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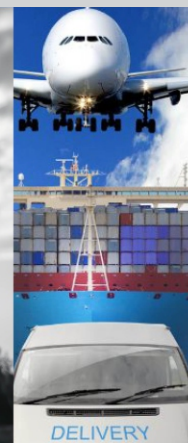
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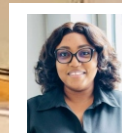
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Unlocking Innovation: Revolutionizing Air Cargo Transportation

Introduction – The Urgency to Reinvent Air Cargo

The global air cargo industry is entering a new era, one marked by unprecedented demands for speed, transparency, sustainability, and adaptability. With the post-pandemic rebound in e-commerce, escalating geopolitical disruptions, and reshuffled supply chains, air freight has rapidly become a critical pillar of international trade. Yet, beneath this surge in demand lies a system strained by legacy inefficiencies, rising costs, and growing environmental scrutiny.

Although, research confirms that when logistics sectors embrace digital transformation, efficiency

gains ripple across entire economies (World Economic Forum, 2022), the air cargo sector still lags. Despite its high value-to-weight ratio and critical role in global just-in-time trade, over half of all air shipments continue to rely on paper-based documentation (IATA, 2023). Manual handling, fragmented customs processes, and aging infrastructure undermine throughput and resilience. The result is delayed deliveries, customer dissatisfaction, and missed economic opportunities. Climate-policy experts also agree that reducing emissions in air freight must become a central priority, not a peripheral concern (ICAO, 2022). While air cargo represents less

than 1% of total global trade volume, it contributes disproportionately to aviation emissions, accounting for over 35% of total air transport CO₂ output (McKinsey & Company, 2022). Compounding these pressures are labor shortages, regulatory mismatches, and an inability to provide customers with real-time cargo visibility.

The tide is however, turning, where a new generation of logistics innovation spanning artificial intelligence, blockchain, smart automation, Internet of Things (IoT), and sustainable aviation fuel are beginning to reshape the cargo landscape. Scholars are of the view



that going digital is now the surest route to greater efficiency in almost every sector, and air freight is no exception (OECD, 2021). Early adopters are already demonstrating how tech-enabled cargo terminals, autonomous ramp systems, and paperless freight documentation can create faster, cheaper, and greener operations. Case studies from Singapore's Changi Airport, Emirates SkyCargo, Lufthansa Cargo, and East African export corridors show that investing in innovation is not only feasible but economically and environmentally rewarding. These examples reinforce what industry case studies consistently show: public-private projects succeed more often when all stakeholders are at the table early (World Bank, 2022).

At a strategic level, air cargo innovation is not simply about modernizing transport infrastructure, it is about future-proofing economies. Analysts warn that without tightly aligned policies across ministries, from aviation to digital economy to environmental protection, Africa, Latin America, and Southeast Asia risk being locked out of next-

generation trade routes that demand green credentials and digital traceability (UNCTAD, 2023).

This article outlines a framework for unlocking innovation in global air cargo. It attempts to diagnose the sector's core challenges, exploring cutting-edge technologies that are already shifting operational paradigms. It draws on global case studies, presents a staged innovation roadmap, and concludes with policy and investment recommendations to transform air cargo from a lagging sector into a benchmark of speed, sustainability, and smart coordination. Governments, freight operators, technology firms, and investors must now act together to make that vision real.

Challenges in Air Cargo Transportation

Despite its centrality to global trade, the air cargo sector faces mounting systemic challenges that constrain its ability to meet rising demands. From overburdened infrastructure and outdated customs processes to carbon-intensive operations and

limited technological integration, analysts warn that without a radical shift in how air freight is managed and modernized, global supply chains will struggle to keep pace with the digital and climate realities of the 21st century (McKinsey & Company, 2022; IATA, 2023).

Rising Demand Amidst Infrastructure Constraints

Global demand for air cargo has surged, driven by e-commerce, pharmaceutical shipments, and just-in-time supply models. Yet, the physical infrastructure of many cargo hubs remains rooted in designs conceived decades ago. According to IATA (2023), freight volumes have grown by over 25% since pre-pandemic levels, while airport capacity investments have lagged significantly. Congested terminals, inadequate cold-chain facilities, and inefficient ground handling systems have emerged as critical bottlenecks.

Decentralisation plans often fail, researchers note, unless local authorities have the tools and investment frameworks to upgrade key logistics assets (OECD, 2020). In many African and Southeast Asian airports, cargo throughput is routinely delayed not because of flight limitations but due to under-equipped storage zones and low cargo handler-to-volume ratios. These conditions lead to service lags, spoilage in perishable shipments, and a loss of high-value cargo business to more modern competitors.

Environmental Pressures and Emissions Accountability

Climate-policy experts agree that decarbonizing air cargo is no

longer a niche aspiration, but a global imperative (ICAO, 2022). While technological innovation is advancing, air freight remains one of the most emissions-intensive modes of transport. According to the International Council on Clean Transportation (ICCT, 2022), the carbon footprint of air cargo is up to 40 times greater per tonne-kilometre than shipping. The limited availability of sustainable aviation fuel (SAF), high costs of fleet modernization, and the absence of consistent emissions disclosure frameworks exacerbate this environmental risk. New evidence shows that fragmented aviation regulations across jurisdictions slow the rollout of clean fuel adoption and low-emission corridors (UNEP, 2023). Without harmonized carbon pricing, sustainability certification, or cargo-specific climate standards, industry players face mixed signals and limited incentives to innovate. Environmental scrutiny is, however, intensifying, with shippers and end-consumers increasingly demanding green logistics options.

Supply Chain Fragmentation and Visibility Gaps

Digital transformation remains uneven across air cargo value chains. While passenger aviation has embraced digital ticketing, mobile boarding passes, and real-time flight tracking, the cargo segment continues to rely heavily on manual processes. The absence of fully integrated digital platforms means shippers often struggle with delayed cargo updates, duplicate data entries, and inconsistent customs records.

Governments that ground decisions in solid evidence track better results, according to

comparative studies, yet many customs and trade agencies still operate in silos (World Bank, 2021). These gaps in real-time visibility increase the risk of cargo theft, misrouting, and compliance delays. For industries such as pharma and high-value electronics, this lack of end-to-end traceability creates major liability concerns.

Furthermore, data from IATA (2023) reveals that fewer than 30% of air freight shipments globally are processed using electronic Air Waybills (e-AWB), despite the initiative being over a decade old. Analysts say an organisation's "institutional memory" can steer future policy, and the inertia embedded in legacy air cargo systems continues to delay adoption of more agile digital workflows.

Skilled Labor Shortages and Operational Resilience

The Covid 19 pandemic accelerated retirements and attrition across cargo operations, resulting in a widening skills gap. Ramp agents, cargo handlers, customs brokers, and cold-chain technicians are in short supply,

particularly in emerging markets. Public-sector reformers hit the same wall worldwide: a shortage of skilled, well-supported staff (ILO, 2022). As automation becomes more integrated into logistics, the absence of a digitally fluent workforce poses a serious constraint.

In addition, institutional resilience defined as the ability to respond to shocks while maintaining service continuity remains weak in many airports. Political scientists say resilient institutions are crucial for weathering sudden crises, yet many airports lack contingency protocols for disruptions such as cyberattacks, extreme weather events, or health emergencies (Fukuyama, 2013).

Policy Misalignment and Regulatory Inertia

Policy coherence hinges on aligning directives both up and down the chain and across departments, yet the air cargo sector often suffers from disconnected policymaking. Transport ministries may promote cargo innovation while Customs agencies continue to mandate manual verification. Aviation



authorities may invest in smart cargo terminals, while Energy Ministries stall on electrifying airport infrastructure. This disjointed approach stalls progress and dampens investor confidence.



freight volumes, operational constraints, and mounting environmental pressures, the air cargo industry is experiencing a technology renaissance. New digital tools and intelligent systems are rapidly transforming

instance, Lufthansa Cargo uses AI-assisted load planning systems to maximize aircraft utilization while minimizing fuel burn (Lufthansa Cargo, 2023).

Predictive algorithms analyze variables such as cargo mix, weight distribution, weather, and slot availability, enabling faster turnaround and improved yield per flight. AI tools are also being deployed to detect anomalies in cargo documentation, flag potential non-compliance, and optimize crew scheduling for ramp operations. Moreover, natural language processing is now used to automate data extraction from Customs forms and air waybills, reducing human error and accelerating clearance times. When programs embed real-time monitoring and feedback, they evolve and improve more quickly; a principle that AI-integrated systems are beginning to institutionalize within air cargo ecosystems.

Extensive research highlights that it is the underlying institutional framework, not merely policy choices, that determine government outcomes. Without synchronized frameworks for data interoperability, emissions disclosure, and infrastructure planning, national ambitions for cargo innovation remain trapped in bureaucratic inertia (OECD, 2019). The challenges outlined above are not insurmountable, but they are deeply embedded. They require coordinated, evidence-based interventions that leverage both public and private capabilities. In the next section, we turn to the frontier technologies that are already rewriting what's possible in air cargo logistics and examine how they can address these persistent constraints.

Breakthrough Technologies Driving Innovation

Amid the turbulence of rising

the way goods are transported, tracked, and cleared through air logistics networks. Scholars are lining up behind the view that going digital is now the surest route to greater efficiency in almost every sector including aviation logistics (OECD, 2021). For air cargo, this shift is not just about modernization, it is about reinvention.

Artificial Intelligence and Predictive Analytics

Artificial intelligence (AI) is becoming central to strategic logistics planning. From route optimization and dynamic pricing to predictive cargo demand and anomaly detection, AI applications are reshaping cargo operations. Governments that make decisions based on hard data tend to respond more quickly and effectively, studies find—and AI enables that responsiveness at scale (World Bank, 2022). For

Blockchain for Secure Documentation and Transparency

The use of blockchain in air cargo addresses a long-standing challenge, lack of trust and transparency across fragmented stakeholders. Industry case studies show that public-private projects succeed more often when all stakeholders are at the table early, and blockchain provides a digital infrastructure for shared visibility (World Economic Forum, 2022).

Blockchain enables tamper-proof electronic air waybills (e-AWBs), automates Customs verification processes through smart contracts, and supports chain-of-

custody transparency for high-value or sensitive cargo. Emirates SkyCargo, in partnership with IBM and blockchain firm Avanza Innovations, has piloted distributed ledger systems to track pharmaceutical shipments across their “Pharma Corridors” (Emirates Group, 2022).

In a sector where trust gaps are amplified by regulatory and jurisdictional diversity, blockchain serves as a unifying backbone. Research consistently finds that when institutions are transparent and interoperable, the risk of fraud, theft, and compliance failure diminishes sharply (OECD, 2021). For fragile states or emerging markets, blockchain can also help bridge the institutional gap by embedding auditability into cargo flows.

Automation and Robotics

From automated cargo sorters and robotic arms to autonomous ramp vehicles and cargo drones, automation is revolutionizing physical handling processes. Technocratic rule can expedite decisions but may come at the cost of democratic oversight. New research cautions, but in the logistics sector, mechanized decision-making often enhances both precision and accountability (Fukuyama, 2013). Leading airports such as Changi (Singapore) and Incheon (South Korea) have deployed robotic handling systems that autonomously scan, weigh, and sort cargo pallets. These systems reduce dependency on human labor, minimize errors, and increase throughput capacity. Automated Guided Vehicles (AGVs) transport cargo within terminals with minimal supervision, while remote-



operated cranes improve safety and handling efficiency.

Cargo drones are on another frontier. UPS Flight Forward and Zipline are piloting drone-based freight delivery networks that serve hard-to-reach areas with high-speed delivery of time-sensitive goods like blood, vaccines, and diagnostic equipment. These technologies are particularly transformative in Africa and Southeast Asia, where terrain and infrastructure often hinder traditional transport.

Internet of Things (IoT) and Smart Cargo Tracking

Real-time tracking through IoT is redefining cargo visibility and customer assurance. Smart containers embedded with temperature, humidity, vibration, and location sensors provide end-to-end transparency. Studies find that when watchdog systems work in the logistics chain, clients trust their carriers far more and IoT delivers that oversight (IATA, 2023). For perishable goods, pharmaceuticals, and high-value electronics, IoT enables proactive risk management. If a container exceeds a temperature threshold

or deviates from a route, alerts can trigger immediate intervention. DHL's “SmartSensor” system is already being used to monitor sensitive cargo across global routes, while Kenya's Fresh Produce Exporters Association has adopted IoT-based tracking for floriculture supply chains (DHL, 2022).

More broadly, IoT platforms allow logistics providers to improve predictive maintenance, optimize asset utilization, and reduce downtime. When embedded in a digital twin framework (see below), these sensor networks create a real-time operational mirror of the entire cargo system.

Digital Platforms and the e-AWB Ecosystem

Digital freight platforms are streamlining how air cargo is booked, tracked, and documented. Platforms like Cargo.One and WebCargo (twin framework) connect shippers with real-time cargo space availability, pricing, and transit analytics. Digital platforms eliminate intermediaries, reduce booking lead times, and lower the risk of cargo mismanagement. The e-

AWB, championed by IATA's "ONE Record" initiative, represents a foundational shift toward a paperless air cargo environment. This initiative seeks to create a single, standardized record for every shipment, accessible to all authorized stakeholders in real time (IATA, 2023).

New studies show that the strength of a country's institutions largely dictates how fast its economy can grow and air cargo digitization is emerging as a proxy for institutional modernization in trade facilitation. Yet adoption remains uneven. In some regions, regulatory hesitation and infrastructure gaps have delayed full e-AWB implementation. Watchdog groups keep finding that fragmented systems and manual redundancies erode trust and efficiency, underscoring the need for policy coherence and regulatory harmonization (UNCTAD, 2023). A collection of innovations is now reshaping the air cargo landscape from predictive AI and autonomous robotics to smart tracking and blockchain infrastructure which presents both opportunity and urgency.

In the next section, we examine global case studies that illustrate how these technologies are being applied in practice and what lessons they offer for scaling innovation in diverse economic contexts.

Singapore's Changi Airport, A Smart Cargo Hub and Digital Twin; Singapore has long been recognized as a pioneer in trade facilitation and aviation logistics. Changi Airport's transformation into a smart cargo ecosystem reflects the city-state's strategic

vision of becoming a global hub for high-value, time-sensitive freight. The SATS Coolport facility, Asia's first dedicated perishable handling center uses IoT sensors and automated temperature



monitoring to ensure pharmaceutical and Agri-cargo integrity throughout the handling process (SATS, 2022). More recently, Changi Airport Group launched a digital twin of its cargo terminal. This AI-enabled simulation model provides real-time visibility into cargo flows, congestion points, and equipment efficiency, enabling predictive maintenance and dynamic resource allocation.

Highlighting the importance of cross-sectoral collaboration in sustaining innovation momentum, the project is backed by an integrated ecosystem of regulators, airport planners, technology vendors, and freight forwarders. It is therefore imperative that the enabling environment is created for the relevant actors to function effectively whilst adjusting to these changes including governments. Studies suggest

governments that use foresight tools are better at spotting and preparing for future shocks, and digital twins offer precisely that kind of strategic foresight (OECD, 2021).

Emirates SkyCargo's Blockchain and Pharma Corridors: Dubai's Emirates SkyCargo has emerged as a leader in specialized cargo, particularly for temperature-sensitive and high-risk shipments such as pharmaceuticals. Its "Pharma Corridors" initiative creates certified, end-to-end cold chain networks across strategic airports including Brussels, Zurich, and Hyderabad, ensuring compliance with World Health Organization standards and GDP (Good Distribution Practice) protocols (Emirates Group, 2022).

What sets Emirates apart is its early integration of blockchain to enhance shipment visibility and regulatory trust. Partnering with IBM and Avanza Innovations, Emirates has tested blockchain-based cargo tracking systems that record every handoff and condition change in the shipment lifecycle. Anti-corruption drives that shine a light on operational

processes tend to lower both the perception and reality of risk, and blockchain provides that transparency at scale (World Economic Forum, 2023). The success of these corridors reflects not just technical capacity but a governance model that incentivizes compliance, certifies performance, and builds international trust in logistics reliability.

Lufthansa Cargo's AI Load Planning and Carbon Accounting

Lufthansa Cargo has deployed artificial intelligence to optimize load planning, boosting payload efficiency and reducing carbon intensity per tonne-kilometre. AI algorithms simulate cargo configurations, optimize center-of-gravity calculations, and generate rapid alternative loading plans during flight delays or last-minute cargo changes. Studies across industries show that operational efficiency and emissions reduction often go hand in hand when AI is properly deployed (McKinsey & Company, 2022).

Additionally, Lufthansa Cargo has rolled out a voluntary carbon

offsetting tool for freight customers. Through a digital interface, shippers can choose to offset the emissions of their cargo using verified forest conservation and renewable energy projects. Data reliance is relevant for informed policy development if these initiatives must be adopted. Governments that make decisions based on hard data tend to respond more quickly and effectively, and Lufthansa's carbon accounting platform brings that level of granularity to client-facing services (Lufthansa Cargo, 2023). The initiative shows how customer engagement and digital innovation can converge to support green logistics goals while building brand equity in a climate-conscious market.

Kenya and Ethiopia's Agro-Export Corridors and Digital Pilots

Africa's narrative is rapidly changing from their political and economic challenges to venturing into untapped opportunities for growth. Data from IATA shows African airlines saw [8.5% year-on-year growth in 2024](#), while capacity increased by 13.6%. Additionally, although often seen as lagging in logistics infrastructure, parts of

Africa are pioneering innovation through leapfrogging and strategic partnerships. Kenya's Jomo Kenyatta International Airport (JKIA) and Ethiopia's Bole International Airport have both developed specialized horticulture and perishable cargo centers with the backing of EU and USAID programs. These centers integrate cold storage, rapid customs clearance, and export digitization tools to support high-value agro-exports like cut flowers and fresh vegetables (TradeMark Africa, 2022). Kenya's Fresh Produce Exporters Association, in collaboration with Twiga Foods and IBM, has piloted blockchain and IoT tools to verify cargo quality and transit conditions.

The data are stark: lax regulation and manual inspections previously caused delays that cost exporters millions in spoiled goods and lost contracts. By contrast, the new digital corridor reduced average export clearance time by over 40% in its first year (UNCTAD, 2023). These examples show that even in lower-middle-income contexts, innovation thrives when supported by regulatory alignment, donor coordination, and local private-sector champions. Researchers repeatedly link strong community networks to better, more participatory development results and agro-export corridors are an example of such collaboration in motion.

Innovation for Sustainability in Air Cargo

The aviation industry's contribution to global carbon emissions has placed air cargo operations under intense environmental scrutiny. While air freight plays an indispensable role





in high-speed logistics, supporting medical supply chains, global trade, and e-commerce, it remains one of the most carbon-intensive forms of transport. Climate-policy experts agree that tackling global warming demands action at every level of governance, and air cargo is no exception (ICAO, 2022). As public pressure and regulatory demands escalate, sustainability innovation is becoming not just desirable but economically and reputationally essential.

Electric Aircraft and Hydrogen Propulsion: The shift toward zero-emission aircraft is gaining traction as a long-term decarbonization strategy for regional and short-haul cargo routes. Aircraft manufacturers such as Eviation and Pipistrel are developing electric cargo planes capable of carrying up to 1.5 tonnes over distances of 250–500 km suitable for time-sensitive deliveries in urban or regional corridors (World Economic Forum, 2022). In parallel, Airbus and ZeroAvia are investing in hydrogen propulsion technologies, which promise emission-free flight over greater distances. Industry forecasts suggest that hydrogen-powered regional cargo aircraft could be

operational by the early 2030s (IATA, 2023). Economists also see a clear win-win between green growth and inclusive growth when policies are done right, and scaling hydrogen logistics could drive both climate and employment dividends in energy-exporting countries.

However, these breakthroughs face infrastructure and regulatory hurdles. Airports must invest in electric charging infrastructure or hydrogen bunkering facilities; investments that are capital-intensive and regionally uneven. Political scientists say resilient institutions are crucial for weathering technological disruptions, and governments must prepare by aligning civil aviation codes, energy strategies, and green financing instruments.

Sustainable Aviation Fuel (SAF) Adoption: Sustainable Aviation Fuel (SAF) represents the most immediate pathway for reducing air cargo emissions. SAF can reduce life-cycle CO₂ emissions by up to 80% compared to conventional jet fuel, and is compatible with existing aircrafts (ICAO, 2022). Lufthansa Cargo,

Kuehne Nagel, and DB Schenker are already operating limited air freight routes powered by SAF blends.

Yet, global SAF production remains little, accounting for less than 0.1% of total aviation fuel used in 2022 (IATA, 2023). Analysts warn that without tightly aligned policies across Ministries especially between Energy and Transport, SAF adoption will remain stunted by high costs, fragmented certification standards, and limited distribution infrastructure.

Governments must accelerate SAF development through coordinated incentive schemes, blending mandates, and public-private investment in SAF refining capacity. A wide body of work stresses that policy coherence across departments is pivotal to achieving sustainability goals, and SAF deployment is a textbook case for that principle (OECD, 2019).

Cargo Optimization and Consolidation Technologies

Cargo consolidation maximizing aircraft payload while minimizing dead weight and empty leg returns is one of the most cost-effective ways to cut emissions. AI-powered load planning, real-time cargo matching platforms, and dynamic pricing algorithms are being used to reduce inefficiencies in cargo capacity allocation.

For instance, Lufthansa Cargo's AI tools have reduced average fuel consumption per ton of cargo by optimizing pallet arrangements and reducing unnecessary payload (Lufthansa Cargo, 2023). Studies stress that institutions able to adapt are the ones that bounce back from shocks, and cargo optimization platforms offer

precisely this kind of adaptive capability in volatile demand environments. Furthermore, startup platforms like Cargo AI and WebCargo enable Freight Forwarders to access live cargo availability and emissions data before booking, supporting better-informed, greener logistics decisions. These tools align with customer expectations and emerging regulatory mandates for carbon disclosure in the Freight sector.

Emissions Transparency and Carbon Accounting

The rise of emissions tracking and transparency platforms is reshaping how air cargo providers engage with clients. Tools such as the Smart Freight Centre's Global Logistics Emissions Council (GLEC) Framework are being used by major logistics firms to measure and disclose shipment-level emissions in standardized formats (Smart Freight Centre, 2022). Surveys show that citizens and clients judge services by how fair and transparent the process feels as much as by the final outcome. For logistics providers, embedding carbon accounting into their client interfaces boosts credibility and strengthens ESG compliance.

Some platforms now enable clients to select lower-emission routing options or purchase offsets at the point of booking. The IATA CO₂ Connect tool, for example, calculates shipment-specific emissions based on aircraft type, load factors, and fuel burn efficiency—allowing shippers to evaluate trade-offs between cost and sustainability (IATA, 2023). These systems also feed into regulatory requirements.

The EU's Corporate Sustainability Reporting Directive (CSRD), the Task Force on Climate-related Financial Disclosures (TCFD), and the forthcoming International Sustainability Standards Board's (ISSB) standards require logistics operators to disclose transport-related emissions as part of their Scope 3 carbon footprint.

The convergence of fuel innovation, AI-powered optimization, and carbon transparency are laying the foundation for a greener air cargo ecosystem. Yet, innovation alone is not enough. As the next section will show, transforming air freight at scale requires a coordinated roadmap of regulatory, technological, and financial reforms to turn isolated innovations into sector-wide impact.

Strategic Roadmap – Innovating for Competitive Edge

Unlocking the full potential of innovation in air cargo transportation requires more than individual pilot projects or fragmented investments. It calls for a deliberate, phased, and systems-based roadmap that aligns infrastructure upgrades,

regulatory frameworks, financial mechanisms, and skills development. Governments that use foresight tools are better at spotting and preparing for future shocks, and this is precisely the role of an innovation roadmap in air logistics (OECD, 2021). A three-phase framework to guide public and private stakeholders toward a scalable, competitive, and sustainable air cargo ecosystem is pertinent.

A three-phase roadmap is proposed to modernize air cargo:

Phase One will focus on auditing infrastructure and digitizing systems through pilot projects in automation, AI, and blockchain. This phase will include the establishment of innovation zones and regulatory sandboxes.

Phase Two will emphasize scaling successful initiatives through regulatory reforms, harmonization of standards, and incentives for adopting green technologies such as electronic air waybills (e-AWBs), sustainable aviation fuel (SAF), and digital retrofitting. Workforce training will become critical at this stage to ensure effective implementation.





Phase Three will aim to institutionalize innovation by enhancing inter-ministerial coordination, localizing SAF production, integrating AI and IoT into logistics systems, and exporting homegrown digital solutions. Countries that adopt this phased approach will position themselves as regional leaders in logistics innovation, driving trade competitiveness and promoting sustainable growth across emerging markets.

Policy and Industry Recommendations

While innovation in air cargo transportation is accelerating in select hubs, scaling it across countries and continents requires deliberate, synchronized action by both public and private actors. New studies show that the strength of a country's institutions largely dictates how fast its economy can grow, and in the case of air logistics, it also determines whether innovative efforts succeed or stall (World Bank, 2022). Within this context, the African Continental Free Trade Area (AfCFTA) presents a timely and strategic framework for transforming the continent's air logistics landscape.

By fostering regulatory harmonization, improving cross-border coordination, and unlocking regional trade potential, AfCFTA can serve as a critical enabler for smarter, greener, and more resilient air cargo systems across Africa. There is a pressing need for actionable, evidence-based recommendations for policymakers, airport authorities, logistics operators, and international development partners to fully leverage AfCFTA's framework and drive integrated air logistics development across the continent.

Harmonizing Global Cargo Standards Through IATA and ICAO Alignment

Fragmented standards remain a major roadblock to innovation in air cargo. Although IATA's ONE Record initiative and ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) provide a regulatory foundation, national adoption remains slow. Analysts say an organisation's "institutional memory" can steer future policy, and in many cases, entrenched legacy systems resist change (OECD, 2021). National Civil Aviation authorities must commit

to full alignment with IATA and ICAO frameworks for:

- Paperless documentation (e-AWBs, e-freight)
- Interoperable emissions tracking (GLEC Framework, CORSIA)
- Digital customs and cargo clearance integration

Additionally, regional blocs like the African Union, ASEAN, and the European Union could adopt harmonized technical standards to enable interoperable green corridors. Governments that ground decisions in solid evidence track better results, and these standards offer a consistent basis for cross-border collaboration (UNCTAD, 2023). Recommended focus areas for innovation zones include;

- Autonomous cargo vehicles and ramp robotics
- AI-powered cargo planning and optimization
- Blockchain-based chain-of-custody systems
- SAF logistics and last-mile hydrogen infrastructure

It is also important to build institutional muscle to support innovation not as a one-off intervention, but as a sustained governance capacity, because technological change is only as effective as the institutions that manage it. ILO, 2022 indicated public-sector reformers hit the same wall worldwide - a shortage of skilled, well-supported staff capable of translating policy into practice. As such, national and regional governments must prioritize the development of digital and environmental logistics competencies within Customs, Civil Aviation, and Trade Ministries.



Recommended actions include establishing logistics innovation units within Transport Ministries, launching technical training programs in AI, blockchain, SAF regulation, and emissions modeling, partnering with universities and Think Tanks to support logistics policy research and embedding digital skills and green logistics modules in public administration academies.

Conclusion

The global air cargo industry is undergoing a tectonic shift, one that is reconfiguring the boundaries of speed, intelligence, and sustainability in freight logistics. From AI-driven planning systems to smart cargo corridors and sustainable aviation fuels, the technologies transforming air freight are no longer experimental, but operational. Yet, the question remains, will innovation remain siloed in a few elite hubs, or can it be scaled inclusively across the entire global trade network?

Mounting scholarly consensus underscores the role of digital transformation in enhancing operational efficiency across sectors, and air cargo is now poised to become a benchmark of that transformation (OECD, 2021;

IATA, 2023). The challenge is not innovation itself, but integration. Fragmented policies, legacy infrastructure, limited climate finance, and institutional inertia remain real barriers. Research keeps confirming that when governments are truly inclusive and aligned across departments, societies and industries become more cohesive, stable, and adaptive in the face of disruption (World Bank, 2022).

Early adopters like Singapore, the UAE, Germany, Kenya, and Ethiopia demonstrate that coordinated strategies yield measurable results in cargo speed, visibility, emissions reductions, and customer trust. These case studies highlight a critical lesson: strategic leadership and system-level reform matter as much as the technologies deployed. Public-sector actors can build capacity, especially when governments and industry collaborate on the design of practical, well-financed, and inclusive transformation roadmaps. Industry analysts and governance experts alike now argue that collaborative decision-making boosts legitimacy, while innovation ecosystems thrive where institutions incentivize

experimentation and adaptation. As global trade becomes more digitally orchestrated and environmentally regulated, air cargo must evolve from a reactive service to a proactive, climate-smart logistics engine.

To get there, governments must harmonize policies, align their Customs and Aviation agencies, and build regional frameworks that allow air cargo to move as seamlessly as the goods it carries. The private sector must scale innovation not just for cost savings, but for long-term resilience. Development partners must also back this transition with finance, technical assistance, and regulatory innovation, and across from all actors, a new ethos must prevail; one that values sustainability and inclusiveness as much as speed and efficiency.

The future of air cargo is not just lighter and faster, it is smarter, greener, and more collaborative. But the path forward depends on the action taken now and more so must be considered regionally. Countries and companies that act early will define the next generation of air trade leadership whilst those that wait may find themselves locked out of green corridors, premium markets, and digital supply chain platforms. The imperative is clear: invest in systems, not silos; build partnerships, not dependencies; and treat innovation as a shared public good, not a competitive luxury. Only then can air cargo fulfill its potential as a catalyst for equitable, climate-resilient, and innovation-led economic growth.



Dr. Gabriel Asante

The Impact of Overloading Cargo Trucks in Ghana: Assessing its Effects and Consequences

Introduction

Overloading cargo trucks beyond the legally prescribed axle load limits—is a widespread issue in global freight transportation (Morovatdaretal., 2020). In Ghana, the axle load limit is set at 11.5 tonnes per single axle, aligning with the regulations established by the Economic Community of West African States (ECOWAS). However, overloading remains a common practice, primarily driven by the desire to reduce transportation costs by maximizing cargo per trip. This issue is especially prevalent in regions with weak regulatory enforcement or where financial pressure compel transporters to exceed legal weight limits to

increase profits (World Bank, 2015; World Bank, 2016).

Despite the perceived economic benefits for transporters, a significant portion of road damage is attributed to overloaded heavy cargo trucks, leading to increased maintenance costs and reduced road lifespan. Additionally, overloading cargo trucks poses serious safety risks, and its environmental impact is significant, as overloaded trucks consume more fuel and emit higher levels of greenhouse gases, contributing to climate change (United Nations Economic and Social Commission for Asia and the Pacific [UNESCAP], 2020). Addressing this challenge requires

stricter enforcement, investment in infrastructure, and greater awareness of the long-term economic and safety risks associated with overloading cargo trucks.

In Ghana, overloaded cargo trucks are a persistent road safety concern. A recent study found that 19% of axle-load trucks exceeded legal weight limits, with three-axle trucks experiencing the highest levels of overloading (Tufuor, 2022). In 2014, a Daily Guide report highlighted that drivers, both local and transit cargo operators, were not the only ones complicit in the issue of overloading; they faced excessive pressure from their “car owners” to overload their vehicles



Overloaded heavy-duty trucks deteriorating roads in Ghana
Picture Credit: ModernGhana

while plying the corridors of Ghana. Although the drivers underscore the consequences of overloading including the damage to the road and the loss of lives through accidents, they alleged that they faced the dilemma of overloading to maximize their trips because their employers (car owners) have to make profit (Awuah, 2014).

This article aims to raise awareness among all stakeholders, including cargo truck owners about the effects and consequences of overloading cargo trucks and advocate for urgent action to address the growing canker conclusively.

Effects of Overloading Cargo Trucks

Road Damage

Overloaded trucks impose excessive pressure on road surfaces, exceeding the design limits for which most highways in Ghana are built. This accelerates road surface deterioration, leading to fatigue cracking, rutting, potholes and structural failures. The Ghana Highways Authority (GHA) identifies the overloading of heavy goods vehicles as a major

contributor to the early deterioration of road infrastructure (GHA, 2025).

Roads are engineered to distribute vehicle weight within certain tolerances, but overloaded trucks disrupt this balance. When the protective surface layer of a road is compromised due to the excess load, the binder layer becomes exposed to water and tire friction. Without timely maintenance, this exposure weakens the binder layer, leading to further damage. The secondary road layer is then unbound, creating potholes. If these potholes are left unrepaired, they can damage the asphalt base

(the third layer), ultimately causing complete road deterioration. Trucks that are overloaded hasten the degradation of road infrastructure, necessitating expensive and frequent repairs.

Damage to other road Infrastructure

Overpasses, bridges, signages, barriers, and street lighting among others are made to support the main road infrastructure to achieve maximum desired results. These infrastructure are designed to handle specific requirements. For example, bridges and overpasses are designed to handle specific maximum weights. Overloaded trucks in most situations cause damage to these important road infrastructure. They put more strain on the structure of the road which eventually erodes bridge components and increases the risk of structural breakdowns. Overloading incidences have been directly linked to bridge disasters in numerous developing nations. In addition to causing financial loss, these failures jeopardize lives and disrupt trade routes affecting the smooth movement of cargo.



Overloaded Trucks stuck under an overpass
Picture Credit: Graphic Online

Increased Accident Risk

Overloaded cargo trucks are inherently unstable, reducing braking power and vehicle control. When a vehicle is overweight, its centre of gravity rises, making it more likely to topple over during sudden twists or stops. Furthermore, the tyres and brakes of overloaded cargo are more likely to fail under stress, which could lead to catastrophic accidents. Overweight trucks are involved in a disproportionately high number of road accidents, with many being fatal, according to research done in developing countries (World Bank, 2021).

According to the 2023 National Road Safety Commission (NRSC) report, an average of four fatalities occurred daily on Ghanaian roads. Among the leading causes of these accidents were overloading—particularly involving freight vehicles—and overspeeding (Ghana News Agency, 2023).

At night, the headlights of the overloaded vehicle are easily tilted up, blinding oncoming drivers to possible debris or obstruction on the road. In effect, a driver's control of an overloaded truck is minimized, with limited control for acceleration, escalating the chances of accidents.



An overloaded truck damages a portion of the Ashaiman overpass
Picture credit: Adomonline.com, 2019

Furthermore, when overloaded trucks break down on major roads, they create traffic congestion and delays, inconveniencing other road users and reducing overall productivity.

Environmental and Health Effects

Overloaded cargo trucks require more energy to accelerate due to increased resistance and strain on engines, leading to reduced fuel efficiency and higher fuel consumption. This does not only raise operational costs for transporters but also increases greenhouse gas emissions. According to the United Nations Environment Programme (UNEP), the transport sector accounts for approximately one-quarter of all energy-related greenhouse gas (GHG) emissions, and outdoor air

pollution contributes to about 3.2 million premature deaths globally (UNEP, 2021).

Additionally, spills from overloaded trucks carrying hazardous materials can contaminate soil and water sources, endangering ecosystems and public health. The implication is that road transport activities, including overloaded cargo trucks, accelerate GHG emissions and contribute to environmental degradation beyond global estimates. Furthermore, poorly maintained roads, often a result of overloading, generate dust and noise pollution, negatively impacting communities along major transport routes.

Impacts of Overloading Cargo Trucks

The effects of overloading cargo trucks have far-reaching consequences that impact the economy, trade facilitation, and public health.

Economic Burden

The economic impact of overloaded cargo trucks is significant. Damaged roads and bridges increase transport costs as drivers are forced to take longer routes or spend more on fuel and vehicle maintenance. Additionally,



Overloaded Cargo vehicle losing balance on the Accra-Kumasi highway
Source: Adom Online



Cargo trucks emitting excessive fumes
Source: Ghana News Agency

repairing road infrastructure places a heavy financial burden on governments. According to recent data, Ghana requires US\$12 billion to meet its road maintenance needs (Cudjoe, 2024). Overloading accelerates road deterioration, further increasing the demand for maintenance and straining public resources.

Beyond infrastructure damage, early road deterioration disrupts logistics and trade networks, driving up consumer prices for goods and services. Overloaded trucks also experience shorter lifespans and higher maintenance costs, reducing profitability for transport operators. Moreover, accidents caused by overloading disrupt supply chains, delays deliveries and increases costs of businesses. The cumulative effect is a decline in economic efficiency and national competitiveness.

Trade Inefficiencies

Poor road conditions have been identified as one of the major barriers to commercial efficiency within the African Continental Free Trade Area (AfCFTA) (Baird, 2024). Road damage disrupts freight movement and slows down supply networks especially in Ghana, where railway infrastructure

remains underdeveloped. As a result, cargo trucks experience longer transit times, increasing the cost of doing business. These inefficiencies hinder regional integration and slow economic growth. Overloaded cargo trucks further disrupt trade networks, particularly in regions like West Africa, where multimodal logistics play a crucial role. Higher transportation costs and longer transit times make imports and exports less competitive, negatively impacting economic activity.

Public Health and Safety Concerns

Overloaded trucks do not only endanger drivers, truck assistants, and loaders but also pose a serious

risk to other road users. Due to their excessive weight and reduced maneuverability, such trucks are more likely to cause severe injuries or fatalities in accidents. Road safety is further compromised by the immense pressure on drivers managing overweight trucks, often leading to fatigue-related accidents (Ghana Highway Authority, 2021; UNEP, 2021).

Beyond safety concerns, poor road conditions caused by overloading create major inconveniences for commuters and reduce overall mobility. In rural areas, where roads are already underdeveloped, overloading worsens accessibility challenges, isolating communities from essential services. Additionally, noise and dust pollution from deteriorating roads negatively impact the quality of life for people living near major transport routes.

Mitigation Strategies for Addressing Overloading by Cargo Trucks in Ghana

Strict Enforcement of the Axle Load Control Policy: To curb overloading and protect road infrastructure, the Ghana Highway



Cargo trucks emitting excessive fumes
Source: Ghana News Agency

Authority (GHA), through the Ministry of Roads and Highways, established the Axle Load Control Unit. This unit is responsible for monitoring and regulating cargo truck weight and dimensions by installing axle weighing equipment at strategic points along major road corridors.

The Axle Load Control Policy aims to reduce overloading, and thereby preserve road infrastructure investments, minimize road traffic crashes, and lower vehicle operating costs. It is crucial to reinforce the mandate of this Unit by enhancing its capacity to monitor, enforce, and penalize policy offenders. Additionally, investing in more weighbridges and digital monitoring systems can significantly improve compliance, and ensure long-term sustainability of road networks.

Public Awareness Campaigns through Collaborative Efforts: Several stakeholders are involved in the movement of international trade cargo to and from Ghana, including the Ghana Shippers' Authority, the Customs Division of the Ghana Revenue Authority, the Ghana Highway Authority, and the Ghana Ports and Harbours Authority, to name a few. There is the need for continuous education and sensitization of shippers and shipping service providers, including cargo truck owners and drivers.

In this context, it is in the interest of all stakeholders to strategize and collaborate to intensify education

and sensitization efforts towards truck owners, truck drivers, and truck driver assistants, such as those in the Joint Association of Port Transport Union (JAPTU), on the effects and negative consequences of overloading cargo trucks. This coordinated approach will ensure that truck operators adhere to the rules that govern axle loading.

Incentives for Compliance: To encourage truck owners and drivers to comply with the axle load policy, authorities should consider implementing a system that recognizes and rewards those who consistently adhere to the law. By offering incentives for compliance, such as recognition, authorities can foster a culture of responsibility and accountability among truck operators. This will ultimately help to reduce the quantum of public investment needed for road maintenance, particularly for roads damaged by overloaded cargo trucks.

Conclusion

Overloading cargo trucks poses a multifaceted challenge that transcends economic, trade inefficiencies and environmental dimensions. While the practice may offer short-term financial gains, its long-term ramifications are profoundly detrimental. Overloaded cargo trucks accelerate the deterioration of critical road infrastructure, heighten the risk of fatal accidents, and contribute significantly to environmental degradation through increased fuel

consumption and emissions. These outcomes do not only disrupt trade and logistics networks but also place considerable financial burden on governments and threaten the lives of other road users.

Addressing this issue requires a comprehensive and collaborative approach. Investing in modern weighbridge infrastructure, strengthening regulatory enforcement, and promoting public awareness are essential first steps. Governments, transport operators, and shippers must work together to prioritize adherence to weight limits and explore innovative solutions, such as load optimization technologies, to enhance efficiency. Additionally, regional cooperation is crucial to harmonize policies and facilitate seamless trade within economic blocs like the African Continental Free Trade Area (AfCFTA).

By adopting sustainable transport practices and implementing stringent compliance mechanisms, stakeholders can mitigate the adverse impacts of cargo overloading, ensure safer roadways, and foster long-term economic growth. These efforts will not only preserve infrastructure and protect public safety, but would also align with global commitments to reduce greenhouse gas emissions and transition towards a more sustainable transportation system.



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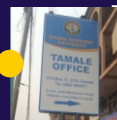
TEMA

GPHA TOWERS, TEMA MAIN
HARBOUR, TEMA



KUMASI

1ST FLOOR NCA BUILDING, DANYAMI



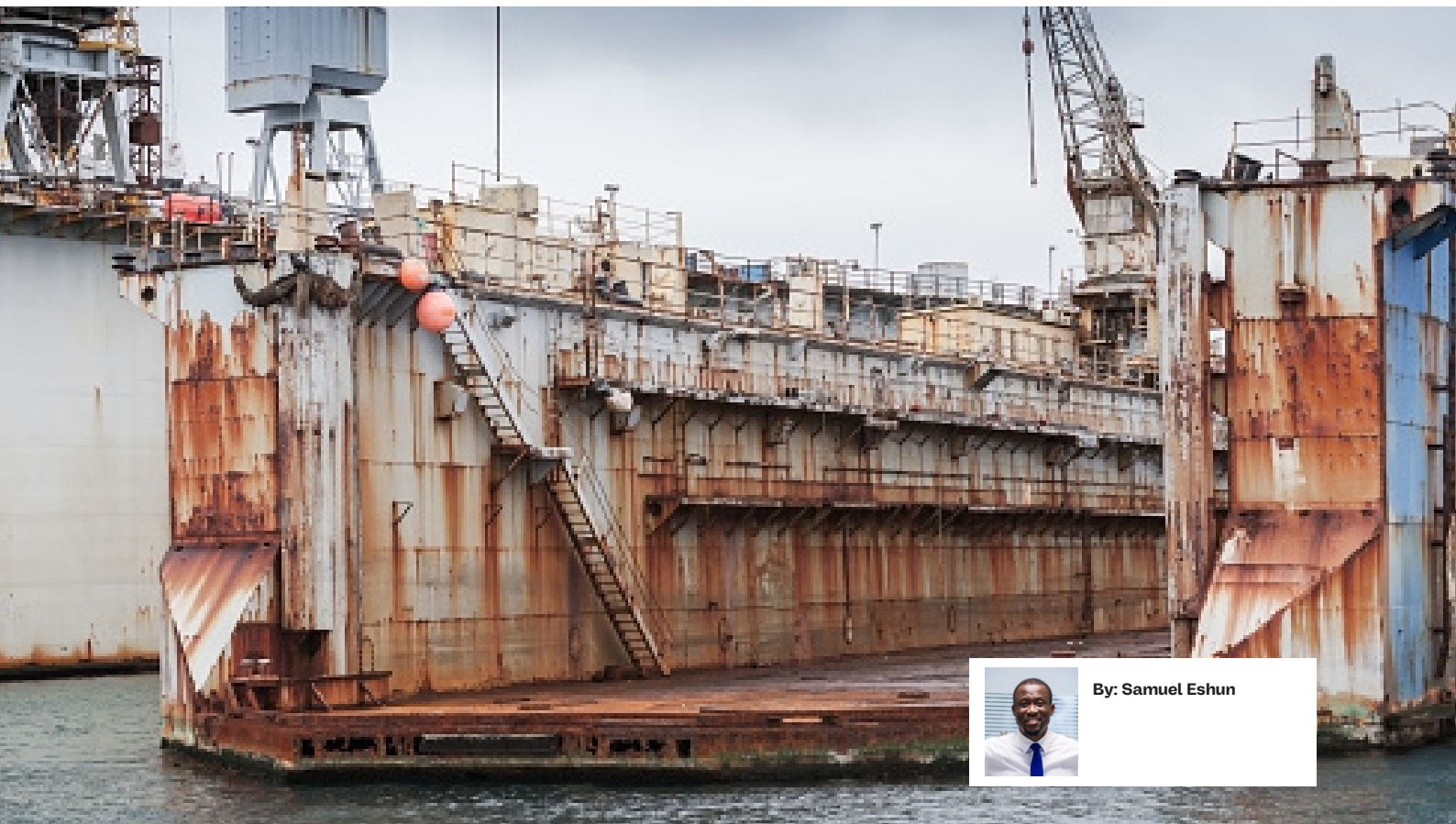
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7th Floor Ghana Shippers' House

NO. 12, CRUICKSHANK STREET AMBASSADORIAL ENCLAVE, WEST RIDGE



By: Samuel Eshun

Revitalizing Ghana's Maritime Infrastructure: The Strategic Imperative of Modernizing Tema Shipyard

Abstract

Not far from the busy docks and moving cranes of Tema Port sits a quiet giant, PSC Tema Shipyard Limited. Once a symbol of Ghana's plan to lead in shipbuilding and repairs, it now stands mostly idle because its dry docks are mostly empty. With its obsolete and deteriorating equipment, the shipyard's role as a national asset has significantly diminished.

Ghana's maritime infrastructure, particularly the PSC Tema Shipyard Limited (Tema Shipyard), represents a largely untapped economic asset. Despite its strategic location (adjacent to Tema Port) and its historical significance, the shipyard operates at less than one-third of its designed capacity. This paper assesses the economic, technical, and policy dimensions of revitalizing the company in the context of the African Continental Free Trade Area (AfCFTA), regional competition, workforce development,

environmental compliance, and national economic strategy. It presents a coherent case for urgent investment, strategic planning, and multi-sectoral collaboration to reposition Tema Shipyard as a viable asset in Ghana's blue economy.

Introduction: A Dormant Asset in a Strategic Location

PSC Tema Shipyard Limited, established in 1965, was envisioned as a cornerstone of Ghana's industrial strategy. Designed with two dry docks and slipways capable of servicing vessels up to 100,000 tons, it was once one of West Africa's premier ship repair facilities. However, due to chronic underinvestment, management inefficiencies, and a failed international partnership with Malaysia, the facility has declined significantly. After returning to full government ownership in 2016 and being managed as a wholly-owned government organization Tema Shipyard now



generates only USD 5–8 million annually and employs about 300 people, a stark contrast to its peak employment of over 1,200 in the early to mid-2000s.

Economic Contradictions and Missed Opportunities

The juxtaposition of Tema Port's activity, which is over 17 million tons of cargo, and 1,500 vessel calls annually with the underutilization of Tema Shipyard highlights a critical economic contradiction. Ghana hosts over 550 registered vessels, yet many bypass Tema for repair services in Nigeria, Senegal, or Côte d'Ivoire due to the Tema Shipyard's limited operational capacity.

Tema Shipyard could capture a significant share of the ship maintenance market and generate between USD 150 and 200 million annually, directly employ about 2,000 workers and indirectly support up to 6,000 others in ancillary sectors such as logistics, painting, welding, and hospitality, if fully rehabilitated and optimized.

This situation transcends a simple missed opportunity and underscores a deeper structural inefficiency. In a macroeconomic environment characterized by fiscal constraints and reliance on external debt, such inefficiencies are socio-economic stiflers and should not be allowed to persist.

Comparative Regional Performance: Lessons from West Africa

Neighboring countries have outpaced Ghana through targeted investments and strategic

planning. Nigeria's Nigerdock and Naval dock operate at 60–70% capacity. Senegal's Dakarnave Shipyard, previously less competitive, has now positioned itself as a regional hub, attracting vessels from across West Africa. Similarly, Côte d'Ivoire's Carena Shipyard is securing repair contracts that could have been captured by Ghana.

These countries made deliberate investments, introduced targeted incentives, developed human capital, and fostered public-private partnerships. In contrast, Ghana

has remained mired in prolonged deliberations, inadequate funding, and non-committal strategic frameworks lacking enforceable timelines. The underperformance of the Tema Shipyard, therefore, seems not to be merely the result of outdated infrastructure, but a reflection of the absence of strategic urgency and decisive action.

The AfCFTA Imperative and Rising Maritime Demand

The African Continental Free Trade Area (AfCFTA) presents both a challenge and an opportunity. Intra-African shipping demand is expected to grow significantly over the next decade. Ghana's geographical positioning, its 550 km coastline and existing port infrastructure, should place it in the lead where ship maintenance and repair is concerned. However, without integrating Tema Shipyard into the broader national trade and logistics framework, Ghana risks being bypassed in favor of more strategically prepared nations.

Beyond infrastructure, the effectiveness of Tema Shipyard's revitalization hinges on addressing the persistent deficit in skilled labor, especially in marine engineering and technical trades. As Desmond Tutu Ayentimi notes in his study *Skilled Labour Shortage: A Qualitative Study of Ghana's Training and Apprenticeship System* (2018), "a critical shortage of skilled labour persists in Ghana due to training mismatches, ineffective apprenticeship schemes, and sustained underinvestment in technical education." Although technical universities run industrial attachment programs to bolster human

capital, these initiatives suffer from systemic challenges. V.F. Nunfam captures these challenges in his 2022 paper *Industrial Attachment and Human Capital of Higher Education Students* thus “constraints such as limited funding, poor logistics, and inadequate collaboration with industry players continue to undermine the effectiveness of industrial training schemes.”

These gaps severely constrain the pipeline of skilled personnel critical to the operations of a shipyard. Bridging them will require robust partnerships between industry and training institutions, strategic government investments in skills development, and improved oversight of industrial training programs. Without addressing these structural and capacity deficiencies, even the most ambitious infrastructural upgrades risk becoming technically hollow.

Environmental Compliance and Green Transition

Modern shipyards must align with international environmental standards. Currently, Tema Shipyard operates at 25–30% below accepted norms. Implementing green solutions such as solar energy integration, water recycling, and zero-discharge policies is not only necessary for compliance but also for competitive positioning. The estimated cost of these upgrades is between USD 30 and 45 million, with potential annual savings of up to USD 7 million in compliance and efficiency gains.

Moreover, meeting environmental standards will enhance eligibility for international funding, including green maritime development grants and sustainable investment portfolios.

Financial Strategy and Investment Outlook

Comprehensive modernization of Tema Shipyard is estimated to cost between USD 225 and 320 million, approximately 0.3% of Ghana's GDP. Given that foreign Ships calling Ghana's ports spends a comparable amount every two years on ship repair services, the investment is economically justifiable.

A well-structured public-private partnership (PPP) model, drawing from global best practices in Singapore and Dubai, could yield returns on investment (ROI) in the range of 15–20%. Given the

strategic importance of rehabilitating the Tema Shipyard, it is essential that the USD 50 million earmarked by the Ghana Infrastructure Investment Fund (GIIF) for maritime infrastructure directed, at least in part towards the resuscitation of the Tema Shipyard.

This investment also serves as a launch pad for attracting further private investment, technical partnerships, and long-term capital financing, extending the impact of the initial GIIF allocation.

Strategic Outlook: From Maritime Dependency to Sovereignty

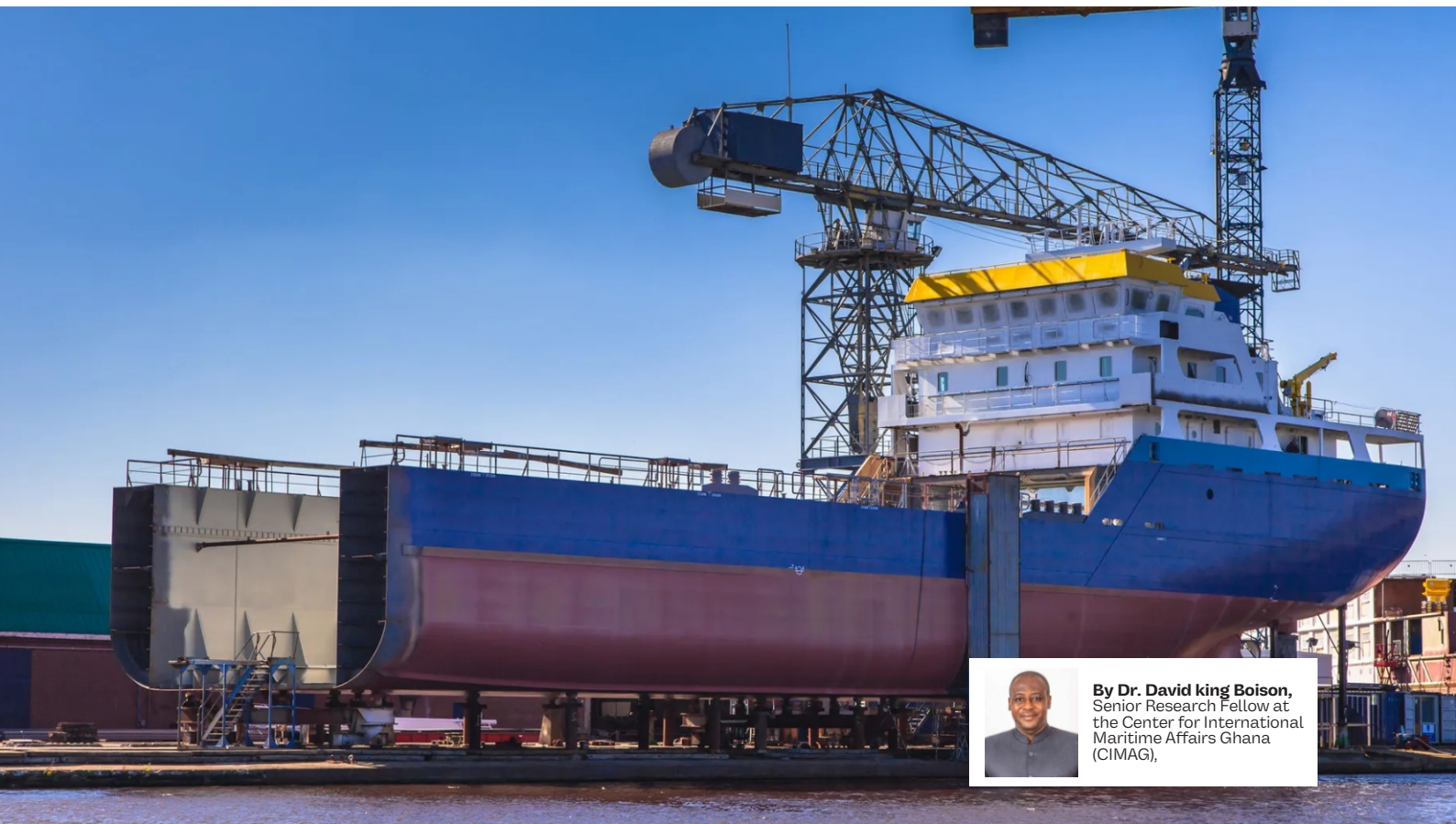
Repositioning Tema Shipyard is not solely about ship repairs, it is a broader strategic decision: whether Ghana will remain an importer of services or emerge as a producer of maritime solutions. The stakes are national and generational. A fully revitalized shipyard can reduce capital flight, bolster industrialization, and anchor Ghana's aspirations for a resilient blue economy.

In contrast, continued delay could relegate Ghana to peripheral status in the West African maritime corridor, particularly as AfCFTA integration accelerates.

Conclusion: From Rust to Relevance

Tema Shipyard stands as a metaphor for Ghana's economic crossroads. Its revival is technically feasible, financially justifiable, and strategically imperative. With the right mix of policy clarity, investment mobilization, and human capital development, Tema Shipyard can become a flagship of Ghana's industrial resurgence.





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The Evolution of Shipbuilding: Assessing the Impact on Global Trade Dynamics

Introduction

The evolution of shipbuilding has been integral to the trajectory of global trade, especially in Africa, a continent with a maritime history as deep and vast as its oceans. From the ancient trading vessels navigating the Red Sea to the colossal cargo ships of today, the progress in shipbuilding technology has profoundly impacted trade patterns, economics, and geopolitics. The advent of the internet and globalization has further amplified the importance of maritime trade, with over 80% of global trade by volume and over 70% by value being carried by sea, according to the United Nations Conference on

Trade and Development (UNCTAD).

In Africa, where about 90% of imports and exports are conducted via sea, the evolution of shipbuilding is not just a matter of historical interest but of current economic and strategic significance. This transition from traditional to modern shipbuilding has reshaped Africa's interaction with global trade.

Historically, Africa's engagement in maritime trade has been significant, ranging from the ancient trade networks of North Africa to the transatlantic slave trade. Today, the continent's

shipbuilding industry, while still developing, is at a juncture where it must embrace technological innovation and address environmental concerns to remain relevant in the global market. In this article, we explore the various stages of shipbuilding evolution in Africa, assess its impact on global trade dynamics, and seek to understand the contemporary challenges and opportunities that lie ahead for the continent in this vital sector.

Historical Context

Africa's maritime history, deeply entwined with global trade, dates back to ancient times. The continent's geographical diversity,

with a coastline spanning over 26,000 miles, facilitated extensive maritime activities. For example, the ancient Egyptians are known for their early advancements in shipbuilding, creating vessels that plied the Nile river and the Red Sea as early as 3000 BCE. In East Africa, the dhow, a traditional sailing vessel, was pivotal in establishing trade routes with Asia and the Middle East, significantly influencing cultural and economic exchanges.

In the transatlantic slave trade era, shipbuilding technology played a darker role. European powers, utilizing advanced naval capabilities, engaged in the mass transportation of enslaved Africans. The volume of this trade was immense, with an estimated 12.5 million Africans forcibly transported to the Americas between the 16th and 19th centuries, as per the Trans-Atlantic Slave Trade Database.

The impact of these maritime activities on Africa's trade dynamics was profound. Ancient trade routes facilitated the exchange of goods like gold, ivory, and spices, shaping early trade networks. In contrast, the Atlantic



slave trade disrupted African societies and economies, with long-lasting repercussions.

Colonial and Post-Colonial Era

During the colonial era, European powers, leveraging their advanced shipbuilding technologies, firmly established control over major global trade routes, including those in Africa. This control was not merely about dominance but also about the ability to connect distant markets efficiently. For instance, by the late 19th century, steamships had replaced sailing ships, drastically reducing travel time between Europe and Africa. This shift had a significant impact on trade: European goods could be

transported faster and more reliably to African markets, and raw materials could be shipped back to Europe with greater efficiency.

In the post-colonial period, African nations faced the challenge of reorienting their economies and trade networks in a world still dominated by Western maritime technology. The gap in shipbuilding technology between Africa and industrialized nations was stark. According to the United Nations Economic Commission for Africa, in the mid-20th century, the continent's share in world shipbuilding was negligible, and it relied heavily on foreign shipping services for its trade. This reliance had economic implications.



A 2019 report by the African Union highlighted that African countries pay approximately 40% more on average for international transport compared to other regions, a direct consequence of the lack of a strong indigenous shipping industry. In response, several African countries have embarked on efforts to develop their maritime capabilities. For example, South Africa's Operation Phakisa initiative aims to unlock the

economic potential of the country's maritime sector, including shipbuilding and repair.

Modern Shipbuilding and Trade Dynamics

In recent years, there has been a concerted effort to modernize Africa's maritime infrastructure and enhance its shipbuilding capabilities, recognizing the crucial role these play in global trade. The African maritime industry currently controls less than 1.2% of the world's shipping fleet, as reported by the African Shipowners Association. This figure is modest compared to the continent's extensive coastline and its strategic position on key global shipping routes, indicating significant potential for growth in Africa's shipbuilding sector.

Efforts to modernize are particularly evident in the expansion and upgrading of port facilities, alongside investment in larger, more efficient vessels. The Port of Durban in South Africa, a key maritime hub, is undergoing extensive expansion to bolster its container handling capacity. Similarly, the Lekki Deep Sea Port in Nigeria, projected for completion in 2022, is poised to



become one of the most modern and largest ports in West Africa, with an expected annual capacity of about 1.5 million twenty-foot equivalent units (TEUs).

Another notable project is the expansion of the Meridian Port Services (MPS) Terminal in Tema, Ghana. This project is part of a significant public-private partnership aimed at transforming the port into a world-class facility. The MPS expansion is expected to increase the port's capacity substantially, to enhance its role as a major trade and logistics hub in West Africa. These developmental strides in maritime infrastructure

are pivotal for Africa's role in global trade. The capacity to handle larger vessels does not only boost trade efficiency but also plays a significant role in reducing transportation costs. As per the World Bank, efficient port operations can decrease shipping costs by up to 50%, markedly improving a nation's competitive edge in international trade. Moreover, these improvements in maritime infrastructure and shipbuilding capabilities are essential for increasing Africa's share in global maritime trade, which, according to UNCTAD, constitutes over 80% of global trade volume.



Economic and Political Factors

The economic and political landscape in Africa significantly influences the shipbuilding industry and, consequently, trade dynamics. Economically, one of the primary challenges is limited access to financing for maritime projects. The African Development Bank (AfDB) reports that the financing gap for infrastructure in Africa, including maritime infrastructure, amounts to \$68-108 billion annually. This gap hinders the development of

comprehensive shipbuilding and port infrastructure projects essential for boosting trade. Political stability is another crucial factor. Regions experiencing political turmoil or governance issues often face setbacks in developing their maritime trade capabilities. For instance, piracy and maritime insecurity, particularly off the coast of Somalia and the Gulf of Guinea, pose significant risks, impacting insurance rates and shipping costs. The International Maritime Bureau reported 195 incidents of piracy and armed robbery in 2020, with the Gulf of Guinea accounting for 95% of crew kidnappings globally. These challenges, however, are being addressed through various initiatives.

The African Union's 2050 Africa's Integrated Maritime Strategy (AIMS 2050) aims to foster more sustainable and prosperous African blue economies, including enhancing maritime safety and security. Additionally, regional cooperation, such as the Southern African Development Community's (SADC) Maritime Security Strategy, is crucial in addressing these challenges collectively.

International Partnerships and Investments

International partnerships and investments play a pivotal role in shaping Africa's shipbuilding industry and its maritime trade capabilities. Notably, China's involvement in Africa's maritime sector has been significant. According to the China Africa Research Initiative, Chinese loans to African port projects amounted to over \$11 billion between 2000 and 2019. These investments are part of China's Belt and Road Initiative (BRI), aimed at enhancing global trade connectivity. China's investment in Africa's maritime infrastructure is evident in projects like the construction of the Bagamoyo Port in Tanzania, which, upon completion, is expected to be the largest port in East Africa. Similarly, the China Harbor Engineering Company Ltd has been involved in the expansion of the Walvis Bay Port in Namibia.

While these investments bring necessary capital and technology into Africa's maritime sector, they also raise concern about debt sustainability and sovereignty. The Center for Global Development notes that eight African countries are at risk of debt distress due to

BRI-related projects. These dynamics highlight the complexity of international involvement in Africa's shipbuilding and maritime trade. Notwithstanding the much-needed impetus for growth these partnerships can provide, they also necessitate careful navigation of geopolitical and economic interests.

Environmental Considerations

Environmental sustainability has become a critical aspect of shipbuilding and maritime trade, with the global shift towards greener practices impacting the African context as well. The maritime sector is a significant contributor to global greenhouse gas emissions, with the International Maritime Organization (IMO) estimating that international shipping accounts for about 2.89% of global CO₂ emissions. This necessitates a concerted effort towards eco-friendly shipbuilding and maritime operations.

African shipbuilding initiatives are increasingly incorporating environmental considerations. For instance, the African Maritime Technology Cooperation Centre, established under the auspices of the IMO, aims to promote energy-efficient technologies in the shipping sector across the continent. This move aligns with the IMO's 2020 sulphur cap, which limits the sulphur content in fuel oil used on board ships, significantly reducing air pollution.

Moreover, the expansion of ports in Africa is being accompanied by environmental impact assessments and measures to minimize ecological disruption. The Lekki Deep Sea Port in Nigeria,



for example, includes comprehensive environmental management plans to mitigate the impact on the surrounding ecosystems. These environmental initiatives are not just a response to global trends but also a reflection of Africa's growing commitment to sustainable development. The integration of eco-friendly practices in shipbuilding and maritime trade is essential for the continent's long-term economic and ecological well-being.

Technological Advances and Innovation

The integration of advanced technologies is reshaping the shipbuilding industry and influencing global trade dynamics, with Africa increasingly embracing these changes. Technological innovation in shipbuilding – from automation and advanced materials to digitalization – is essential for enhancing efficiency and competitiveness in the global maritime industry.

One notable area of advancement is in the use of digital technologies. According to the International Data Corporation, spending on digital transformation globally is expected to reach \$2.3 trillion by 2023, a significant portion of which is in the logistics and transportation sector. African shipbuilders and ports are gradually integrating digital solutions like blockchain for logistics, IoT (Internet of Things) for real-time tracking, and AI for predictive maintenance, improving operational efficiency and reducing costs.

Additionally, the use of advanced materials in shipbuilding is on the

rise. Composites, known for their strength and lightweight properties, are increasingly preferred over traditional materials, leading to more fuel-efficient vessels. This shift is significant given that fuel consumption accounts for a major portion of a ship's operating expenses. African countries are at varying stages of adopting these technologies. South Africa, for instance, has shown progress in integrating advanced technologies in its shipbuilding sector, aligning with global standards. The adoption rate of such technologies directly influences the competitive position of African countries in the global maritime industry.

Regional Differences and Capabilities

The shipbuilding industry and maritime infrastructure in Africa exhibit considerable regional variation, influencing each country's capacity to engage in global trade. Nations with extensive coastlines and strategic locations, like South Africa, Egypt, and Nigeria, have distinct advantages over their landlocked counterparts. South Africa, for instance, boasts of one of the most developed shipbuilding industries in Africa. According to the South African Maritime Safety Authority (SAMSA), the country's maritime sector contributes about \$4.4 billion to her GDP.

South Africa's strategic position along key global shipping routes, combined with its established shipbuilding and repair facilities, positions it as a significant player in the maritime industry. Egypt, with the Suez Canal – one of the world's busiest maritime passages – plays

a vital role in global trade. The Suez Canal Authority reported that in 2019, nearly 19,000 ships passed through the canal, highlighting its significance in global shipping. Egypt's maritime infrastructure and capabilities are central to its economic strategy.

On the other hand, landlocked countries face unique challenges. They rely heavily on regional partnerships and transit agreements to access maritime trade routes. For instance, countries like Uganda and Rwanda depend on ports in Kenya and Tanzania for their imports and exports. The development of efficient inland transportation networks and logistics hubs is crucial for these countries to effectively participate in global trade.

The disparity in shipbuilding capabilities and maritime infrastructure across African nations underscores the need for regional collaboration and tailored strategies to leverage each country's unique geographical and economic strengths.

Conclusion

The evolution of shipbuilding in Africa is a story of resilience, innovation, and strategic significance. As African nations navigate the complexities of modern shipbuilding, their success in this sector will be pivotal in determining their role in the evolving tapestry of global trade. Balancing technological advancement, environmental sustainability, and economic independence remains the key challenge and opportunity for Africa in the realm of shipbuilding and maritime commerce.



From Craft to Capital: Affum Handicrafts and Ghana's Emerging Export Frontier

By The Shipping Review Editorial Desk

Ghana's rich cultural heritage has long been expressed through its vibrant arts and crafts products that embody identity, tradition, and exceptional craftsmanship. These creations, ranging from delicately carved stools to symbolic masks and sculptures, serve as cultural ambassadors, telling the unique stories of Ghana's diverse communities. As global demand for authentic, handmade, and culturally meaningful products continues to rise, Ghanaian artisans and craft dealers are presented with a significant opportunity to expand beyond local markets and establish a strong foothold on the international stage.

Handicrafts, once considered secondary to mainstream commodities like gold and cocoa, are now becoming a vibrant engine of export growth which with the right policy support, could emerge as a key pillar of Ghana's economic diversification agenda.

The growing global interest is reflected in the impressive performance of Ghana's Industrial Arts and Crafts sub-sector, which recorded a 23 percent increase in export earnings in 2024. According to the Ghana Export Promotion Authority's (GEPA) 2024 Non-Traditional Export (NTE) Statistics Report, the sub-sector contributed 3 percent to total NTEs up from 2.43 percent in 2023. The surge was led by kente products, which posted an exceptional growth of 523%, reflecting growing international demand for Ghanaian products. Handicraft items followed closely with a 440% increase, while bamboo and cane furniture exports rose by 274%. Other strong performers included beads, which recorded a 114% increase, ceramic products with a 23% rise, and hides and skins contributing a 26% growth.

These figures reflect the experience of exporters like Mr. Frederick Affum, Chief Executive Officer (CEO) of



Affum Handicrafts, and Chairman of the Greater Accra Arts & Crafts Dealers Association. Speaking to *The Shipping Review* in Accra, Mr. Affum attributed the sector's recent gains to increased international demand for handcrafted goods, rising cultural appreciation, and supportive government initiatives such as the National Export Development Strategy (NEDS) and the establishment of Ghana Trade Houses abroad. These programs aim to empower local producers through access to trade information, training, and marketing platforms - laying the groundwork for even stronger performance in the years ahead.

The Business of Culture: Numbers That Tell a Story

Having spent nearly four decades championing the cause of Ghanaian handicrafts home and abroad, Mr. Affum relived the strides and struggles of local craft dealers, particularly in their efforts to penetrate international markets.

For entrepreneurs like Mr. Affum, these figures also validate decades of effort and strategic market development. His client base spans continents, from the United States of America to China, with the latter now becoming the dominant export destination for products such as traditional stools, Djembe drums, ebony sculptures, and ceremonial masks that are

deeply rooted in Ghanaian culture but have found universal resonance across the globe.

"The world is ready for what we have," he says. "But we must be ready to deliver not just in craft, but in compliance, consistency, and competitiveness."

- Export Acceleration through Global Exposure and Domestic Enablement

Affum's access to international markets was catalyzed by trade promotion missions that enabled artisans to exhibit their products in countries like Egypt, Zambia, Burkina Faso, Côte d'Ivoire, South Africa, China, and the United States of America. These exhibitions opened new markets and exposed participants to international pricing systems, quality benchmarks, and evolving consumer preferences. "Seeing what others were doing and how the world responds to our work changed how we think about our own products," Affum noted. "We started seeing our work not just as art, but, as an enterprise."

He added, Ghana's participation in such platforms amplifies the visibility of its creative industries and affirms the export readiness of its handicraft sector. Indeed, recent international trade outcomes have demonstrated the strong commercial potential of Ghana's handicraft sector and underscore the urgent

need for strategic investment and policy direction to unlock its full value.

Ghana's participation in key trade events is already delivering measurable returns. At the Ambiente Fair in Frankfurt, Germany, Ghana secured over €2.8 million for Ghanaian-made wood crafts, straw baskets, ceramics, beads, and home décor (GEPA, 2025) which are at various levels of execution. These results confirm a growing global appetite for authentic, well-crafted, culturally rich products, an appetite Ghana is well positioned to satisfy.

The scale of demand revealed by these fairs presents a compelling business case; Ghana's handicraft sector is not merely an expression of cultural heritage but a viable export industry with the capacity to contribute significantly to foreign exchange earnings and non-traditional export (NTE) growth. However, seizing this opportunity requires more than participation in exhibitions; it demands a coordinated national response.

Mr. Affum called for deliberate and sustained support for the handicraft sector, emphasizing that policy must shift from passive promotion to proactive development. This, he noted, should include targeted export financing, investment in production and logistics infrastructure, enterprise development support, and the enforcement of quality standards. These interventions, he argued, are essential to positioning Ghanaian artisans to meet international demand and compete effectively in global markets. He also proposed a more integrated and intentional

approach, one that goes beyond isolated artisan support and reimagines the ecosystem in which craftspeople operate.

A critical first step lies in building export-ready artisan clusters and production hubs across the country. These hubs would serve as shared workspaces and centers of quality assurance, skills enhancement, and product standardization. By pooling resources and expertise, such clusters can help small-scale artisans scale up production without compromising the authenticity or craftsmanship that define their products.

Equally essential is the creation of efficient logistics pathways that bridge the gap between local workshops and international markets. Currently, many artisans face prohibitively high costs and unpredictable timelines in moving their goods from remote areas to export points. A coordinated logistics framework comprising first-mile transport solutions, affordable warehousing, and partnerships with shipping and freight agents would reduce barriers and make exports more viable for smaller producers.

Additionally, today's digitally connected world requires access to international buyers also hinges on online visibility. Supporting digital platforms that connect artisans directly to global consumers presents a significant opportunity. E-commerce, when combined with digital skills training and integration into international payment systems, allows artisans to tell their own stories, build their own brands, and retain a greater share of export value.

Together, these interventions form a blueprint for transitioning Ghana's vibrant handicraft tradition into a modern, export-driven sector; one that preserves cultural identity and also contributes meaningfully to inclusive economic growth.

Ghana's potential mirrors the success stories of countries like Vietnam and Peru. Vietnam's rural industrialization strategy now drives over \$2 billion in annual exports from its craft sector, while



Peru's targeted investment in indigenous textiles and alpaca products supports a \$1.2 billion export industry. These examples show what is possible when traditional industries are treated as strategic assets within national economic development plans.

Kenya, on its part, has institutionalized support for the creative economy through initiatives such as the Kenya National Theatre as well as the GoDown Arts Centre, which nurtures artistic talent and serve as trade incubators. Similarly, Morocco's "Vision 2020 for Handicrafts" strategy transformed the sector through investments in artisan training, dedicated export houses (Maisons de l'Artisan), and strong linkages with the tourism sector. Morocco's handicraft exports have since recorded steady growth in markets such as France, the U.S.A, and the UAE.

Ghana's policy actors can take a cue from these examples as Ghana has begun taking steps in this direction through initiatives like NEDS and the establishment of Ghana Trade Houses abroad, however further policy coordination and resource mobilization are needed.

Without stronger investment and institutional support, Ghana risks underutilizing a sector that could generate foreign exchange, promote youth employment, and advance inclusive growth. Targeted reforms particularly in infrastructure redevelopment, trade facilitation, and artisan capacity-building could position the sector as a serious contender alongside traditional export.

Compliance as a Competitive Advantage

One area of notable progress in Ghana's handicraft export ecosystem, according to Mr. Affum, is compliance with export regulations and certification requirements; a critical but often overlooked enabler of international trade. In the past, many artisans faced setbacks due to the lack of proper documentation, including the risk of product seizure, shipment delays, or outright rejection at destination



ports. Today, however, a growing number of artisans and craft exporters are becoming increasingly proactive in meeting compliance standards.

From obtaining Forestry Commission approvals for wooden artifacts to securing export permits from the Ghana Museums and Monuments Board for culturally significant items, artisans are beginning to understand that certification is not just a bureaucratic formality, but a strategic asset. These approvals validate the origin and sustainability of materials used and safeguard Ghana's cultural heritage while aligning products with international ethical sourcing and legal importation standards.

"Certification is no longer optional; it's essential to doing business," Affum stresses. In his view, this growing culture of compliance is laying the groundwork for broader market access, especially under frameworks such as the African Continental Free Trade Area (AfCFTA). The AfCFTA offers Ghanaian producers an unprecedented opportunity to reach markets across Africa tariff-free but only if they meet origin verification, product safety, and documentation protocols.

Moreover, compliance enhances credibility with buyers, particularly in Europe and North America, where due diligence and regulatory scrutiny are intensifying in response to consumer demand for ethical, sustainable, and legally sourced products. For artisans, this shift toward compliance signals a transformation in mindset from informal craftsmanship to structured enterprise.

Affum believes that with continued training and institutional support, Ghana's handicraft sector can consolidate this advantage. "If we treat compliance as a business tool, not a barrier, we will gain market access, trust, repeat business, and long-term value," he noted.

To this end, he advocates for stronger public-private partnerships to demystify the certification process, expand access to technical support services, and embed regulatory literacy into artisan training programs.

Addressing Structural Barriers in Ghana's Handicraft Sector

Despite its considerable export potential, Ghana's handicrafts sector continues to face critical domestic constraints that undermine its growth. According to Frederick Affum, the Chairman of the Greater Accra Arts & Crafts Dealers Association, these challenges are most visible at the Centre for National Culture, Ghana's largest hub for traditional crafts.

The Arts Centre is home to more than 2,000 artisans and serves as a vital marketplace for cultural goods, attracting thousands of tourists annually. However, it suffers from chronic infrastructure deficits, including poor ventilation, outdated facilities, and overcrowded working spaces. Compounding these issues is the looming threat of relocation due to urban redevelopment plans, which Affum argues would be highly disruptive.

Relocating the Arts Centre from its current high-traffic, commercially strategic location, he warns, would dismantle a dynamic economic ecosystem reliant on tourist footfall, diplomatic visitors, and international buyers. In place of relocation, Affum advocates for an in-situ redevelopment model; one that revitalizes and modernizes the Centre without displacing its artisans. He draws on successful examples from Kenya and Morocco, where government-backed creative hubs have elevated both artisan livelihoods and export performance through targeted infrastructure investment.

Beyond infrastructure, Affum also highlights a growing challenge in

accessing raw materials, particularly wood. Despite holding the necessary legal documentation, many artisans experience bureaucratic delays and harassment when sourcing materials. This, he argues, constrains productivity and increases costs. He therefore calls for the establishment of a transparent and regulated system that ensures artisans have reliable and lawful access to sustainable raw materials, free from unnecessary interference.

For Ghana's handicraft sector to fulfil its export potential and remain globally competitive, Affum stresses the need for bold policy shifts. These should include protection and enhancement of key artisan zones, improved access to production inputs, and sustained government support for creative enterprises. With coordinated action, the sector can become a major contributor to foreign exchange earnings and cultural diplomacy.

Conclusion: A Sector with Strategic Promise

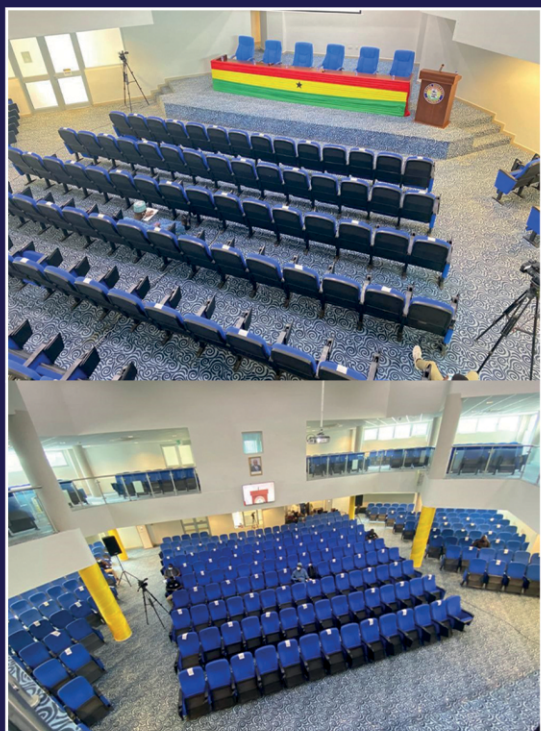
The journey of Affum Handicrafts illustrates the potential of Ghana's Industrial Arts and Crafts sector to serve as a viable economic pillar and a tool for cultural diplomacy. With strategic investment and sustained policy attention, the sector could play a vital role in Ghana's broader efforts to build a diversified, resilient export economy.

As Ghana seeks to redefine its role in global value chains, non-traditional exports like handicrafts must be positioned as cultural expressions and engines of economic opportunity. Entrepreneurs like Mr. Affum exemplify the blend of heritage, innovation, and ambition required to take Ghanaian craftsmanship from local markets to global shelves.





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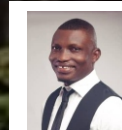
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FEATURES

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- 100 seating capacity conference room
- Projector, Public Address system
- High speed internet infrastructure



031 202 1739



Frederick Kafui
Agbleze

Combating Driver Fatigue on Trade Routes: A Call for more Rest Stops along Ghana's Transit Corridors

Ghana's inland transportation corridors are the arteries of trade connecting the ports of Tema and Takoradi to landlocked neighbors such as Burkina Faso, Mali, and Niger. Thousands of heavy-duty cargo trucks traverse these long and arduous routes, ensuring the flow of goods vital to both national and regional economies. Yet, the welfare of the drivers behind the wheels; the very lifblood of this network is often overlooked. Inadequate rest infrastructure, coupled with the pressures of long-distance haulage, has created a dangerous void: one that endangers lives, weakens supply chain efficiency, and undermines Ghana's trade competitiveness.

Rest stops are public facilities located along major roads such as highways, motorways, or expressways enabling truck drivers and passengers to rest, eat, or refuel without leaving the main route. These stops are no longer just convenience features; they are essential infrastructure. They play a critical role in trade facilitation, driver safety, and economic growth. Both public and private stakeholders must recognize their strategic importance.

Combating Driver Fatigue on Trade Routes

Fatigue remains one of the leading causes of road accidents involving

cargo trucks in Ghana. Gyimah (2023) identifies driver fatigue, poor road conditions, and vehicle malfunctions as key contributing factors to these often-fatal incidents. This is supported by data from the National Road Safety Authority (NRSA), which attributes nearly 50% of fatal road crashes to fatigue-related driving and the indiscriminate parking of heavy-duty vehicles.

The issue is particularly acute along major trade corridors such as Tema-Paga/Hamile, Takoradi-Hamile, Tema-Kulungugu as well as Aflao-Elubo / Tema-Elubo where long-haul truck drivers often work extended hours; up to

16 hours per day under physically and mentally demanding conditions. These drivers frequently navigate poorly maintained roads with limited signage and minimal access to rest areas, increasing the risk of drowsiness, reduced reaction time, and impaired decision-making behind the wheel.

Real-time traffic monitoring and crash reports have revealed a worrying uptick in fatigue-related incidents along these corridors, especially during night hours when drivers are more susceptible to sleep deprivation. According to the NRSA, Ghana recorded 3,674 road traffic crashes between January and March 2025, involving 6,143 vehicles across various categories. In a similar trend, between January and July 2024, the country experienced 7,470 crashes involving 12,678 vehicles. In the full year 2023, there were 14,960 reported road traffic crashes, which involved 25,754 vehicles. These incidents resulted in 2,373 fatalities and left 15,690 people injured. A significant number of these incidents have been linked to driver fatigue, particularly among cargo truck operators.

The absence of designated rest stops and proper fatigue management policies only worsens the situation, turning trade routes into high-risk zones for both drivers and other road users.

Looking to international best practices, Kenya offers a compelling example. Through the Northern Corridor Transit and Transport Coordination Authority, rest zones have been strategically



placed at regular intervals along its busiest highways. This initiative has led to a notable decrease in fatigue-related crashes and has improved overall road safety for commercial transport operators. Similarly, South Africa has well-planned rest stops for drivers along major highways, equipped with essential facilities such as fuel stations, rest areas, restaurants, toilet facilities, ATMs, and more—all of which support and enhance transit trade. Notable examples include Bukhulu Retail Truck Stop, Balmoral Truck Stop, Sasol N3 Truck Stop, and Caltex Star Stop Monte Vista.

Public and Private Sector Roles: A Shared Responsibility

The Ghana Shippers' Authority (GSA) has taken a proactive role in improving infrastructure within the shipping and logistics sector, with particular emphasis on the development of rest stops for long-distance truck drivers. Recognizing fatigue as a major contributor to road accidents, especially along trade-intensive corridors, the GSA constructed the Elubo Freight Park, which now functions as a dedicated rest stop for truck drivers operating along the Western Corridor. In addition,

the ongoing Boankra Integrated Logistics Terminal (BILT) in the Ashanti Region and the soon-to-be-constructed Akatakyiwa Freight Park near Cape Coast are set to include rest facilities tailored to the needs of cargo drivers, to enhance their ability to rest and recover during long hauls. The Ghana Ports and Harbours Authority (GPHA) sponsored the construction of the Tema Truck Park and the Paga Transit Park to provide similar services to haulers.

These initiatives represent significant progress toward improving driver welfare and enhancing road safety, particularly on routes critical to national and regional trade. However, public investment alone is insufficient to meet the scale of infrastructure required. The reach and coverage of Rest Stops remain sparse along high-traffic routes where data continues to show rising rates of fatigue-related incidents especially in areas with no formal rest areas or roadside amenities.

In Ghana, a number of rest stops have been developed by private individuals, primarily to serve travellers using passenger buses and private vehicles. Notable

examples include the Linda D'or Rest Stop in the Eastern Region, Eat n Ride Food Parlour at Apam in the Central Region, and Eli Eli in Sogakope in the Volta Region. Despite being designed for lighter traffic, some cargo truck drivers also make use of these facilities—often out of necessity rather than suitability. This practice does not only place additional strain on the infrastructure, but also creates safety and logistical concerns, as these Rest Stops are not equipped to handle the size, weight, and specific needs of heavy-duty trucks.

To sustainably address this infrastructure gap, there is an urgent need to leverage public-private partnerships (PPPs) as a strategic solution. By actively involving key private sector stakeholders such as fuel retailers, food vendors, construction firms, logistics companies, and even telecom providers, the government can co-develop well-equipped Rest Stop facilities that enhance road safety while driving socio-economic development. The Rest Stops must contain fuel stations, secure parking bays, food courts, restrooms, medical clinics,

convenience stores, and driver lounges, to make them vibrant multifunctional service hubs along major trade corridors.

To attract private investment and ensure long-term viability, the government can introduce a range of incentive mechanisms. These may include tax breaks or exemptions on initial capital investments, duty-free importation of construction materials and equipment, and access to subsidized land. Additionally, investors can be granted naming rights or advertising privileges, to turn Rest Stops into branded destinations that enhance corporate visibility. Revenue streams can also be diversified through retail leasing, user fees, telecom masts, and value-added services such as vehicle diagnostics and mobile banking kiosks. With such a model, Rest Stops would not only become safe havens for drivers, but would also be commercially sustainable assets that contribute to national development goals.

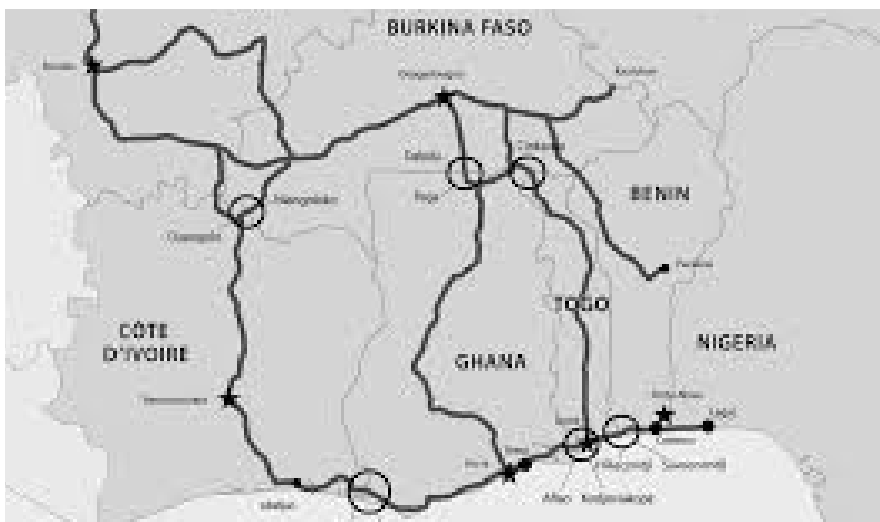
Enforcing Road Safety Laws with the Right Facilities

Enforcing mandatory rest periods for cargo truck drivers remains a

significant challenge for the National Road Safety Authority (NRSA), despite the clear provisions of Ghana's Road Traffic Regulations 2012. These regulations stipulate that drivers should not operate a vehicle for more than four continuous hours without a break, exceed eight hours of driving within a 24-hour period, or cover more than 500 kilometres without resting. Drivers are further required to take a compulsory 30-minute break after every four hours of continuous driving and a minimum of eight consecutive hours of rest within every 24-hour period, starting from the beginning of the driving schedule.

However, compliance has been hampered by a critical lack of secure and designated rest areas along major transport corridors. In the absence of proper facilities, drivers are forced to rely on informal and often unsafe locations such as fuel stations, shoulders of roads, or unlit bush paths for rest. This situation does not only compromise their safety and well-being but also makes effective enforcement by the NRSA extremely difficult. Establishing well-equipped Rest Stops at intervals of 200–300 kilometres would significantly support adherence to the law, discourage illegal parking, and ease enforcement pressures.

Moreover, such infrastructure would position Ghana to better meet the road safety standards and trade requirements of ECOWAS, key steps toward maximising the benefits of regional integration under the African Continental Free Trade Area (AfCFTA).



Challenges Hindering the Development of Rest Stops in Ghana

Despite the recognised importance of Rest Stops to road safety, transport efficiency, and regional trade integration, the development of such facilities in Ghana faces several systemic challenges. One of the foremost obstacles is land acquisition. Suitable land along major corridors is often encumbered by chieftaincy disputes, unclear ownership titles, or high compensation demands. These issues significantly delay project timelines or increase the cost of development beyond feasibility.

Another key barrier is regulatory fragmentation. Multiple State Agencies including the Ghana Highway Authority, National Road Safety Authority, Ghana Standards Authority, Ministry of Roads and Highways, Metropolitan/Municipal/District Assemblies (MMDAs), and Environmental Protection Agency—must approve various aspects of a single project. This multiple mandate often results in prolonged approval timelines and unclear responsibilities.

Financing limitations also pose a significant challenge. While the potential for commercial viability exists, the upfront capital needed for construction, land development, utilities, and compliance can be prohibitive. Most banks remain cautious about lending for transport infrastructure projects due to perceived high risks, inconsistent policy enforcement, and limited guarantees.

Lastly, there is limited public awareness or demand articulation

because cargo truck drivers and logistics operators often make do with informal rest points. There is therefore minimal organized demand for suitably equipped Rest Stop facilities. This lack of user-demand further weakens the incentive for government and private sector actors to invest in long-term solutions.

Recommendations

Given these challenges, a public-private partnership (PPP) model remains the most viable implementation route for Rest Stop development in Ghana. The role of the private sector, however, needs to be strategically defined. A private sector-led approach, where entrepreneurs or consortia take the lead in design, construction, and management, can work effectively if supported by enabling policies.

To begin, the government; through the Ministry of Roads and Highways and the National Road Safety Authority should identify and secure pre-zoned land parcels at regular intervals (e.g., every 200–300 km) along key highways. This would reduce entry barriers for private developers. In parallel, a dedicated regulatory framework

for Rest Stops should be created, to clearly define design standards, operational guidelines, and coordination responsibilities among stakeholders.

To attract investors, the government can offer incentive packages, such as tax holidays, import duty exemptions, naming rights, and long-term leases on favourable terms. Additionally, corporate partnerships can be encouraged—fuel companies like TotalEnergies and GOIL, or food chains such as Papaye or Marwako, could co-invest in branded Rest Stops that serve both public and commercial interests.

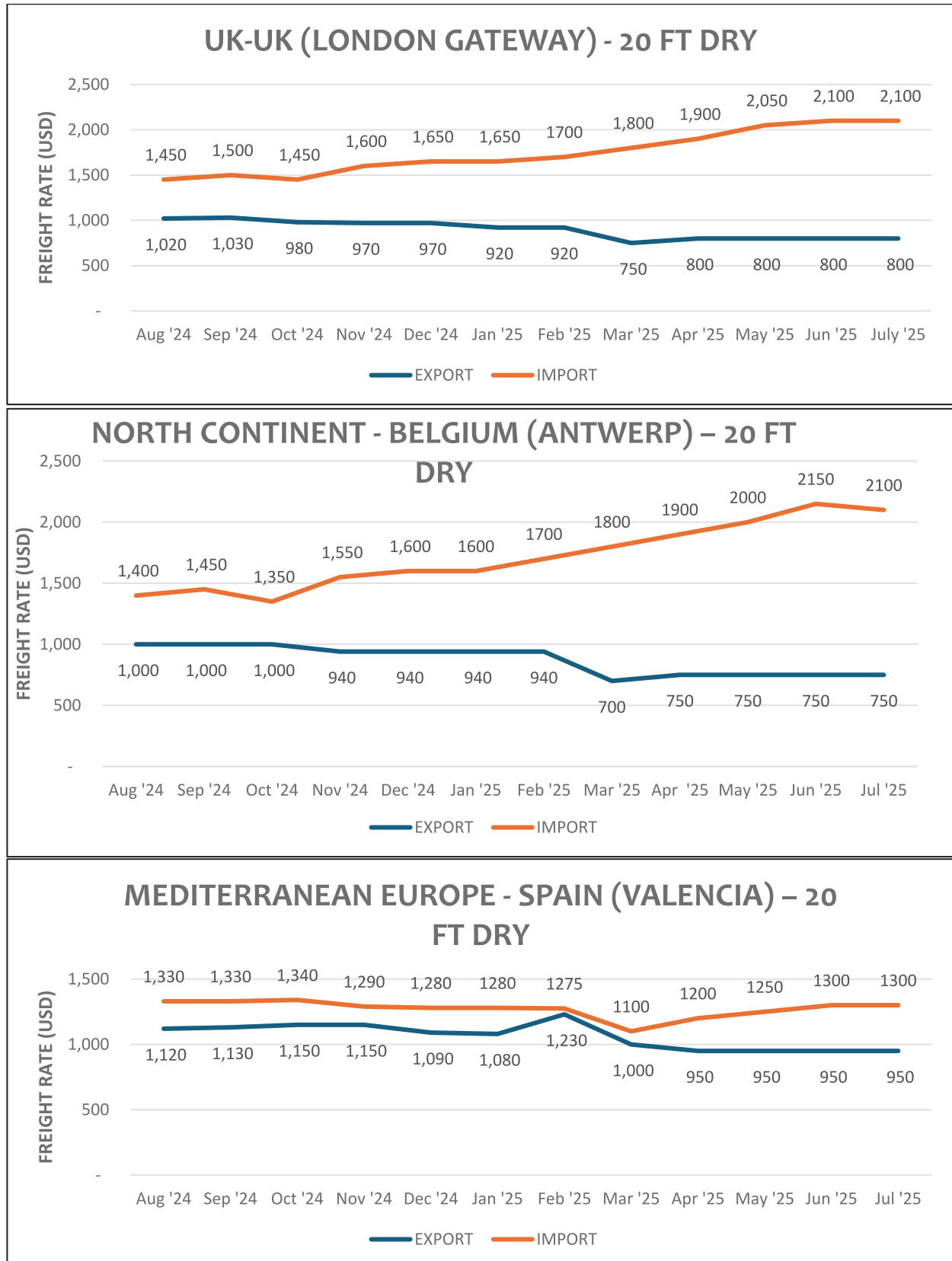
For example, the Linda D'or Rest Stop in the Eastern Region, though designed for private travelers, illustrates the market potential. A cargo-focused equivalent, developed by a private logistics consortium with government support, could serve as a national pilot and proof of concept.

With the right balance of regulation, incentives, and private sector freedom, Ghana can transform its highways into safer, more efficient trade corridors.



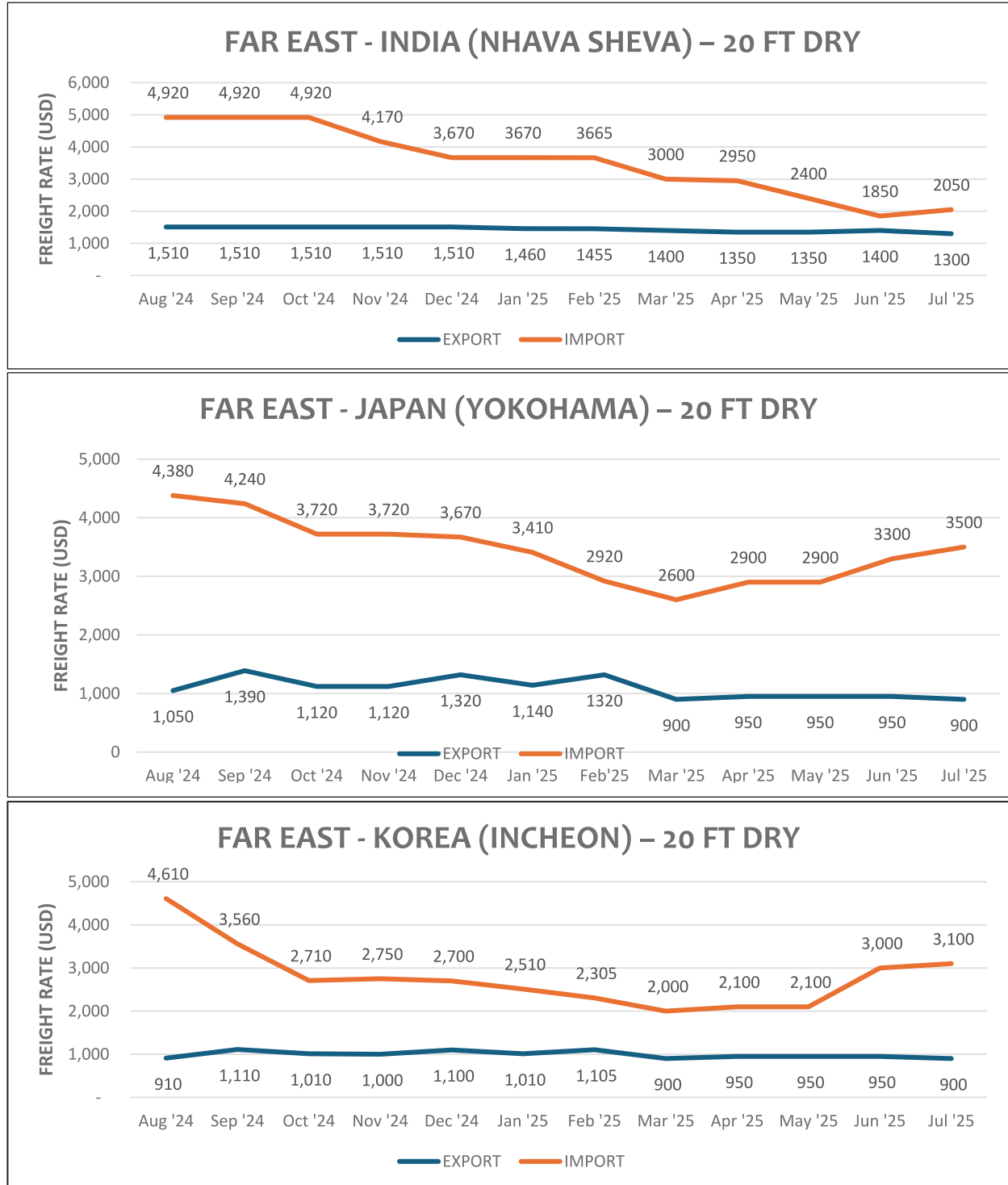


INDICATIVE FREIGHT RATES (in USD) FOR SHIPMENTS TO/FROM GHANA (PORT OF TEMA) AUGUST 2024 – JULY 2025



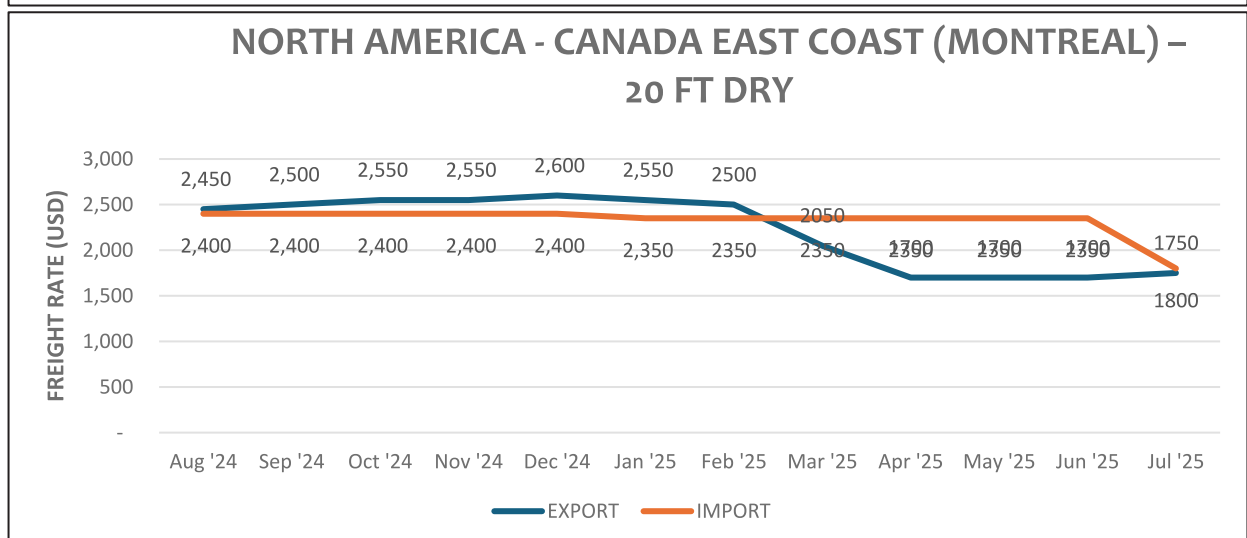
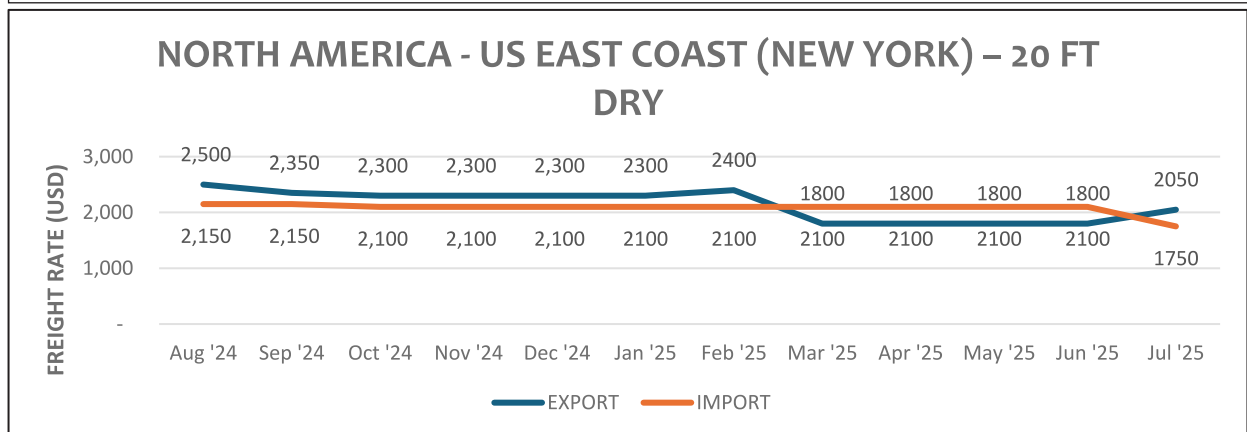
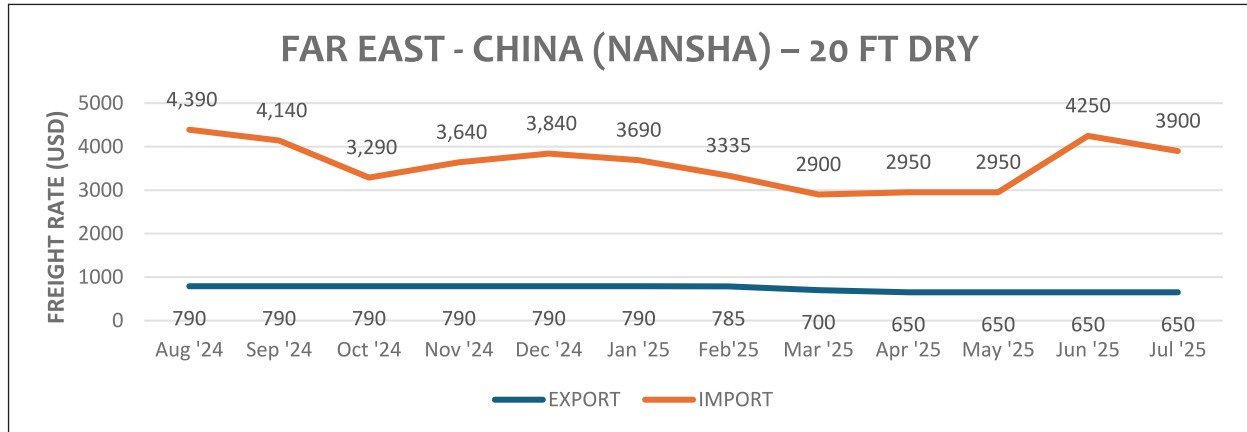


INDICATIVE FREIGHT RATES (in USD) FOR SHIPMENTS TO/FROM GHANA (PORT OF TEMA) AUGUST 2024 – JULY 2025



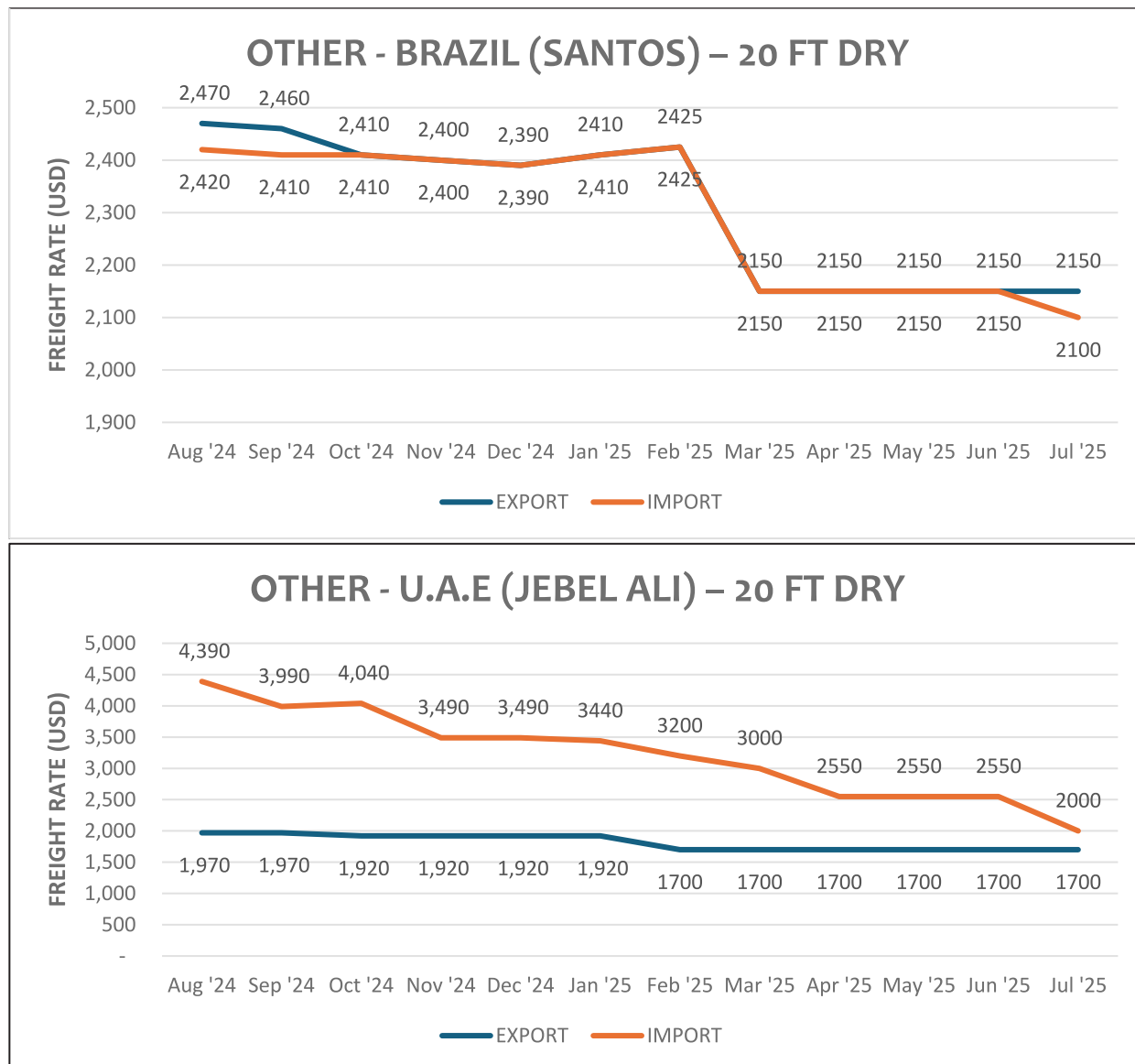


INDICATIVE FREIGHT RATES (in USD) FOR SHIPMENTS TO/FROM GHANA (PORT OF TEMA) AUGUST 2024 – JULY 2025





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