take the vehicle in question to the DVLA office, but the general consensus is that this practice has now stopped, and the owners are indeed taking their vehicles for inspection. That said, all stakeholders agreed that emissions testing is currently not part of the roadworthiness testing. It is felt that for various reasons this would be beneficial, not only to reduce air pollution in urban areas and to decarbonize the transport sector, but also as a tool to remove old vehicles from the road. Stakeholders felt that Ghana has to some extent become a “dumping ground for old vehicles”.

Related to the matter of emissions is that of fuel quality. The two aspects need to be addressed hand-in-hand. More modern vehicles require higher fuel quality to run. In this respect it was mentioned that some imported fuel has high sulphur content.

Another aspect of regulation concerns the “powerful” transport unions currently dominating both freight transport as well as (urban) paratransit services. As a matter of fact, the transport offered via the transport unions is in many urban (and rural) areas often the only form of “public” transport available. See also sections on urban transport and freight in this respect.

Stakeholders also mentioned that aspects of transport regulation are often left to metropolitan and municipal assemblies who do not have the required capacity, funds, or power to enforce these matters.

Finally, the issue of encroachment into the right-of-way was highlighted, impacting both road and rail infrastructure. There are instances where establishments, particularly shops, have been established within the right-of-way, perilously close to the roadways. This situation directly contributes to traffic congestion, either by physically obstructing the flow or indirectly as vehicles halt to make purchases. Unfortunately, law enforcement agencies and government bodies often encounter challenges in addressing and enforcing regulations against these encroachments. The right of way issue for railway is even more critical as it was said that the right of way disappears when the rails are removed (or stolen) as is often the case. Consequently, new or rehabilitated rail lines often cannot follow the original right-of-way, compounding the challenges in the railway infrastructure landscape.

#### **4.1.3 Lack of Funding to Implement Transport Sector Projects**

An important observation made by stakeholders was the lack of implementation of transport sector initiatives and projects whatever the transport mode. Stakeholders stated that while there are numerous studies and (master)plans, implementation often fails for a variety of reasons. Furthermore, it was stated that often the projects that are implemented may not always be in line with the planning. However, the main reason given for lack of implementation of transport sector project is insufficient funding or budget.

Additional factors mentioned as contributing to poor or no implementation include fragmentation of the institutional landscape and poor coordination; weak institutional capacity; lack of communication; poor knowledge of or access to data, information, or studies; shortfalls in regulation; poor project preparation or engineering; in some cases, lack of support by stakeholders; conflicting interests; and finally political interference or politicisation.

A related issue – certainly on government funded projects – relates to cashflow as contractors frequently run out of cash before even 20% of the work is done. Delays in payment for the works carried out, result sometimes that contractors struggle or fail to implement the rest of the project. This results in contractual claims that tie up available funding, capacities, and resources.

Overcommitting budgets is a challenge faced by the sector (MRH, 2020; MRH and MoT, 2016). The accrued revenue into the Ghana Road Fund has been consistently lower than the expenditure for the same period (Obeng and Tuffour, 2020). The resultant effect is that projects may be initiated without sufficient financial support, leading to delays or incomplete developments (Obeng and Tuffour, 2020). This financial strain can hinder the progress of other necessary road projects and negatively impact the overall infrastructure



development. Additionally, inadequate revenue generation poses challenges, as it limits the financial resources available for essential road maintenance, upgrades, and new constructions. Insufficient funds may impede the development of new infrastructure required to accommodate the increasing demands of transport networks (Obeng and Tuffour, 2020; MRH, 2020).

With respect to road transport, maintenance activities are disproportionately affected by inadequate funding. Road tolling, the second largest contributor to the road fund revenue apart from the fuel levies, was temporarily stopped by a ministerial order due to: 1) excessive delays at the toll booths, 2) inadequate accruals from tolls due to lack of political will to adjust the rates which had devalued due to inflation, 3) projections that the accruals from the (momo) tax on digital transactions were going to earn sufficient revenues to cater for the amount which would be lost from non-imposition of the road tolls. Since most revenue accruals to the road fund come from the fuel tax, the shift towards lower use of fossil fuels could be detrimental to road fund revenue. A reintroduction of tolling might require a new policy and practise to improve the situation, at least with respect to road maintenance. It would certainly level the playing field with respect to other transport modes as the users are usually required to pay the full cost of infrastructure (or only slightly subsidized), while on the road transport side infrastructure is largely provided free of charge by the country. While stakeholders did not specifically object to the payment of road tolls, they raised concerns about delays resulting from the bottlenecks at tollbooths, impact on vehicles operating cost, fuel consumption, environmental pollution, and contribution to traffic congestion.

#### **4.1.4 Poor Planning, Engineering, Selection and Procurement**

Some reasons assigned by several stakeholders as contributing to the poor or lack of implementation is inadequate project preparation or inadequate engineering studies, resulting in poor “executable” designs or excessive variation or cost overruns during project implementation. This partly explains delays in project completion after implementation, excessive contractual claims, necessity for several design reviews to reduce cost, or cost overruns due to excessive variations.

Poorly prepared projects and non-transparent procurement practices including poor document preparation can lead to delays, cost overruns, and compromised project quality. Without proper planning and execution, the effectiveness and longevity of infrastructure will be compromised, leading to subpar results, dissatisfaction among users and loss of investment or higher road administration costs for maintenance or replacement.

Conflicting interests, political interference or politicisation can affect the selection of projects to be implemented under available funding, this could lead to inadequate execution, poor competition leading to corruption and in some cases project abandonment.

Currently transport planning in Ghana is public sector driven and often done at the ministerial level but not always fully disseminated to all stakeholders or agencies who are expected to execute the plans. It was also stated that the plans were often prepared with insufficient involvement by all stakeholders and hence may not be fully supported. There is an essential requirement to translate transport planning from policy to action, effectively operationalising strategic and master plans at the agency level for seamless implementation. Capacity development may be needed to improve this. Also, it was stated that decision making on investment is not always guided by the highest economic value, priorities, and plans, but there is often a political element to it. Stakeholders commented that initiatives such as the BRT projects in Accra as well as the Accra-Tema motorway rehabilitation PPP have suffered under political interference or politicisation.

#### **4.1.5 Poor Transport Interconnectivity**

Closely related to the issue of fragmented institutional landscape is the issue of poor interconnectivity between modes, services, forms of transport and also between corridors.

Within the road sector, interconnectivity issues were raised with respect to the east-west connections of the three major corridors and lack of ring roads, especially in the north.





Examples of poor modal interconnectivity, include the new railway link from Tema Port to Mpakadan, the location of a future port on Lake Volta. At the time of visiting the location in June 2023, the railway link had been substantially completed, while the construction of the related port facilities as well as of the road leading to the future port have not yet started. There were no clear indications who would build these facilities or when. Issues were also observed on the Tema side of the new railway link from Mpakadan, where between the current rail head and the cranes which load cargo onto the maritime vessels a gap exists that needs to be bridged by the use of trucks which requires reloading. Other modal interconnectivity issues include the connection of inland ports (planned or under construction) to the road or railway networks, connections of infrastructure initiatives to the feeder road system, or the integration of paratransit, which is the dominant mode of “public” transport, in the formal planning of transport initiatives.

Similar issues were also observed with respect to the envisaged multi-modal Trans-Volta Logistics Corridor from the border of Burkina Faso via road corridors to Lake Volta, then via IWT to the new railway link and down by railway to Tema Harbor. The different sections, modes and infrastructure facilities appear to be developed at different speeds with insufficient consideration given to joint financing, programme and coordinated timelines; interfaces and reloading issues; individual capacities of agencies involved as well as transport operators; environmental issues affecting the different modes; etc. As it stands each agency or mode appears to be left alone to finance, plan, implement and operate their own section independently of the others. That said, the Trans-Volta Logistics Project was awarded to LMI Holdings for development with the aim to transport containers and bulk cargo from the Port of Tema to Ouagadougou via Lake Volta. The Project included the construction of two new ports on the lake at Mpakadan (in the South) and Debre (in the North) and was expected to be delivered by 2023<sup>2</sup>. During the stakeholder consultation and field visits no stakeholder mentioned it and no activities were seen on ground. The authors reached out to LMI Holdings but were unsuccessful to establish contact.

The issue of stand-alone masterplans, mentioned already above, as well as the issues related to their effective operationalization and implementation, contribute to poor transport interconnectivity. It is often hard enough to effectively implement a high-level masterplan within the same sector, but a coordinated implementation of plans across agencies falling under different line ministries is even more difficult. Currently the National Transport Policy (MOT, 2020) is effectively the intermodal masterplan and falls under the Ministry of Transport. Then there are the modal masterplans such as railway and within the road sector there are even several individual masterplans for highways, urban and feeder roads, but not an overall one for the road sector. Cities also have their individual masterplans which have transport components.

When planning public transport, such as Bus Rapid Transit (BRT) services or railway passenger services, the link to the paratransit may not always be sufficiently considered or mistrusted. It is understood that unions dominating the paratransit were initially considered to be part of the Accra BRT, but the relationship was not fully completed during implemented or became sour (for whatever reasons beyond the scope of this study).

#### **4.1.6 Lack of Reliable Transport Demand Data**

The availability and accessibility of traffic demand data, inventories, and historic travel data for transport planning in Ghana is problematic. While some stakeholders claim sufficient study and understanding of transport needs, others point to a lack of comprehensive updated traffic and inventory data as resulting from non-functional automatic counters, discontinued traffic databases since 2011 and lack of investment in capacity and equipment attributed largely to funding issues.

The absence of integrated traffic management system further complicates the data collection and analysis process. The accessibility of data may also be a challenge, limiting effective decision-making and planning.

#### **4.1.7 Insufficient Consideration of Environmental and Climate Change Issues**

<sup>2</sup> <https://lmi-ghana.com/transVolta/>



Environmental and climate change concerns are usually not given high priority and are often sidelined or not given attention for compliance, especially in government funded transport infrastructure projects. Contrary to this, compliance for environmental and social risk management, including climate resilience, is high for development partner financed projects, mainly because fund disbursements are linked to such compliance. Political interference sometimes leads to inadequate/poor project packaging in government-funded projects, affecting their quality and long-term viability.

Road and railway construction often have negative impacts on communities and/or the environment, such as loss of livelihood, resettlement, emissions, destruction of forests, noise, and disruption and severance of wildlife habitats. On the Tema-Mpakadan railway project, concerns were cited with respect to wildlife crossing. There may be a need for a biodiversity study along transport corridors.

Additionally, roadworthy tests of vehicles do not adequately address emissions, and there are concerns about high sulphur content above permissible levels in imported petroleum products.

## **4.2 Rural Transport and Poverty**

### **4.2.1 Poor Feeder and Access Roads**

The feeder road system is poor in most rural areas of Ghana. In the northern regions, the roads are mainly unpaved, however due to poor design or execution and/or lack of effective routine and periodic maintenance, road conditions are generally poor and often not passable during rainy season. For the purpose of this report minor bridges, culverts and drainage channels are included in “feeder roads”. The main reasons for the poor feeder road system is – of course – lack of funds as well as weak political will. Political interference in decisions on where to invest the limited funds available for feeder road rehabilitation was stated as an issue by many stakeholders. Feeder roads, and feeder road maintenance, are not considered prestigious projects compared to the construction or rehabilitation of major highways or railways. The lack of poor or “executable” designs has also been raised by various stakeholders, including development partners. This results in projects being delayed or even halted as redesign is costly or not feasible or results in construction costs that exceed the available budgets. Poor quality of construction and materials used is equally a contributor to poor (feeder) roads. Finally, road maintenance faces funding challenges, especially given the distress of the Ghana Road Fund, this is especially problematic for unpaved feeder roads which depend on annual routine maintenance, such as grading and spot improvements, as well as maintenance of drainage and river/water crossings. Available funds and equipment are said to be insufficient. Some stakeholders claimed that in the past some district assemblies had access to equipment for routine grading and shaping of the rural roads, but that this intervention through equipment or plant pooling was stopped.

Many stakeholders consulted highlighted the poor feeder road system as being one of the main contributors to rural poverty and lack of rural development. Poor feeder roads contribute to loss of fishery or agricultural produce as well as unnecessarily inflated food prices at markets due to seasonal inaccessibility (especially during the harvest which coincides with the rainy season), high vehicle operating costs, and refusal of many transport providers to access these poor roads (unless paid exorbitant prices). The post-harvest loss in Ghana is significant and amounts according to (IFPRI, 2018) to about 13% for cereals, around 20% to 25% for roots and oilseeds and up to 40% for fruits and vegetables such as tomato and mango. The same study also specifically mentions poor road conditions as a reason for such losses.

Poor feeder roads also result in reduced access to other means of transport such as IWT, as well as reduced access to social infrastructure, education, training and opportunities. In addition, they result in frequent accidents, injury and loss of life. Finally, poor feeder roads result in higher CO<sub>2</sub> emissions produced by the vehicles using them, as well as limiting the number of vehicles using them altogether.

Most farmers in rural Ghana depend on traders and middlemen to buy from their farms or villages. Very few have alternatives such as their own or shared transport. For perishable goods (such as vegetables and fruits) they depend on traders coming to their farm gates. Because of the poor feeder roads there may very few traders travelling to those areas, hence the farmers often have no negotiating power but completely depend on the



trader or middlemen dictating the price. They either accept or let the goods perish except for the amount they keep for their own consumption.

For goods that can be stored (such as yam, groundnuts, shea nuts, peas, beans and cereals) the issue is slightly different. Apart from the lack of adequate storage facilities, there appears to be an issue of transport between the farms and the villages where the goods are stored. Poor feeder roads (as well as lack of access to vehicles) result in some loss of produce (as outlined above) or, as a minimum, contribute to an increased price. While during the dry season transport may be easier, even on bad feeder roads, there is still limited competition among traders and middlemen and some areas may still only see one of them coming to their village, therefore enjoying some kind of monopoly. Hence, while slightly better than for perishable goods, their negotiating power is still fairly low. Poor adult education contributes to this as does the fact that with lots of produce in storage, competition between farmers is high.

Safety issues on feeder roads relate predominately to poor road conditions, due to poor road maintenance and seasonal accessibility of roads, poor state of vehicles, conduct or skills of drivers due to lack of enforcement of traffic rules or even licensing. Access by emergency services is limited for the same reasons as outlined above.

#### **4.2.2 Limited Access to Vehicles**

As mentioned above, limited access to vehicles is considered a much smaller contributor to the rural transport issues than the poor feeder road conditions. Still, it was highlighted by several stakeholders. Vehicles here may refer to any form of machine that transports people or cargo including bicycles, motorbikes, tricycles, cars, transporters, trucks, boats, canoes, etc. Stakeholders stated that around 20% of farmers have access to private or shared motorized vehicles to transport their produce. Where vehicles are shared, these are predominately between family members, but in some cases NGOs have set up cooperatives and provided vehicles for shared use by the members. However, such initiatives are punctual and in general cooperatives which share facilities, vehicles and other equipment do not seem to be widely established in Ghana. As such, most farmers or farming communities depend on traders and middlemen to come to their farms or communities with adequate transport to buy their produce. This affects their negotiating power and the price they can get as outlined in Section 4.2.1 above.

Where river transport is possible, “boats are only for those who have the means” (statement by a stakeholder from a local NGO) and private boat operators charge high fees (see also below).

Finally, vehicle operation, maintenance and repair costs are issues, as fuel is expensive (especially premix – see also below), wear and tear are significant, damage is frequent and spare parts are expensive, largely because of poor accessibility.

#### **4.2.3 Rural River Transport (local)**

Local transport on inland waterways is only limited to communities in the vicinity of the main rivers in Ghana or the Volta Lake. Most rural communities in Ghana do not have direct access to inland waterways. This section does not deal with the question of using inland water transport as an alternative to roads (or rail) for long distance transport of goods to large population centres or seaports, but merely deals with accessibility to local markets or social services by water or the prevention of such access by water.

While river transport is considered by many as an alternative to functioning feeder roads in areas in proximity to rivers or lakes, there are several factors that seem to prevent it from being widely used or effective. These include:

- Limited supply, especially by public operators
- High prices by private operators
- Poor availability and/or quality and high cost of premixed fuel
- Lack of adequate vessels (boats, barges)
- Lack of jetties or adequate landing sites suitable all year round
- Lack of access to landing sites



- Lack of regulation
- Lack of navigation facilities, both on rivers/lakes but also on boats
- Poor integration with other transport modes
- Lack of training of operators
- Lack of safety equipment on boats including life vests
- Lack of emergency boats that could come to rescue (the authors are not aware of any such vehicles available on the inland waterways in Ghana)

Most Inland Water Transport (IWT), especially across rivers far from the major transport routes, is provided by private operators organized in unions and regulated by GMA. Public operators such as the VLTC operate only few selected ferry services on major transport routes. These are generally subsidized, but elsewhere IWT is relatively expensive and only accessible to those who can afford it. Along Volta Lake, where communities were displaced when the lake was created, communities found themselves largely cut off and dependent upon subsidized IWT provided by the VLTC. This has stopped in cases where vessels either required repair or were reallocated due to different priorities.

A major issue is that IWT infrastructure is underdeveloped since many jetties or landing sites cannot be used all year long or are otherwise inadequate. At Kpando-Torkor and Agordeke for example, the jetty is not accessible any longer and instead the ferry lands on the beach with no concrete slab to facilitate loading. For private boats such beach landings are common. As a result, loading becomes difficult, and people often have to wade through water. Also, many such sites cannot be used during high water levels as access roads are poor, or they may become inaccessible during rainy season.

While canoes are widely used for fishing, they are rarely suitable for transporting goods and people across rivers due to lack of space, equipment and adequate safety measures. Boats with outboard motors, proper equipment and safety measures are costly. They are made of special timber which is difficult and costly to get in some rural areas due to the government bans on chainsaw operations in these regions. They then depend on timber from sawmills that does not always meet the requirements for boat construction. There have been suggestions to change to boats made from fibre, but boat operators were concerned about the safety and durability of the fibre boats in the event of a collision with a tree stump (a significant risk in some areas of Lake Volta). Prices of outboard motors are also very high.

Traders mostly travel with goods such as agricultural produce, fish or livestock, but also equipment and spare parts. Many private boats carry mixed traffic and are often not ideal for loading or even carrying some cargo, especially when they are not able to berth at a suitable jetty. Most boats also have no canopy to protect the passengers and goods from the elements. Finally, they have generally no navigation equipment or lights so that operators depend on touch lights when sailing at night or no service is provided at all when there is low visibility.

Another issue affecting the availability and affordability of rural IWT is the availability, quality and cost of premixed fuel. Often boats cannot cater for demand due to unavailability of fuel. This means that in some cases traders cannot travel to the market or fishermen are not able to pursue their livelihood. A shortage of premixed fuel increases the cost of travel and hence the produce, both agricultural and fish. Poor quality of premixed fuel negatively affects the engines of the outboard motors which can cause accidents on the lake, especially during bad weather. Electric ferries are not used in Ghana.

Because of the above the availability of suitable IWT is in many areas limited and fees are high. In some areas there simply does not seem to be any adequate service on offer as the stories of children swimming to schools (see above) illustrate.

Safety issues in the IWT relate predominately to the fact that waterways are not chartered and navigation routes not always adequately marked, lack of navigation equipment on boats or the waterways, lack of suitable communication equipment on board, tree trunks or rocks under the water surface, inadequate training of operators, overloading of the boats or canoes, lack of or inadequate life vests, and lack of secondary engines or emergency vessels that could come to rescue.



The lack of life vests was raised by multiple stakeholders including communities, private and public boat operators, authorities, and others. In many cases, organisations, or companies such as Zoomlion and authorities such as GMA have provided life vests to private operators, but it is estimated that the supply caters for less than 15% of the demand. Training has also been provided for boat operators by actors such as the GMA, VRA and the Navy but is still patchy.

Women mostly constitute most victims/casualties in cases of accidents.

### **4.3 Transport and Gender/Inclusion**

#### **4.3.1 The Needs of Women, Children and People with Disabilities are not Sufficiently Considered**

Many stakeholders pointed out during the consultation that most market buyers and traders are women, who need to feel safe and secure, and the transport sector needs to deliver value for them. However, their particular needs are not generally considered in planning or design of transport or its operation. The same is true for children and people with disabilities. Rural transport appears to still be very much a male-centred affair.

Women work in agricultural production but have less rights than their male counterparts, especially in the north, where stakeholders advised they are often excluded from land or even vehicle ownership. They are less fortunate than their male counterparts also with respect to education. One stakeholder from civil society advised that families with less economic means generally send their sons to higher education if they can afford to. It was pointed out that there are few opportunities for women in the transport sector and that these, predominately employment opportunities, should be created.

In conclusion, women are much less mobile, especially in the rural areas, than their male counterparts and hence less able to contribute to economic development, participate in social and cultural exchange and access services including health and education as well as employment opportunities, including in transport.

With respect to children, the issue that received most attention (also in national media) was that in some areas children have to swim through rivers to get to school. Stakeholders mentioned this to the authors, and it appears to be supported by some publications and videos on the internet<sup>3</sup>. While these may be isolated cases, such stories clearly make headlines and highlight the overall accessibility issues, especially in rural Ghana. On the other hand, stakeholders outline that the literacy rate of children in Ghana is (contrary to adults) quite high, including in rural areas. However, this does not translate to access to employment opportunities and economic development which is very unevenly distributed in Ghana and is a main reason for growing urbanisation.

School access (or the lack of it) appears to be less a problem to children in rural Ghana than hunger.

It is understood from the stakeholder consultation that no special attention is given to people with disabilities (PWD) in paratransit and private transport which serve most passenger transport needs. Only the state owned intercity STC allows some PWDs to board for free. By government policy, Intercity STC Coaches Limited gives a boarding pass to PWDs and their guides, if they have them. It is understood that no privileges are given to PWDs even in state-owned IWT.

### **4.4 Public Transport and Freight Transport**

#### **4.4.1 Insufficient Consideration of Paratransit**

There is a lack of formal public transport in Ghana, limited to a single railway service operational between Tema Harbour and Accra and a few more formal intercity bus services. Instead, there is a large informal sector of paratransit which covers the entire country. This paratransit is largely road-based and covers urban but also rural and intercity services. Via the private boat operators there is an element of paratransit also on IWT.

<sup>3</sup> [Children of Agorde swim across two rivers to get to school \(ghanaweb.com\)](http://ghanaweb.com)

[PHOTOS: Children swim to school daily in Tapa Abotoase of Volta region - Adomonline.com](http://adomonline.com)

[Torgodo school children swim to school when it rains; no bridge to cross river | GhHeadlines Total News Total Information](http://GhHeadlines.com)





Paratransit is dominated by powerful unions such as the Ghana Private Road Transport Union (GPRTU) that is by far the largest union, accounting for 60% of all transport demand as outlined further above. GPRTU was established in 1935 and hence predates independence. It controls about 90-95% of private road transport operators and claims to have the ability to control its members (to the good and to the bad). It has in the past demonstrated that it can stage effective industrial action in response to undesirable changes to government legislation and other decisions it or its members may not agree with.

The paratransit provided by the unions were described by one stakeholder as “organised chaos, causing pollution and congestion, but providing essential and in many areas the only transport services available.” The paratransit is semi-structured with unions matching supply with demand; allocating passengers to individual vehicles; selling tickets and collecting fares; negotiating fares with the respective authorities and fuel pricing with suppliers; keeping a register of vehicles and where they are allowed to run; removing vehicles that are too old from services; etc. The government has also been supporting them in some cases with the procurement of vehicles on hire purchase to get old vehicles off the road.

Unions are extremely powerful and have the possibility to push or influence agenda and bring entire projects to a halt. They have more power to enforce change than authorities can achieve, if they can be convinced to do so. While this could be an opportunity, this situation appears to also have created some level of distrust and suspicion, between the authorities and the unions.

It was said that the legislative instrument (LI) required that all drivers must belong to a union, but the unions stated that there is competition for passengers from other vehicles operating outside the various unions. These operators, which have no station where passengers are allocated to vehicles, are considered by the unions to be a major cause of road traffic accidents. Also, while unions say they collect passenger information at the stations/terminals in case of an emergency, drivers not linked to any union/station do not do that. So, there is a growing sector of paratransit that is completely unregulated and beyond even the reach of the unions, let alone the authorities.

Where transport links are interrupted by rivers or the Volta Lake, ferries or boats provide the connection, but these are less organized than the road-based paratransit and cater for mixed traffic. On the private side, unions control transport providers such as the Ghana Private Lake Transport Union (GPLTU), who assigns routes and passengers similarly to how road-based paratransit is organised. However, there is no apparent coordination of services between providers belonging to GPRTU and GPLTU to facilitate more efficient connections.

#### **4.4.2 Economics and Regulation of Road Transport Service Providers**

The road transport sector faces challenges in finance and economic terms. The sector is characterized by insufficient funding from public sources for construction, maintenance, and management of various modes of transport (Ministry of Roads and Highway, 2020). This problem stems from multiple factors. Firstly, there is often an overcommitment to road projects, with budgets exceeding the approved limits (Ministry of Roads and Highway, 2020), which strain available resources and lead to funding shortfalls for other essential transport needs. There is also an overreliance on public funds, making the sector vulnerable to budget constraints and fluctuations in government revenue. To bridge this funding gap, the government of Ghana has developed a legal framework for public-private partnership as a means of road financing (Public Private Partnership Act, 2020 Act 1039, 2020). The government is currently partnering with the private sector for infrastructure development as an alternative means of providing infrastructure for national development. A number of PPP projects are being pursued and are at various stages of preparation or implementation, such as the Accra-Takoradi dualization, Accra-Tema Motorway, Accra-Kumasi dualization and Boankra inland port project (Ministry of Roads and Highway, 2020).

Another significant issue is the prevalence of many small informal road transport service providers renting vehicles and lacking sufficient understanding in the provision of professional road transport services. This is attributed to a regulatory framework that does not recognize road transport as a profession, unlike other transport modes like railways and aviation.





Only a small percentage (estimated to be around 5%) of industrial carriers demonstrate a proper understanding of the business, possess relevant experience in managing and providing transport services, have the necessary expertise and professionals to run the business, and show a thorough understanding of health and safety concerns with a proven safety record.

Many owner-drivers and firms operate under unreasonable transport patterns, offering services at very low rates. Additionally, a lack of understanding of effective pricing strategies to collect freight through efficient operating techniques hampers the sector's health and adversely impacts the Ghanaian economy as a whole. Addressing these issues and implementing a more supportive regulatory framework can help improve the financial sustainability and efficiency of the road transport sector.

Some of the unions criticized the regime of taxes (fuel and otherwise) stating that some have outlived their usefulness but create high costs which suppress many potential trips. It was suggested that the government could convert some of the taxes and use them for road maintenance.

#### **4.4.3 Poor Regulation of the Informal Freight Sector**

With respect to the trucking industry in Ghana, the issue is quite similar to the paratransit for passenger transport, albeit there is not the same dominance of a single union or association as for passenger services. Cargo Transport unions and Ghana Haulage Transport Owners Association are the main actors. Similarly to the paratransit, it is semi-organized, and vehicles are old, in poor condition and high polluters. That said, some stakeholders claimed that they do not understand the trucking industry. Truck ownership is high, and the lorries contribute significantly to road pavement deterioration and road accidents.

The Ghana Institute of Freight Forwarders (GIFF) who has an agreement with its counterparts from neighbouring countries for a 60/40 share of cargo between Ghanaian freight forwarders and those from neighbouring countries, states that its drivers are often beaten when operating in neighbouring countries.

The Ghana Highways Authority clearly prefers these trucks off its roads as the cost to the road administration in terms of annual maintenance and deterioration is high due to the issue of axle overloading. How much the cost related to this issue is and with how much money the people of Ghana effectively subsidize the road-based haulage of goods (also through Ghana) by providing roads free of charge is unknown, but – as mentioned above – it is estimated to be in the billions.

As mentioned earlier, stakeholders from the trucking industry expressed concerns about the prospect of enforcing axle load limits as they fear this will take business away from Ghana to other countries but did not object to charging road tolls. Frustration was also vented with respect to multiple police/immigration checkpoints along the road corridors which often cause undue delays and create additional cost making transport less efficient and competitive<sup>4</sup>.

Freight on inland water transport is underdeveloped, mistrusted, inefficient and slow. With respect to localised or cross river/lake transport by boats these take mixed traffic and vessels are generally both suitable for some cargo or loading. VLTC has the capacity to take freight (other than via ferries), but this is less and less used as traders do not know of the service, or are afraid of the unknown transfer cost, or deem it too slow and too unreliable. Road is the “known evil”.

#### **4.4.4 Inefficiency of Container Transport**

One area that stakeholders observed across the different modes relates to container transport. There appears to be scope for review and improvement. While some stakeholders claimed that it simply does not work for Ghana and neighbouring countries because of the large imbalance between import (largely northbound) and export (largely southbound), meaning that containers would go back empty, other observed that one can

<sup>4</sup> Statement by stakeholder consulted working in the Ghana's maritime industry.



perfectly transport bulk goods from northern to southern Ghana using containers. The availability of equipment and logistics of doing so however needs to be studied.

There were also concerns about security clearance away from the maritime ports and the risk of smuggling within containers, especially if customs clearance was done in the future away from the maritime ports. Currently customs clearance is only done at the maritime ports.

Containers would however make reloading a lot easier and hence multi-modal transport of cargo a lot easier. Currently there are plans to bring the new railway line into the container port (Terminal 3) at the Tema Harbour (albeit some stakeholders stated that this interface remains unresolved as the private operator cannot engage with other agencies other than the GPHA, which needs to be clarified).

On the Volta Lake side, of course, the railway line is almost completed but the port at Mpakadan still not started. Some stakeholders already warn that the railway line to Mpakadan could become a “white elephant” if no action is being taken quickly with respect to the port. It is envisaged that this will include a container terminal as is planned for the ports at Debre (currently only a makeshift port) and Bupe. Container facilities and container handling equipment needed to load / unload barges is rather expensive and only feasible in case the container volumes are there. In the absence of such large cargo volumes, Roll-on / Roll-off (RoRo) might be preferred. This would still be a good strategy to take the trucks off the roads, reduce pavement deterioration, improve road safety and reduce substantially the Green House Gas (GHG) emissions from trucks.

It is unclear whether container transport using a multi-modal link from the boarder with Burkina Faso / northern Ghana via Lake Volta to Tema Harbour has been adequately studied to date, including its feasibility. While the Trans Volta Project suggests that it has, the fact that nothing has happened since its inauguration suggests otherwise.

#### **4.5 Inland Water Transport (Volta Lake)**

As with many statements from other sections, below contains views and observations communicated by stakeholders to the authors. Where possible these were cross checked with literature and during field visits, but statements still reflect only the views of the stakeholders and not necessarily the views or the authors or DT Global and have no claim to be fully correct or investigated. The purpose of this documents is also to flag these (perceived) issues for discussion and possibly clarification.

##### **4.5.1 Lack of Development of and (Political) Interest in Inland Water Transport**

In general, the transport system in Ghana suffers from inefficiencies, particularly in inland water transport. The lack of development and coordination of inland water transport with other modes, such as poor road and railway connections, exacerbates the problem.

Ferry services on the lake prioritize routes that align with road transport requirements, such as primary and secondary roads crossing the lake. This was demonstrated when a vessel used for passenger transport between Akosombo and Yeji (the Yapei Queen) was relocated to Dambai in the Oti Region to replace a broken cross lake ferry (the Senchi ferry), resulting in the suspension of the north-south service connecting communities.

The development of inland water transport has faced challenges due to low political interest in the past, leading to insufficient infrastructure and investment in the sector. Despite the success and importance of the north-south and cross lake transport for communities, there remains a need for increased attention and support to fully utilize the lake's potential for transport and other purposes beyond power generation.

##### **4.5.2 Navigational Challenges and IWT Infrastructure Issues**

The navigation and navigational safety challenges on Volta Lake in Ghana are significant and multifaceted. The lake remains uncharted due to high costs, with no bathymetric survey conducted to determine water depths and map different usage areas like fishing and navigation. The absence of a navigation system further adds to the challenges.



Navigation on the lake relies on the experience of skippers and some navigation instruments on vessels. The tops of some tree trunks in the river are painted for easy spotting and reference to aid navigation. Additionally, fishing nets of fishermen from the communities along the Volta River obstruct barges, necessitating slowdowns or delays until the nets are removed. Sediments and shoals, particularly between Debre and Buiepe, pose hazards to navigation and limit navigation between this section of the Volta River during dry season, and require substantial investment, approximately USD 10 million, for removal.

Tree stumps in the lake present a major navigational safety issue and have caused accidents. The removal of these stumps has begun through the services of Kete-Krachie Timber Recovery Limited, but there is uncertainty regarding the selection of trees for removal, whether it is based on ease of access and financial benefit or on navigational or safety considerations. This removal has sparked conflict between the fishing communities and the company removing stumps. The community fear the removal may negatively impact fish stocks. Such claims and other impacts of the potential development of Volta Lake including IWT remain to be investigated.

The Volta Lake and other inland waterways in Ghana are essential assets for the nation's transport system, facilitating the movement of goods and people across regions. However, these waterways encounter several obstacles that hinder their smooth operations and potential for growth. One of the primary challenges is the occurrence of annual periodic drops in the water level of Volta Lake. These fluctuations create navigational difficulties, limiting the longitudinal movement of vessels and exposing shoals, particularly in areas like Debre (Ministry of Transport, 2020). Consequently, certain critical destinations, such as Buiepe, become challenging to reach, impacting trade and connectivity. Compounding the issue is the lack of adequate infrastructure and poor investment in the inland water transport sector (Boadu et al., 2021). Insufficient funds directed towards enhancing the waterways' facilities, such as landing facilities and navigational infrastructure, hamper the efficiency of the system. Inadequate maintenance of existing facilities further exacerbates the problem, leading to degradation and reduced operational capabilities.

The absence of proper navigational aids compounds the challenges faced by boats and barges navigating the waterways (NDPC, 2017; 2019). The lack of modern and accurate charts, especially of the navigation routes, navigational markers, and other aids poses risks to safe navigation, especially during adverse weather conditions or periods of low water levels. Without reliable guidance systems, vessels are susceptible to accidents and delays, further hindering the smooth flow of transport along the waterways. The ferries have navigation gears, eco sounders, GPS etc. In case of the local boats, it was observed that boats rather have “heard men” or “out-lookers” who sit on the bow to guide the operators of the outboard motors from the rear of the boat. Navigation as such depends largely on visibility gear, such as telescopes and lights, on the vessel to detect tree stumps or guide the vessel during landing (on a beach or otherwise). Furthermore, it is understood that there are no emergency vessels. While there are police and navy stationed along waterways, especially Volta Lake, these do not have boats themselves.

Furthermore, the inland water transport sector suffers from a lack of comprehensive regulations and coordination between national and subregional institutions (Boadu et al., 2021). The absence of stringent rules and harmonized policies creates an environment of uncertainty, making it difficult for investors and operators to make long-term commitments. This regulatory deficiency contributes to the under-utilization of the waterways' potential and inhibits the sector's growth.

Addressing these challenges requires strategic planning and concerted efforts by relevant authorities and stakeholders. Investing in the development and maintenance of the inland water transport infrastructure, including modern navigational aids, can significantly improve the efficiency and safety of operations. Enhancing coordination between national and subregional institutions can create a unified and coherent approach to address the sector's challenges and exploit its potential.

Additionally, promoting private sector participation and attracting investments can provide much-needed resources to upgrade the inland water transport system. By fostering partnerships between public and private entities, the sector can tap into innovative technologies and expertise, leading to improved facilities and



operational standards. Moreover, incorporating sustainable practices into the management of the inland waterways can contribute to environmental conservation and long-term viability. Proper regulation of vessel construction, loading controls, and adherence to safety standards can enhance the sector's safety record and reputation, attracting more users and investors. Overall, by recognizing and actively addressing the obstacles faced by the Volta Lake and other inland waterways, Ghana can unlock the full potential of its inland water transport system. With a focus on modernization, regulatory improvements, and sustainable practices, the nation can foster a robust and thriving inland water transport sector that contributes to economic development, regional connectivity, and environmental preservation.

#### **4.5.3 Irregular and Slow Services, Poor Connectivity and Utilization**

According to the Transport Sector Review Report, one of the primary reasons for the under-utilization of the Volta Lake waterway is the lack of maintenance and aging vessels which have resulted in frequent breakdown of the company's vessels affecting operation, inappropriate materials handling equipment leading to delay in loading and offloading cargo at the Akosombo and the Buipe Ports, as well as the lack of Hydrographic charts of the lake and the presence of tree stumps, which pose navigational hazards (MRH and MoT, 2016). Additionally, the lack of proper linkages with the road network hinders seamless connectivity, and intermodal transport is one of the identified challenges hampering the effectiveness of the waterway. Efficient transport systems often rely on well-coordinated connections between different modes, such as inland waterways, roads, and railways. The absence of smooth intermodal transitions between these transport networks results in inefficiencies, longer transit times, and increased transport costs.

The north-south services via barges are (perceived to be) irregular, unscheduled, unreliable, and slow, with inadequate advertisement and bad publicity from smaller boat operators. Transporters have to wait until vessel or barges have sufficient cargo or are full before departure. The lack of a logistics chain, unclear cost-effectiveness of door-to-door services, and fears of reloading risks and charges further discourage traders. Additionally, the limited intermodal connections and unknown costs in the intermodal supply chain add to the complexity, and the use of old vessels and engines results in frequent breakdowns due to inadequate maintenance. However, efforts have been made to improve the situation, with new engines funded by the World Bank through MRH, five new ferries from Korea, and two others new barges, indicating some progress in upgrading and modernizing the fleet. These and other challenges deter traders from using the barges, resulting in the barges returning empty to Akosombo from Buipe.

However, an opportunity exists to create a scheduled north-south cargo service based on an agreement with major cement producers such as Ghacem, Dangote cement, Diamond Cement etc. and distributors. It was said that Dangote cement is considering starting its own inland water transport (IWT) services instead of using VLTC's services.

For ferry users, waiting until the vessel arrives before tickets are sold and loading is organized creates inefficiencies and delays. Furthermore, ferry services are not cost-effective, and their fees do not cover real costs, necessitating subsidies from the Ministry of Transport (MoT), Ministry of Roads and Highways (MRH), and the Volta River Authority (VRA). To improve the situation, pre-selling tickets and better organizing loading and offloading, introducing weight bridges for accurate fees, and addressing the underlying cost-effectiveness of the services could enhance efficiency and user experience.

Additionally, the pipelines of Bulk Oil Storage and Transport (BOST) connecting the Tema-Akosombo and Buipe-Bolgatanga Depots for the transmission of fuel from their Primary Depot in Tema to Akosombo and via River Barges on the Volta Lake to Buipe and the North are no longer in use. Diesel, the only petroleum product transported by the barges from Akosombo to Buipe, is transported on road from the depots in Tema to Akosombo. Petrol is transported on road nationwide, further exacerbating the transport challenges in the country.

Despite these challenges, there is significant potential for improvement in Ghana's inland water transport sector. By addressing key areas of concern, the country can capitalize on the numerous benefits that waterways



offer as a cost-effective, environmentally friendly, and reliable mode of transport. To enhance the utilization of the Volta Lake waterway, a multi-pronged approach is required. Firstly, investing in the expansion and modernization of the watercraft fleet is essential to increase transport capacity and efficiency. Encouraging private sector participation in vessel ownership and operation through supportive policies and incentives can attract much-needed investment and expertise into the sector. Furthermore, improving linkages between the inland waterways and the road network is crucial for creating an integrated and seamless transport system. Developing well-planned intermodal hubs and loading/unloading facilities that facilitate the smooth transfer of goods and passengers between different modes of transport can optimize logistics and minimize transit times.

#### **4.5.4 Regulatory and Coordination Deficiencies**

The efficient functioning of Ghana's inland water transport system is impeded by challenges stemming from a lack of stringent rules and coordination between national and subregional institutions as well as the absence of comprehensive regulations governing the inland water transport sector (Boadu et al., 2021). The lack of clear and enforceable rules creates an environment of uncertainty for operators, investors, and stakeholders. Without proper guidelines on safety standards, vessel requirements, operational protocols, and environmental protection, the sector operates with limited accountability and oversight. This regulatory gap not only hinders the growth of the industry but also raises concerns about safety and environmental sustainability (NDPC, 2017; 2019). Coordination between national and subregional institutions is also essential for effective management and optimization of inland waterways. The sector involves multiple stakeholders, including government bodies, transport agencies, private operators, and local communities. The lack of coherent coordination among these entities can lead to conflicting policies, duplication of efforts, and inefficient resource allocation. As a result, the full potential of the waterways remains underutilized, hindering the development of trade routes, tourism, and other economic opportunities. Furthermore, the absence of harmonized regulations and coordination creates challenges for cross-border transport. Inland waterways often connect regions within Ghana and neighbouring countries, serving as vital corridors for regional trade. Inadequate coordination between national authorities and subregional bodies can create barriers to seamless cross-border navigation, leading to delays, administrative complexities, and increased costs for both businesses and consumers.

To address these regulatory and coordination challenges, there is a need for a collaborative approach involving all relevant stakeholders. Establishing a comprehensive legal framework with clear guidelines and safety standards will enhance the sector's transparency and accountability. This will provide operators with a conducive business environment, attracting more investment and fostering sustainable growth. At the same time, enhanced coordination mechanisms between national and subregional institutions are essential. Establishing a platform for regular communication and collaboration can facilitate the sharing of best practices, resources, and expertise. It can also enable joint initiatives to address common challenges and promote the integration of inland water transport within regional trade networks. To bridge the regulatory gap, the government may consider working closely with industry experts, academia, and international organizations to develop comprehensive policies and regulations. By learning from successful models in other countries and adapting them to Ghana's unique context, the nation can create a robust and efficient inland water transport system. Public awareness and engagement are equally vital in this endeavour. Involving local communities and stakeholders in the decision-making process can foster a sense of ownership and responsibility for the sustainable development of the waterways. This participatory approach can lead to better outcomes and ensure that the interests of all stakeholders are considered.

#### **4.5.5 Maintenance, Safety and Compliance**

The state of disrepair of existing facilities for inland water transport poses significant challenges to the efficiency and safety of operations. Over time, these facilities have experienced wear and tear, making maintenance and rehabilitation efforts imperative for ensuring the continued functioning of the inland water transport system. Deteriorating landing facilities do not only hinder the smooth loading and unloading of cargo but also pose risks to the passenger and crew. During adverse conditions, for instance, rotted wood, broken structures, and unstable platforms can lead to accidents during boarding and disembarking, especially when water levels are





fluctuating. Maintenance and rehabilitation efforts are essential to address these issues and restore the facilities to their optimal conditions. To ensure that landing facilities remain safe, reliable and efficient for both passenger and cargo operations, regular inspections, timely repairs, and adherence to safety standards are crucial. In addition to infrastructure concerns, safety issues related to non-compliance with safety regulations, poor boat design, and incompetent handling further compound the challenges faced by the inland water transport sector (NDPC, 2017; Boadu et al., 2021). Non-compliance to safety regulations of boats and vessels operating on the waterway also put passengers and crew at risk and may increase the rate of accident on the waterway (Kwame, 2008). Vessel's manoeuvrability, stability and overall safety is largely affected by its design. Poorly designed boats can be prone to capsizing or accidents, especially in adverse weather conditions or turbulent waters.

A multi-faceted approach is required in addressing these safety concerns. To ensure that all vessels comply with the necessary standards and requirements, rigorous enforcement of safety regulations is essential. Regular inspections and certification of boats can help identify and rectify safety deficiencies, reducing the risk of accidents. Secondly, investing in training programs for boat operators and crew is crucial for improving competency and promoting safe practices on the waterways. Properly trained personnel can handle vessels more efficiently and respond effectively to emergency situations, minimizing the likelihood of accidents and enhancing overall safety. Furthermore, promoting the adoption of modern and safer boat designs can significantly improve the sector's safety record. Collaborating with boat manufacturers and naval architects to develop vessels with better stability and safety features can make a substantial difference in reducing accidents and incidents. Public awareness campaigns on safety practices and guidelines can also play a role in fostering a safety-conscious culture among passengers and operators. Educating travellers about safety procedures, emergency protocols, and responsible behaviour on board can contribute to a safer inland water travel experience. Overall, through proactive maintenance, adherence to safety regulations, and investment in training and modern boat designs, the nation can enhance the efficiency and safety of its waterways, promoting economic growth and ensuring the well-being of those utilizing this essential mode of transport.

#### **4.5.6 Data Limitations and Resource Constraints**

One of the primary obstacles faced by the Ghana Maritime Authority, which plays a crucial role of regulating and managing the IWT sector, is the lack of adequate data on waterway conditions, lack of hydrographic charts, lack of bathymetric data and transport demand (MRH and MoT, 2016). Without comprehensive and up-to-date information on the prevailing situation of the Volta Lake and other inland waterways, the Authority struggles to make informed decisions and develop evidence-based policies. This data deficiency hampers the authority's ability to assess the current state of the waterways, identify potential risks, and plan for future improvements.

Accurate data collection on navigation conditions, water levels, traffic patterns, and cargo volumes is therefore vital for optimizing the use of the waterways. This could go a long way in identifying areas for infrastructure development and ensuring the safety of vessels and passengers. Trip Line (2023) has also emphasized on the lack of comprehensive flood hazard or flood frequency maps for the Volta Lake. These data gaps not only heighten the potential exposure to risk but also amplify vulnerability if risk management strategies are not firmly rooted in dependable evidence.

Additionally, the Ghana Maritime Authority faces resource shortages and limited regulatory challenges, lack of patrol boats to enforce maritime safety measures at sea and on the Volta Lake, lack of landing facilities at major landing sites on the Volta Lake (MRH and MoT, 2016). Insufficient financial and human resources hinder the authority's ability to conduct regular inspections, enforce safety standards, and effectively oversee the operations of inland water transport operators. The lack of adequate resources affects the authority's ability to respond promptly to emerging issues, address safety concerns, and carry out essential maintenance and rehabilitation projects. Moreover, limited regulatory capacity can result in delays in processing permits and licenses, hampering business operations and hindering investments in the sector. Insufficient personnel and technical expertise within the authority may also lead to challenges in conducting thorough assessments of operator compliance, accident investigations, and providing timely support to stakeholders.





To overcome these challenges, the Ghana Maritime Authority can adopt various strategies. First and foremost, securing adequate funding and resources is crucial for enhancing the authority's capabilities. Increased budget allocations can enable the recruitment and training of skilled personnel, the establishment of a comprehensive data collection system, and the acquisition of modern technology for effective regulatory oversight. Collaboration with other government agencies, academic institutions, and international partners can also prove beneficial in addressing data deficiencies and enhancing regulatory capacity. Establishing partnerships can facilitate knowledge exchange, capacity building, and access to expertise, enabling the authority to tap into valuable resources and best practices from around the world. Furthermore, leveraging technology for data collection, analysis, and decision-making can significantly improve the authority's regulatory effectiveness. Implementing remote sensing technologies, data analytics, and predictive modelling can help gather real-time information on waterway conditions, traffic, and potential risks, empowering the authority to take proactive measures and make informed regulatory decisions. Overall, by investing in data collection, securing adequate resources, and enhancing regulatory capacity through collaboration and technological advancements, the authority can enhance its oversight capabilities and foster the sustainable growth of inland navigation in Ghana.

There is a strong case to develop the Volta Lake into a major transport arterial by building a functional inland port and facilities, secure modern ferries, water buses and cargo vessels, however budgetary constraint is a major limitation to realising the objective. A strong collaboration with the private sector for private financing or private sector involvement in the sector may be necessary. Currently, the VLTC is the only major player in the North-South cargo transport on the Volta Lake.

## **4.6 Rail Transport**

### **4.6.1 Institutional Challenges and Capacity Issues**

The current institutional and regulatory framework governing the railway industry in Ghana presents several challenges that need to be addressed to ensure effective and efficient operations. The Ghana Railways Development Authority (GRDA) is responsible for promoting and developing the railway sector, while the day-to-day operations, both freight and passenger movements, fall under the purview of the Ghana Railway Company Limited (GRCL). However, the GRCL faces significant issues, such as obsolete equipment and rolling stock, and aged staff. At the end of 2021 GRCL's staff strength was about 1,122. Out of this number, a total of 706 members of staff (about 67%) were aged between 51-60 years and 252 (about 25%) of the staff strength of the company were aged between 41-50 years (MoRD, 2022). The operations of GRCL have been declining in recent times due to poor tracks, obsolete equipment and rolling stock. Passenger rail services are limited to sections of the Eastern Line between Accra and Tema, at the time of the site visit in August 2023, the passenger rail services on the Western Line from Takoradi through Kojokrom to Sekondi had been suspended (MoRD, 2022). To address these challenges, there is a pressing need to secure funding for the acquisition of new rolling stock and embark on a recruitment drive to replace the old workforce and recruit key staff to augment its workforce.

### **4.6.2 Neglected Infrastructure, Rolling Stock and Encroachment**

Decades of neglect and underfunding have taken a toll on Ghana's railway network, leaving it in a state of disarray (MoFEP, 2010) until redevelopment efforts started over the last decade. The once robust and efficient railway system has suffered from a lack of investment and attention, resulting in severe infrastructure deterioration. Track conditions have reached a critical point, with sections becoming unusable due to neglect and inadequate maintenance.

Moreover, the signal and communication systems, critical components for ensuring the safe and efficient operation of trains, are outdated and malfunctioning. One of the consequences of the neglected railway infrastructure is encroachment along idle railway lines. With tracks left unused for extended periods, informal settlements and encroachments have sprung up, making it difficult to reclaim the land for railway use and leading to land use disputes.



Adding to the woes, the rolling stock, comprising locomotives and railway cars, has suffered from inadequate maintenance and a lack of operational use. As a result, much of the rolling stock remains idle and in poor condition, rendering it unfit for service. The inactivity of these assets not only represents a substantial financial loss but also limits the capacity of the railways to meet transport demands.

#### **4.6.3 Financial and Investment Constraints**

Revitalizing the railway industry in Ghana requires substantial financial investments, which pose significant challenges due to budgetary constraints. To attract private sector participation, the Government of Ghana is seeking private financing through Public-Private Partnerships (PPP), on Build, Operate and Transfer (BOT) basis. (NDPC, 2019; MoRD, 2022). Currently the construction of the Boankra inland port is on-going under a PPP arrangement on BOT basis. However, the success of such ventures hinges on demonstrating the economic and financial viability of railway projects. Historically, the issue of concessionary arrangements has been a roadblock due to the Ghana Railway Company acting as both a player and referee. Overcoming this challenge necessitates establishing an impartial and transparent regulatory framework that fosters trust and confidence among potential private investors.

#### **4.6.4 Impact of Lack of Railway Development on Other Modes and Industries**

The dilapidated state of the railway system has had far-reaching consequences for Ghana's overall transport system and the industries it serves. The suppression of mining activity, primarily reliant on efficient railway transport, has led to economic losses and increased pressure on the road network. As a result, the road system's rapid deterioration accelerated, straining the country's infrastructure and increasing maintenance costs. The lack of a competitive railway system has contributed to higher transport costs and limited options for shippers and passengers. Furthermore, the railways' inability to adapt to market demands has hampered the development of the hinterland, hindering economic growth and access to remote regions.

### **4.7 Road Transport**

#### **4.7.1 Network Expansion and Maintenance Challenges**

The road transport sector encounters several critical challenges related to network expansion and maintenance (NDPC, 2019). Unplanned network expansion is a major obstacle, leading to inefficient resource utilization and difficulties in managing the growing road infrastructure. This lack of systematic planning results in inadequate road connectivity and potential traffic bottlenecks, causing disruptions in the flow of goods and people. Furthermore, inconsistent maintenance investment prioritization poses a significant concern, as it can lead to the neglect of essential road segments. This neglect, in turn, accelerates the deterioration of roads and increases the cost of repairs in the long run.

Road maintenance is affected by several factors, many of them discussed elsewhere: lack of funding; poor planning and engineering; selection and procurement issues; etc.

When it comes to funding, it is especially maintenance activities that are affected. Road maintenance is not considered prestigious compared to the construction or rehabilitation of major highways or railways. As mentioned above, road tolling was meant to contribute to the road fund to finance road maintenance activities, but this was temporarily stopped. Most funding within the road fund comes from the fuel tax. A changed tolling policy and practise may improve the situation, at least with respect to road maintenance.

#### **4.7.2 Execution, Contract Administration, and Logistics Challenges**

The effective execution of road projects is often hindered by various challenges in contract administration and logistics (Ministry of Roads and Highway, 2020). Contract administration challenges, such as ineffective management and a lack of oversight, can lead to disputes, delays, and subpar project outcomes. Discrepancies and misunderstandings between parties involved in contracts can hamper the smooth progress of construction works and may lead to costly legal disputes.



Delays in work execution represent a significant issue faced by the road transport sector. Bottlenecks in construction schedules can delay project completion, causing inconvenience to road users and escalating project costs. Untimely completion of road projects can also disrupt traffic flow and cause economic losses to businesses and communities.

Effective supervision is crucial during construction to ensure quality workmanship and adherence to project specifications. Inadequate human resources to meet the demand of the road sector is a critical issue. Government approval for additional staffing requests has been a bottleneck, but some progress has been made (Ministry of Roads and Highway, 2020). This contributes to inadequate supervision which can result in substandard work, compromising the safety and durability of road infrastructure. Moreover, logistics constraints pose challenges in transporting construction materials and equipment to project sites. These difficulties can lead to project delays and increase operational costs, further straining project budgets and timelines.

Ineffective management and supervision of construction works can lead to cost overruns, delays, and compromised project quality. Project management practices play a crucial role in ensuring projects are executed on time, within budget, and according to specifications. Inadequate management can lead to avoidable mistakes and costly rework.

#### **4.7.3 Road condition and Overloading**

Road conditions in Ghana are varied; during the field visits to the main corridors the authors of this report have evidenced sections of very good condition, sections of very poor condition and everything in between. Road maintenance is underfinanced, under-resourced and not considered to be (politically) attractive when it comes to presenting planning or initiatives to the public. Road condition is said to be better in the south than in the north of the country and better on the main corridors than on link and feeder roads. Secondary roads are said to be less well designed and receiving less maintenance. This and the issue of interconnectivity of road corridors, especially in the north, has begun to draw attention. Link and feeder roads in the north are now high priority for the Government of Ghana. Adequate feeder roads are essential for poverty reduction, with poverty being greatest in the far north-west of the country. One stakeholder stated in relation to the disparity between trunk and feeder roads that “we create an opportunity for people from poorer regions in the north to run away before investing into the infrastructure and economic development into the north.”

Although the Ghana Highways Authority has mounted axle weighing bridges along the major highways to clamp down overloading, vehicle overloading, and poorly maintained vehicles remains a major problem and significant contributor to the poor state of the major highways due to inadequate enforcement of axle load limits.

Overloaded vehicles can cause premature damage to road infrastructure, leading to increased maintenance costs. Effective axle load control is crucial for preserving road integrity and prolonging the lifespan of roads, thus reducing the burden on maintenance budgets. The authors have observed extremely heavily loaded trucks along the main corridors, including trucks coming from the neighbouring countries. Stakeholders stated that they are well aware of the problem, have weight bridges but are unable to enforce the axle load limits. With respect to weight bridges, it was said that trucking companies prefer to pay fines than unload and the “human factor” was mentioned by several stakeholders as being an issue with respect to enforcement. I.e., overloaded lorries are permitted to continue their journey after paying a “fine”. Stakeholders agreed that while lorries coming from the ports are being weighted at port exit, that they reload soon after entering the road network to limit journeys.

The economic cost to the people of Ghana as a result of overloading and the related road damage is unknown but estimated to be in the billions of Ghanaian Cedis. Stakeholders called for automated axle weigh control built into the roads. Overloading, especially of old trucks, are also a cause for accidents and the authors have observed many wrecks of trucks along the corridors travelled. Some key stakeholders on the freight side



expressed concern about the prospect of enforcing axle load limits as they fear this will take business away from Ghana to other countries<sup>5</sup>. They however did not object to charging road tolls.

#### **4.7.4 Road and Traffic Safety**

Linked to the matter of road condition and overloading is road safety, albeit this is a much wider issue. Road safety in Ghana has been a significant concern, with a high number of road accidents and fatalities reported annually. The poor road infrastructure (observed by the authors) in many parts of the country leads to hazardous road conditions, making accidents more likely. Potholes, inadequate signage, and poorly designed roads increase the risks faced by drivers and pedestrians.

Roads are also not well marked or not marked at all, which leads to accidents, especially at night. The authors also observed that speed limits are being ignored and there appears to be an issue with respect to enforcement of these. Non-compliance with traffic regulations and irresponsible driving behaviours are common issues in Ghana. Over-speeding, reckless driving, and failure to adhere to traffic rules create unsafe road environments and contribute to accidents.

The age of many vehicles on the Ghanaian roads and insufficient maintenance makes vehicles more prone to mechanical failures and road traffic crashes.

Furthermore, speeding and inadequate pedestrian safety facilities, including the lack of proper pedestrian crossings and sidewalks, put vulnerable road users at risk; until recently, pedestrian topped the chart of road traffic casualties in Ghana.

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<sup>5</sup> Statement by stakeholder consulted working in the Ghana's maritime industry.



## APPENDIX G: DETAILS OF RECOMMENDATIONS

Excerpt from Chapter 5 of the Final Field Visit, Literature Review and Stakeholder Consultation Report

### Disclaimer

The below recommendations were gathered during the initial phases of the study. There are presented grouped by transport mode or cross-cutting topic but are listed otherwise in no order of priority and had not been qualified or quantified at that stage (i.e., pre workshop). Some of the interpretations might be subjective and based on peoples' perspectives and may not be completely accurate. They also do not necessarily reflect the opinion of the authors, DT Global, or FCDO.

**Recommendations gathered during the initial phases of the study:**

**Table 7: Recommendations for further studies, data or information collection**

Recommendations		Poverty Reduction	North-South Divide	CC & CO2 Reduction	Gender & Inclusion	Affordability of Transport	Transport Safety	Rural Transport	Public (Urban) Transport	Freight Transport	Inland Water Transport (IWT)	Rail	Road
<b>5.1 General &amp; Poverty Reduction</b>													
R1.	Study on coordination and communication between different transport ministries and agencies in Ghana.	x											
R2.	Study on how climate financing can be leveraged to introduce positive change into the transport sector in Ghana while reducing its carbon emissions.	x											
R3.	Study on how improved transport services or infrastructure can reduce poverty and increase production and the impact of and lessons learnt from previous initiatives.	x	x					x	x	x	x	x	x
R4.	Study on the cost of the agricultural and fisheries supply chains for selected regions of Ghana such as the Upper West and Savannah Regions and how much transport or transport related issues contribute to such cost.	x	x			x				x	x	x	x
R5.	Training for drivers and operators especially working within the informal sector (both road and IWT) on aspects of gender, inclusion, health and safety, first aid, etc.				x		x	x	x	x	x	x	x
R6.	Study on women in transport in Ghana, how the share of women employed in				x			x	x	x	x	x	x



	the formal and informal transport sector can be increased, and how their voices and needs can be made more heard and considered during planning, construction and operation.												
R7.	Study on establishing potential service provision centres in rural Ghana which can rent out to members vehicles and equipment and provide other services including shared transport to its members and even basic feeder road repair and maintenance.	x				x		x		x	x		x
<b>5.2 Public Transport &amp; Freight Transport</b>													
R8.	Study on how the influence and power of the unions dominating paratransit and freight transport can be leveraged and used to introduce positive change such as fleet renewal, emission reduction, and improvement on gender and inclusion.			x	x	x	x	x	x	x	x	x	x
R9.	Comparison of the real cost of transporting selected cargo and goods from Northern Ghana and the border with Burkina Faso to markets and ports in Southern Ghana using different transport modes and based on different scenarios.	x	x	x		x				x	x	x	x
R10.	Study on which north-south (and south-north) cargo and goods (if any) could or should be forced off the road onto the barges (multi-modal) and how this could be achieved using different tools, interventions, mechanisms, such as law, policy and subsidies.		x	x			x			x	x	x	x
R11.	Study on how container transport across Ghana could be made more effective, attractive and efficient despite the gap between exports and imports, how this is best organised and supported by policy, subsidy and other interventions.		x	x		x				x	x	x	x
<b>5.3 Inland Water Transport</b>													
R12.	Conduct a detailed market assessment of cargoes / PAX which can be captured by IWT via Volta Lake based on - amongst others, a competitive logistics chain assessment.		x	x		x				x	x		
R13.	Conduct detailed hydrological studies of the Volta Lake and River System and	x					x	x	x	x	x		





	develop with stakeholders suggested zoning of the lake and river system.												
R14.	Chart and carry out bathymetric surveys of the main IWT navigation routes and propose and provide updated cost estimates for minimal navigation installations along these routes and removal of physical obstacles affecting safe and efficient all-year navigation.						x	x	x	x	x		
R15.	Research into establishing mini IWT systems connecting several communities in close vicinity and design and propose options for pilot projects in three agricultural/fishing areas in rural Ghana, particularly in districts of the Savannah Region which has a high level of poverty and access to the Volta River System.	x			x	x	x	x	x	x	x		
R16.	Establish a comprehensive data collection system for navigation and safety-related information.						x	x	x	x	x		
R17.	Assess the current and future passenger transportation demands on the inland waterways, utilization rates, bottlenecks, and how different type of vessels could bring improvement. Develop strategies for enhancing usage and connectivity.		x		x	x	x	x	x	x	x		
R18.	Review the Trans-Volta logistics corridor project, its planning, costing, cost/benefit, risks and obstacles, and determine required parallel measures. The aim should be to re-evaluate existing studies holistically and highlight the obstacles, update costing and cost/benefits and provide a phased plan forward with the aim to make swift use of the existing IWT on Volta Lake as well as the completed new railway line to Mpakadan.		x	x						x	x	x	x
R19.	Undertake comparative studies with other countries that have successful inland water transportation systems. Analyse their regulatory frameworks, safety standards, infrastructure development strategies, and private sector participation models to draw insights and best practices applicable to Ghana's context.	x	x	x			x	x	x	x	x		
R20.	Conduct comprehensive assessments of the economic and environmental	x	x	x		x		x	x	x	x		



	impacts of inland water transportation. Analyse the cost-benefit ratio, job creation potential, and carbon footprint reduction achieved through increased utilization of waterways and potential for carbon financing.											
R21.	Evaluate the existing policies, standards and regulations governing inland water transport in Ghana. Identify gaps, inconsistencies, and areas for improvement to develop a more comprehensive and coherent regulatory framework.	x	x	x	x		x	x	x	x	x	
R22.	Assess the training and capacity-building needs of boat operators, crew members, and regulatory authorities to enhance safety practices, knowledge of gender and inclusion issues and best practises, technical skills, and operational efficiency.				x		x	x	x	x	x	x
<b>5.4 Rail Transport</b>												
R23.	Study to understand the current and projected freight and passenger demands in various regions of Ghana.							x	x	x		x
R24.	Conduct surveys and studies to understand public perceptions and awareness of railway transport in Ghana.							x	x	x		x
R25.	Establish a monitoring and evaluation framework to assess the progress and impact of railway development projects, including aspects such as poverty reduction, improved north-south transport, carbon reduction, environmental considerations, transport safety and gender and inclusion.	x	x	x	x		x	x	x	x		x
R26.	Undertake comparative studies with countries that have successfully revitalized their railway systems after facing similar challenges. Identify best practices, lessons learned, and strategies for implementation in Ghana's context.	x	x	x	x		x	x	x	x		x
<b>5.5 Road Transport</b>												
R27.	Study on how carbon emission reduction within the transport sector in Ghana can be achieved by fleet renewal and identify and examine different tools to achieve this. Look at the implications			x			x	x	x	x		x



	on other sides if fleet renewal is achieved, including fuel quality and vehicle maintenance capacity.												
R28.	Determine the real economic costs to the people of Ghana of overloading of trucks per annum in terms of asset deterioration and maintenance / replacement costs. Estimate the effective “subsidy” the people of Ghana provide to the freight sector, both within and outside Ghana, by providing infrastructure free of charge.		x	x		x	x	x		x			x
R29.	Determine the effectiveness of axle load control in preserving road integrity and reducing maintenance costs. Explore technological solutions and enforcement measures to ensure proper load compliance.		x	x		x	x	x		x			x
R30.	Investigate into appropriate and alternative tolling schemes that are fair and socially acceptable and take away the unfair advantage of the road sector over the railway and IWT sectors. Including carbon costing and how tolling can be used to introduce positive change, including fleet renewal in line with other measures (incentives).		x	x		x	x	x	x	x			x
R31.	Investigate options for and gradual introduction of emissions testing as part of roadworthiness testing and how setting the limits needs to go hand in hand with other measures, such as incentives, tolling, air quality testing (and limits), and Ghana’s commitment to reduction of its carbon emission.		x	x		x		x	x	x			x
R32.	Develop in cooperation with stakeholders alternative mechanisms to prioritize feeder road rehabilitation projects and to determine their impact. Review feeder road strategy, programmes and priorities for the three districts in the Upper West and Savannah Regions. Provide and revised planning, design, costing and cost/benefit analysis for each district.	x				x	x	x	x	x			x

### 5.1 General & Poverty Reduction

- R1.** Evaluate the level of coordination and communication between different transport ministries and agencies in Ghana. Identify barriers to effective coordination and collaboration and propose strategies and means to improve and streamline efforts and optimize resource utilization. Prove recommendation on how such



coordination and collaboration could be overseen and – if needed – enforced and by whom and what needs to happen to adequately empower such overseeing institution.

- R2. How can climate financing be leveraged to introduce positive change into the transport sector in Ghana while reducing its carbon emissions? Could such financing be used to support initiatives such as inter-modal connections, rail, IWT, tolling, fleet renewal, etc?
- R3. Review studies on how improved transport services or infrastructure can reduce poverty and increase production and determine, review and evaluate the highest impact interventions in Ghana, whether they have achieved the desired goal and, if not, what would have to change? If interventions have not started, determine what the obstacles are, what needs to be done, and how. Identify the “low hanging fruit” resulting in quick and measurable improvement. Design a related mechanism to evaluate the impact, including baseline surveys and impact surveys. Look at both passenger and cargo transport. Focus should be on the rural communities in poor districts in the north, especially north-west, as well as the rural communities in poor districts along the Volta River System.
- R4. Study on the cost of the agricultural and fisheries supply chains for selected regions of Ghana such as the Upper West and Savannah Regions and how much transport or transport related issues contribute to such cost. Estimate the likely related economic benefit to both these regions as well as consumers and actors involved in the supply chain, if the major transport issues were removed. Compare such benefits to the estimated cost for addressing such issues, considering also other factors such as carbon emissions. Provide a roadmap for the main recommended initiatives.
- R5. Training for drivers and operators especially working within the informal sector (both road and IWT) on aspects of gender, inclusion, health and safety, first aid, etc. How this can be incorporated into their planning and services, and what changes to vehicles, facilities, and infrastructure may be required.
- R6. Study on women in transport in Ghana, how the share of women employed in the formal and informal transport sector can be increased, and how their voices and needs can be made more heard and considered during planning, construction and operation.
- R7. Study on establishing potential service provision centres in rural Ghana which can rent out to members vehicles and equipment and provide other services including shared transport to its members and even basic feeder road repair and maintenance. Look at similar functioning initiatives elsewhere or even in Ghana that could be used as reference. Design and propose options for pilot projects in three agricultural/fishing areas in rural Ghana, particularly in districts of the Upper West and Savannah Regions which have a high level of poverty. Focus shall be on sustainability of such service provision centres which should be self-funding from fees and rental income, following initial investment (CAPEX) by government or Development Partners. Determine the cost/benefit for such initial investment.

## 5.2 Public Transport & Freight Transport

- R8. Study on how the influence and power of the unions dominating paratransit and freight transport can be leveraged and used to introduce positive change such as fleet renewal, emission reduction, and improvement on gender and inclusion. Investigate the legal and policy implications, risks, and what parallel measures would be required including tolling, enforcement of axle load control, emissions testing and limits during roadworthiness testing, fines as well as a catalogue of potential incentives and subsidies and how these could be funded and organised. Look at the implications on other sides if fleet renewal is achieved, including fuel quality and vehicle maintenance capacity. The aim is to use and motivate the power and reach of the unions to introduce positive change. To date unions have largely been felt threatened by change and used their power to block interventions such as the introduction of the BRT in Accra, etc. Also consider the question: How can consumers be supported to demand improvement of services from the unions organising paratransit?



- R9.** Compare the real cost of transporting selected cargo and goods from Northern Ghana and the border with Burkina Faso to markets and ports in Southern Ghana using different transport modes and based on different scenarios. Provide actual as well as future scenarios, allowing both traders and transport companies to get clarity on current alternatives, as well as allowing policy makers to define their interventions to introduce change. Current alternatives will include as a minimum road transport via trucks as is the case for the majority of cargo today, but also multi-modal transport including the existing barge service combined with trucks and soon railway (between Mpakadan and Tema Harbours). The cost comparison should include the actual (current) cost to the traders or transport companies including reloading costs, the indirect cost covered by the people of Ghana providing roads free of charge, cost of time (quantifying delays), costs of carbon emissions of the different scenarios, as well as estimated future costs such as tolling, etc. The study should also look at risks and concerns, motivation and prejudices of traders and users. The aim is to assist the shift of cargo off the road onto alternative modes of transport both immediately as well as in the future. It will help the development of alternatives before and in parallel to introducing related measures such as tolling, etc.
- R10.** Study on which north-south (and south-north) cargo and goods (if any) could or should be forced off the road onto the barges (multi-modal) and how this could be achieved using different tools, interventions, mechanisms, such as law, policy and subsidies. Determine the related cost, implications (also to businesses and consumers), required investment and other prerequisites that need to be put in place beforehand (such as how IWT should be organised and navigational safety). What motivates traders and users to use the road vs. the barges? What is needed to convince them to change? If there will be a policy that some cargo must be forced (even in the short term) off the road and onto other forms of transport (currently barges and soon railway), then these alternatives must be viable and exist first. Provide a roadmap and cost-benefit analysis for short, medium and long-term initiatives, including looking at businesses, consumer prices, carbon reduction, and reduction of damage to roads.
- R11.** Study on how container transport across Ghana could be made more effective, attractive and efficient despite the gap between exports and imports, how this is best organised and supported by policy, subsidy and other interventions and what would be the required cost and infrastructure requirements and other prerequisites that need to be put in place beforehand (predominantly on the IWT, how it is organised and navigational safety). Examine how containers can be used to transport cargo, including current bulk, hence reducing the risk of containers going back north empty. Look at the issues of security, smuggling and customs clearance raised by stakeholders and how this could be best organised. The aim is to make north-south and south-north cargo transport more efficient and cost effective and getting cargo off the road onto other modes addressing the re-loading concerns which are reduced by the use of containers, and to focus decision making by relevant stakeholders.

### 5.3 Inland Water Transport

To address the challenges and improve the efficiency of Ghana's inland water transport system further, the following recommendations for further studies, data, or information collection are suggested to develop evidence-based policies to optimize its inland water transport system and unlock its full potential as a vital contributor to the nation's economic growth and regional connectivity.

- R12.** Conduct a detailed market assessment of cargoes / PAX which can be captured by IWT via Volta Lake based on - amongst others, a competitive logistics chain assessment. See also recommendations R9 and R10.
- R13.** Conduct detailed hydrological studies of the Volta Lake and River System to understand the patterns of water level fluctuations and their impacts on navigation, accessibility, and economic development. Additionally, environmental studies can help assess the ecological health of the water bodies and identify measures to minimize the environmental impact of transport activities. Develop with stakeholders suggested zoning of the lake and river system.



- R14. Chart and carry out bathymetric surveys of the main IWT navigation routes and propose and provide updated cost estimates for minimal navigation installations along these routes and removal of physical obstacles affecting safe and efficient all-year navigation.
- R15. Research into establishing mini IWT systems connecting several communities in close vicinity. Look at current practises and opportunities to create a more efficient, safe and affordable system. Look at examples in other areas within and outside of Ghana. Consult and involve stakeholders such as the women, communities, boat operators and unions. Design and propose options for pilot projects in three agricultural/fishing areas in rural Ghana, particularly in districts of the Savannah Region (possibly East Gonja and Bole Districts) which has a high level of poverty and access to the Volta River System. Focus shall be on sustainability of such mini IWT systems which should be self-funding from fees and charges following initial investment (CAPEX) by government or Development Partners. Determine the cost/benefit for such initial investment.
- R16. Establish a comprehensive data collection system for navigation and safety-related information. This should include real-time data on waterway conditions, traffic patterns, accidents, and safety incidents. In line with this develop together with stakeholders an effective and practicable emergency response system for IWT and estimate the required cost including CAPEX and OPEX in line with expected growth of IWT.
- R17. Conduct studies to assess the current and future passenger transport demands on the inland waterways. Analyse utilization rates, identify bottlenecks, and understand the factors influencing the choice of transport modes to develop strategies for enhancing usage and connectivity. Determine also whether vessels such as hydrofoil ferries, hovercraft and airboats could improve transport and what would be the feasibility and implications.
- R18. Review the Trans-Volta logistics corridor project, its planning, costing, cost/benefit, risks and obstacles. Include in the cost benefit analysis carbon reduction benefits and the economic benefit of axle load reduction. Determine parallel measures that need to accompany the project such as road tolling and axle weight enforcement as well as feeder road and feeder IWT systems. Review the costing and obstacles of construction of Mpakadan Port as a priority as the railway line has been completed. Evaluate the options of Debre inland port vs upgrading of Buiepe port (acknowledging that Buiepe port is not 100% accessible due to the rocks between Debre and Buiepe). Consult relevant stakeholders, including development banks and potential private investors. Determine the obstacles for private financing. It is assumed that comprehensive studies are in place, but the aim should be to re-evaluate these holistically highlight the obstacles, update costing and cost/benefits and provide a phased plan forward with the aim to make swift use of the existing IWT on Volta Lake as well as the completed new railway line to Mpakadan. See also related recommendation R9, R10, R11 and others.
- R19. Undertake comparative studies with other countries that have successful inland water transport systems. Analyse their regulatory frameworks, safety standards, infrastructure development strategies, and private sector participation models to draw insights and best practices applicable to Ghana's context. Include an assessment of how the private sector can set-up and operate competitive logistics chains.
- R20. Conduct comprehensive assessments of the economic and environmental impacts of inland water transport. Analyse the cost-benefit ratio, job creation potential, and carbon footprint reduction achieved through increased utilization of waterways and potential for carbon financing.
- R21. Evaluate the existing policies, standards and regulations governing inland water transport in Ghana. Identify gaps, inconsistencies, and areas for improvement to develop a more comprehensive and coherent regulatory framework. This should include aspects of health & safety, gender and inclusion, enforcement of regulations, private sector involvement and licencing.





- R22. Assess the training and capacity-building needs of boat operators, crew members, and regulatory authorities to enhance safety practices, knowledge of gender and inclusion issues and best practises, technical skills, and operational efficiency.

#### 5.4 Rail Transport

- R23. Undertake comprehensive studies to understand the current and projected freight and passenger demands in various regions of Ghana. Analyse the potential for transporting specific commodities, such as minerals, cocoa, timber, and petroleum products, by railway and assess the economic viability of such transport. See also related recommended IWT studies such as R17.
- R24. Conduct surveys and studies to understand public perceptions and awareness of railway transport in Ghana. Identify factors influencing the public's choice of transport and develop strategies to promote railway travel as a viable and sustainable option. See also related recommended IWT study R18.
- R25. Establish a robust monitoring and evaluation framework to assess the progress and impact of railway development projects, including aspects such as poverty reduction, improved north-south transport, carbon reduction, environmental considerations, transport safety and gender and inclusion. Regularly evaluate the effectiveness of implemented strategies and make necessary adjustments for continuous improvement.
- R26. Undertake comparative studies with countries that have successfully revitalized their railway systems after facing similar challenges. Identify best practices, lessons learned, and strategies for implementation in Ghana's context.

#### 5.5 Road Transport

- R27. Study on how carbon emission reduction within the transport sector in Ghana can be achieved by fleet renewal and identify and examine different tools, including tolling, enforcement of axle load control, emissions testing and limits during roadworthiness testing, fines, leveraging the power and influence of unions (see related recommended study below) as well as a catalogue of potential incentives and subsidies and how these could be funded and organised. Look at the implications on other sides if fleet renewal is achieved, including fuel quality and vehicle maintenance capacity.
- R28. Conduct studies / research on the real economic costs to the people of Ghana of overloading of trucks per annum in terms of asset deterioration and maintenance / replacement costs. In line with this estimate the effective “subsidy” the people of Ghana provide to the freight sector, both within and outside Ghana, by providing infrastructure free of charge. Consider also carbon costing.
- R29. Conduct studies / research on the effectiveness of axle load control in preserving road integrity and reducing maintenance costs. Explore technological solutions and enforcement measures to ensure proper load compliance. Consider effective ways of enforcing compliance and review penalties. Consult with stakeholders including freight companies and unions as well as traffic polies and road agencies. Determine cost, economic impact and benefit.
- R30. Investigate into appropriate and alternative tolling schemes that are fair and socially acceptable and take away the unfair advantage of the road sector over the railway and IWT sectors. Including carbon costing and how tolling can be used to introduce positive change, including fleet renewal in line with other measures (incentives). Consider charging trucks, lorries and transporters according to either axle load or volume. Consider electronic charging. Consider effective ways of enforcing compliance and charging. Consult with stakeholders including freight companies and unions as well as traffic polies and road agencies. Determine cost, economic impact and benefit.
- R31. Investigate options for and gradual introduction of emissions testing as part of roadworthiness testing and how setting the limits needs to go hand in hand with other measures, such as incentives, tolling, air quality testing (and limits), and Ghana’s commitment to reduction of its carbon emission.



R32. Develop in cooperation with stakeholders, including public sector, private sector, Transport Operators, Development Partners, rural communities, civil society and NGOs, alternative mechanisms to prioritize feeder road rehabilitation projects and to determine their impact. Look at available literature and examples elsewhere or in Ghana. Review feeder road strategy, programmes and priorities for the three districts in the Upper West and Savannah Regions which have a high level of population working in agriculture or fisheries and have a high percentage of poverty (incl. East Gonja district). Include where applicable river crossing drainage structures and elements of IWT supplementing feeder road system to provide market access or access to amenities. Provide and revised planning, design, costing and cost/benefit analysis for each district.



## APPENDIX H: RELATION BETWEEN OUTLINE INTERVENTIONS, ISSUES AND RECOMMENDATIONS

Below illustrates how the proposed outline interventions relate to both the issues and recommendations shown in Table 1 and Table 2.

### A. Rural Transport & Poverty (Roads): Feeder and Access Road Study in the Upper West and Savannah Regions of Ghana

#### Original Recommendations included:

- R32 (2<sup>nd</sup> ranked): Develop in cooperation with stakeholders alternative mechanisms to prioritize feeder road rehabilitation projects and to determine their impact. Review feeder road strategy, programmes and priorities for the three districts in the Upper West and Savannah Regions. Provide and revise planning, design, costing and cost/benefit analysis for each district.
- R3 (1<sup>st</sup> ranked; feeder/access road only): Study on how and which improved transport services or infrastructure can reduce poverty and increase production and the impact of and lessons learnt from previous initiatives.

#### Issues Addressed (Limited to selected project area and to Feeder / Access Roads):

- 4.2.1 (1<sup>st</sup> ranked): Poor Feeder and Access Roads
- 4.7.2: Execution, Contract Administration, and Logistics Challenges
- 4.1.4: Poor Planning, Engineering, Selection and Procurement
- 4.7.1: Network Expansion and Maintenance Challenges
- 4.7.4: Road and Traffic Safety

### B. Rural Transport & Poverty (IWT): Study on Local Inland Water Transport Connecting Rural Communities along Volta River System of Ghana

#### Recommendations included:

- R15 (4<sup>th</sup> ranked 3/3): Research into establishing mini IWT systems connecting several communities in close vicinity and design and propose options for pilot projects in three agricultural/fishing areas in rural Ghana, particularly in districts of the Savannah Region which has a high level of poverty and access to the Volta River System.
- R3 (1<sup>st</sup> ranked; small IWT only): Study on how and which improved transport services or infrastructure can reduce poverty and increase production and the impact of and lessons learnt from previous initiatives.
- R17 (4<sup>th</sup> ranked 1/3; limited to selected regions): Assess the current and future passenger transportation demands on the inland waterways, utilization rates, bottlenecks, and how different type of vessels could bring improvement. Develop strategies for enhancing usage and connectivity.
- R6 (IWT only): Study on women in transport in Ghana, how the share of women employed in the formal and informal transport sector can be increased, and how their voices and needs can be made more heard and considered during planning, construction and operation.
- R5 (IWT only & limited to private boat owners in selected districts): Training for drivers and operators especially working within the informal sector (both road and IWT) on aspects of gender, inclusion, health and safety, first aid, etc.



- R22 (limited to private boat owners in selected districts): Assess the training and capacity-building needs of boat operators, crew members, and regulatory authorities to enhance safety practices, knowledge of gender and inclusion issues and best practises, technical skills, and operational efficiency.

Issues Addressed (Limited to selected project area and local IWT):

- 4.5.1 (3<sup>rd</sup> ranked 3/4): Lack of Development of and (Political) Interest in Inland Water Transport
- 4.5.3 (3<sup>rd</sup> ranked 4/4): Irregular and Slow Services, Poor Connectivity and Utilization
- 4.1.4: Poor Transport Interconnectivity
- 4.3.1: The Needs of Women, Children & PWD are not Sufficiently Considered
- 4.5.5: Maintenance, Safety and Compliance
- 4.4.1: Insufficient Consideration of Paratransit
- 4.2.2: Limited Access to Vehicles
- 4.2.3: Rural River Transport (local)

**C. North-South Transport (Multi-Modal): Study / Review on North-South Freight Transport in Ghana using Multi-Modal Transport, including IWT on Volta Lake and Rail, and Comparison to Existing Road Transport.**

Recommendations included:

- R20 (3<sup>rd</sup> ranked 2/3): Conduct comprehensive assessments of the economic and environmental impacts of inland water transportation. Analyse the cost-benefit ratio, job creation potential, and carbon footprint reduction achieved through increased utilization of waterways and potential for carbon financing.
- R17 (4<sup>th</sup> ranked 1/3): Assess the current and future passenger transportation demands on the inland waterways, utilization rates, bottlenecks, and how different type of vessels could bring improvement. Develop strategies for enhancing usage and connectivity.
- R18: Review the Trans-Volta logistics corridor project, its planning, costing, cost/benefit, risks and obstacles, and determine required parallel measures. The aim should be to re-evaluate existing studies holistically and highlight the obstacles, update costing and cost/benefits and provide a phased plan forward with the aim to make swift use of the existing IWT on Volta Lake as well as the completed new railway line to Mpakadan.
- R12: Conduct a detailed market assessment of cargoes / PAX which can be captured by IWT via Volta Lake based on - amongst others, a competitive logistics chain assessment.
- R23 (Freight only): Study to understand the current and projected freight and passenger demands in various regions of Ghana.
- R28: Determine the real economic costs to the people of Ghana of overloading of trucks per annum in terms of asset deterioration and maintenance / replacement costs. Estimate the effective “subsidy” the people of Ghana provide to the freight sector, both within and outside Ghana, by providing infrastructure free of charge.
- R9: Comparison of the real cost of transporting selected cargo and goods from Northern Ghana and the border with Burkina Faso to markets and ports in Southern Ghana using different transport modes and based on different scenarios.



- R2 (3<sup>rd</sup> ranked 1/3): Study on how climate financing can be leveraged to introduce positive change into the transport sector in Ghana while reducing its carbon emissions.
- R11: Study on how container transport across Ghana could be made more effective, attractive and efficient despite the gap between exports and imports, how this is best organised and supported by policy, subsidy and other interventions.

Issues Addressed (Limited to selected project area and IWT):

- 4.1.3 (3<sup>rd</sup> ranked 1/4): Lack of Funding to Implement Transport Sector Projects
- 4.1.5 (3<sup>rd</sup> ranked 2/4): Lack of Reliable Transport Demand Data
- 4.5.1 (3<sup>rd</sup> ranked 3/4): Lack of Development of and (Political) Interest in Inland Water Transport
- 4.1.4: Poor Transport Interconnectivity
- 4.3.1: The Needs of Women, Children & PWD are not Sufficiently Considered
- 4.4.4: Inefficiency of Container Transport
- 4.5.2: Navigational Challenges and IWT Infrastructure Issues
- 4.5.6: Data Limitations and Resource Constraints

**D. Climate Change, Gender & Inclusion: Study on how to Use Climate Financing and Leverage the Power of the Transport Unions to introduce Positive Change in the Informal Transport Sector in Ghana.**

Recommendations included:

- R2 (3<sup>rd</sup> ranked 1/3): Study on how climate financing can be leveraged to introduce positive change into the transport sector in Ghana while reducing its carbon emissions.
- R27: Study on how carbon emission reduction within the transport sector in Ghana can be achieved by fleet renewal and identify and examine different tools to achieve this. Look at the implications on other sides if fleet renewal is achieved, including fuel quality and vehicle maintenance capacity.
- R5: Training for drivers and operators especially working within the informal sector (both road and IWT) on aspects of gender, inclusion, health and safety, first aid, etc.
- R8: Study on how the influence and power of the unions dominating paratransit and freight transport can be leveraged and used to introduce positive change such as fleet renewal, emission reduction, and improvement on gender and inclusion.
- R22: Assess the training and capacity-building needs of boat operators, crew members, and regulatory authorities to enhance safety practices, knowledge of gender and inclusion issues and best practises, technical skills, and operational efficiency.
- R6: Study on women in transport in Ghana, how the share of women employed in the formal and informal transport sector can be increased, and how their voices and needs can be made more heard and considered during planning, construction and operation.

Issues Addressed (Limited to Passenger Paratransit):

- 4.1.3 (3<sup>rd</sup> ranked 1/4): Lack of Funding to Implement Transport Sector Projects
- 4.3.1: The Needs of Women, Children & PWD are not Sufficiently Considered
- 4.7.4: Road and Traffic Safety



- 4.4.1: Insufficient Consideration of Paratransit
- 4.4.2: Economics and Regulation of Road Transport Service Providers
- 4.1.6: Insufficient Consideration of Environmental and Climate Change Issues

#### **E. Inland Water Transport: Hydrological and Bathymetric Studies along Volta Lake Transport Routes in Ghana.**

##### Recommendations included:

- R13: Conduct detailed hydrological studies of the Volta Lake and River System and develop with stakeholders suggested zoning of the lake and river system.
- R14: Chart and carry out bathymetric surveys of the main IWT navigation routes and propose and provide updated cost estimates for minimal navigation installations along routes and removal of physical obstacles affecting safe and efficient all-year navigation.

##### Issues Addressed:

- 4.5.1 (3<sup>rd</sup> ranked 3/4): Lack of Development of and (Political) Interest in Inland Water Transport
- 4.5.3 (3<sup>rd</sup> ranked 4/4): Irregular and Slow Services, Poor Connectivity and Utilization
- 4.5.2: Navigational Challenges and IWT Infrastructure Issues

#### **G. North-South Transport (Road): Study on the Economic Cost of Truck Overloading, Axle Load Control & Options for Road Tolling of Freight Transport in Ghana.**

##### Recommendations included:

- R28: Determine the real economic costs to the people of Ghana of overloading of trucks per annum in terms of asset deterioration and maintenance / replacement costs. Estimate the effective “subsidy” the people of Ghana provide to the freight sector, both within and outside Ghana, by providing infrastructure free of charge.
- R29: Determine the effectiveness of axle load control in preserving road integrity and reducing maintenance costs. Explore technological solutions and enforcement measures to ensure proper load compliance.
- R30: Investigate into appropriate and alternative tolling schemes that are fair and socially acceptable and take away the unfair advantage of the road sector over the railway and IWT sectors. Including carbon costing and how tolling can be used to introduce positive change, including fleet renewal in line with other measures (incentives).

##### Issues Addressed:

- 4.7.3: Road condition and Overloading
- 4.7.4: Road and Traffic Safety
- 4.4.2: Economics and Regulation of Road Transport Service Providers
- 4.4.3: Poor Regulation of the Informal Freight Sector



**DT Global International Development UK**

Tel: +44 776 461 28 46

Email: [richard.dietrich@dt-global.com](mailto:richard.dietrich@dt-global.com)

Web: <http://www.dt-global.com/>