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Satakunnan ammattikorkeakoulu
Satakunta University of Applied Sciences

ABAS SAIDYKHAN

REVIVAL OF INLAND WATER TRANSPORT – CASE STUDY RIVER GAMBIA

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ABSTRACT

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This paper explores the economic, social, and environmental benefits of inland water transport (IWT) in the River Gambia, focusing on its potential to stimulate economic growth and regional connectivity. The research aims to highlight the importance of sustainable transportation systems in promoting regional connectedness and economic growth. The literature review explores challenges and accomplishments related to inland water transport, focusing on the historical importance of river transportation and the factors leading to its decline. The methodology chapter uses a comprehensive approach, collecting primary data through surveys and stakeholder conversations. The survey results presentation chapter analyses data on the River Gambia's water transport infrastructure, stakeholder perspectives, and the economic and environmental consequences of revitalization. The final analysis and suggestions chapter consolidates findings from literature review, methodology, and survey results, concluding the viability of reviving IWT along the River Gambia and offering useful insights for regulator, business, and local communities. The findings contribute to the discussion on sustainable transportation by providing valuable insights for future endeavours, emphasizing Inland Water Transport's capacity to stimulate economic expansion and improve connectivity in the region.

Keywords: Inland Water Transport, Revival, River Gambia, economic, River Transport.

PREFACE

In the intricate fabric of worldwide trade and transportation, inland water transport has consistently occupied a pivotal role, forging links between towns, facilitating business, and shaping the economic landscapes of entire regions. Given the importance of efficient transportation solutions and environmental sustainability, the resurgence of inland water transport is a matter of critical relevance.

This thesis conducts a thorough analysis of the revival, with specific focus on the River Gambia. The River Gambia, throughout the core of The Gambia, has served as a channel for trade, cultural exchange, and survival for countless years. Throughout history, this previously prosperous canal has been largely neglected as a result of changing economic objectives, advancing technological environments, a decrease in groundnut output, and the development of road infrastructure.

The primary objective of this study is to provide insight into the advantages and difficulties associated with the revitalization of inland water transportation, with a particular emphasis on the River Gambia as an intriguing case study. This investigation extends beyond a simple academic endeavour; it acts as a motivator for action, recognizing the intrinsic value that well-managed water transportation holds for the people located alongside the rivers.

The River Gambia, as it winds its way through many landscapes, acts as a small-scale example of the potential benefits and difficulties that characterize the wider resurgence of inland water transportation. The River Gambia symbolizes the interconnected relationship between communities and the essential water source that sustains them, spanning both peaceful rural areas and lively metropolitan centres.

Throughout this intellectual journey, we explore not just the geographical characteristics of the River Gambia, but also the intricate interplay of socioeconomic dynamics, infrastructure, policy, and environment. This thesis seeks to provide a comprehensive understanding of the processes involved in revitalizing inland water transport. It will extrapolate insights from current challenges, propose solutions to overcome these challenges, identify measures to ensure its sustainability, and propose a regulatory framework for transportation along the River Gambia.

The next chapters conduct a thorough analysis of the possibility of economic regeneration, the ecological and environmental elements that are inherent to such endeavours, and the crucial importance of collaboration among stakeholders. This book aims to make a scholarly addition to the subject of transportation studies and also aspires to contribute to the conversation that influences regulatory policymaking and the sustainable restoration of the River Gambia transport system.

DEDICATION

This thesis is dedicated to my parents, Daddy Wandifa Ebrima Saidu Khan, Mummy Musukuta Sanneh, and Mummy Fatou Jammeh, as well as my senior brother, Mr. Lamin Saidu Khan. He made great efforts to assure my academic achievement despite facing financial challenges. Undoubtedly, I would not have been able to accomplish this without his kind assistance.

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1 INTRODUCTION

1.1 Brief History of The Gambia and River Gambia

The Republic of The Gambia is the smallest nation in the Africa Mainland. The 19th century saw a deterioration in the British colonial policies in Africa, and a clear will by the home government to end its role in West Africa. However, this was not so with France whose efforts of expansionism grew increasingly as British complacency sets in; hence England withdrew its claim to the watershed of The Gambia in 1887. Subsequent concessions made to France over Newfoundland fisheries disputes meant that present-day restricted borders of British tropical colony – The Gambia (Armitage, 1928, p. 814).

At present, The Gambia is a small enclave, which stretches approximately 250 miles along the banks of the River Gambia and located within the Republic of Senegal. The whole colony only occupies 69 square miles out of an overall area of about 4000 square miles occupied by Gambia. Its boundary was also established ten kilometers into river's windings in accordance with agreement with France in 1889. Tribal territories have even been split deliberately resulting to division of established settlements hence rendering them under different Administrations unlike before when they were one people. These strange borders that are crossed due to needs that do not know law may not have been fully exploited as a result of the bank erosion or accretion through periodic floods (Armitage, 1928, p. 814).

In the 15th century, Portugal's discoveries in this century had a beginning; it is at this point that Europe and The Gambia established their historical connection. Prince Henry of Portugal employed Cadamosto, a Venetian explorer, to find a river because he had heard that there was a nation which used to mine large quantities of gold along its banks near Cape Verde. Soon after getting there, they were attacked by colonizers forcing them to leave for Portugal. The following year, he returned and located an island 25 miles from the mouth of the river which was shaped like an iron

smoothing-stone; he named it St Andrew's island after burying one of his sailors who died from fever called Andrew. (Southorn, 1943, p. 532).

The British explorers named this island James Island, and it was the first major European settlement in the Gambia until Bathurst replaced it in 1816 (Southorn, 1943, p. 532).

After traveling sixty miles upriver from the mouth of the Gambia River, Cadamosto found that the local chiefs were friendly to him; he got some gold and a few slaves in exchange for European goods (Southorn, 1943, p. 532).

The trade with the Gambia started with gold and slaves, that's what happened. For 200 years, gold was the attractive force that drew many explorers to the Gambia in search of legendary mines of gold. Up to the end of the 18th century, enslaved people were the backbone of Gambian trade (Southorn, 1943, p. 532).

For more than a century, Portuguese operated small trading posts along the Gambia River. Portugal had little interest in this country and could not resist British challenge because their traders were weak. The peanut was brought to stay by Portuguese for long as a substitute for slaves as well as Gambian staple food and major export crop (Southern, 1943, p. 532).

English men first encountered Gambia in 1587—two English ships sailed up the river and returned with ivory and hides, which sparked interest throughout Britain. It was easy money they were interested in; this was an era of exploration and expansion when imaginations were fired by visions of quick wealth (Southorn, 1943, p. 532).

In 1588 companies began applying to the crown for charters conferring monopoly rights on them for trade with Gambia; but few were successful. During the reign of James I a firm calling itself "the company of Adventurers of London trading into Africa" ran the two companies: it failed financially in much the same way as its predecessor had done, and lasted only three years (Southorn, 1943, p. 532).

Starting in Guinea's Fouta Djallon Mountains, the Gambia River snakes its way 700 miles to empty into the Atlantic Ocean. It does so at an estuary eight miles wide that spans from northern Guinea through Senegal and The Gambia (Florio, 2013, pp. 143-144)

The Gambia River is a grand old stream that has been classed amongst the Nile's affluents. For almost three hundred miles up this river ships could sail in the sixteenth and seventeenth centuries; hence it became invested with a peculiar interest by the merchant adventurers of those days (Southorn, 1943, p. 531).

History tells of Carthaginian settlements which were discovered on its banks by a traveller named Hanno who ascended it with his ships: he speaks of having seen night-fires continually breaking out in all directions; these were probably bush-fires, which are common and most striking during the dry season.

For trading purposes, British businesses used this river up to 350 miles inland. When a British trader called Jobson met one of the best local traders named Buckor Sano, he offered him some of his slaves. "We are a people who did not deal in any such thing; neither do we purchase nor sell one another or any that had our shapes," replied Jobson declining the offer (Southern, 1943, pp. 531-532).

Francis Moore stayed in Gambia for five years while working with Royal African Company and in 1738 he released an interesting record about those years. The amount of ships that went up and down Gambia River at that time was amazing (Southorn, 1943, p. 534).

British merchants conducted business at many small trading stations between James Island and Fattatenda (now Wuli) — a distance of about 270 miles (Southorn, 1943, p. 535).

In 1823 an island named after the governor, Sir Charles McCarty, was bought from the native Chiefs; it is 150 miles up the river. Incorporated with the little Colony, Georgetown became the second most important town in The Gambia after Bathurst. As a depot for the products and trade of the Upper River which ocean-going steamers

could climb, Georgetown was also an important centre of trade. A significant groundnut depot has now been established at Kuntaur which is about twenty miles downstream on the right bank of the river where ocean-going steamers can moor alongside its banks (Armitage, 1928, p. 813).

In 1843, The Gambia severed its connection with Sierra Leone and was made into a separate colony under its governor. Then in 1857 the exchange of Al-Breda took place; as a result the Gambia became entirely under British colonial rule (Armitage, 1928).

It was not until 1882 when The River Gambia Trading Company, a highly acclaimed British firm, brought a river steamer and a steamer launch that the modernisation of navigation on river Gambia officially began. For years local battles had kept European traders at bay but three years earlier this company started buying groundnuts on the upper river. Groundnut evacuation was hoped to be hastened by the new steamer so as to surpass French competitors of this company (Van Der Laan, 1981).

1.2 Problem statement

This introduction shows that the inland water transport system along River Gambia, which used to be the lifeblood of trade in The Gambia with significant historical importance, has been abandoned for a long time. Neglect has taken many forms and affected various sectors such as river port infrastructure decay, economic activities decline, loss of navigability on the river and cultural value depreciation. This key means of transportation has deteriorated so much that it now causes among other things rotting structures, lacklustre business activity as well as social integration breakdowns downstream.

In view of these difficulties, this thesis aims at exploring how complicated re-establishing inland water transport on River Gambia can be. It seeks to identify why it has been neglected over years and what could hinder its revitalization before suggesting sustainable ways through which this mode can once again become vibrant in terms of historical background. This study investigates every aspect related to such

problems with an intention of coming up with practical recommendations that would guide relevant authorities towards reviving inland water transport while recognizing its socio-economic significance within different communities along the riverbanks.

1.3 Aim/Purpose

The Government of The Gambia and relevant state own enterprises are desirous of reviving the River Gambia transportation for socio-economic gains. The deleterious consequences such a venture might have on the River Gambia, its present uses, and its ecosystem might be neglected or given little relevance. The prevalent approach in such circumstances is reactive instead of proactive measures. This thesis is therefore aimed at highlighting the challenges that are impeding transportation along the River, the negative impact the restoration of river transport can have, proffer recommendation to mitigate the identified negative impacts, the safe guards that needs to be in place to ensure sustainability, the necessity of continuous monitoring enforcement and institution of rigid legal framework. This research is further aimed at providing the regulator, Gambia Maritime Administration on actionable recommendation that will give it a head start and ensure successful restoration of River Gambia transport. Furthermore, the research is aimed to investigate the current state, challenges and opportunities surrounding the inland water transport system along the River Gambia, and sustainable revival of this crucial transport mode. This research aims to provide useful recommendations for the regulator on how they can revive inland water transport in River Gambia as well as tap into its socio-economic and ecological advantages. The suggestions will be based on the analysis of infrastructure, economic and environmental dimensions with an attempt to make it more effective in terms of generating employment opportunities.

1.4 Objectives

Global trade is fuelled by shipping, although it faces environmental issues and puts labourers at risk. Approximately 80% of world trade consists of international (*Introduction to IMO*, n.d.). More than 90% of the Gambia's imports enter through Banjul port.

Though there are risks involved, shipping is still the most cost-effective and efficient means of transport between countries. It has provided cost-effective and reliable solutions, which have enhanced trade and improved the wealth of countries and societies worldwide. Its importance in global trade demonstrates the scarceness of environmentally friendly shipping techniques (*Introduction to IMO*, n.d.). This concept can be narrowed down in the context of River Gambia.

Despite the critical role in global and local commerce, the operating environment of maritime transportation is unpredictable, uncontrollable and unstable, as a result, disasters still occur despite the rigid regulatory and operating legal frameworks in place, advancement in technology and improvement in training of the labour force. On this basis, the objectives of this thesis are:

1. Conducting a comprehensive survey of current facilities and finding specific areas that need to be addressed so as to know the state of infrastructure along the River Gambia.
2. Assess policy enforcement and stakeholder engagement in relation to regulatory challenges faced by Gambia Maritime Administration (GMA) for managing inland water transport
3. Evaluate the environmental impact of reviving the river Gambia's inland water transport system using examples and data from similar environments.
4. Propose workable suggestions on how best to revive sustainable inland water transportation with emphasis on; developing infrastructures, managing environment and improving policies based on these findings.

2 LITERATURE REVIEW

2.1 Introduction

This chapter presents a comprehensive literature review on inland water transport (IWT) with consideration for its advantages, sustainability, challenges and barriers to development as well as global case studies and best practices. It hopes to investigate the current state of Gambian IWT by examining potential benefits and past obstacles. By theming the review, this section reflects on various concerns about IWT thus far in relation to this thesis.

The revival of River Gambia's IWT is a complicated matter that involves many different economic, environmental and regulatory factors. Therefore, this review draws from wide-ranging studies conducted in different areas and disciplines; thereby providing an interdisciplinary view on issues surrounding IWTs such as challenges faced or opportunities available. The chapter starts off with looking at how important these services are economically then goes into discussing their environmental benefits after that it investigates what has been stopping them from growing in other places like here ending up with some worldwide instances which can teach us something about our own country called The Gambia.

This study is based on the idea of sustainable transport, which highlights the need for transportation systems that minimize environmental impact and at the same time maximize economic and social benefits. This theory is especially applicable to River Gambia where there is an opportunity for sustainable development through inland water transportation. The connection between sustainable transport and regional economic growth forms the core of this inquiry as reviving River Gambia may become an example on how to blend environmental sustainability with economic prosperity.

Trade, growth of economy and environmentally friendly transport options are some of the benefits of inland water transportation in various parts of the globe. This means that goods and people can be moved using canals, lakes, rivers and other navigable waters. Consequently, this type of transport takes place between inland ports or inland ports and deep-sea ports. For the purpose of moving commodities which are

mainly agricultural products; building aggregates; raw materials among others as well as people; pontoons ferries canoes and other vessels are used. (Solomon et al., 2021, p.2).

Transportation refers to the movement of goods or services from one place to another. Transport is also a key element for trade whether locally or globally besides being an important catalyst for development in towns and cities. Over time man has come up with different methods of making it easier for him to move things around from one location to another hence ships were invented together with planes trains cars etcetera as means through which this could be achieved. The main modes of transport include ships, aeroplanes, trains, pipelines, and roads, among others, while about 90% of the world's cargo is carried by water using ships and other crafts (Solomon et al., 2021, p.1). Considering what has been said above, this study will now give a brief overview of the importance and potentiality of inland water transport.

2.2 Advantages of inland water transport

2.2.1 Economic Importance

Inland water transport can be cheaper than other modes of transportation for bulky and oversized cargoes, as it replaces approximately 70-80 truckloads, creating cost-effectiveness (Roso et al., 2020, p.6). Compared to other modes of transport, inland water can transport large quantities of goods with lower fuel consumption and few carbon emissions, per ton-kilometre and has a significantly lower external cost (Gołębiowski, 2016, p.225). It also offers safe and more economical rates in areas where water is naturally prevalent (Department Of Geography University Of Nigeria Nsukka & Chukwuma, 2014).

Efficient inland water transport infrastructure can be a crucial catalyst for boosting and accelerating the rate of social, political, economic, and industrial growth as well as attracting investments and promoting socio-economic development in the hinterland (Solomon et al., 2021).

Regions that have little or no other means of transport such as roads and railways always recognize that inland water transport is the most economic. Some of the economic benefits of IWT include cheap bulk movement, stimulating regional trade and creation of job opportunities (Rodrigue et al., 2016). Additionally, it is less expensive with regard to fuel consumption per ton-mile than road or rail meaning more goods can be transported over longer distances using this method.

Moreover; the development of IWTs could bring about great impacts on economies at different levels within regions. When goods are moved easily between places due to improved trade facilitation by reducing costs in terms of transportation then industries become competitive locally where markets are limited mainly because they are located far away from major markets which happens when you look at landlocked areas or remote regions (Paudel & Balakrishnan 2018). Introduction or revitalizing IWT routes may also create subsidiary services like warehousing logistics among others which will lead to more jobs being created along such routes.

In line with this Gambian context revitalising River Gambia-based IWT could greatly contribute towards enhancing intra-regional trade as well as economic integration both nationally and across neighbouring regions. Looking at it from a historical perspective too there is a lot that can be done in terms of using inland waterways for promoting economic growth given their strategic location vis-à-vis other parts not forgetting its role played over time being an important commercial artery. But still much needs to be addressed if these gains must materialise hence coming up next are challenges involved

2.2.2 Environmental Sustainability

To transport any kind of cargo, inland water transportation is the cheapest, most fuel-saving and green-house gas/air-pollution-causing compound emission-releasing means as compared to road based or air freighting which therefore makes it a better environmental choice (Department Of Geography University Of Nigeria Nsukka & Chukwuma, 2014).

Inland water transport is fuel-efficient and accessible, it can be used by either developed or underdeveloped countries. It is better for the environment because it uses less energy than an equal amount transported over the road and per unit of cargo when compared with any other mode, thus saving energy and cutting down on reliance on oil. (Solomon et al., 2021).

Among the many benefits of inland water transport is that it could help with environmental sustainability. International consciousness about climate change and ecological destruction has grown, and this offers a viable way for the transport sector to reduce their carbon footprint. IWT produces far less greenhouse gas emissions than road or air transportation because vessels are more fuel efficient while having lower frictional resistance in water (European Commission, 2011).

Another advantage is that it reduces congestion on roads which causes major air pollution problems in cities worldwide. Regions can achieve cleaner skies and less crowded transport networks if they redirect some freight traffic from highways onto canals or rivers – thus contributing towards wider environmental objectives (Banister, 2008). Also, its low energy use per tonne-kilometre makes IWT an essential part of any sustainable transport strategy aiming at reconciling economic growth with environmental protection.

The Gambia has ecologically sensitive areas through which flows the River Gambia; therefore, there should be adoption of environmentally friendly modes of transportation here. In this regard, reviving inland waterways' system would be a way to improve national transport infrastructure while minimizing negative impacts on it from an ecological standpoint. Nonetheless, whether or not such systems are sustainable hinges upon putting in place effective regulations as well as embracing clean technologies which will be discussed later in this chapter.

2.2.3 Reliability and Safety

Inland water transport (IWT) has a low accident rate in comparison with other modes of transportation, which improves safety and reduces traffic congestion. Because of this, IWT is very desirable for moving both goods and passengers, especially in

places with many rivers such as the River Gambia. Such security comes from the fact that it operates within controlled water bodies, ships travel at slow speeds and incidents involving them are rare if we compare to those happening on roads. Furthermore, using these routes also eases pressure on our highways and railways thus reducing jams along the way while cutting down cases of road mishaps too. This safety advantage not only enhances dependability but also creates a healthier and less stressful atmosphere for travelling in IWT. For this reason alone therefore reviving it along this river could make substantial contributions towards overall efficiency as well as safety in transportation thereby becoming one among many valuable parts that constitute regional infrastructure development (Roso et al., 2020).

2.2.4 Congestion Alleviation

As a means of transportation, inland water transport (IWT) has one big plus point that is it avoids traffic jams. Road transport often faces congestion while IWT does not have this problem at all. The smooth and unvarying travel times resulting from this save a great deal of time for the travellers; hence enhancing the whole dependability of transportation system. Typically, road networks are jammed due to heavy traffic or accidents, but these things don't happen frequently on rivers and canals, so goods move more. Such reliability becomes handy for industries with strict delivery deadlines because it ensures that there are no delays thus making logistics operations efficient than they would be if some other mode were used thus making them more efficient which in turn makes them cost-effective too ultimately leading to savings thereby contributing significantly towards creating an internationally competitive economy through better service provision especially when integrated within larger multimodal systems such as those linked by railways or ports where intermodal transfers occur frequently because everything works together smoothly without any hitches during transit until goods reach final destinations(Roso et al., 2020).

2.3 Challenges of Inland water transport

Many developed and developing nations with abundant navigable inland water are barely utilising this resource. Based on the examples below, the difficulties they face vary.

The efficiency of the Inland water transport (IWT) sector has been impacted by public operating policies, expenses, and water transport charges in a world where roads and automobiles are associated with growth and development. Despite inland water transport's many benefits, it is the least developed compared to road and rail transportation. The efficient operation of IWT is hampered by broad factors such as inadequate infrastructure, poor investment, weak regulations, and a lack of coordination among pertinent national organisations. Many deep rivers in various countries across the world have the potential to help with inland water transport, but only a few of them are used (Solomon et al., 2021, pp.2-3).

The use of IWT in Nigeria has significantly decreased, according to a study by Nsukka & Chukwuma. This was ascribed to several physical limitations on impending growth and performance in Nigeria's IWT sector. To ensure that the sector remains the cornerstone of commerce, industry, and economic development, it is urgently necessary to implement novel measures and methods. According to different research, Nigeria's IWT represents an "untapped bonanza for investors." This demonstrates that the IWT sector may have a significant positive economic impact. More people are becoming aware that IWT could replace roads as a mode of transportation (Department of Geography, University of Nigeria Nsukka & Chukwuma, 2014, p.1).

Technical, regulatory, geo-political, financial, and integrated development approach issues are some of the key challenges being faced by India's inland water transport sector as claimed by Praveen. Among the technical difficulties are poor navigation infrastructure, inadequate depth, or air draft; shortage of IWT vessels; absence of terminals; lack of night navigation facilities and Maintenance; Repair & Overhaul (MRO) facilities being scarce.

Regulatory challenges involve modular integration with relevant infrastructure development; creating a level playing field between different transport modes; ensuring uniformity in operational aspects and restructuring inland waterways authority among others while considering geopolitical factors. International protocols can be used together with cross structures such as river interlinking projects which have strategic importance for connecting north-eastern regions through this mode of transportation.

On the other hand, financial constraint mainly results from government investment, private sector participation and capacity building. Governments have been under investing on this sector vis-à-vis road or rail, but it needs to be given more attention than any other means. The policy could explore private sector investments too besides vessel operations and infrastructure development which require capacity building. Integrated project developments face challenges like long term cargo commitment, viability gap funding, modal shift incentives and factors affecting waterway traffic diversion. The government should provide necessary viability gap fund or fund from regular budget for missing infrastructures. Factors that affect waterway traffic includes type of commodity, volume, actual place of origin / destination, long term commitment of traffic, distance from terminal, existing modular choice, port waterways connectivity, comparative intermodal distance, water transport trip distance empty return ratio number users at terminal deep sea transshipment etc (Praveen, 2015).

The operational constraints which must be addressed to improve the Nile's transport system include: no regulatory framework for river cargo transportation in South Sudan; limited cargo handling facilities and other necessary infrastructure at numerous ports; absence of navigation aids showing rocks, shallow areas or wrecks; the occasional need for maintenance like dredging to avoid silting up the waterway used as a channel. There are also serious challenges caused by blocking channels with invasive aquatic weeds especially water hyacinth that invade; And lastly but not least there is still great concern about general safety within this area needs to be addressed for free movement of goods and people (The Role of Inland Water Transport in Support of Further Regional Integration, n.d.).

Companies identified several challenges that could hinder the modal shift towards IWT. Shipping is a conservative business with slow development, leading to a slow pace of innovation. Significant investments in ships are often made with the hope of using the boat for about 60 years, and research on alternative fuels, and electrification experiences inertia. Younger people in the industry are more likely to invest, as they usually have more time in business ahead of them. Manufacturing companies have a smaller investment and risk to buy trucks instead of ships, leading to a slower development and utilisation of IWT.

Some companies need help with their products, such as being too large to fit into a barge with a reasonable fill rate and needing help loading and unloading the vessel without damaging concrete pipes. This can cause damage, increase transit time, and increase costs. The long solidification time for substantial goods must be dealt with, and the issue of transferring brittle goods is less severe than durable metal goods.

Loading and unloading the vessel is another challenge, as it requires costly cranes and is only feasible for some ports. To facilitate IWT, some companies believe that cranes and other necessary equipment will become more adapted to IWT, with the hope of automatic loading and unloading operations soon.

Infrastructure is another concern, as customers tend to want one truckload at a time, which could be an issue due to the large quantities required to fill an entire barge. Coordination with other actors is crucial for IWT, and transparency and co-ordination of the supply chain can bring a competitive advantage.

Companies in Drachten, located adjacent to the waterway, need help with poor hinterland connectivity, end-haulage, and customer demand. They adapt by building factories along the canals, reducing transit time and costs. However, longer delivery times could be an issue for some customers when using IWT instead of road transportation (Roso et al., 2020).

Inland water transport (IWT) faces many problems, including market, logistic, infrastructural, and administrative constraints. Market constraints are key to the growth of any industry, including the inland water transport sector. Yapei Queen ferry in Ghana,

which transports 91.6% of cargo from Akosombo to the northern part of Ghana, faces market constraints due to empty ferries and an imbalanced cargo flow; this leads to high freight rates, thereby making the service unattractive.

Logistic and infrastructural challenges also affect the IWT industry; for instance, outdated landing stations make their services uncompetitive since they lack adequate cargo handling equipment while operating old water vehicles, among others, without innovative modern vessel storage and cargo handling machinery, as seen in India.

Administrative bottlenecks are a big issue when it comes to IWT. Countries such as Canada have well-structured agencies that oversee and regulate this business. Still, most developing countries lack such institutions, making it difficult for them to control activities within their territories professionally.

VLTC has been under Volta River Authority management since 1970, thus being a subsidiary company under the Energy Ministry, which disadvantages them in terms of funds allocation and administrative decisions because VRA does not see VLTC's services as its core function; hence, less attention is given, plus little support from Energy Ministry towards addressing their concerns.

The administrative procedure for vessel endorsement acquisition in China is expensive and time-consuming, especially where operations involve multiple ports from different provinces; this poses a great challenge to shipping companies operating in IWT in China because there is a need for a complete integrated port management system across the country coupled with vessel endorsement requirements from various provinces thus further aggravating challenges faced by IWT firms. The In-land Water Transport (IWT) system faces many hurdles like bureaucracy, technical constraints, constructing and maintaining navigational channels, canals, locks, etc. These issues demand frequent dredging and canal lock construction, which may be capital-intensive. Moreover, there are dangers in building and maintaining navigational channels, canals, and locks due to tree stumps, sedimentation, and shallow water depths. In some countries, IWT is a seasonal means of transport because some routes are left at the mercy of rivers when funds run dry; hence, they silt at particular points.

Certain parts of the navigational channel have become shallow because of sediments thereby making them unsafe thus causing company to suspend operations during the dry season or wait behind canal locks; also, sedimentation of navigable rivers coupled with construction road and rail bridges contribute to sedimentation as well as shallow water depth problems in India. In China, each year from September to March, there is a 50% drop in water levels that can reduce vessel capacity by half if its carrying capacity is below 1000 tons.

The operation of canal locks at Zhuzhou and Xiangjiang increases vessel waiting time before crossing, which affects IWT's competitiveness. Therefore, it is important to understand these constraints so that appropriate measures can be implemented to address them; moreover, respondents' knowledge based on their experience from countries where this mode is highly competitive can help solve such problems (Solomon et al., 2021).

Enhancing transportation along the Nile River involves some operational challenges like lack of a regulatory framework, not enough cargo handling facilities and absence of navigation aids. Furthermore, intermittent waterway maintenance is required while occasional blockages by water weeds and hyacinths are necessary. The reconstruction of the Lake Victoria transport network can provide a viable connection between the Northern Corridor and Central Corridor, thus enhancing flexibility for transporters in Burundi, DRC, Rwanda, and Uganda. Poor interconnection, high traffic flows, outdated vessels for water transport, inadequate cargo handling and supply chains are among factors that limit navigation. To improve the subsector there should be ferry slips and dock facilities; involvement of private sector; fresh hydrographic survey and more investment in inland water transport sub-sector. (The Role of Inland Water Transport in Support of Further Regional Integration, n.d.,p.202).

Because cattail has spread in its eutrophicated habitats and water quality, the Senegal River's flow regime has been severely affected. While they have also changed its flow regime, making the river unfit for navigation, the Diama and Manantali dams have had positive impacts on the river. Although it is a trade link between West Africa and North Africa, the river has suffered from prolonged droughts and poor

maintenance of its bed which have further weakened its flow regime. Since 1972 when these projects were initiated to revive it as an economic powerhouse in the region, OMVS has been investigating this navigation scheme. River transport can open new economic perspectives and sustain existing populations while attracting back those who left. The basin alone constitutes 15% of the total population of four member states within OMVS with a total number standing at about 7.6 million people (“Conclusions of the Sessions,” n.d., IAGF-session-6-GB.pdf, pp. 5-11).

As a regional hub, the Gambia took its foundation from River Gambia which served as a means of conveying groundnuts and other goods. The river historically ensured the smooth movement of things which greatly supported the economy. However, in recent pasts, there has been a decline in the condition of river transport infrastructure. Therefore, to bring back this very important means transportation then it is necessary that more consideration should be given towards repairing long ignored barges; tug-boats; wharfs and navigation aids among others. By doing so would improve on services offered by these facilities thereby enhancing transportation for groundnuts among other items which might reawaken Gambia’s position as a key player in regional trade and strengthen local economies (Gambia DTIS, p.13).

2.4 Sustainability of inland water transport

Various definitions of sustainable development have been offered. The simplest and most quoted definition is “Meeting the needs of the present without compromising the ability of future generations to meet their own needs.” This idea stresses on three interrelated dimensions – an inclusive economy, environmental sustainability, and social equity (ARE, n.d. Brundtland 1987 p.8). Initial approach towards sustainability should be based upon societal, economical as well as environmental aspects; these three pillars being interconnected such that anyone cannot work in isolation from others. Therefore achieving sustainability demands for a more holistic view which takes into account wider or longer term effects on society, economy and environment alike where by what we do today does not negatively affect tomorrow’s people’s chances.

(*The Role of Inland Waterway Navigation in a Sustainable Transport System*, n.d., p.2).

Often, the sustainable development is focused on the sustainable transport, because of its considerable and well-known effects on environment and society.

The definition of sustainable transport adopted by the Ministers of Transport of the 15 European Union countries is as follows: A sustainable transport system is defined as one that:

- allows the basic access and development needs of individuals, companies, and societies to be met safely and in a manner consistent with human and ecosystem health and promotes equity within and between successive generations.
- is affordable, operates fairly and efficiently, offers choice of transport modes, and supports a competitive economy, as well as balanced regional development.

2.4.1 Actions required for a sustainable inland water transport.

To achieve sustainable inland water transportation, a comprehensive approach and wide range of operations are needed, some of which are under governments' traditional control over inland waterways. Presenting this vision for eco-friendly inland water transport does not aim at extending the boundaries of operation beyond one state. Rather than that, it seeks to highlight possible coordination options on both government and corporate levels to increase its significance awareness.

Herein are the chief objectives (or imperatives) for states in their efforts to create an environmentally sound system of inland water transport in collaboration with other actors.(Sekimizu, n.d.).

2.4.2 Safety culture and environmental stewardship

Inland water transport requires a well-structured domestic regulatory framework in order to carry trade in a safe, dependable, and effective manner. The foundation for this structure should be a multiplicity of domestic regulations that cover every facet of inland water shipping. Advancement of safety, optimum energy efficiency, resource conservation, and pollution reduction should be its top priorities. In addition, it must make inland water transportation dependable and seamless. To achieve this, each party involved in the inland water transport chain must act responsibly, adhere to best practices, and put them into reality at every stage, from the design of the ship's original construction to its eventual recycling at the end of its useful life. To maintain the long-term sustainability of inland water transportation, it is essential to foster a culture of safety and environmental stewardship that encompasses the actions of all stakeholders with the following objectives:

Goals 1 – In order to establish a sustainable system of inland water transportation, there must be created a culture of safety. This might be done by establishing national standards that are based on the best world practices. It is important to enforce these local rules strictly. While ensuring "equal opportunities", these requirements should move beyond mere regulatory compliance and actively promote safety as an added value to the system.

Objective 2 – Sustainable development in the field of transport on internal waters means reducing negative impact on the environment caused by shipping and marine activities. This task requires inclusion ecological responsibility into elaboration and implementation at home level pollution prevention standards as well protection of rivers, lakes etc. from them. Such criteria shall take into account recognized international benchmarks(Sekimizu, n.d.).

2.4.3 Education and training in maritime professions, and support for seafarers working on river fleet.

The maritime industry, which includes both domestic and international operations, will continue to embrace more and more sophisticated equipment to improve environmental stewardship, energy efficiency monitoring, navigation and route planning, cargo handling, and ship and cargo safety. As a result of the introduction of new equipment, seafarers will have to take on new or altered duties. For maritime professionals involved in various roles, including engineers, legal experts, port staff, ship managers, and senior policy administrators, ongoing training, education, and capacity building will be required due to the integration of retrofitted or new equipment as well as the evolution of shipboard protocols over seafarers' careers. This is crucial in developing countries because it enables marine professionals to explore a variety of positions and increase their involvement in shipping and associated maritime sectors.

However, due to increased occupational mobility or the expansion of career prospects ashore, many seafarers' careers may be shorter than in the past. The shipping sector will be under additional pressure to offer seafarers a better and more desirable working environment due to the challenges of a shipboard employment, such as time spent away from home and friends, isolation, and potential exposure to tiredness. Inability to do so will make it harder to find and keep qualified seafarers, as well as personnel of the calibre who can be trained and continuously adjust their expertise in response to rapidly changing technologies and shipboard procedures. Therefore, the training and development of seafarer's career should base on the following objectives:

Goal 1 – The development of a sustainable inland transportation system requires competent and knowledgeable seafarers. To achieve this, the STCW Convention or its domestic counterpart should serve as the basis for such training and education. Refresher courses and educational updates shall be provided as necessary, with particular emphasis on safety and environmental consciousness. There is a need to enhance capacity building in marine education and training.

Objective 2 – It should be made possible that the inland water transport industry becomes an attractive career option for well-rounded individuals seeking employment across ship- and shore-based roles if we are to continue with our efforts of enhancing standards of living among seafarers operating within these crafts. Retaining qualified

personnel is likely to pose a challenge amid recurring issues like absence of recreational facilities, as well as substandard living conditions comparable with those found ashore for professionals working onboard these vessels; therefore, joint actions with local labour legislations relating maritime affairs should be taken into account.

Objective 3 – Training programmes for maritime professionals working ashore especially in developing countries must be comprehensive enough so that it can support the continuous growth of this sector. Such programs can target legal, engineering, ship management and port related professions among many others but all need professional training. These objectives may be achieved at regional or local institutions offering education about them (Sekimizu, n.d.).

2.4.4 Energy efficiency and ship-port interface.

In terms of moving large quantities of goods, inland water transport is the most energy efficient. Nonetheless, efforts towards increased efficiency in every aspect of shipping must not stop. The maritime industry continually seeks to minimize fuel consumption by enhancing ship energy efficiency and reducing their environmental footprint. However, this drive for greater efficiency needs also adapt with changing needs for efficiency in future freight handling over the coming years as well as considering new demands from inland water transportation itself so that it can effectively cater for necessary freight movements during next few decades. It should recognize that ships form part of a wider system comprising shore-based organizations; hence efficiency considerations must extend beyond vessels themselves to include those components on land connected with them through which they operate within this sector such as inland ports whose role is provide sophisticated services alongside required infrastructure for hinterland shipping Likewise other stakeholders along logistics chain like cargo handling agents, vessel traffic controllers or even routing protocols need consideration because their activities affect overall performance between different modes operating together especially commercial aspects around ship management/chartering have impact effectiveness observed among other aspects at this moment when new facilities are being established to serve emerging markets so there should be

streamlining operations while fostering stakeholder involvement during development phase for example it may necessary establish better communication channels among port authorities and customs administrations. To this end collaborative approach is needed address avoidable delays in clearing ships, cargoes crews and passengers .It should be noted that many administrative requirements relating to inland transport sometimes coincide with critical stages of a voyage where attention of master or crew may be least required.

Objective 1 – To greenify inland water transportation is an inherent emphasis on efficiency that goes beyond the ship itself. It means simplifying and standardizing cargo delivery and receipt documentation to enhance the port interface with ships. Also, it involves coordination improvement as well as new technology adoption in order to quicken ship clearance, crew change over, cargo discharge and passenger embarkation among others; hence this requires achieving these objectives.

Objective 2 – Port performance is a critical factor towards attainment of sustainable inland water transport. These facilities are important in ensuring that ships continue operating efficiently throughout their stay at sea or while sailing along rivers or canals thus necessary for washing off fouling organisms from hulls and polishing propellers; providing specialized fuels such as low sulphur diesel oil (LSDO) which contributes significantly towards reducing carbon emissions into atmosphere; strong logistics infrastructure e.g., storage tanks systems connected with pipelines etcetera. The above integrated system should be designed so as ships could travel fastest speed possible depending on intended routes they wish to follow logistics for shipping, port planning just time berthing route etc such components create a complete “holistic” energy saving framework for overall network of inner land transport systems energy use optimization. This still gives top priority on continuously seeking new ideas together with applying them appropriately during operationalization stages relating ships.(Sekimizu, n.d.).

2.4.5 Energy supply for ships

The ability of ships to operate depends on the availability of fuel, which is provided by the oil and energy sectors through terminals situated at inland ports. While shipping historically relied on heavy fuel oil, current global rules place an emphasis on emissions that are getting cleaner. As a result, strict emission control measures were put in place. Innovation and cutting-edge technologies, such as onboard treatment facilities and cutting-edge engine technology, are required to adhere to these regulations. Emission quality is directly influenced by fuel oil quality. Therefore, it is crucial for ships operating in inland water to implement suitable fuel oil quality regulations. To achieve this the following objectives, have to be addressed.

Objective 1 – The domestic distribution and accessibility of marine fuels must be ensured if sustainable inland transportation is to be achieved. It is crucial to strategically arrange port infrastructure for fuel provisioning to ships, based on a thorough analysis of future demands. The smooth operation of inland transportation depends critically on the accessibility of high-quality fuel on a domestic scale. Further research should be done on the prospective expansion of traffic information systems, such as the Marine Electronic Highway idea, to improve fuel efficiency and navigational safety.

Objective 2 – A sustainable inland water transportation system requires widespread availability to clean energy sources like LNG (liquefied natural gas) and low-sulphur fuel oils since modern civilization places a greater premium on clean air. Furthermore, society should not unfairly burden the shipping sector, who act as the end users, with the duty and cost burden of adhering to strict emission control standards, such as sulphur rules.

Objectives 3 - Fostering partnerships between the energy supply and shipping sectors is necessary to establish sustainable inland water transportation. In order to fulfil the need for bunkering facilities that can accommodate new types of fuels, these partnerships are essential. The achievement of this goal necessitates the participation of a wide range of stakeholders, including inland port planning organizations, flag administrations, cargo owners, and sectors dependent on reliable inland transportation services(Sekimizu, n.d.).

2.4.6 Maritime traffic support and advisory systems

Inland waterways are being used more now than ever, because of the increase in inland water transport and various applications such as fishing, tourism, cruise shipping etc. which revolve around settings for transportation over inland waters. As traffic becomes congested due to heavy use brought about by population density along these routes it calls for development of reliable open information systems that will support shipping routes; this can be seen from increased traffic intensity and bigger ships too. What is needed are better hydrographic services, navigational aids like buoys or lighthouses and technical innovations e.g., vessel Traffic Service (VTS) among others aimed at making vessels more efficient while enhancing safety levels at the same time. With navigation aid technology advancing rapidly but without standards being set by shipping industry players concerning harmonization between equipment/systems involved; there arise risks affecting both safety aspects as well efficiency gains made over years may evaporate. E-navigation should integrate new and existing navigational aids particularly those electronic based into a comprehensive framework which enhances navigational safety while reducing navigator's workload.

Objective - Sustainable inland water transport system needs cooperation and harmonization when designing best navigation systems. This involves integrating e-navigation with intelligent routing systems as well as weather routing aids where necessary. River pilotage should be considered in appropriate cases while recognizing the authority and skills of ship masters on their vessels. Among key factors is availability of reliable charts founded on updated hydrographic plus environmental data(Sekimizu, n.d., p.17).

2.4.7 Maritime security

Marine trade is threatened by the security environment, which causes trade flows to become uncertain. Such occurrences relating to security can somewhat deprive the poor of food while risking energy safety. Some of those are closely linked with piracy

and armed robbery as a result of political, economic and social developments in coastal countries promoting lawlessness and criminal activity at sea and on land. These perils are still ongoing among other security challenges. With growth in international trade, new security threats will emerge leading to expansion towards new maritime routes and ports that will cause shipping congestion to increase in some regions. Inland water transportation is an important part of the maritime transportation system that faces many different types of risks such as piracy, armed robbery, terrorism, illegal arms trafficking, smuggling, drug trafficking, human trafficking and unreported fishing or poaching. For this achievement, below objective must.

Objective -The communities benefiting from ocean-based commerce as well as those relying on mariners/seafarers and vessels/ships that should actively participate in preserving these features thereby creating an ecologically sound inland waterway transport system. The measures for maintaining safety must reflect the specific threats faced by the shipping industry; ships; seafarers ought to be implemented. It is also necessary to consider the financial implications that may come from increased safety measures because they potentially threaten shipping viability hence hindering inland water transit. Any ship registered under it shall also ensure that all actions taken aboard observe the ISPS code during voyage within international borders i.e., any vessel should hold onto all regulations enshrined in ISPS Code wherever it moves into world ports or when working anywhere else aboard ship whether or not it's involved in any International Sea Trade Venture ([Sekimizu, n.d., p.18](#)).

2.4.8 Technical co-operation

As international trade increases, the maritime transportation system is attracting new participants. Ports are now being constructed and the old ones are getting modernized in developing countries. The effectiveness of those available navigational aids is under scrutiny as well as in need for new ones to be adopted for developing trade zones. There will be a need to better coordinate capacity-building activities to avoid duplication of efforts. In this way, aid provision will no longer be just guided by mere demands but also will be grounded on genuine requirements as informed through this coordinated approach. This shows that these countries have great potential in

shipping industry. Poor countries require practical support for maritime capacity-building advancement to take place effectively. It is therefore necessary that governments in these countries understand the critical nature of drafting and implementing comprehensive national maritime policies within their setup. All nations must integrate their maritime policy to ensure the continued viability of the Maritime Transportation System (MTS).

Objective 1 – It is necessary to form partnerships in technical collaboration and look for new sustainable sources of financing that will guarantee the IWT system's survival in a long-term perspective. The above initiatives should focus on supporting ongoing technical aid programs and future needs across key operational domains like ship-building and repair, port infrastructure development and management as well as maritime personnel training. It is intended to enhance the capacity to build a strong and efficient maritime administration that encourages activities like vessel operations such as ship owning/management among others. To attain this, national maritime policies must be developed with the view of making the nation's shipping business more competitive. While also considering broader aspects of the country's marine engagement including National Jurisdiction over marine regions characterized by sustainable exploitation of their resources, there is need for emphasis on safety and security issues within this sector.

Objective 2 – Technical cooperation is aimed at enhancing the maritime industry growth in developing countries by improvement and maintenance of oceanographic, hydrographic, and meteorological information as well as ensuring provision of essential navigational aids. This cooperation should enhance the capacity for vessel traffic information and management services, all-weather search and rescue operations, pollution management techniques efficiency. The technical cooperation can greatly improve safety, effectiveness as well as sustainability of maritime activities in these fields. Such an all-encompassing strategy will guarantee that developing nations are better placed to manage their maritime assets and mitigate environmental problems thereby promoting long term development in the sector. (Sekimizu, n.d., p.19).

2.4.9 New technology and innovation

New vessels will gradually incorporate complex design, construction, and operational components. Existing vessels will also be required to adhere to stricter efficiency and environmental criteria. This will call for modifications to operational procedures and adherence to new regulatory requirements, including equipment retrofitting. The advancement of technology emphasizes the necessity of improved information sharing, common experiences, and teamwork in expertise. Such cooperation is essential to maximizing the advantages of innovation and cutting-edge technology, boosting maritime safety and environmental awareness, and subsequently enhancing the cost effectiveness of the sector. To achieve this the below objective becomes imperative:

Objective – A dedicated platform that promotes innovation and shines a light on cutting-edge technology and its use in real-world applications is required to achieve sustainable inland water transportation. Governmental organizations, shipbuilding organizations, classification societies, manufacturers, research and development organizations, and academic institutions will collaborate on this project. Implementations for inland water transportation. Governmental organizations, shipbuilding organizations, classification societies, manufacturers, research and development organizations, and academic institutions will collaborate on this project. Governments should provide incentives that stimulate the adoption and development of new technologies in order to advance technological innovation within the Inland Water Transport System (Sekimizu, n.d., p.20).

2.4.10 Finance, liability, and insurance mechanisms.

Due to public expectations communicated by governments through the regulatory processes at IMO, the marine industry will continue to face new regulatory obligations. The sector is also fundamentally dedicated to upholding efficiency, safety, and environmental stewardship. Soon, these changing requirements may necessitate large capital expenditures, including vessel retrofitting. The following generation of

vessels will continue this pattern. Additionally, within the current framework of unfettered commerce and the global economy, long-term investments in shipping have constantly benefited from the expansion of seaborne trade brought on by global economic growth. As a result, every global economic slowdown directly affects the balance between supply and demand for all ship transportation capacity, which in turn affects the shipping industry's profitability. For ship owners, cargo stakeholders, ship workers, passengers, the environment, and people or communities depending on clean waters, the financial effects of maritime catastrophes can be enormous. Maintaining thriving enterprises and living up to societal standards both need quick and sufficient compensation for real losses or damages. To achieve this the following objectives become imperative:

Objective 1 – Accessible and dependable finance is required to build new vessels or convert and modify existing ones to establish a sustainable inland water transport system. While considering the cyclical nature of the inland water transport industry, this financial support is essential to meet safety and environmental requirements.

Objective 2 – In order to have a sustainable inland water transport system, there should be clear rules on roles and responsibilities of parties in case of a maritime accident and the amount of money that should be paid out. These clauses detail compulsory liability and compensation for third-party claims. A global regulatory framework aimed at achieving consistent liability identification, enforcement and insurance requirements would help maintain sustainable price levels as well as facilitate the prompt indemnification of affected persons. (Sekimizu, n.d., p.21).

2.4.11 Inland water governance

The balancing of conflicting interests is a significant challenge considering the continued growth of domestic economy and the increased use of the Inland Waters. Conflicting interests in Inland Water usage will interact and have an impact on the Inland Water Transport. These range from the need to protect maritime areas for users besides the shipping industry to the conflicts that arise between environmental concerns

and the escalating demand for increased River borne freight capacity. A common method used to achieve this protection is the creation of Particularly Sensitive Areas. To balance these dynamics and guarantee an equitable cost distribution, efficient coordination between parties with divergent interests is crucial. To maintain the sustainability of various Inland Water usage, any reallocation of Inland Water uses must be well understood and approved by all stakeholders while considering pertinent harmonized domestic standards. This work should focus on coordinating actions, and a detailed discussion about the potential effects of suggested laws and regulations on the Inland Water Transport. To achieve this the below objective becomes imperative:

Objective – Different users and stakeholders of inland waters should engage in outreach and cooperation, aiming at conserving inland water bodies and promoting accountable governance. This assessment seeks to secure the future sustainability of the system while ensuring its efficient service delivery through fostering collaboration among these groups. Active involvement and coordination are essential in dealing with various problems experienced by inland water systems such as conserving the environment, managing resources, and achieving sustainability. In this light, it is through such undertakings that a strong, flexible foundation for governing inland waters will be established where all beneficiaries can participate equally thus safeguarding important supplies of water for posterity. (Sekimizu, n.d., p.22).

2.5 International Examples and Theories

When seeking for ways to address the problem of reviving the inland water transport in Gambia, it is best to analyze successful IWT systems in other developing areas. That is through making strategic investments, instituting changes in policies and forming public-private partnerships countries like Bangladesh and Vietnam have managed to rejuvenate their internal waterway (Islam, 2013; Pham & Yoshida, 2016)

In Bangladesh, for example, the government has put money into upgrading its IWT infrastructure which includes building ports and navigation systems while also

enacting laws that would ensure safety as well as environmental protection standards are met. Consequently, not only has this made transportation efficient but it has also promoted economic activities along these routes thus contributing towards regional development.

Vietnam on the other hand integrated IWT within its national logistics framework as one way of revitalizing this system with additional support being given through investment into infrastructure among others. The achievements realized here show how important it is for there to be an all-inclusive approach towards such developments which must involve among others infrastructure investment, robust regulatory frameworks and active participation by stakeholders.

These examples from different parts of the world can therefore act as useful guides for Gambia when planning on how best it can develop IWT services in a more coordinated manner. By borrowing ideas from them, Gambia will be able to adopt those practices which work well within her own context thereby helping overcome local challenges while at same time maximizing utilization of inland waterways.

2.6 Identify Gaps in Present-day Literature

There are still gaps in understanding how to achieve the benefits of inland water transport (IWT) in developing regions such as The Gambia, even though much has been written about its environmental and economic advantages. Basically, what many authors have done is talk about those parts of the world that possess good infrastructure systems and strong regulatory frameworks leaving out specific challenges faced by countries with poor transport networks.

Furthermore, no studies have been conducted concerning various ecological and socio-economic aspects of River Gambia which are instrumental in designing workable strategies for IWT. These factors were not given prominence in literature hence creating a knowledge lacuna that this thesis aims at filling. Drawing from an extensive account on what prevents smooth sailing of ships along the river and what could

promote it again – especially when viewed through sustainable development lens – this paper will try to bridge these gaps while contributing into wider discussions around sustainable transportation within underdeveloped areas.

2.7 Theoretical Framework

The theoretical foundation of this thesis about reviving inland water transport (IWT) along the River Gambia combines different concepts covering sustainable development, transportation systems as well as regional economic growth. This basis draws on sustainability theory in transport which acts as the main framework for examining how IWT can be revitalized along the River Gambia. Besides being integrated with other relevant theories on regional economic development and environmental sustainability, this provides a complete guidance for my study (Banister, 2008; Black, 2010).

2.7.1 Sustainable Transport Theory

In its simplest form sustainable transport theory supposes that there must be an establishment and functioning of such transportation systems that do not harm the environment while at the same time they maximize social benefits and economic gains (Banister, 2008). These principles are based upon needs for present generation without compromising ability of future generations to meet their own needs. With regard to IWT context this approach points out possibilities for carbon emissions reduction through lower road congestion together with cost-effective means of transporting goods and people. Properly planned and managed systems of IWT could contribute towards wider objectives for sustainable development like reduction in environmental degradation or provision affordable transport options leading to social equity enhancement as well fostering economic growth through efficient logistics (Litman, 2007).

The River Gambia presents a chance to apply sustainable transport theory practically because it has historical significance coupled with favourable geographical features. Making the river more usable as a route of transportation is therefore consistent with principles of sustainability by promoting ecologically friendly modes of transport which can foster economic prosperity while preserving ecological integrity both within and around the river itself (Gibson, 2006).

2.7.2 Regional Economic Development Theory

According to regional economic development theories regions can promote their own growth and raise living standards if they fully utilize available resources in an effective manner (Porter, 1990; Storper, 2010). Such theories also look at how different economic activities are distributed over space, infrastructure's role in facilitating trade as well as importance of regional connectedness in promoting economic integration and development. This theory views revitalization of IWT along the River Gambia as a strategic move for improving regional connectivity and enhancing economic integration. In addition, it is expected that investment will be attracted by the bettering transport infrastructure along this river which should then result into increased trade creation of jobs especially within those parts where there are no proper road networks serving them because they are located along rivers. When transport infrastructure is improved upon there may occur what is known as multi-sectoral interdependence where by virtue having been enhanced it brings about more interaction between sectors leading to general growth across regions (McCann, 2013).

2.7.3 Environmental Sustainability Theory

Theories on environmental sustainability deal with long-term viability of ecosystems and responsible use natural resources so that human needs can be met both now and in future (Meadows et al., 2004). Such theories advocate for practices that

conserve biodiversity while supporting socio-economic progress with due consideration given towards striking balance between these two forces; thus ensuring sustainable management of nature's wealth during development process (Costanza et al., 2014). Therefore, within my study area which focuses on IWT along the River Gambia this means looking into effects on environment when rivers are used for transporting goods once again coupled together identification ways through which such impacts could be mitigated against. For instance one would want to know whether there will be any change in water quality or aquatic life due to increased traffic on the river among others apart from examining cleaner technologies aimed at reducing pollution levels (Gibson, 2006).

A framework for assessing the balance between economic gain and ecological damage as well as ensuring that the river remains a viable transport route in the future is provided by environmental sustainability theory. It also backs the incorporation of environmental stewardship into IWT planning and management so that sustainable development goals are achieved through these efforts on revitalization.

2.7.4 Integration of Theories

This research is underpinned by an integrative approach which combines different theories namely, sustainable transport theory, regional economic development theory, and environmental sustainability theory. This enables it to comprehensively analyse challenges and opportunities associated with reviving inland water transport along River Gambia. Utilizing these interrelated concepts, the study seeks to provide recommendations that will meet short term needs for infrastructure enhancement in transportation while at the same time ensuring long-term economic growth and environmental conservation in The Gambia (Banister, 2008; Black, 2010; Storper, 2010).

2.8 Research question

What are the current challenges and opportunities for the revival of Inland Water Transport (IWT) along River Gambia with respect to infrastructure, regulations and environment? How should Gambia Maritime Administration (GMA) improve its regulatory framework to create a transport system that is sustainable financially while supporting regional development at the same time?

2.9 Hypothesis

Many nations, including The Gambia, do not take full advantage of inland water transport (IWT) despite its obvious benefits. This was the main connection between its hinterlands and urban centers. Among the reasons behind this decline are a need for much capital to restore infrastructure, trade imbalances and concentration on road network development at the expense of river transportation.

According to the theory, if we rejuvenate IWT along River Gambia it will increase commerce mostly through re-export business which in turn leads into economic growth. Another thing expected from this revitalization is that it should improve access to markets; therefore, reducing costs incurred during transportation thus enhancing competitiveness among local enterprises. Moreover, investments made on infrastructures may create employment opportunities as well supporting growth at grass root level within communities where such developments take place. Additionally, what the theory suggests is that there could be lower post-harvest losses for farmers due to better transport systems over waterways also stabilizing supplies within their areas. However improved connections along rivers have potential benefits towards agriculture since it helps stabilize prices locally besides saving environment through reduced congestion caused by traffic jams along roads coupled with carbon emissions resulting from motor vehicles traversing those highways. Finally, this research seeks among other things actionable proposals geared towards establishing an ecologically friendly and viable transportation system that can be sustained along River Gambia considering legislations, environmental conservation measures as well safety precautions.

3 METHODOLOGY

The chapter describes the research methodology used in this study to examine the challenges and opportunities of revitalizing inland water transportation on River Gambia. The chapter is organized to give detailed information about research design, data collection methods, data analysis techniques and ethical considerations that guided the research process. A mixed method was applied due to complexity of research questions to have both qualitative and quantitative data for a comprehensive understanding of the subject matter.

The methodology had to be carefully chosen because it needed to be aligned with the objectives of the study which were: To assess the current state of IWT infrastructure; Evaluate stakeholder perceptions and examine regulatory and environmental factors affecting sustainability of IWT in The Gambia. This enables triangulation of data from diverse sources hence enhancing validity and reliability. Starting with an explanation concerning research design, followed by a detailed description about how data was collected analysed. Lastly ethical considerations are discussed to ensure that it adheres to academic integrity at its best.

3.1 Research Methodology

Research methodology is described differently by different scholars in academia. For example, it can be referred to as “the method or approach used in carrying out research”. Other definitions of methodology are; “a set of rules or procedures that guide the conduct of a particular research” and “basic assumptions and values underlying a given enquiry.”(Wilson, 2014). In a nutshell, what this means is that research methodology involves general beliefs plus systematic steps followed when doing investigations. It helps one choose techniques for answering questions correctly while ensuring objectivity which matches theory and objectives.

3.2 Research Design

This study's design uses a combination of quantitative and qualitative data collection techniques within a mixed-methods approach. Such a mixed-methods design was chosen due to the many-faceted nature of the research questions, which necessitate understanding both measurable aspects about IWT infrastructure as well as subjective views held by different stakeholders.

This research uses qualitative approach with some aspects of quantitative approach. Literally the research approach is a mixed/multi method.

3.2.1 Qualitative Research

Qualitative research is hard to define in few words because it encompasses a wide range of methods and theories. It includes deep interviews, focus groups, content analysis, visual methods, life histories or biographies – all of which are designed to get at people's experiences. The interpretive approach also known as qualitative research lets us see things through other people's eyes and understand what they mean by them. This means that qualitative research is concerned with context. Qualitative researchers work from the premise that social phenomena can only be understood when considered within their natural settings so try not to disturb anything while studying it hoping for an insight into how some participants make sense out of such things. (Hennink et al., 2010)

3.2.2 Quantitative research

Quantitative research is systematic scientific inquiry that relies on measurable performance indicators and controlled methods. It emphasizes measurement and statistics as a way of connecting observable events with mathematical statements about relationships. The purpose of quantitative research is to produce models or theories which explain behaviour; it also involves creating and testing hypotheses. These

researchers seek to make findings more valid by making them objective, reliable, and generalizable using statistical tools and techniques. By doing so they can identify regularities in data systematically, check forecasts against them, and draw numerical-based inferences about what has been investigated thus far into some phenomenon's underlying nature.(Hoy, 2010, P.).

3.2.3 Mixed Method approach:

A mixed-methods approach refers to the use of both qualitative and quantitative research methods in one study to enable researchers reach a better understanding of their subject matter(Creswell & Plano Clark, 2018). In this case, it allowed for gathering various types of information that could be analyzed at different levels. For instance, structured questionnaires were used to collect quantitative data on indicators like infrastructure status or usage frequency or economic impacts while semi-structured interviews were conducted with key informants such as government officials, transport operators and community leaders who provided more detailed responses concerning regulatory issues among others.

In extremely simpler terms, the mixed methods approach to social research combines two or more methods to collect and analyze data about your research problem. Combined methods are classified as mixed method approaches when these methods are from both paradigms, that is, when the study uses both quantitative and qualitative methods. The approach is based on the rationale that qualitative techniques are better for certain situations, and for others, quantitative ones are better. Hence, to get the best outcome for a study, you need to combine both approaches(Kumar, 2018, P. 48-49).

Qualitative and quantitative approaches each have their strengths and weaknesses. Through qualitative research, it is possible to develop an in-depth understanding of the context of events and phenomena while with quantitative research, conclusions are arrived at by measuring things leaving a lot of room for generalization through statistical analysis. Furthermore, being drawn from several separate variables without

considering the others may not give valuable insights as well as failing to provide a reasonable explanation/understanding (qualitative) and this might result in failure to achieve some research goals or objectives. This therefore calls for mixed methods approach. The mixed method approach combines the qualitative depth with the power of quantitative analysis thereby allowing for a richer understanding of research questions and more rigorous results that can be acted upon. (Kumar, 2018, P. 65).

In this study, a combination of approaches called mixed method was used so as to obtain both numerical and non-numerical information about the situation with inland water transportation along the River Gambia. Questionnaires were employed to collect figures regarding stakeholders' point of view, whereas interviews brought out descriptive data concerning regulation and infrastructure. Such a methodology has been adopted to enable exhaustive examination which fuses statistical strictness with deep-seated investigation into stakeholder outlooks thus responding to various aspects of the research problem.

3.3 Rationale for the Research Design

The choice to adopt this particular approach is guided by its relevance towards comprehensively addressing research objectives. This means that through mixture of both approaches; quality becomes stronger thus making certain findings are valid enough (Tashakkori & Teddlie, 2010). Furthermore, it also enables looking at various dimensions related with investigation problem so that statistical trends can be viewed alongside their underlying causes too.

Quantitative surveys are necessary because they generate numbers which may then be statistically analyzed in order to have an overview regarding what currently obtains along River Gambia vis-à-vis IWT. On this account; methods like this help establish relationship between quality infrastructure from one side and frequency use from another among others.

On the other hand, qualitative interviews provide an opportunity for respondents' voices to be heard hence giving them chance express themselves freely about issue at hand. They are useful when dealing with complex matters that cannot fully be captured through numbers alone; Therefore, these two approaches should complement each other throughout this investigation.

3.4 Research ethics

The design and conduct of this study were driven by ethical considerations. This means that it was essential to observe good research practice, which is socially responsible and morally correct, particularly in situations where sensitivity is high like The Gambia. The investigation followed the strictest code of ethics by ensuring that all participants' rights are observed at every stage of the project without compromising their dignity or well-being.

3.4.1 Consent:

One of the main pillars on which this study rested was informed consent. In light of this, people were given enough information about the aims, objectives, and likely effects of the research before they agreed to take part. It should be noted that these details were passed across using a language that was easily understandable to them so as not leave any room for doubt or confusion. Additionally, participants knew very well that they had every right to quit from being part of it anytime without facing negative consequences hence no harm done. Written consents were obtained but for those who could not read or write verbally recorded after clear explanation had been made (Orb et al., 2001).

3.4.2 Privacy:

Another crucial aspect considered during data collection process was confidentiality with respect to individuals' private lives. Hence no information gathered during this exercise would be able to identify any person involved or even point out specific organizations where they come from since everything has been de-identified including personal identifiers themselves such as names etcetera, thus protecting their anonymity throughout storage period too which should be limited only within reach among members conducting such investigations besides taking care while sharing findings lest someone may inadvertently become recognizable thereby preserving confidentiality also provided (Bryman, 2016)

3.4.3 Local Communities' Concerns:

Researchers considered possible effects on nearby communities at different stages planning up till now. Basically, what the researcher wanted was positive contribution towards these societies through giving recommendations based on economic factors affecting them alongside environmental issues surrounding those areas under investigation therefore intending not only do no wrong but also ensure benefits outweigh risks in any research undertaking of such nature. Further still, findings will made available to representatives from various communities as well other stakeholders involved thus fostering openness around implementation suggestions for enhancing wellbeing among people living nearby (Israel & Hay, 2006).

This study followed strict ethical principles that safeguarded the rights and welfare of those participating while recognizing broader community relationships.

3.5 Methodological Framework

The research objectives guided the methodological framework of this study. These objectives were centered on assessing the current condition of IWT infrastructure in The Gambia, evaluating the effectiveness of its regulatory system and exploring the environmental sustainability of this sector. Holistic examination is possible by use of both qualitative and quantitative data to analyze these objectives hence giving a wider knowledge about challenges and opportunities for IWT revival.

Quantitative data was analyzed using statistical techniques; descriptive statistics being one such technique while correlation analysis being another used in identifying trends between variables or relationship among them. On the other hand, thematic coding which involves finding patterns within information (Braun & Clarke, 2006) was adopted as means for analyzing qualitative data. Through this approach therefore, it was ensured that findings are based on facts and steps followed during analysis were logical and strict.

Mixed methods design has been employed in conducting this research because it fits well with the research objectives. This implies that when quantitative information is merged together with qualitative data, we will be able to have a better understanding about what needs to be done so as to revitalize IWT along River Gambia. Additionally, multi-methods approach enables researchers to critically look at the problem from different angles thus making their findings strong enough supported by empirical evidence obtained through rigorous investigation procedures.

3.6 Research strategy

Due to scanty secondary data available on river transport in the Gambia, this research uses case study for primary data collection with the following data collection techniques employed:

1. Document review.
2. Questionnaires.
3. Interviews
4. Surveys.

3.6.1 Document Review

Is a systematic way of analysing and evaluating printed and electronic (computer-based and internet-transformed) documents in a systematic manner. Similar to other qualitative research methods, document analysis necessitates the interpretation and examination of data in order to derive meaning, acquire comprehension, and construct empirical knowledge.(Bowen, 2009, P.1).

A review is conducted for the purpose of this research of national policy documents, acts, and their regulations pertaining to inland water/river transport. Particularly. Qualitative information for this research has been gathered through a review of the Gambia Maritime Administration Act of 2006, the Merchant Shipping Act of 2014 and its 24 regulations, The Marine Pollution Act, 2013, The Gambia Ports Authority Act of 1976, the national transport policy, and other pertinent documents.

3.6.2 Questionnaires

A questionnaire is a prevalent instrument utilized for information collection. It consists of a form or instrument that respondents (from a designated population) complete by providing secure answers to a series of questions. The purpose of the questionnaire is to obtain the necessary data for the study. The information gathered through a questionnaire is not accessible through secondary sources. These forms are appropriate for both qualitative and quantitative data collection. While not frequently employed in qualitative research, these techniques can be advantageous when a sizable sample size is required for a study. A questionnaire serves various objectives, although statistical data collection is its most prevalent use. It is capable of being configured to assess distinct variables, including facts, preferences, and behaviours. While the development and distribution of a questionnaire may not be challenging, there are certain aspects of these procedures that should be regulated. Typically, this form is utilized in situations where individual discussions with each participant are not feasible. As a result, it facilitates the collection of data from various organizations, groups, and individuals. Questionnaires may be classified according to various characteristics, including question types and methods of administration(Taherdoost, 2021, P.7).

3.6.3 Interviews

Interviews constitute a fundamental mode of communication where questions are posed, and answers are provided by the participants. The main aim of interviews is to gather information depicted in the subjects' answers. In contrast to questionnaires, which collect data in an indirect way, interviews allow probing of sensitive topics, but they demand certain skills. The interviews can be performed in different formats including individual, group, face to face or using phone, computer or any other method. Such formats permit flexibility in the data gathering process and yet allow for greater depth that is harder to achieve by other means. (Taherdoost, 2021, P.9). The targeted group for this technique is the Heads of Institutions and Departments within those institutions (Regulators, Operators and Key users as well as subject matter experts) involved or concerned with the inland water transport on the River Gambia. They are selected on the assumption that they are best placed to give the required information, thoughts, or perspectives to the scope of this study. All interviews in this study were conducted face-to-face and were structured around one essential set of questions prepared in advance to be posed to all respondents. This approach provided comparability among the responses and focused on the core area of interest. In order to elaborate on the issue, Google Forms was first used to conduct questionnaires, and then interviews were conducted. These interviews were primarily intended to be structured in a form where the data collected would be relevant to the research objectives of the study.(Taherdoost, 2021, P.10).

3.6.4 Surveys

A survey is an efficient technique which enables to know how people feel, what their opinions are, and so on. It can be directed to either general, global questions or to more specific questions which need to be answered. The survey includes many ways to reach participants, such as telephone calls or emailing. Surveys, because of their varied forms, can cover a wide population and gather significant information making it beneficial as a research instrument. (Taherdoost, 2021, P.24). The use of this technique is specifically preferred for collection of data from the riverine communities selected as target group for this research. In person face to face interviews were

conducted to give the researcher chance to interact with sample population alongside observation of the real situation prevailing.

3.7 Target group

Operators (The Gambia Ports Authority), Regulators (The Gambia Maritime Administration) and River Port Communities comprise the targeted population. Participants are selected using a purposive sampling strategy, which involves considering their expertise and/or professional experience in the inland water transport systems of the nation. This approach is favoured because it enables the inclusion of participants who possess specialized knowledge and expertise regarding the critical factors that facilitate or restrict transportation in the River Gambia, as well as its environmental ramifications, challenges, and prospects. Such individuals can offer invaluable perspectives and insights.

Sample size (Target group size) determination is crucial for drawing valid conclusions in research. Singh and Masuku (2013) emphasize the need for careful selection based on investigation objectives, variations, precision, and cost. It involves recording information on pre-designed schedules or questionnaires. Sample sizes are chosen considering cost, target variance, and statistical power. Larger samples enhance precision. In a comparative study, sample size influences statistical power, crucial for detecting significant differences between groups. Adequate sample size minimizes the risk of type II errors, ensuring the credibility of study results. Different studies may require varied sample sizes based on their designs and objectives.

In general, a purposeful sample size of 20 was taken into account. Officers were selected in the following proportions: ten from the Operators, ten from the Regulators, five from subject matter experts.

The precise and all-encompassing inventory of the river port communities (the final target group) was obtained from the Gambia Bureau of Statistics' Cartography Unit and Geographic Information System (GIS). For the study, a random sample of eight communities (one from each region) was chosen to take part. A single enumeration area was chosen for each community in a proportional-to-size manner. Twenty

residential households were selected for interviews in each enumeration area during the subsequent phase.

3.8 Data Analysis

The study employed a mixed methods approach incorporating quantitative and qualitative inquiries to investigate factors deeply.

The responses from the survey questionnaires were analysed using SPSS, which employed both qualitative and quantitative analysis. This approach aimed to give a resilient and comprehensive understanding of what was found in the study. Combining quantitative and qualitative studies gave different angles to the findings, making them more comprehensible. The method enabled detailed exploration into factors, ensuring that every aspect of the research terrain is well understood. Involving multiple analytic methods makes the study results more reliable and complete, enhancing its overall research tale.

To analyse the data, the researcher used qualitative data, and thematic coding for the same purpose. This is enable the researcher to discover various themes about infrastructure problems in relation to regulatory challenges as well as environmental impacts. Besides that, quantitative information was analysed by means of statistical techniques so as to recognize patterns or correlations between different stakeholders' reactions on a given issue. By integrating these two types of analysis together it helps the researcher to get holistic knowledge concerning what is happening with river transport along the River Gambia currently; thus, making the findings relevant with regards the study objectives.

3.9 Data search and sources

The study's resources were picked depending on their relevance with the problems and prospects of inland water transport in underdeveloped nations, more specifically Sub-Saharan Africa. To make sure that the information is up to date, preference was

given to the most recent surveys. Moreover, they were also assessed critically for how they can be used to address Gambia's unique socio-economic setting as well as its ecological conditions. In areas where there is not enough information available from existing materials; this research will try filling those gaps using firsthand findings obtained by means such as questionnaires and personal inquiries during interviews.

3.10 Reliability and validity

The methodology for participant selection in this study was to find river port communities and key government agencies involved in River Gambia Transport and finally, contacting these people. It is necessary to emphasize that a two-pronged approach was used to show all positions within the River Gambia Transport adequately; one was based on questionnaires, while the other used Key Informant Interviews (KIs).

Therefore, the first step included developing an exhaustive list comprising all the current government bodies involved in River Gambia Transport and river port towns. This list served as a platform for subsequent interactions. These individuals were chosen from each agency and community to make effective communication channels. The dissemination of questionnaires was supported by these persons, who also facilitated the organization of KIs.

To acknowledge the complex and diverse aspects of River Gambia Transport, surveys were carefully distributed to persons from different sectors within the River Transport system. The purpose of this comprehensive approach was to encompass a wide range of viewpoints and understandings that are pertinent to the intricate system being examined. The questionnaire was customized to gather relevant information regarding institutional roles, considering the specific context of each sector. This approach guarantees the collection of accurate and meaningful data.

To ensure that the study produced detailed, trustful results the use of both questionnaire administration and Key Informant Interviews was rather a tactical approach. In conducting this research, the researcher utilized this strategy to employ triangulation in order to verify findings by examining responses from various sources and viewpoints. Therefore, the methodological rigor encompassed in merging these methods

considerably enhanced reliability and trustworthiness of study's findings thus offering an all-inclusive and plausible critique for possible future research and decision-making. Through employing this twin approach, the researcher could check answers from numerous sources and viewpoints as well as agree on validity of conclusions reached. As such it generated comprehensive understanding of the subject matter under investigation encapsulating both broad quantitative data as well as detailed qualitative insights.

In addition, the comprehensive understanding of River Gambia Transport was improved by purposefully including different viewpoints from frontline practitioners to high-ranking officials and inhabitants of Riverport Communities. The study sought to engage people at all levels of the organizational hierarchy to fully explore the experiences, challenges, and opportunities in waterways transportation.

Basically, the selection process targeted a wide range of informants who would yield rich data regarding River Gambia Transport. The study aimed at methodological rigour by using both qualitative and quantitative approaches, which were expected to enhance the reliability and validity of the findings. This approach enhanced a nuanced understanding of the subject matter.

3.11 Limitation of scope

In this study, the researchers intentionally narrowed down to the River Gambia because it has been regarded as an essential historical waterway for moving goods across The Gambia, which can be revived to meet modern economic demands. It should be noted that other modes of transport like railway lines and roads were not considered in this research, and neither were other parts of the world looked at since what is being focused on here are only those distinct problems experienced during navigation through rivers. Such a limited concentration enables an in-depth investigation applicable to this study's scope.

4 SURVEY RESULTS PRESENTATION

4.1 Presentation of survey results

Upon completion of field data collection, a comprehensive process of cleaning the data began which entailed editing, checking for inconsistencies and rectifying mistakes. The subsequent examination of the data was conducted using the Statistical Package for Social Sciences (SPSS). The study's ability to generate meaningful engagement is evident in the strong response rates from both stakeholder institutions and River Port communities. The demographic breakdowns provide additional insight into the study's deliberate emphasis on influential decision-makers and professionals in departments related to river transport operations. This contributes to a thorough and well-informed examination of the research findings.

All 20 respondents that were selected through key institutions and informants were interviewed successfully hence having an outstanding response rate of 100%. Out of 180 participants who had been picked from River Port villages, interviews were held with 151 individuals thereby resulting in response rate of 84%. These high response rates demonstrate that this study has managed to capture a significant amount of participation from both stakeholder institutions as well as local populations.

4.2 Data Analysis

The final data after been examined using the Statistical Package for Social Sciences (SPSS), the data received from Gambia Ports Authority and the Gambia Maritime Administration will be analysed using qualitative data analysis method.

Essentially qualitative data analysis involves a process of immersion in data through which you can identify and interpret the experiences of your study participants. It involves a process of discovery that enables you to remain close to the data and form an evidence-based understanding of the research issues. It is through immersion in your data that you can identify the unique perspectives of your study participants,

understand social or cultural meanings attached to behaviour and begin to explain and develop theory about people's actions or beliefs. Immersion in qualitative data actions or beliefs. Immersion in qualitative data involves following analytic procedures to prepare, analyse and interpret data, so that the meanings from the data are indeed evidence based (Hennink et al., 2010)

Qualitative data analysis is sometimes described as a 'Science and Art', as 'structured but flexible' and as a process of 'calculated chaos' (Hennink et al., 2010 - P. 205). Qualitative data analysis is the classification and interpretation of linguistic or visual material to make statements about implicit and explicit dimensions and structure of meaning-making can refer to subjective or social meanings. It could also be applied to discover and describe issues in the field or structures and processes in routines and practices. Often, qualitative data analysis combines approaches of a rough analysis of the material (overviews, condensation, summaries) with approaches of a detailed analysis (elaboration of categories, hermeneutic interpretations or identified structures). The final aim is often to arrive at generalizable statements by comparing various materials or various text or several cases ("Qualitative Data Analysis," 2020 - P. 1).

The precise qualitative analysis method used in this study is qualitative thematic data analysis. Thematic analysis is a method which analyses and reports patterns or themes present in the data. It is meant to create an account of the data set in steps which are consequently comprehensive. However, thematic analysis is not always restricted to description, as it usually involves some level of analysis of the various components of the research topic. This method is popularly accepted by researchers although there is still no agreement on what thematic analysis is or how it should best be carried out, nothing but some form of elasticity and controversy in the method employed. (Braun & Clarke, 2006- P.8).

To perform a qualitative thematic analysis, this research will follow a systematic approach to develop codes, identify themes, and analyse the data from the Statistical Package for Social Sciences (SPSS). The below outlined steps are followed for the purpose of this research to carryout thematic analysis for the data received from the Gambia Maritime Administration and Gambia Ports Authority.

4.2.1 Step 1: Familiarization

Prior to filtering and sorting data, it is vital for the researcher to familiarize themselves with the types of information they have obtained. The latter is particularly important even if he or she was not directly involved in collecting data. To be able to comprehend main problems and developing themes in the material, a researcher should completely dive into the context of accumulated knowledge. Involving one's consciousness into collected facts, listening to audio files, reading interview transcriptions as well as carefully studying observational records are some activities that familiarization demands. During this phase, there are certain instances when it is possible to go over all the obtained materials. For example, if only a few interviews were done or if there is enough time on the research timeline for an exhaustive review, then this would be feasible. It allows researchers to make meaning of information by becoming intimately acquainted with it thus forming a better understanding for subsequent stages of analysis of data. Identification of crucial patterns and insights begins at this step which makes sure that examining and picking out valuable pieces from massive amounts of information can be done in a systematic approach based on evidence ("Qualitative Data Analysis," 2020).

The data after been processed by the Statistical Package for Social Science (SPSS), it was thoroughly reviewed to get an in depth understanding of the data. The processed data contains responses from stakeholders about various aspects of inland water transport along the River Gambia, categorized by Gambia Maritime Administration as the regulatory entity and the Gambia Ports Authority as the sole port operating entity.

4.2.2 Generating Initial Codes

The process of initial coding begins with dividing qualitative data into sections which can be labelled using various methods. These categories are then meticulously

examined and compared by the researchers to identify similarities and differences. This allows for the emergence of categories. In this stage, codes and categories are provisional and may change during analysis. The process is dynamic; therefore, it requires deep involvement with materials to bring out latent patterns or themes. After completing an initial code, reflective writing is done through analytic memos where thoughts about why certain parts were coded in a particular way are documented. Such reflections serve to sharpen up on codes or categories used at different points. Qualitative research has an iterative character that calls for continuous re-evaluation until all angles have been considered towards achieving holistic comprehension around data (“Qualitative Data Analysis,” 2020).

Building on the above, generation of initial codes, which are like captions of important parts of the data that relate to the research questions, is the next stage in the process. It is at this point that this research progress through reading each piece of text minutely to try and see if any theme or pattern emerges. Prominent attributes and subtle shadings are noted by careful review of data as it is arranged into more manageable sections for further study.

This systematic approach enables the researcher to dissect large quantities of data and discern links as well as meaningful conclusions. As a result, coding is a reiterative procedure with several rounds often being required for refining and clarifying labels. In fact, this initial coding paves way for more sophisticated analytical techniques hence giving structure to understanding the data. This step is vital in discovering insights that may have been missed during a quick scan over or when preparing an all-encompassing analysis aimed at effectively dealing with research questions.

The initial codes generated based on the data received from the Gambia Ports Authority are here presented below:

Table 1: Initial codes for data from Gambia Ports Authority.

Data Extract	code
“It has been dormant over the years”	Dormant
“Grossly underutilized.”	underutilized

"It has almost ceased to exist."	almost ceased
"Inland water transport is currently underutilized due largely to dilapidated infrastructures."	lack of infrastructure
"Inland water transportation is currently underutilized due largely to insufficient water depths in the river."	Insufficient water depths
"Poor state of jetties."	Poor jetties
"The main reason for the decline of the inland river transport is the unavailability of cargo vessels."	Unavailability of Vessels
"Lack of investment in the river transport."	Lack of investment
"Preference to use road transport	Preference for Road Transport
"Air draft restriction due to the overhead bridge in the river."	Air Draft Restriction
"The ineffective implementation of inland water transport policy of the lack thereof is also a contributing factor."	Ineffective
"Am not aware of any." "None that am aware of." Not to my knowledge."	Awareness of Policies
"Yes, National Transport Policy adopted in 3 rd republic." "Yes, the river transport policy."	National Transport Policy
"Lack of effective implementation of inland water transport policy."	Lack of Effective Implementation
"Employment generation."	Employment Generation
"More cost-effective, reliable and safer."	Cost-effective
"Reduced road congestion. It will also compliment the government's effort in decentralization."	Reduced Road Congestion
"Reduced pollution and lessen burden on road transport."	Environmental Benefits
"Availability of funds to address the infrastructural requirements	Lack of Funds
"Lack of adequate inland water transport policy, Lack of political will from government."	Inadequate Policies
"Technical Support and finance."	Technical Support

“Inability to remove the numerous wrecks in the river.”	Wreck Removal
“The port is currently undergoing a Public-Private Partnership process to improve maritime activities in the country.”	Public-private Partnerships
“Can’t confirm but could have many investors planned to invest in river transport revitalization but no meaningful action until present.”	Investors Plan
“Stakeholder meetings and engagements.”	Stakeholder Engagement
“Reduction of carbon emissions.” “Handling of ship-generated waste and GHG emissions from ships will be taken into consideration.”	Environmental Considerations
“Handling of ship-generated waste.”	Waste Handling
“Annual inspection of crafts engaged in inland water transport to ensure they are safe to operate and not to pollute our waters.”	Inspections
“Aids to navigation will be established along the river.”	Aids to Navigation
“Presence of few buoys to guide safe navigation of ships, restrictions of night navigation.”	Shipwreck Removal
“Ensuring that all vessels operating in our inland waters are inspected and issued with seaworthiness certificate/license or permit to operate.”	Licensing and certification
“Compared to road transport, inland water transportation had the potential to transport large volumes of cargo through the river in a single voyage.”	Cost Comparison with Road Transport.
“Invest into the area.”	Investment in Infrastructure
“Through a detailed feasibility study.”	Feasibility Studies
“Improvement of infrastructures and provision of cargo handling equipment and storage facilities in the river terminals.”	Government Commitment
Engage the private sector in these initiatives.”	Private Sector Engagement

“To ensure sustainability, the government and the various stakeholders should invest in revitalization of inland river transportation.”	Infrastructure Improvement
“Capacity building should be a top priority to ensure more Gambians are trained in marine affairs.”	Training and Capacity Building

The initial codes generated based on the data received from the Gambia Maritime Administration are here presented below:

Table 2: Initial codes for data from Gambia Maritime Administration.

Data Extracts	Codes
“Merchant Shipping Act 2013 and Licensing Regulations 2013.” “The regulatory framework that governs the transportation of goods by river are as follows: The Merchant Shipping Act 2013.”	Existing Regulations
“Not to my knowledge.” “No.”	Limited Initiatives and Awareness
“GMA 5 years strategic plan. Activity 3.3.2.6.”	Strategic Plans
“Stakeholder meetings and engagements.” “By engaging them in workshops and meetings.”	Stakeholder Engagement
“The regulatory body fosters reunion with other stakeholders via the creation of committees.”	Committees and Surveys
“Administration of a Safety License regime.” “Ensuring that all vessels operating in our inland waters are inspected and issued with seaworthiness certificate.”	Inspection and Licensing
“Navy patrol.” “Patrol boats conduct routine monitoring.”	Monitoring and Patrol

<p>“An ESIA is carried out before approval is granted.” “The Merchant Shipping Act ensures safety and compliance standards.”</p>	<p>Regulations and Environmental and Social Impact Assessment</p>
<p>“Annual inspection of crafts engaged in inland water transport.”</p>	<p>Regular Inspections</p>
<p>“Meetings are regularly conducted within the premises of the regulatory body.” “The regulatory framework established by the Merchant Shipping Act of 2013.”</p>	<p>Stakeholder Meetings and Policy Support</p>
<p>“Application sent to the Administration followed by an inspection and eventual certification upon fulfilment of requirements.” “The licensing structures and the permitting procedures for the operators are outlined in the Merchant Shipping Licensing Regulations.”</p>	<p>Inspection and Certification</p>
<p>“Amending the present licensing regulations and incorporate rules that fit all stakeholders.” “Quarter meetings with stakeholders and community landing sites.”</p>	<p>Stakeholder Meetings and Inclusive Regulations</p>
<p>“The main objectives are having safe vessels on clean and navigable waters.” “the regulatory body while implementing its core functions have aligned itself to the objective of the UN sustainable development goals.”</p>	<p>Strategic Engagement and Alignment</p>

4.2.3 Searching for Themes

The phase began by recognizing a wide range of codes in the dataset. The main objective was to identify trends and connections both within and between sets of data.

To do this, various codes were studied for how they could be brought together under broader themes. Instead of looking at individual codes, attention was paid towards thematic analysis where a theme represents what is important about the information with respect to a particular research question and shows patterned response or meaning across the whole dataset. Thus, these codes should be seen as building blocks or foundations upon which similar or multiple ones may be combined into potential themes that address the research questions more directly. This stage therefore involved integrating codes into higher-level categories (themes) that shed light on their relevance to the study objectives based on deeper reflections into various aspects of collected materials (Dawadi, 2020)

After coding the data, now the codes are grouped into potential themes. Themes are broader patterns that capture the essence of the coded data.

Table 3: Themes and Description for data from Gambia Ports Authority.

Description	Themes
Inland water transport is largely inactive and minimally used	Dormant State and Underutilization
Decline due to lack of infrastructure, investment and ineffective policies.	Contributing Factors to Decline
Limited awareness and existence of policies to promote inland water transport.	Policies and Initiatives
Reviving inland water transport could bring job creation, economic growth, cost savings and environmental benefits	Economic and Social Advantages
Major obstacles include funding shortages, poor infrastructure and regulatory issues.	Challenges and Barriers
Limited partnerships with private enterprises and government agencies for the revival of inland water transport.	Collaboration and Partnerships

Efforts to incorporate sustainability measures are adding though reducing emissions is a focus.	Sustainability and Environmental Considerations
Navigation safety includes aids to navigation and surveys, but more efforts are needed	Safety and Navigation
Inland water transport is seen as potentially cost-effective, with future plans focusing on infrastructure and stakeholder engagements	Economic Viability and Future Prospects

Table 4: Themes and Description for data from Gambia Maritime Administration.

Description	Themes
The existing regulatory framework is based on the Merchant Shipping Act and associated regulations	Regulatory Framework and Policies
Awareness and specific initiatives to revive inland water transport are limited, despite some strategic plans.	Limited Awareness and Initiatives
Regular meetings and committees are used to foster collaboration among stakeholders.	Stakeholder Engagement
Emphasis on inspection, licensing and patrols to ensure safety and security in inland water transport.	Safety and Security
Environmental sustainability is addressed through assessments, regular inspections and adherence to regulations.	Sustainability and Environmental Compliance
The regulatory framework aims to enhance the competitiveness and economic viability of inland water transport.	Economic Viability and Competitiveness

A structured process involving inspection and certification to ensure compliance and safety.	Licensing and Permitting
Efforts to balance the interest of various stakeholders through inclusive regulations and regular engagement.	Balancing Stakeholder Interests
Aligning regulatory objectives with sustainable development goals for long term sustainability and growth.	Sustainable Development Goals

4.2.4 Reviewing Themes

During this stage, themes are intentionally brought together to refine initial groupings and present them in an orderly manner. It is important to stress the significance of internal homogeneity within themes as well as external heterogeneity between them. Internal homogeneity implies that each theme should make sense by itself throughout the data extracts given while external heterogeneity requires clear differentiation among various themes hence avoiding overlaps since each one must contribute something unique towards analysis.

To achieve this, re-visiting of data extracts and initial codes becomes necessary so that consistency within each theme can be ensured at the same time distinguishing it from others. What should be done is researchers confirming all data extracts under one theme fit together perfectly and that every single theme reflects a different part of information. Comparing then contrasting these sets out enough difference between them all. Through such rigorous scrutiny findings are made stronger thus making themes more reliable and valid which result into systematic understanding about what is being said by the numbers (Dawadi, 2020).

The themes were reviewed to ensure they accurately reflect the coded data and the entire dataset. The review was done to test the Internal Homogeneity and External Heterogeneity

For Gambia Ports Authority (GPA):

Internal Homogeneity: Each theme is internally consistent in itself, with applicable data extracts that fit together. For instance, all the extracts under “Dormant State and Underutilization” describe clearly about the inactive state of the inland water transport.

External Heterogeneity: The themes are different from one another. For example, 'Challenges and Barriers' talks about what hinders them while 'Economic and Social Advantages' highlight their benefits thus ensuring there is no repetition.

For Gambia Maritime Administration (GMA):

Internal Homogeneity: Each theme is coherent within itself. For instance, in "Safety and Security" section all data extracts are related to safety measures such as inspections or patrols.

External Heterogeneity: The themes are well distinguished from each other. “Regulatory Frameworks and Policies” talk about different policies that govern them unlike "Sustainability & Environmental Compliance" which focuses more on environmental concerns of regulating inland water transport systems.

Both GPA and GMA have strong internal homogeneities as well as external heterogeneities hence this ensures an organized analysis presentation which can be easily understood by anyone who reads it.

4.2.5 Defining and Naming Themes

This stage began with improving the themes. It was meant to “find out what each theme is about and identify the overall themes and decide what part of the data they refer to.” A theme should not be too variegated or intricate. A good theme should have definite borders which make it possible for it capture all relevant areas of information. It calls for close scrutiny of the data until such a time as one can say without doubt that no two subjects share any similarities but also that all themes under discussion are valid representations arising from them(Dawadi, 2020 P-9).

Once a satisfactory set of themes were achieved, each theme was defined and named. This involves identifying the essence of what each theme is about and determining what aspect of the data each theme captures.

Table 5: Reviewed Themes for data from Gambia Maritime Administration.

Theme	Description	Codes	Data Extracts
Current State of Inland Water Transport	The condition of inland water transport in the Gambia.	Dormant. Underutilized, Dilapidated Infrastructure, Insufficient Water Depths	“Currently The Gambia do not Have access to inland water transport especially for the transportation of freight within the country.” “Inland water transportation is currently underutilized due largely to dilapidated infrastructures and insufficient water depths in the river.”
Factors Contributing to Decline	Reasons behind the decline of inland water transport.	Lack of Investment, Poor Infrastructure, Insufficient water depths, Decline in Trade.	“Decline in Groundnut trade. Lack of River transport infrastructure and unavailability of means of River Transport.” “Poor states of jetties, inadequate water depths, inadequate river steamers/barges.
Economic and Social Benefits	Potential benefits of revitalizing inland water transport.	Employment Generation, Economic development, Reduced Road Congestion.	“Will complement the development of coastal shipping and road transport to enhance the country’s capacity to serve as a distribution centre for Mali and neighbouring countries.” “Employment generation, more cost effective, reliable and safer.”

Challenges	Main challenges faced by port authorities in advancing inland water transport.	Lack of Funds, Poor Infrastructure, Insufficient Water Depths	“Availability of funds to address the infrastructural requirements.” “Lack of adequate inland water transport policy, Lack of political will from government, Lack of funding for the revival of river transport.
Policies and initiatives	Existing policies or initiatives aimed at promoting and revitalizing inland water transport.	National Transport Policy, River Transport Policy	“Yes, National Transport Policy adopted in the 3 rd Republic.” “Yes, the River transport Policy

Table 6: Reviewed Themes for data from Gambia Maritime Administration.

Theme	Description	Codes	Data Extracts
Regulatory Framework	Legal and regulatory frameworks governing the transportation of goods by river	Merchant Shipping Act, Licensing Regulations	“The regulatory framework that governs the transportation of goods by river are as follows: The merchant Shipping Act 2013 Part 2 Section 3 and Part 3 Section 4 and the Merchant Shipping (Local Trade) Regulation 2014.”
Collaboration with Stakeholders	Methods employed by the regulatory authority to foster collaboration	Stakeholder meetings, workshops, MOUs	“A survey has been conducted with the various stakeholders and specific landing sites have been identified for the construction of jetties country

	among stakeholders.		wide.” “The institution have MOU with stakeholders with promotes collaboration.”
Safety and Security Protocols	Protocols implemented to safeguard inland water transport operations.	Safety License Regime, Seaworthiness Certificate, Navy Patrol	“Ensuring that all vessels operating in our inland waters are inspected and issued with seaworthiness certificate/license or permit to operate and for security, the Gambia Navy have a continuous monitoring system to safeguard all operations in our waters.”
Economic Viability and Competitiveness	Evaluation of the economic viability and competitiveness of inland water transport	Cargo Volume, Cost Efficiency, Feasibility Studies	“Compared to road transport, inland water transport had the potential to transport large volumes of cargo through the river in a single voyage and this would reduce the volume of cargo stored at the port of Banjul for transit to other countries or the hinterland.”
Sustainable Development Objectives	Objectives and measures for the sustainable development of inland water transport.	Private Sector Engagement, Infrastructure Improvement, Policy Implementation	“Engage the private sector in this initiative, commitment from government, acquisition of the river barges, improvement of infrastructures and provision of cargo handling equipment and storage facilities in the river and shipwreck removal.”

The above tables summarize the thematic analysis findings from the data, illustrating the key themes, their descriptions, codes and supporting data extracts from both Gambia Ports Authority and the Gambia Maritime Administration.

4.2.6 Producing the Report

To persuade readers about the worth and legitimacy of thematic analysis, it is important to tell a transparent, cohesive, and rational story that faithfully represents what the data is saying within as well as across themes. Much work has been done in this regard through giving enough evidence for every claim made by using examples or quotations that best represent each point; such samples were incorporated smoothly into an analytic account so as not only show but also serve research aims. This strategy makes sure that there is good grounding for conclusions reached during analysis while at the same time ensuring findings are communicated appropriately through storytelling with thematizing content found within datasets (Dawadi, 2020 P-10). Finally, the report summarizing the thematic analysis is produced below. This includes a description of each theme, supported by data extracts.

The report of a detailed thematic analysis of the current state, contributing factors to the decline, potential challenges, and regulatory frameworks concerning inland water transport in the Gambia. The analysis is based on data from two key institutions: The Gambia Ports Authority (GPA) and The Gambia Maritime Administration (GMA)

Gambia Ports Authority (GPA)

Current State of Inland Water Transport

The inland water transport system in The Gambia is described as:

Dormant, Underutilized due to poor infrastructure and insufficient water depths, Dilapidated Infrastructure and Insufficient Water Depths.

Data Extracts:

“Currently the Gambia do not have access to inland water transport especially for the transportation of freight within the country”. “Inland water transportation is currently underutilized due largely to dilapidated infrastructures and insufficient water depths in the river.”

Factors Contributing to decline

The decline in inland water transport is attributed to:

Lack of Investment, Poor Infrastructure, Insufficient Water Depths and Decline in Trade.

Data Extracts

“Decline in Groundnut trade. Lack of river Transport infrastructure and unavailability of means of River Transportation.” “Poor state of Jetties, inadequate water depths, inadequate river steamers/barges.”

Economic and Social Benefits

Potential benefits of revitalizing inland water transport include:

Employment Generation, Economic Development and Reduced Road Congestion

Data Extracts:

“Will complement the development of coastal shipping and road transport to enhance the country’s capacity to serve as a distribution centre for Mali and neighbouring countries.” “Employment generation, more cost effective, reliable, and safer.”

Challenges

Primary challenges in advancing inland water transport are:

Lack of Funds, Poor Infrastructure and Insufficient Water Depths.

Data Extracts:

“Availability of funds to address the infrastructural requirements.” “Lack of adequate inland water transport policy, Lack of political will from government, Lack of funding for the revival of river transport.”

Policies and Initiatives

Existing policies aimed at promoting inland water transport include:

National Transport Policy, River Transport Policy.

Data Extracts:

“Yes, National Transport Policy adopted in the 3rd Republic.” “Yes, the river transport policy.”

Safety and Security Measures

Measures to ensure safety and security of inland water transport.

Navigational Aids and Buoys.

Data Extracts:

“Appropriate Aids to Navigation will be established along the river. A full-blown survey will be conducted to establish the existing conditions in terms of available depths and newly emerged dangers along.”

Gambia Maritime Administration (GMA)

Regulatory Framework

Regulations governing river transport include:

Merchant Shipping Act and Licensing Regulations

Data Extracts:

“The regulatory framework that governs the transportation of goods by the river are as follows: The Merchant Shipping Act 2013 Part 2 section 3 and Part 3 section 4 and The Merchant Shipping (Local Trade) Regulation 2014.”

Collaboration with Stakeholders

Methods to foster collaboration include:

Stakeholder Meetings, Workshops and MOUs

Data Extracts:

“A survey has been conducted with the various stakeholders and specific landing sites have been identified for the construction of jetties country wide.” “The institution have MOU with stakeholders which promotes collaboration.”

Safety and Security Protocols

Protocols implemented for safety and security:

Safety License Regime, Seaworthiness Certificate and Navy Patrol.

Data Extracts:

“Ensuring that all vessels operating in our inland waters are inspected and issued with seaworthiness certificate/license or permit to operate and for security, the Gambia Navy have a Continuous monitoring system to safeguard all operations in our waters.”

Environmental Sustainability

Measures to address environmental concerns include:

ESIA, Pollution Prevention and Environmental Regulations.

Data Extracts:

“An ESIA is carried out before approval is granted for any infrastructural project related to the marine environment in collaboration with relevant stakeholders NEA, NDMA.” “Handling of ship generated waste and reduction of GHG emissions from ships will be taken into considerations.”

Economic Viability and Competitiveness

Evaluation methods for economic viability include:

Cargo Volume, Cost Efficiency and Feasibility Studies

Data Extracts:

“Compared to road transport, inland water transportation had the potential to transport large volumes of cargo through the river in a single voyage and this would reduce the volume of cargo stored at the port of Banjul for transit to other countries or the hinterland.”

Sustainable Development Objectives

Objectives and measures for sustainable development:

Private Sector Engagement, Infrastructure Improvement and Policy Implementation

Data extracts:

“Engage the private sector in this initiative, commitment from government, acquisition of river barges, improvement of infrastructures and provision of cargo handling

equipment and storage facilities in the river terminals, dredging of the river and shipwreck, removal.”

The thematic analysis reveals critical insights into the current state, challenges, and potential benefits of inland water transport in the Gambia. The inland water transport system is described as dormant, underutilized, and hindered by dilapidated infrastructure and insufficient water depths. Contributing factors to this decline include a lack of investment, poor infrastructure, and the decline in trade, particularly the groundnut trade. These issues have resulted in significant underutilization of the river for freight transport.

Addressing these highlighted factors through strategic measures can significantly enhance the sector, contributing to both economic and social development. Potential benefits of revitalizing inland water transport include employment generation, economic development, and reduced road congestion. It is essential to secure adequate funding, improve infrastructure, and increase water depths to realize these benefits.

Challenges faced by the sector includes lack of funds, inadequate infrastructure, and insufficient water depths. Overcoming these challenges requires a concerted effort from both the government and private sector. Existing policies and initiatives, such as the National Transport Policy and river Transport Policy, provide a framework for these efforts.

The regulatory framework, including the Merchant Shipping Act and Licensing regulations, governs the sector. Collaboration with stakeholders is fostered through meetings, workshops, and memoranda of understanding (MOUs). Safety and security measures, such as navigational aids, wreck removal, and the issuance of seaworthiness certificates, are crucial for ensuring safe operations.

Environmental sustainability is addressed through Environmental and Social Impact Assessments (ESIA) and pollution prevention measures. The sector’s economic viability and competitiveness are evaluated based on cargo volume, cost efficiency and feasibility studies. Sustainable development objectives focus on private sector engagement, infrastructure improvement, and policy implementation.

Collaborative efforts, robust regulatory frameworks, and sustainable practices are essential for revitalizing inland water transport. These strategies will ensure the long-term viability and competitiveness of the sector, ultimately contributing to the economic and social development of the Gambia. By addressing the challenges and leveraging the potential benefits, inland water transport can become a vital component of the country's transport infrastructure, facilitating trade and enhancing connectivity.

The survey results from river settlements, classified by gender, demonstrate intriguing patterns on the utilization of inland water transport along the River Gambia:

1. Frequency of Utilization for Inland Water Transport

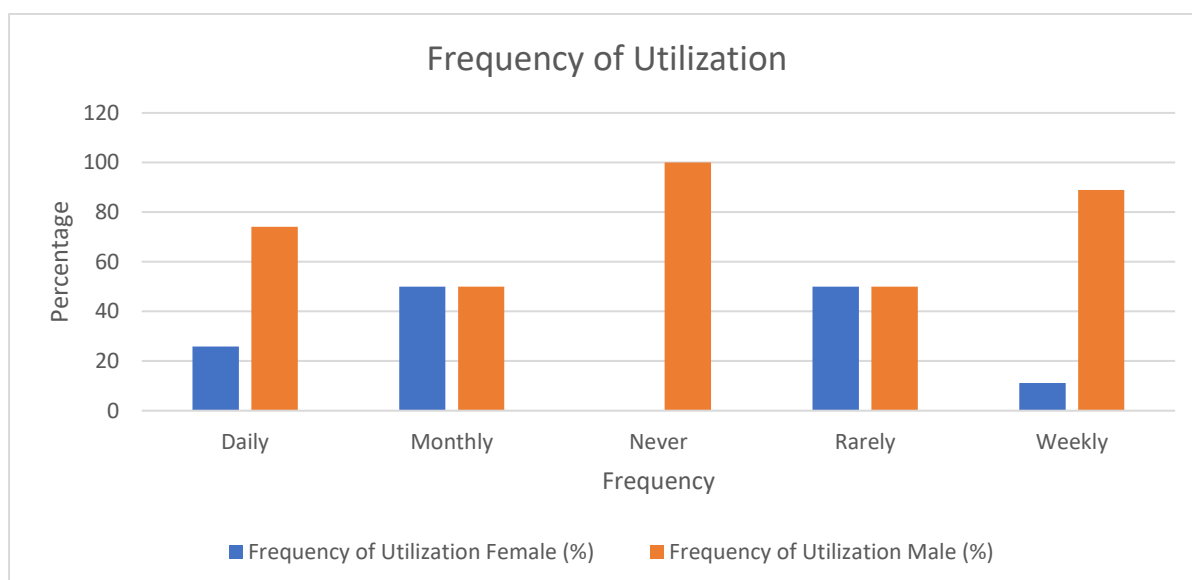


Diagram 1: Frequency of Utilization

The deductions drawn from the above diagram are as follows:

Utilization Frequency: Males have a higher rate of daily usage i.e. 74.1% as compared to females with 25.9%.

On monthly basis, both genders utilize it in equal proportions with each gender accounting for exactly 50.0 %.

All women never used inland water transport (100%) while males reported occasional use (50.0%) and weekly use (88.9%).

2. Classification of Goods for Inland Water Transport

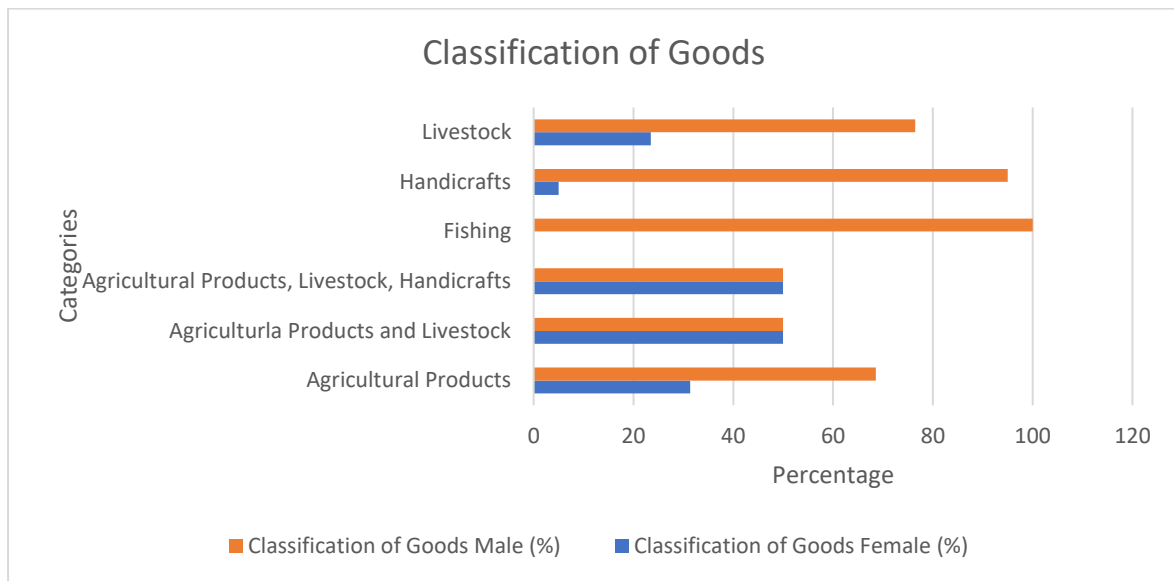


Diagram 2: Classification of Goods

The deductions drawn from the above diagram are as follows:

Both sexes believe that agricultural items are fit for transportation, but there is more preference among men at 68.6% than women at 31.4%.

Both sexes consider livestock appropriate, but the opinion is equally divided between them, thus each accounting for 50%.

Fishing is seen by most exclusively as being suitable only for boys (100%). The endorsement of handicrafts is significantly higher among males (95.0%) than to females (5.0%).

3. Economic Impact:

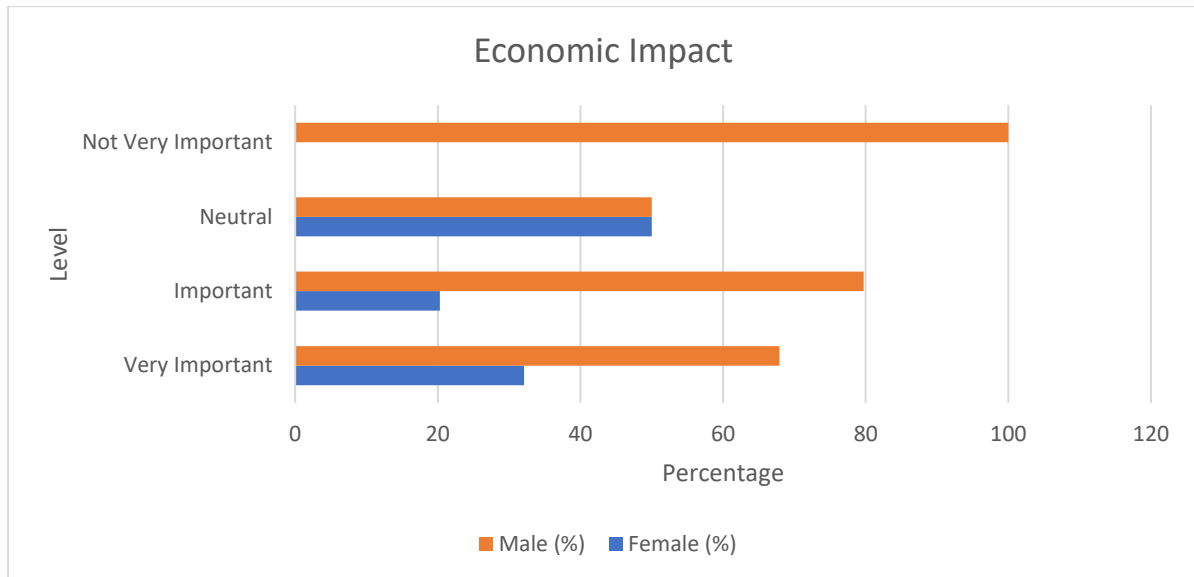


Diagram 3: Economic Impact

The deductions drawn from the above diagram are as follows:

Most respondents, irrespective of gender, perceive the revitalization of inland water transport as significant or highly significant for the economic advancement of their community.

Women exhibited a marginally larger proportion (79.7%) deeming it significant, in contrast to men (67.9%).

4. Environmental Effects Awareness:

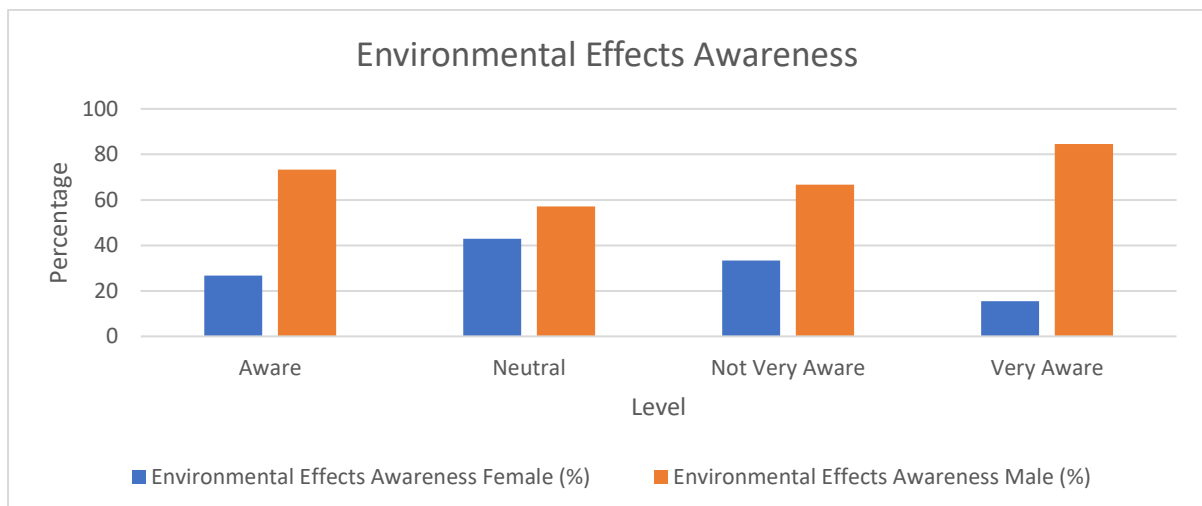


Diagram 4: Environmental Effects Awareness

The deductions drawn from the above diagram are as follows:

Percentagewise, 73.3% of females have an enhanced awareness concerning the environmental impact of inland waterways transportation, while a lack of consciousness exists among 26.7% of them.

The men's portion is more evenly distributed with 57.1% at normal level, 66.7% at low level and 84.6% at high level.

5. Factors Responsible for Decline:

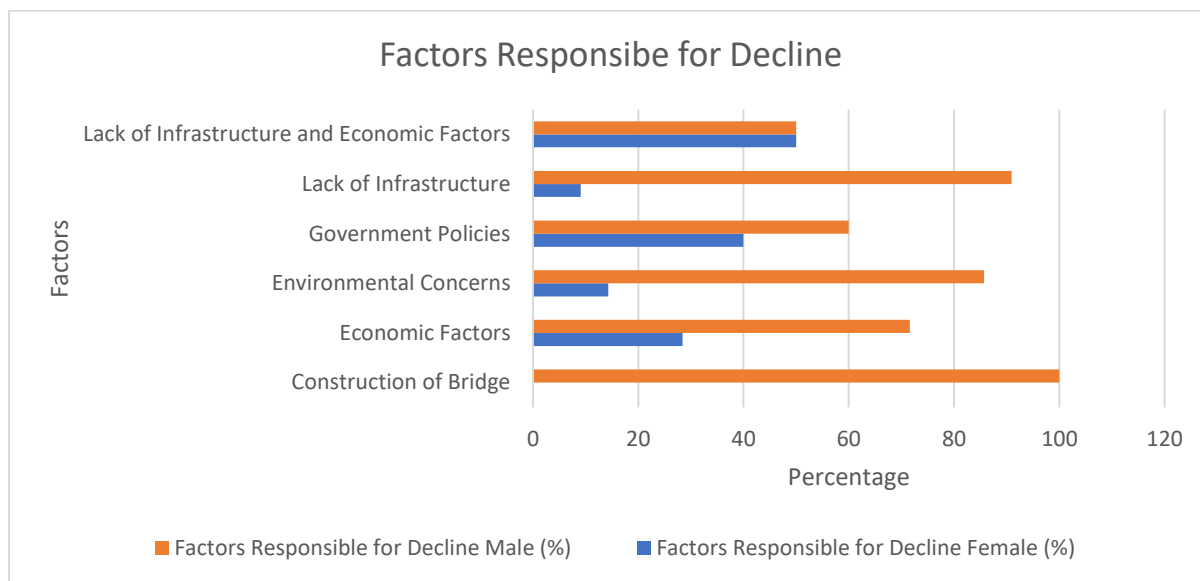


Diagram 5: Factors Responsible for Decline

Females generally consider bridge construction as a reason for decrease in inland water transportation whereas males differ in their opinions regarding this.

Both sexes agree on economic and ecological matters; however, males exhibit even higher levels of perception toward economy (71.6%).

Both sexes identify government policies involvement with women expressing a greater understanding (40.0%).

Both genders see the absence of infrastructure albeit more among females (90.9%).

Both genders equally acknowledge that a combination of inadequate infrastructure and economic problems is responsible, with a percentage of 50.0%.

The data demonstrate gender-based variances in perceptions and knowledge about inland water transport, with females displaying a stronger environmental awareness and worry about specific issues contributing to the decline of these services. Both

genders, nevertheless, acknowledge the economic significance of revitalizing inland water transport for their respective regions.

6. Safety Assessment:

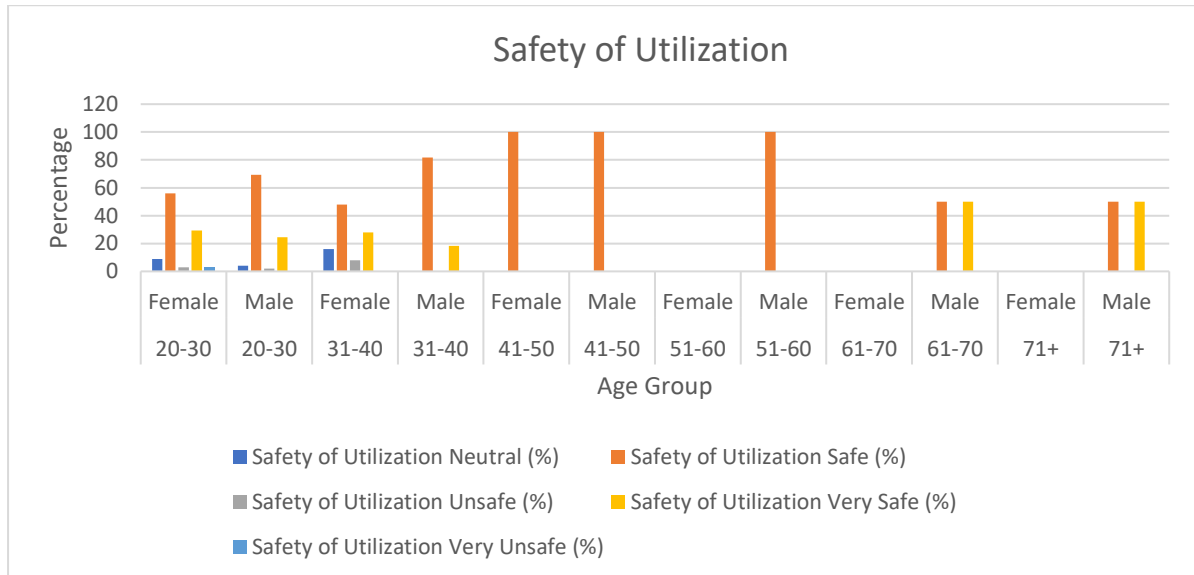


Diagram 6: Safety of Utilization of Inland Water

- Youths (20-30 years) have varying confidence levels about safety, whereby males feel more secure than females.
- Comparatively, older people are less confident about their safety with the highest observed being in the 41-50 age group.
- For elderly people (over 61 years), the level of confidence is mixture but few who participate feel unsafe.

7. Impact on Social Cohesion:

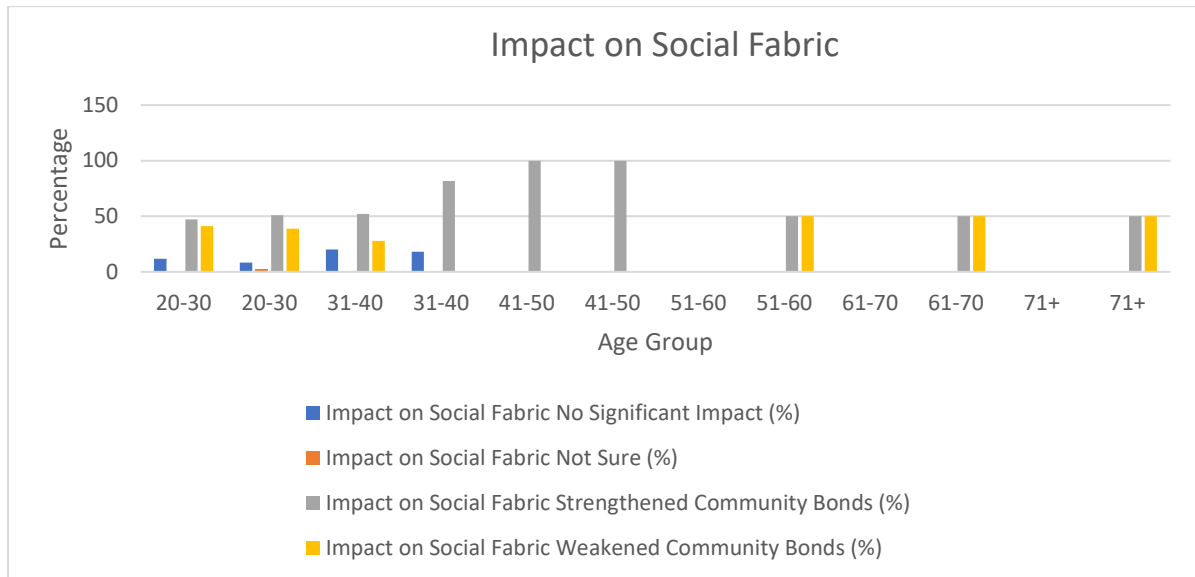


Diagram 7: Impact on Social Fabric

- Younger age groups (20-30 years) however, show divergent views, both positive and negative ones.
- Middle aged persons (31-50 years) on the other hand have a higher belief on positive impacts especially among men.
- There are different perceptions from older age groups where there is almost an equal split between those that believe positively and negatively.

8. New Economic Opportunities:

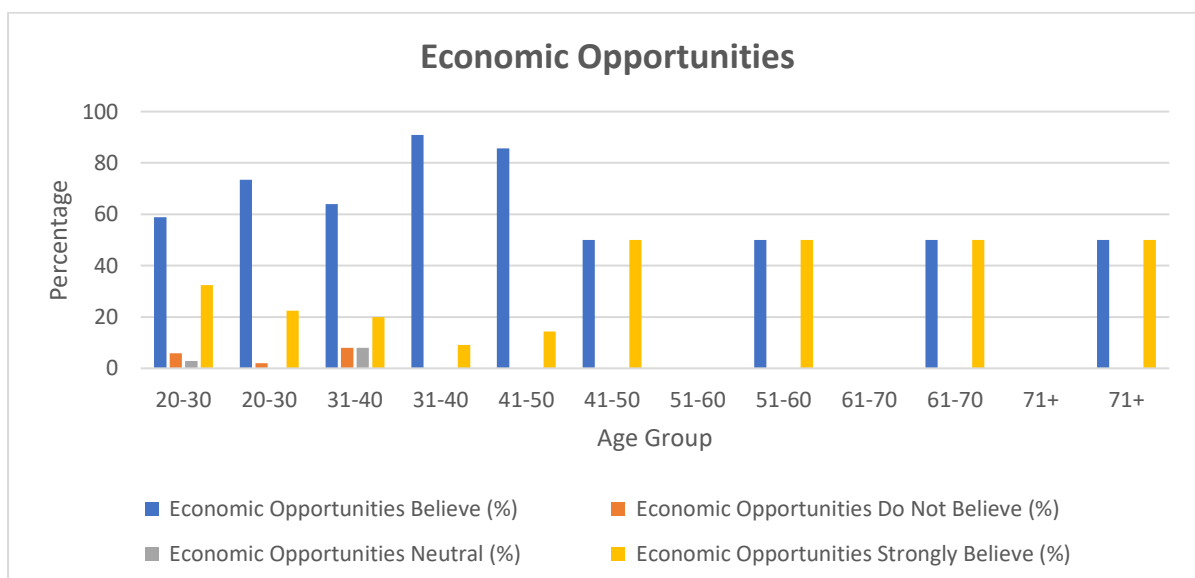


Diagram 8: Economic Opportunities

Younger age groups (20-30 and 31-40) appear to be very sure about economic opportunities especially among males.

Similarly middle-aged groups (41-50) have a strong faith in economic opportunities with a higher number of males believing strongly.

Conversely, older individuals seem to remain consistent in terms of their beliefs about economic opportunities with equal male percentages believing or strongly believing.

There are subtle variations in perceptions and viewpoints depending on different age cohorts. Although daily usage is common, there are differences in preferences for different sorts of goods, perceived economic significance, awareness of environmental impacts, and factors contributing to the decline among various age groups. In general, the respondents express support for the revival of inland water transport and predict favourable effects on their areas.

5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The analysis showed great findings about the challenges and opportunities in reviving inland water transport (IWT) on the river Gambia. The research identified significant areas for development such as infrastructure improvement, policy reformulation and stakeholder involvement among others based on surveys conducted by key players including Gambia Ports Authority and Gambia Maritime Administration.

5.1.1 Gender Disparities in Participation

Records from the Gambia Maritime Administration, Gambia Ports Authority and river communities indicated that men dominate decision making positions especially at higher levels of management where crucial choices concerning IWT are made. It was found out through gender analysis within riverine societies that there are subtle but important variations in perceptions and awarenesses particularly relating to environmental impacts and economic prospects. This therefore implies that it is necessary to take into account gender specific considerations when designing and implementing programs aimed at revitalizing IWT.

5.1.2 Challenges Facing the Present Situation

The current state of IWT is faced with various difficulties including poor infrastructure, shallow waters as well as lack of up-to-date regulatory regime among others. According to data provided by Gambia Ports Authority, these bottlenecks need immediate attention if they are to be overcome so that IWT can be revived successfully. Due to this finding, strategic investments need to be made urgently while updating policies remains paramount since infrastructural deficiencies cannot be left unaddressed.

5.1.3 Causes for Decline

Several factors contribute towards decline of IWT which involves low levels investment; weak enforcement or implementation mechanisms around policies related with this sector; groundnut trade losing its former position as one of the mainstay activities within riverside commerce among other things revealed during surveying exercise. Data collected also indicate that more funds should be channelled into infrastructure development coupled with policy reforms geared at addressing historical aspects associated with it.

5.1.4 Policy and Awareness Gap

The study established that most stakeholders lack knowledge about existing laws/policies meant to support IWT as well as ongoing initiatives towards this end. This gap in information dissemination has potential negative implications on any efforts aimed at reviving the sector hence calling for need to educate all players through comprehensive communication strategies.

5.1.5 Economic and Social Benefits

Nevertheless, despite these hurdles it was established through investigation that reviving IWT along river Gambia can bring about significant economic gains and social benefits such as job creation, improved regional trade among others. The findings also showed that there should be partnerships between public private sectors since they may be key in overcoming financial limitations while availing required inputs/skills during revival process.

5.2 Recommendations:

This study makes it apparent that there are a number of crucial obstacles to be overcome in order for the revival of inland water transport (IWT) along River Gambia to be a success as well as ensuring sustainable economic growth. The findings also show that recommendations made were based on data collected through questionnaires and interviews done among different stakeholders such as The Gambia Ports Authority, Gambia Maritime Administration and communities living along the river itself. These suggestions were therefore prepared with intention of addressing infrastructure gaps; raising awareness about policies related to IWT; fostering stakeholder participation and involvement; protecting environment among other things which will lay foundation for viable and sustainable IWT system in The Gambia.

5.2.1 Awareness Campaigns on Policy

Stakeholders, such as port authorities and river communities, should be educated by the Gambia Maritime Administration through vast awareness campaigns about the current policies and activities encouraging the revival of IWT. This will help in closing up the considerable gaps in knowledge that were noted by this study.

5.2.2 Development of Infrastructure

Essential investments in port facilities, jetties and water way management are necessary to address infrastructure challenges identified. From international organizations and financial institutions can assist to secure funds required for these projects.

5.2.3 Public-Private Partnerships

Public-private partnerships must be promoted actively so as to attract private investment as well as expertise and innovation needed for revitalizing IWT. In order to finance fast recovery of inland water transport from a financial problem and technical constraints such collaborations become vital.

5.2.4 Programs of Environmental Sustainability

To promote public understanding about sustainable practices, programs need to be created based on comments made by female respondents. These initiatives should zero down on emission reduction, compliance with pollution control regulations, environmental impact assessments integration at all stages of IWT revitalization.

5.2.5 Improving Safety and Security

Regular inspections with naval patrols being deployed will improve safety protocols as well as removing navigational hazards. This is done so as to increase trust among stakeholders through security provision along the riverbanks using law enforcement agencies.

5.2.6 Engaging Communities

It is essential that ongoing dialogues are sustained between surveyors, workshop holders and stakeholders in relation to river communities. To respond effectively to gendered concerns as well capitalise local knowledge especially concerning women's needs an expectation aiming at aligning it with revitalisation of IWT keeping local perspectives relevant should one take this approach.

5.3 Further area of research

A potential area for future research might be to look at different ways of dealing with stakeholder perception and involvement when it comes to revitalizing inland water transport. This study can go into more detail about what people from different backgrounds want, need or expect concerning this issue – such as those who live along rivers; managers at ports; owners of businesses that rely on shipping goods via barges etc.; local authorities. It may also consider views held by national governments or organizations like the International Maritime Organization (IMO). To do so, researchers will have to find out some of these viewpoints and then develop communication strategies which are more likely to work depending on whom they are targeting among stakeholders. Thus, a strategy could try provoking general backing but also fostering cooperation while making sure that all involved persons agree with sustainable transportation projects related to income generation through trade facilitation alongside preserving environmental conservation.

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ANNEXES

Findings from Institutional Stakeholders

Gambia Ports Authority

Table 2: Findings from Gambia Ports Authority by gender

		What is your gender?	
		Female	Male
Presently, what is the state of inland water transportation along the River Gambia?	Currently, The Gambia do not have access to inland water transport, especially for the transportation of freight within the country	1	0
	Dormant	0	1
	Grossly underutilised. It has almost ceased to exist.	0	1
	Inland water transportation is currently underutilized due largely to dilapidated infrastructures, and insufficient water depths in the river. The ineffective implementation of inland water transport policy or the lack thereof is also a contributing factor.	0	1
	It has been dormant over the years	0	1
	It is almost dead.	0	1
In recent years, what, in your opinion, have been the contributing factors to the declining of inland water	Decline in Groundnut trade. Lack of River Transport infrastructure and unavailability of means of River Transportation.	0	1
	Lack of investment in the river transport	0	1
	Lack of knowledge on the significance and great impact created by inland water transport by regulatory and national bodies in The Gambia.	1	0
	Poor state of jetties, inadequate water depths, inadequate river, steamers/barges, preference to use	0	1

transport along the River Gambia?	road transport, inadequate quantity of agricultural produce to stimulate viability of river transport.		
The following are some of the factors responsible for decline in inland water transport:	Insufficient water depths, no ATon and presence of numerous shipwrecks	0	1
	Poor infrastructures in the river e.g. wharves, storage facilities, poor fenders, and mooring bollards	0	1
	Air draft restriction due to the overhead bridge in the river	0	1
	Ineffective implementation of the inland water transport policy or the lack thereof	0	1
The main reason for the decline of the inland river transport is the unavailability of cargo vessels for plying the river Gambia.	And the dedicated dry ports along river	0	1
	There are number of factors, key among them is lack of investment in the sector.	0	1
Do any policies or initiatives currently exist in the Country with the objective of promoting and revitalizing inland water transport?	Am not aware of any.	0	1
	No	0	1
	None that am aware of	1	0
	Yes	0	1
	Yes, National Transport Policy	0	1
	Yes, the National Transport Policy adopted in the 3rd Republic	0	1
	Yes, the river transport policy	0	1

What are your thoughts on the potential economic and social advantages that could result from the revival of inland water transport along the River Gambia?	Will complement the development of coastal shipping and road transport to enhance the country's capacity to serve as distribution centre for the Mali and the neighboring Countries;	0	1
	Employment generation;	0	1
	More cost effective, reliable, and safer; and	0	1
	W promote economic development in the Hinterland	1	0
	Easy and fast access to the hinterlands with respect to the transportation of freight from the country's only Port. This will create a source of revenue for the country as well as increase the amount of freight on transit	1	0
	Fast and reliable movement of goods. Safe the roads from overloaded trucks	0	1
	Increased employment, reduce pollution and lessen burden on road transport, reduced cost in transporting goods and services from place to place.	0	1
	It will reduce road congestion. It will also complement the government's effort in decentralization. It will reduce CO2 emissions. It will also provide a cheap alternative means of transportation.	0	1
	It will reduce the cost of transportation	0	1
Revival of inland water transport has the following advantages:	Which will reduce cost of commodities in the urban Gambia.	0	1
	It can also attract transit to neighboring senegal.	1	0
	Improve intermodal connectivity	0	1
	Enable movement of large volumes of goods from Banjul Port to the hinterland	0	1
	It would ease congestion on the highways as cargoes destined for the hinterlands or transit cargoes could be transported on the river to Basse and other destinations	0	1
	It would boost economic activities along the river	0	1

	Passenger transportation in the river would significantly be enhanced	0	1
	It would enhance employment opportunities for the youths	0	1
	The rural-urban drift would significantly be reduced due to the creation of job opportunities upriver	0	1
	Decentralization of development	1	0
In supporting and advancing inland water transport operations along the River Gambia, what are the primary challenges encountered by port authorities?	Availability of funds to address the infrastructural requirements.	0	1
	Lack of adequate inland water transport policy	0	1
	Lack of political will from government		
	Lack of funding for the revival of river transport		
	Inability to remove the numerous wrecks in the river		
	Insufficient water depths		
	Lack of jetties along the river. There is also a limitation in terms of the depth. The inland waters are shallow.	0	1
	Poor state of jetties ,situation/wrecks presence impacting safety of navigation and reduced air draft due to senegambia bridge thus would impact bigger vessels to ply the river.	0	1
Regulations and the ability to explore the navigable river Gambia	1	0	
Technical support and finance	0	1	
The cost of rehabilitation of the dry-ports. Cargo handling facilities. Dredging in some some areas.	0	1	
Do collaborations or partnerships exist with private enterprises or government	Can't confirmed but could recall many investors planned to invest in river transport Revitalisation but no meaningful action until present.	0	1
	No, it does not exist.	0	1
	Not currently. However, this is conceived in the National Transport Policy.	0	1

agencies, among others, to assist in the revival of inland water transport?	Not to my knowledge	0	1
	The Port is currently undergoing a Public Private Partnership process to improve maritime activities in the country	1	0
	Yes, to some extent	0	1
	Yes. there was plan to revive the inland water transportation	0	1
What sustainability measures and environmental considerations are incorporated into the design and implementation of inland water transport initiatives along the River Gambia?	Am not aware of any	0	1
	Cargo storage facilities The reduction of carbon emissions	0	1
	Handling of ship generated waste and reduction of GHG emissions from ships will be taken into consideration.	0	1
	I am not aware of any, but it should be the one leading towards zero emission, in line with the global decarbonization campaign.	1	0
	I'm not privy to the inland water transport policy	0	1
	Please refer to the national transport policy document.	0	1
In regard to inland water transportation, how are safety and security concerns addressed, and what precautions are	Unknown to me	0	1
	Appropriate Aids to Navigation will be established along the River. A full-blown survey will be conducted to establish the existing conditions in terms of available depths and newly emerged dangers along.	0	1
	For now not all of these concerns are addressed. However, there are navigational aids to help navigators identify safe water marks.	0	1
	Not available	0	1
	Not aware of any	1	0

taken to mitigate potential dangers?	Presence of few buoys to guide safe navigation of ships, restrictions on night navigation and planned removal of wrecks /bathymetry survey being spear-headed by the maritime administration	0	1
	Safety of navigation in the river is cause for concern due to insufficient water depths and the presence of ship wrecks in strategic locations in the river. Ship wreck removal and dredging of strategic locations would enhance safety of navigation in the river	0	1
In what manner can the economic viability and competitiveness of inland water transport be evaluated in relation to alternative modes of transportation within the country?	Amount of cargo transported.	0	1
	Compared to road transport, inland water transportation had the potential to transport large volumes of cargo through the river in a single voyage and this would reduce the volume of cargo stored at the port of Banjul for transit to other countries or the hinterland. It is therefore more economically viable or cost effective to transport such volumes by the river than by road	0	1
	Investing into the area	0	1
	Systemic approach of collecting data with respect to the markets within and beyond our borders. This will determine product and service offered and price setting	0	1
	This can be done through regular performance	0	1
	Through a detailed feasibility study. Recently concluded revealed among other things that the following will be addressed: 1. High economic, social and environmental cost of trucking; and 2. Road accidents leading cause of death.	0	1
What are the long-term objectives and	Engage of the private sector in this initiative Commitment from government Acquisition of river barges	0	1

future prospects pertaining to the sustainability and advancement of inland water transport along the River Gambia?	Improvement of infrastructures and provision of cargo handling equipment and storage facilities in the river terminals		
	Dredging of the river and ship wreck removal		
	Deployment of AToN to enhance safety of navigation		
	Expansion of the productive capacity of the economy and increasing earnings and purchasing power of the citizenry hence the overall standards of living of the Gambian population.	0	1
	It will bring about Social and economic growth, with high employment rate, it can also have an impact on the tourism sector.	0	1
	Refer to the national transport policy.	0	1
	The implementation of regulation and policies, development of infrastructure to support the inland water transportation, integration with regional networks which will be more beneficial for the freight on transit, it can be used for tourism purpose, and research activities should be encouraged for continuous development.	1	0
This is not available in the country so no known plans as well	0	1	
To ensure sustainability the government and the various stakeholders should invest in revitalisation of inland river transportation. Capacity building should be a top priority to ensure more Gambians are trained in marine affairs.	0	1	

Table 2: Findings by age of respondents

		Age of respondent (in years)	
		30-40	41+

Presently, what is the state of inland water transportation along the River Gambia?	Currently, The Gambia do not have access to inland water transport, especially for the transportation of freight within the country	1	0
	Dormant	1	0
	Grossly underutilised. It has almost ceased to exist.	0	1
	Inland water transportation is currently underutilized due largely to dilapidated infrastructures, and insufficient water depths in the river. The ineffective implementation of inland water transport policy or the lack thereof is also a contributing factor.	0	1
	It has been dormant over the years	1	0
	It is almost dead.	1	0
	SIGNIFICANTLY DORMANT	0	1
In recent years, what, in your opinion, have been the contributing factors to the declining of inland water transport along the River Gambia?	Decline in Groundnut trade. Lack of River Transport infrastructure and unavailability of means of River Transportation.	0	1
	Lack of investment in the river transport	1	0
	Lack of knowledge on the significance and great impact created by inland water transport by regulatory and national bodies in The Gambia.	1	0
	Poor state of jetties, inadequate water depths, inadequate river, steamers/barges, preference to use road transport, inadequate quantity of agricultural produce to stimulate viability of river transport.	0	1
	The following are some of the factors responsible for decline in inland water transport: 1. Insufficient water depths, no AToN and presence of numerous ship wrecks 2. Poor infrastructures in the river e.g. wharves, storage facilities, poor fenders and mooring bollards 3. Air draft restriction due to the overhead bridge in the river 4. Ineffective implementation of the inland water transport policy or the lack thereof	0	1
	The main reason for the decline of the inland river transport is the unavailability of cargo vessels for plying the river gambia. And the dedicated dry ports along river	1	0
	There are number of factors, key among them is lack of investment in the sector.	1	0
Do any policies or initiatives currently exist in the Country with the objective of	Am not aware of any.	1	0
	No	1	0
	None that am aware of	1	0
	Yes	1	0
	Yes, National Transport Policy	0	1

promoting and revitalizing inland water transport?	Yes, the National Transport Policy adopted in the 3rd Republic	0	1
	Yes, the river transport policy	0	1
What are your thoughts on the potential economic and social advantages that could result from the revival of inland water transport along the River Gambia?	1. will complement the development of coastal shipping and road transport to enhance the country's capacity to serve as distribution centre for the Mali and the neighbouring Countries; 2. Employment generation; 3. More cost effective, reliable and safer; and 4. will promote economic development in the Hinterland	0	1
	Easy and fast access to the hinterlands with respect to the transportation of freight from the country's only Port. This will create a source of revenue for the country as well as increase the amount of freight on transit	1	0
	Fast and reliable movement of goods. Safe the roads from overloaded trucks	1	0
	Increased employment, reduce pollution and lessen burden on road transport, reduced cost in transporting goods and services from place to place.	0	1
	It will reduce road congestion. It will also compliment government's effort in decentralisation. It will reduce CO2 emissions. It will also will provide a cheap alternative means of transportation.	1	0
	It will reduce the cost of transportation Which will definitely reduce cost of commodities in the urban gambia. It can also attract transit to neighbouring senegal.	1	0
	Revival of inland water transport has the following advantages: 1. Improve intermodal connectivity 2. Enable movement of large volumes of goods from Banjul Port to the hinterland 3. It would ease congestion on the highways as cargoes destined for the hinterlands or transit cargoes could be transported on the river to Basse and other destinations 4. It would boost economic activities along the river 5. Passenger transportation in the river would significantly be enhanced 6. It would enhance employment opportunities for the youths 7. The rural-urban drift would significantly be reduced due to the creation of job opportunities upriver 8. Decentralization of development	0	1

In supporting and advancing inland water transport operations along the River Gambia, what are the primary challenges encountered by port authorities?	Availability of funds to address the infrastructural requirements.	0	1
	Lack of adequate inland water transport policy Lack of political will from government Lack of funding for the revival of river transport Inability to remove the numerous wrecks in the river Insufficient water depths	0	1
	Lack of jetties along the river. There is also limitation in terms of the depth. The inland waters are shallow.	1	0
	Poor state of jetties ,situation/wrecks presence impacting safety of navigation and reduced air draft due to senegambia bridge thus would impact bigger vessels to ply the river.	0	1
	Regulations and the ability to explore the navigable river Gambia	1	0
	Technical support and finance	1	0
	The cost of rehabilitation of the dry-ports. Cargo handling facilities. Dredging in some some areas.	1	0
	Do collaborations or partnerships exist with private enterprises or government agencies, among others, to assist in the revival of inland water transport?	Can't confirmed but could recall many investors planned to invest in river transport Revitalisation but no meaningful action until present.	0
No, it does not exist.		1	0
Not currently. However, this is conceived in the National Transport Policy.		0	1
Not to my knowledge		1	0
The Port is currently undergoing a Public Private Partnership process to improve maritime activities in the country		1	0
Yes, to some extent		0	1
Yes.there was plan to revive the inland water transportation		1	0
What sustainability measures and environmental considerations are incorporated into the design and implementation of inland water transport initiatives along the River Gambia?	Am not aware of any	1	0
	Cargo storage facilities The reduction of carbon emissions	1	0
	Handling of ship generated waste and reduction of GHG emissions from ships will be taken into consideration.	0	1
	I am not aware of any, but it should be the one leading towards zero emission, in line with the global decarbonization campaign.	1	0
	I'm not privy to the inland water transport policy	0	1
	Please refer to the national transport policy document.	0	1
	Unknown to me	1	0

In regard to inland water transportation, how are safety and security concerns addressed, and what precautions are taken to mitigate potential dangers?	Appropriate Aids to Navigation will be established along the River. A full-blown survey will be conducted to establish the existing conditions in terms of available depths and newly emerged dangers along.	0	1
	For now not all of these concerns are addressed. However, there are navigational aids to help navigators identify safe water marks.	1	0
	Not available	1	0
	Not aware of any	1	0
	Presence of few buoys to guide safe navigation of ships, restrictions on night navigation and planned removal of wrecks /bathymetry survey being spear-headed by the maritime administration	0	1
	Safety of navigation in the river is cause for concern due to insufficient water depths and the presence of ship wrecks in strategic locations in the river. Ship wreck removal and dredging of strategic locations would enhance safety of navigation in the river	0	1
In what manner can the economic viability and competitiveness of inland water transport be evaluated in relation to alternative modes of transportation within the country?	Amount of cargo transported.	0	1
	Compared to road transport, inland water transportation had the potential to transport large volumes of cargo through the river in a single voyage and this would reduce the volume of cargo stored at the port of Banjul for transit to other countries or the hinterland. It is therefore more economically viable or cost effective to transport such volumes by the river than by road	0	1
	Investing into the area	1	0
	Systemic approach of collecting data with respect to the markets within and beyond our borders. This will determine product and service offered and price setting	1	0
	This can be done through regular performance	1	0
	Through a detailed feasibility study. Recently concluded revealed among other things that the following will be addressed: 1. High economic, social and environmental cost of trucking; and 2. Road accidents leading cause of death.	0	1
What are the long-term objectives and future prospects pertaining to the sustainability	Engage of the private sector in this initiative Commitment from government Acquisition of river barges Improvement of infrastructures and provision of cargo handling equipment and storage facilities in the river terminals	0	1

and advancement of inland water transport along the River Gambia?	Dredging of the river and ship wreck removal Deployment of ATON to enhance safety of navigation		
	Expansion of the productive capacity of the economy and increasing earnings and purchasing power of the citizenry hence the overall standards of living of the Gambian population.	0	1
	It will bring about Social and economic growth, with high employment rate, it can also have an impact on the tourism sector.	1	0
	Refer to the national transport policy.	0	1
	The implementation of regulation and policies, development of infrastructure to support the inland water transportation, integration with regional networks which will be more beneficial for the freight on transit, it can be used for tourism purpose, and research activities should be encouraged for continuous development.	1	0
	This is not available in the country so no known plans as well	1	0
	To ensure sustainability the government and the various stakeholder should invest in revitalisation of inland river transportation. Capacity building should be a top priority to ensure more Gambians are trained in marine affairs.	1	0

Gambia Maritime

		What is your gender?	
		Female	Male
Currently, what regulatory framework governs the transportation of goods by river within the River Gambia?	Gambia Maritime Administration	0	1
	Merchant Shipping Act 2012 and the Licensing Regulations 2013	0	1
	Merchant Shipping Act and Regulations	0	1
	Merchant shipping regulation	0	1
	The Merchant Shipping Act regulations	0	1
	The regulatory framework that governs the transportation of goods by river are as follows: The Merchant Shipping Act 2013, Part 2, section 3 and Part 3, section 4 and The Merchant Shipping (Local Trade) Regulation 2014	0	1
	The river transport policy	1	0
	Transport policy	0	1
Unknown	0	1	

Are there any regulations or guidelines that are specifically designed to encourage the revival of inland water transport in the area?	GMA 5 years strategic plan.Activity 3.3.2.6,Describes ways to develop efficient maritime transport system to increase employment and facilitate the movement of goods ..Survey has been c	0	1
	N.A	0	1
	No	0	1
	Not to my knowledge	0	2
	There are guidelines for the river revitalization	1	0
	Transport policy	0	1
	Unknown	0	1
	Yes	0	1
In pursuit of the objectives of reviving inland water transport, how does the regulatory authority foster collaboration among other stakeholders, including port authorities and government agencies?	A survey has been conducted with the various stakeholders and specific landing sites have been identified for the construction of Jetties country wide ..	0	1
	By engaging them in workshops and meetings	0	1
	By taking the lead and ensuring the necessary requirements to start the process are taken care off eg wreck removal. Hydrographic and bathymetry surveys are effected	1	0
	Stakeholder meetings and engagements	0	1
	The Gambia Maritime Administration Act Chapter 68:07, Part 3, Section 14, subsections 2(L) and (2P), is mandated to liaise effectively with other public bodies of maritime transport and related transport matters for the purpose of harmonising activities in the maritime industry and also propose policies for the development and maintenance of maritime infrastructure, such as, Ports and harbours with other interested organisations in the Gambia.	0	1
	The institution have MOU with stakeholders which promotes collaboration	0	1
	The regulatory body fosters re-union with other stakeholders via the creation of committees, inclusive Gambia Maritime Integrated Strategic Sectors committee.This committee is a composition of stakeholders from diverse areas that periodically evaluates activities that are very imperative to the revitalization of the inland water transport.	0	1
	Through consultation on the revival of the river Gambia Transport project concept	0	1
What safety and security protocols are implemented	Unknown	0	1
	Administration of a Safety License regime	0	1
	Ensuring that all vessels operating in our inland waters are inspected and issued with seaworthiness certificate /license or permit to operate and for security the	0	1

to safeguard inland water transport operations along the River Gambia?	Gambia Navy have a continuous monitoring system to safeguard all operations in our waters		
	Licensing Regulations	0	1
	Navy patrol	0	1
	Plans are underway by the Administration for the removal of wrecks and installations of AIDS to Navigation. Buoys and lights ...	0	1
	Surveys and inspection	1	0
	The Gambia Maritime Administration	0	1
	The regulatory body has fostered a closer collaboration with the enforcement agencies by providing support to these agencies. The body knowing the limited capacity of the enforcement institution in terms of mobility to continually monitor the operations of these crafts have bought patrol boats for the Gambia Navy. These patrol boats conduct routine monitoring of the inland water crafts while at sea. These patrol boats are positioned at strategic locations within the riverline transport system. Additionally, the regulatory have established a MOU with the Department of Fisheries with respect to creation of a number plates for all the inland water crafts. This will facilitate easy identification of crafts within the framework of security.	0	1
	Unknown	0	1
In what ways does the regulatory body ensure that inland water transport activities adhere to sustainability principles and address environmental concerns?	An ESIA is carried out before approval is granted for any infrastructural project related to the marine environment..In collaboration with relevant stakeholders,NEA NDMA	0	1
	By annual inspection of crafts engaged in inland water transport to ensure they are safe to operate and not to pollute our waters.	0	1
	During vessels annual inspections and spot inspections, we ensure all measure in preventing and in case of spill are in place on vessels before issuance of license/ safety certificates, we also have safety and environment officials posted along the River landing sites to continuous monitor and report of any incident or concern with regards to safety and environment matters.	0	1
	Feasibility and impact assessment studies	0	1
	The Marine Pollution Regulations are not yet finalised	0	1
	The Merchant Shipping Act , the Carriage of Goods at Sea Act and Merchant Shipping (Licensing of Gambian Vessels Under 24 Metres or Fifteen Gross Tons And Vessels Engaged Solely in Inland and Near Coastal Voyages in The Gambia) Regulations, 2014	0	1

	The regulatory body ensures that the users of the inland water transport system are continuously compliant with provisions of the regulations guiding their operations within the maritime space. This is achieved by regularly conducting inspections onboard these crafts regularly by inspectors that are directly in contact with their daily activities. In addition, these inspectors often engage in sensitization programs on environmental protection standards with the actors within this domain.	0	1
	To to put in place environmental regulations and ensure proper enforcement	1	0
	Unknown	0	1
In what ways does the regulatory framework mitigate concerns pertaining to the competitiveness and economic sustainability of inland water transport in comparison to alternative modes of transportation?	As part of the framework policies of the Administration meetings are conducted with various actors within the inland water transportation and in these meetings all the challenges faced by the actors in their mode of operation is spelt out ..And they are assisted by the Administration e.g The concerns of small artisanal fishermen getting their fishing nets spoiled by bigger trawlers was addressed by communications to DOF by Administration since it falls within their mandate...	0	1
	By opening up to investors both local and international	0	1
	It's reflected in the national transport policy	1	0
	N/A	0	1
	Stakeholders meetings and engagement	0	1
	The regulatory body has created an open door policy with respect to the operations of inland water transport. Meetings are regularly conducted within the premises of the regularly body with the actors and users of inland water transport system to provide answers to their concerns.	0	1
	The regulatory framework established by the Merchant Shipping Act of 2013 in The Gambia plays a crucial role in addressing concerns related to the competitiveness and economic sustainability of inland water transport when compared to alternative modes of transportation. Firstly, the Act ensures safety and compliance standards for vessels operating in inland waters, fostering confidence among operators and users. Provisions such as those outlining the qualifications and certification of crew members, vessel inspection protocols, and safety requirements contribute to mitigating risks associated with inland water transport, thereby enhancing its competitiveness by assuring reliability and security. Secondly, the Merchant Shipping Act promotes economic sustainability by establishing a clear legal	0	1

	<p>framework for the registration and licensing of vessels engaged in inland water transport. This regulatory clarity facilitates the growth of the sector by attracting investment and promoting fair competition. Specific provisions within the Act address issues such as the registration of vessels, licensing of ship operators, and the imposition of penalties for non-compliance, ensuring a level playing field and preventing unfair practices. Furthermore, the Act empowers regulatory authorities to set standards for environmental protection, contributing to the sustainable development of inland water transport as an eco-friendly alternative compared to certain land-based modes of transportation.</p> <p>Lastly, the Merchant Shipping Act includes provisions that enable the formulation of policies and regulations aimed at enhancing the competitiveness of inland water transport. For instance, the Act allows for the establishment of national shipping policies, tariff regulations, and incentives that can support the growth of the inland water transport sector. By providing a legal basis for the government to create an enabling environment, the regulatory framework contributes to the overall economic sustainability of inland water transport, ensuring its viability and competitiveness within the broader transportation landscape in The Gambia.</p> <p>The Carriage of Goods by Sea Act provides a legal framework for contracts of carriage, addresses concerns regarding the protection of goods during transportation, ensuring fair and transparent business practices. The Carriage of Goods by Sea Act complements this by regulating the responsibilities and liabilities of carriers and shippers, promoting economic efficiency in the transportation of goods. Together, these Acts contribute to the growth of inland water transport by fostering an environment conducive to investment and by preventing unfair practices that could hinder the sector's economic viability.</p>		
	Unknown	0	1
What is the structure of the licensing and permitting procedures for operators	Application sent to the Administration, followed by an inspection and eventual certification upon fulfillment of requirements	0	1
	GMA licensing charges	0	1
	See Merchant Shipping (Licensing of Gambian Vessels Under 24 Metres or Fifteen Gross Tons And Vessels	0	1

engaged in inland water transport along the River Gambia?	Engaged Solely in Inland and Near Coastal Voyages in The Gambia) Regulations, 2014		
	The licensing structures and the permitting procedures for the operators are outline in the Merchant Shipping licensing regulations. This involves inspecting the crafts to determine the seaworthiness of the crafts and subsequent issuance of the license upon satisfactory inspection of the crafts. On the hand foreign inland crafts are issued with a permit to operate. Both the license issued to Gambian flag crafts and foreign crafts is valid on annual basis (period of 12 months).	0	1
	The operators are issued with certificate of proficiency and the boats are issued with safety license	0	1
	The regulatory authority have safety inspectors posted at different landing sites and they conduct inspections to all vessels/ boats and if fouls in seaworthiness condition, a license will be issued or if a foreign vessel, it will be issued with permit to operate of which is renewed yearly upon successful inspection. Sports checks on vessels are also carried out y inspectors for continuous monitoring.	0	1
	This is govern by licensing regulation	1	0
	Through the GMA merchant shipping act licensing regulations..	0	1
	Unknown	0	1
How does the regulatory authority regulate inland water transport while balancing the interests of various stakeholders, including environmental organizations, local communities, and businesses?	By amending the present licensing regulations and incorporate rules that fit all stakeholders.	0	1
	GMA maintains a delicate balance between the business interest of people and the environment. The two acts cited above incorporates provisions that address environmental concerns, promoting sustainable practices in inland water transport. By ensuring compliance with these regulations, GMA aims to harmonize the diverse interests of stakeholders, contributing to the overall development and sustainability of inland water transport in the Gambia.	0	1
	Not comprehensive	0	1
	Quarterly meetings with stakeholders and community landing sites are carried out for better collaboration and matters concern are address. Therefore stakeholders and local community understanding the need for regulating inland water transport, it's benefit to the environment, and wellbeing	0	1
	The regulatory body as the most competent authority conferred with responsibility to implement Maritime Safety and Security therefore all other stakeholders seek approval or authorization from the regulatory body..	0	1

	The regulatory body is the competent authority conferred with the responsibility to regulate inland water transport system. Thus, its priority is fully implement these functions without the interference of any stakeholders and this is known to all the stakeholders. All operations involving the operations of inland water crafts at sea has to be authorised by the Administration before the involvement of any stakeholder irrespective of their interests. These are the standard operating procedures of the regulatory body	0	1
	Through MoUs	1	0
	Unknown	0	1
	Using the transport policy and stakeholders engagement	0	1
What are the regulatory authorities' objectives for the sustainable development of inland water transport in the country, and what measures are being implemented to achieve these goals?	Based on certain parameters(Tourism ,Access to the jetty ,commercial activities etc) to various landing sites for construction jetties have been identified with key stakeholder participation..	0	1
	Creating dry ports up country for re export regional trade	0	1
	Not available	1	0
	Not comprehensive	0	1
	Strategic Priority 5 of the Gambia's NDP requires that State to take measures to Enhance land, river, sea and air transport for affordability, accessibility, and competitiveness. This provides the basis for revitalization of river transport.	0	1
	The main objective is having safe vessels on clean and navigable waters with competent sailors. In implanting this, the Authority.ensures vessels are inspected and found in seaworthy condition and environmental friendly in their operation, continuous engagement with private companies in removal of wrecks in our waters for safe navigation, conducting environmental assessment in ensuring all operations in our waters are not pollution prone, amending regulations for more stricter measures.	0	1
	The objective is to have a safe inland water transport in clean waters. The measures are to inspect and license boats and train the operators through the Maritime School.	0	1
	The regulatory body while implementing its core functions have aligned itself to the objective of the UN sustainable development goals. Understanding the strategic location of the country on the Atlantic and reliance of the Gambia River for sustainable development, inland water transport activities is at the core of the institution strategic objectives. Thus, research is being conducted by far on to how to rivertalized the transport system.	0	1

	On the other hand, the body has also look into Adaptation polices and mitigation measures that can be formulated within its strategic objectives within the short term and long term to maintain sustainability patterns in the inland water transport system. Even looking at the material composition of these crafts, which are made of wood, the Administration is looking into alternative environmental friendly materials that would be used for the construction of these crafts. These include the use of reinforced fibers and other sustainable materials to construct inland water crafts instead of wood.		
	Unknown	0	1

Findings from River Communities

Table 3: Percentage distribution of gender by variables

Variable	Response categories	Gender of respondent	
		Female	Male
Regarding local travel and commerce, what is the current frequency of utilization for inland water transport services along the River Gambia?	Daily	25.9	74.1
	Monthly	50.0	50.0
	Never	0.0	100.0
	Rarely	50.0	50.0
	Weekly	11.1	88.9
Which categories of goods or products are you of the opinion are most appropriate for conveyance via inland water transport along the River Gambia?	Agricultural products	31.4	68.6
	Agricultural products, Livestock	50.0	50.0
	Agricultural products, Livestock, Handicrafts	50.0	50.0
	Fishing	0.0	100.0
	Handicrafts	5.0	95.0
	Livestock	23.5	76.5
To what extent can the revitalization of inland water transport contribute to the economic progress of your locality?	Very important	0.0	0.0
	Important	20.3	79.7
	Neutral	50.0	50.0
	Not very important	0.0	100.0
	Very important	32.1	67.9
Concerning the potential environmental effects of inland water transport on the River Gambia, to what extent are you informed?	Aware	26.7	73.3
	Neutral	42.9	57.1
	Not very aware	33.3	66.7
	Very aware	15.4	84.6
Which factors, in your perspective, are responsible for the decline	Construction of bridge	0.0	100.0
	Economic factors	28.4	71.6

of inland water transportation within your locality?	Environmental concerns	14.3	85.7
	Government policies	40.0	60.0
	Lack of infrastructure	9.1	90.9
	Lack of infrastructure, Economic factors	50.0	50.0

Table 4: Percentage distribution of gender by variables

Variable	Response categories	Gender of respondent	
		Female	Male
Concerning the safety of utilizing inland water transport on the River Gambia, what is your assessment?	Neutral	33.3	66.7
	Safe	27.7	72.3
	Unsafe	25.0	75.0
	Very safe	22.6	77.4
	Very unsafe	0.0	100.0
How has the decrease in inland water transportation impacted the social fabric of your community, in your experience?	No significant impact	40.0	60.0
	Not sure	0.0	100.0
	Strengthened community bonds	32.4	67.6
	Weakened community bonds	12.2	87.8
Do you believe that the revival of inland water transport could provide your community's local businesses with new economic opportunities?	Believe	27.0	73.0
	Do not believe	20.0	80.0
	Neutral	66.7	33.3
	Strongly believe	23.3	76.7
	Strongly believe	0.0	100.0

Table 5: Percentage distribution of age by variables

Variable	Response variable	Age of respondent (in years)					
		20-30	31-40	41-50	51-60	61-70	71+
Regarding local travel and commerce, what is the current frequency of utilization for inland water transport services along the River Gambia?	Daily	85.3	87.8	76.0	81.8	50.0	84.4
	Monthly	5.9	2.0	8.0	9.1	0.0	4.7
	Never	0.0	0.0	4.0	0.0	0.0	0.8
	Rarely	0.0	4.1	8.0	0.0	0.0	3.1
	Weekly	8.8	6.1	4.0	9.1	50.0	7.0
Which categories of goods or products are you of the opinion are most appropriate for conveyance via inland water transport along the River Gambia?	Agricultural products	58.8	65.3	64.0	81.8	100.0	100.0
	Agricultural products, Livestock	2.9	0.0	4.0	0.0	0.0	0.0
	Agricultural products, Livestock, Handicrafts	2.9	2.0	0.0	0.0	0.0	0.0
	Fishing	2.9	0.0	0.0	0.0	0.0	0.0
	Handicrafts	20.6	22.4	8.0	0.0	0.0	0.0

	Livestock	11.8	10.2	24.0	18.2	0.0	0.0
To what extent can the revitalization of inland water transport contribute to the economic progress of your locality?	Important	38.2	42.9	60.0	72.7	85.7	50.0
	Neutral	8.8	4.1	8.0	9.1	0.0	0.0
	Not very important	0.0	4.1	4.0	0.0	0.0	0.0
	Very important	52.9	49.0	28.0	18.2	14.3	50.0
Concerning the potential environmental effects of inland water transport on the River Gambia, to what extent are you informed?	Aware	73.5	83.7	84.0	90.9	100.0	50.0
	Neutral	8.8	6.1	4.0	0.0	0.0	0.0
	Not very aware	0.0	2.0	8.0	0.0	0.0	0.0
	Very aware	17.6	8.2	4.0	9.1	0.0	50.0

Table 6: Percentage distribution of age by variables

Variable	Response variable	Age of respondent					
		20-30	31-40	41-50	51-60	61-70	71+
Which factors, in your perspective, are responsible for the decline of inland water transportation within your locality?	Construction of bridge	0.0	2.0	0.0	0.0	0.0	0.0
	Economic factors	70.6	81.6	80.0	90.9	100.0	50.0
	Environmental concerns	2.9	8.2	4.0	9.1	0.0	0.0
	Government policies	8.8	0.0	8.0	0.0	0.0	0.0
	Lack of infrastructure	14.7	6.1	8.0	0.0	0.0	50.0
	Lack of infrastructure, Economic factors	2.9	2.0	0.0	0.0	0.0	0.0
Concerning the safety of utilizing inland water transport on the River Gambia, what is your assessment?	Neutral	8.8	4.1	16.0	0.0	0.0	0.0
	Safe	55.9	69.4	48.0	81.8	100.0	100.0
	Unsafe	2.9	2.0	8.0	0.0	0.0	0.0
	Very safe	29.4	24.5	28.0	18.2	0.0	0.0
	Very unsafe	2.9	0.0	0.0	0.0	0.0	0.0
How has the decrease in inland water transportation impacted the social fabric of your community, in your experience?	No significant impact	11.8	8.2	20.0	18.2	0.0	0.0
	Not sure	0.0	2.0	0.0	0.0	0.0	0.0
	Strengthened community bonds	47.1	51.0	52.0	81.8	100.0	50.0
	Weakened community bonds	41.2	38.8	28.0	0.0	0.0	50.0
Do you believe that the revival of inland water transport could provide your community's local	Believe	58.8	73.5	64.0	90.9	85.7	50.0
	Do not believe	5.9	2.0	8.0	0.0	0.0	0.0
	Neutral	2.9	0.0	8.0	0.0	0.0	0.0

businesses with new economic opportunities?	Strongly believe	32.4	22.4	20.0	9.1	14.3	50.0
	Strongly believe	0.0	2.0	0.0	0.0	0.0	0.0