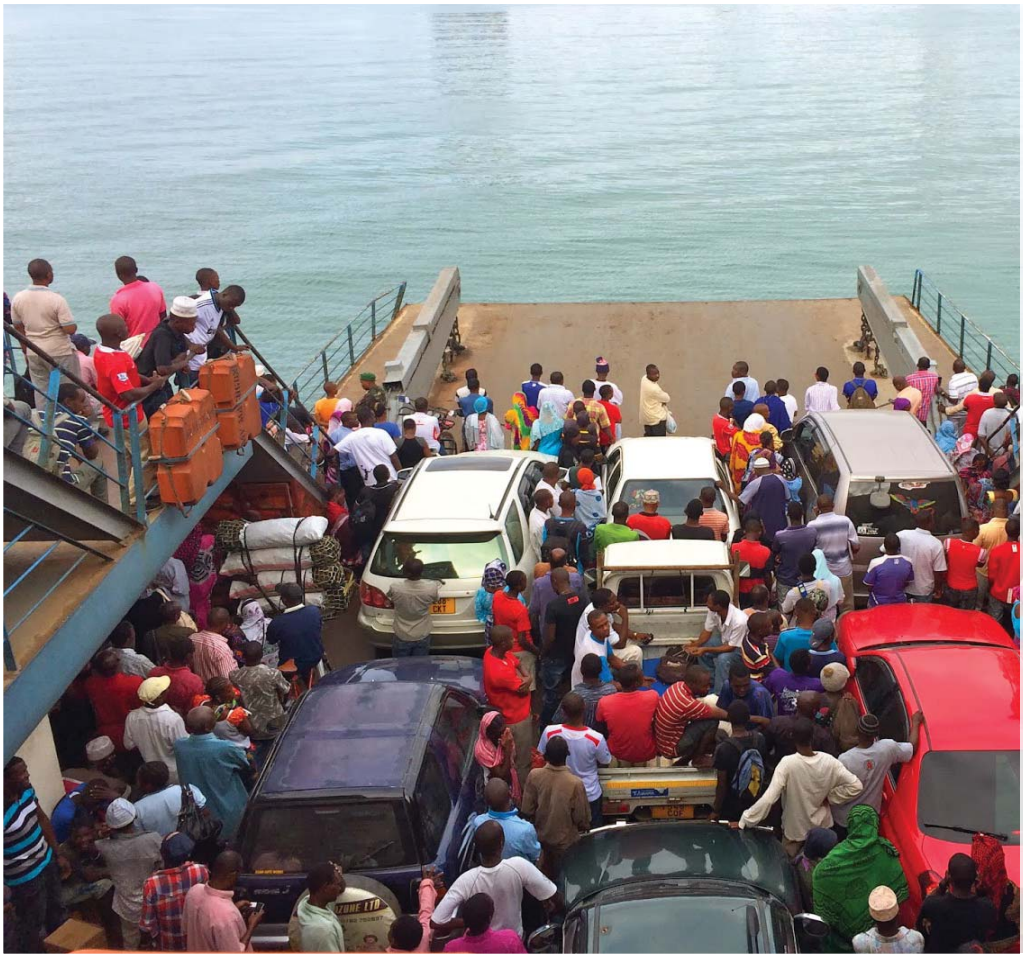

IN PERILOUS WATERS

An Analysis Of Current Conditions And Proposed Improvements To The Passenger Ferry System In Dar Es Salaam, Tanzania

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Cover photo: Ferry in Dar Es Salaam
Source: Google Images

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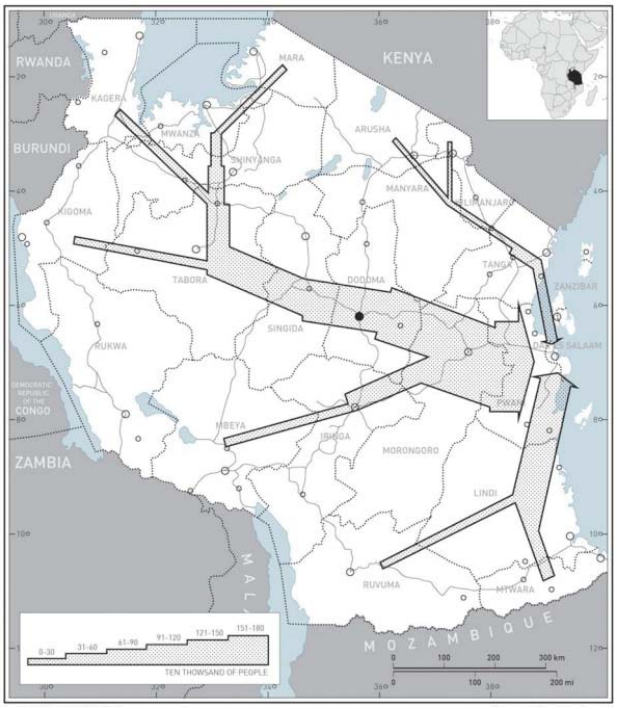
INTRODUCTION

Tanzania History & Growth Trends

Tanzania is located in East Africa in the African Great Lakes Region. The country achieved colonial independence from the British in 1964, with the union of the mainland, Tanganyika, with the archipelago of Zanzibar. Dar Es Salaam is Tanzania's largest city, with over 4 million inhabitants. Its location on the country's eastern border with the Indian Ocean makes it a natural port and a commercial center of activity. Further, although Dodoma is the official country capital, Dar Es Salaam is also considered the political center of the country, and many government offices are located there.

Figure 1: Overview Map
Dar Es Salaam & Zanzibar, Tanzania

Figure 2: Tanzania
Migration Flows



Source: Dar Es Salaam Master Plan

Zanzibar is made up of two main islands, Unguja and Pemba. Unguja is the southern, more developed island, and boasts Zanzibar City, commonly known as Stone Town, as its major port and center of commercial activity. The northern island, Pemba, is more rural and has developed Mkoani as its marine center of activity. These islands are also known as the "Spice Islands" due to their traditional export industries of cloves, nutmeg, cinnamon, and black pepper, but they also have developed a tourism industry due to their unparalleled beaches and world-class scuba diving and fishing.

Tanzania has seen steady GDP growth for the past 10 years ("Tanzania Overview"). In 2012,

the country exhibited 6.9% growth, which is higher than the 4.9% for the African continent on a whole ("Tanzania Overview"). Additionally, population growth at 2.7% a year is a large factor in the growth of domestic demand, and at this rate the population is expected to double every 25 years ("Tanzania Overview").

At this time, Tanzania remains a predominantly rural nation. Approximately 30 million people, or 75% of the country, lives in rural areas. However, this is a decrease from the late 1960s when nearly 94% of the country was rural ("Basic Facts," 20). Factoring in natural increase and in-migration, the Dar Es Salaam Master Plan published in 2013 predicts 5 million more inhabitants expected in the city by 2032 ("Dar Es Salaam Masterplan"). This shows the increasing trend of urbanization in Dar, and the increased demand placed on limited passenger ferry service.

As both fertility and urban migration have swelled the population of Dar es Salaam, so too has the community of Tanzanians living on the island of Zanzibar; between 2002 and 2012, the population grew from 984,000 to more than 1.3 million, an increase of more than 32 percent ("Tanzania Overview"). Over this time period, the economic ties that connect the islands to the mainland have continued to thicken, causing a surge in demand for ferry service between the islands. With these increasing economic linkages in addition to the projected population growth, the expected demand for ferries is projected to increase sharply in coming years.

Paper Overview

This paper will examine the current conditions of Dar Es Salaam's domestic ferry system. Dar Es Salaam currently offers an intra-city ferry as well as longer-distance service to Zanzibar's islands of Unguja and Pemba, and semi-regular service to Mtwara in southern Tanzania. A bridge is currently under construction to replace the intra-city ferry, and the Mtwara route has not had any recently publicized safety incidents, so these will not be the focus of this research. Instead, it will pay particular attention to the Dar Es Salaam – Zanzibar routes, as these have seen the most safety issues within the past five years. Recent ferry accidents have been caused by overcrowding, high winds, capsizing, and fire. This research will survey these accidents and the current passenger ferry infrastructure in place. It will then suggest recommendations based on internationally-recognized standards for safe ferry operation.

CURRENT CONDITIONS

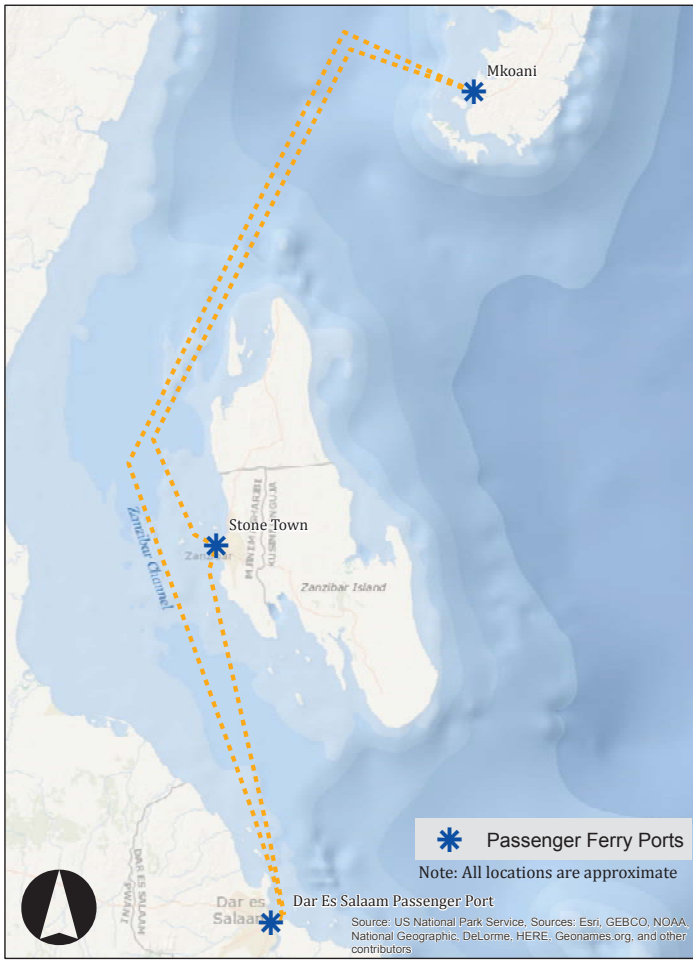
Ferry Operators

In order to meet the increasing demand for service between Zanzibar and the mainland, several companies now run daily ferries between Dar and Zanzibar. Ferry companies fall into two broad categories: older, legacy ferries, and new companies.

Older ferry companies operate just one vessel. Seagull, Flying Horse, and Sea Star each make the trip once a day ("Dar Es Salaam-Zanzibar Ferry Schedules"). These companies offer the cheapest tickets, and therefore are the most crowded. Ferries purchased by these companies are often vessels that have seen decades of use in other ferry markets before arriving to carry passengers from Dar es Salaam. The MV Marianna had ferried passengers in Greece for forty years before beginning service in Dar under a new name, MV Spice Islander; she operated for less than four years before sinking ("M/S Marianna"). Similarly, the MV Skagit, which sank in 2012, had served passengers in the Seattle area for twenty years before coming to Dar in 2011 (Associated Press). In each of these cases, the ships were heavily overcrowded beyond capacity. Seagull, which operated the MV Skagit, continues to operate ferries passengers to this day.

Two other companies currently operate multiple newer, catamaran-style vessels: Azam Marine and Fast Ferries Limited. Azam Marine is the venture of Said Azam Bakhresa, whose Tanzanian conglomerate includes such diverse businesses as mining, dairy products, chocolate, and wheat milling ("Bakhresa Group"). In contrast to operators of the older ferries, Azam Marine's ferries are new construction catamarans. Additionally, Mr Bakhresa's desire to create a world-class ferry service has prompted him to invest in safety training, despite the absence of governmental mandate to do so (training for passengers includes life-jacket demonstrations) ("Life Vests Save Lives!!").

Figure 3: Ferry Routes from Dar Es Salaam



Port Infrastructure

There are a variety of port configurations in Dar Es Salaam and Zanzibar. Figures 4-7 help to illustrate these differences.

Dar Es Salaam Passenger Port: Dar Es Salaam's ferry port is located in a bustling area of the city. Tickets for the ferries can be purchased across the street from the port at Azam Coastal Marine's building, and other companies sell their tickets from a nearby church. The port is equipped with two docks which can be used by up to four ferries at a time. There is also an outdoor, covered waiting area for passengers waiting to embark. The cargo port is nearby, but not directly attached to the passenger ferry area.

Stone Town Passenger Port: Stone Town's passenger ferry area is directly next to the cargo port, as can be seen in Figure 4. There is only one dock for passenger loading, and the port offers a covered waiting area.

Mkoani Passenger/Cargo Port: The passenger ferry port in Mkoani, Pemba is a basic facility. On the mainland of the island there is a ferry waiting area, and then a long concrete dock that leads out into the water. Passenger ferries can be accommodated on both sides of the dock, and there is a smaller docking area for fishing vessels in the same area (see Figure 6).

Figure 4: Dar Es Salaam Port

Figure 5: Stone Town Port

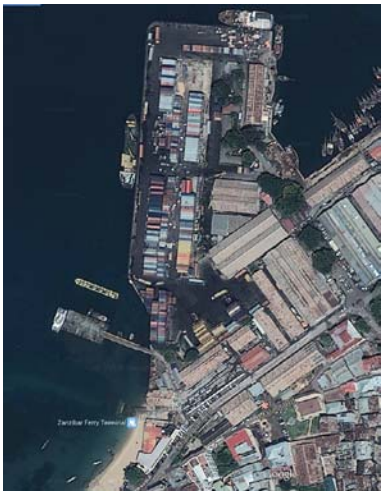


Figure 6: Dar Es Salaam Port

Figure 7: Mkoani Port

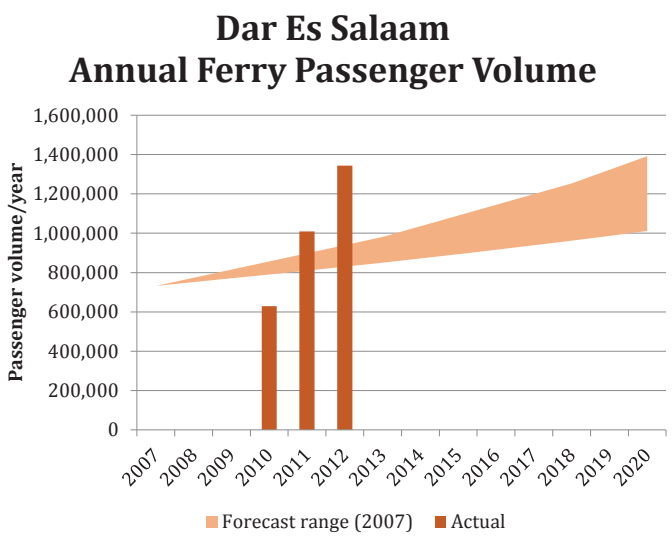
Photo sources clockwise from top: "Dar Es Salaam", Google Earth, Google Earth, https://www.google.com/maps/@-5.358937,39.641408,3a,75y,90t/data=!3m5!1e2!3m3!1s27756526!2e1!3e10.

Passenger Volumes

The Tanzania Ports Authority (hereafter TPA) regularly publishes passenger quantities for its Dar Es Salaam port. Although the data includes travels to all ports, not just Zanzibar, it is still illustrative of increasing demands on existing capacity. In Figure 8, one can see the increases in passenger volumes from 2010-2012, as published in TPA annual reports. As a comparison, the Tanzania Ports Master Plan, published in 2009, projected low- and high-forecast passenger figures through 2028 (see Figure 8). As can be seen when comparing these two figures, the actual passenger data from 2012 shows that there were 1,342,875 passengers (TPA Annual Report 2012). However, this figure exceeds even the high-end estimates for the port's expected passenger demand in 2018.

Through examining these two figures, it is clear that passenger port facilities are at a premium, and actual demand today is even more than expectations for demand four years from now.

Figure 8: Passenger Volumes



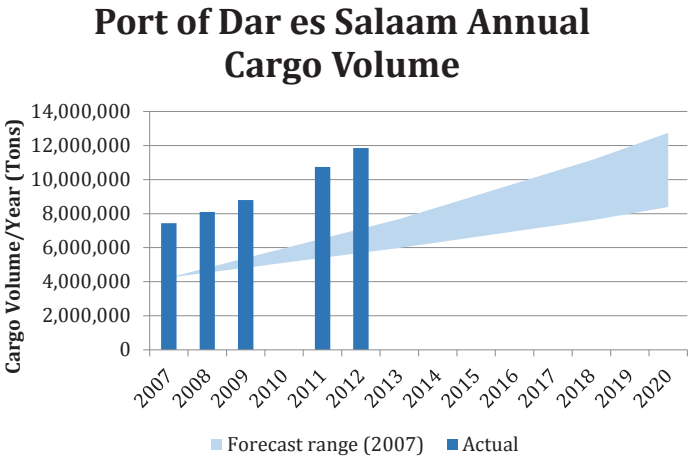
Source: TPA Annual Reports 2007-2012 & Tanzania Ports Master Plan 2009.

Cargo Volumes

It is also illustrative to examine cargo volumes in Dar Es Salaam. All of the passenger ferries between Dar Es Salaam and Zanzibar also allow cargo, so it can be extrapolated that as cargo demands increase in Dar Es Salaam's ports, this would increase cargo demand for space on the passenger ferries. Further, as many of the most fatal accidents have been due to overweight vessels, the cargo component of the port system is an important one to examine.

TPA publishes similar data for cargo volumes (see Figure 9). Actual cargo volumes, published in the TPA annual reports for 2007 – 2012, show a sharp 37% increase in cargo volume. When compared to projected volumes, like the projected passenger demand, the 2012 figures have already surpassed the high-end forecast for 2018.

Figure 9: Cargo Volumes



Source: TPA Annual Reports 2007-2012 & Tanzania Ports Master Plan 2009.

Accident Sites & Causes

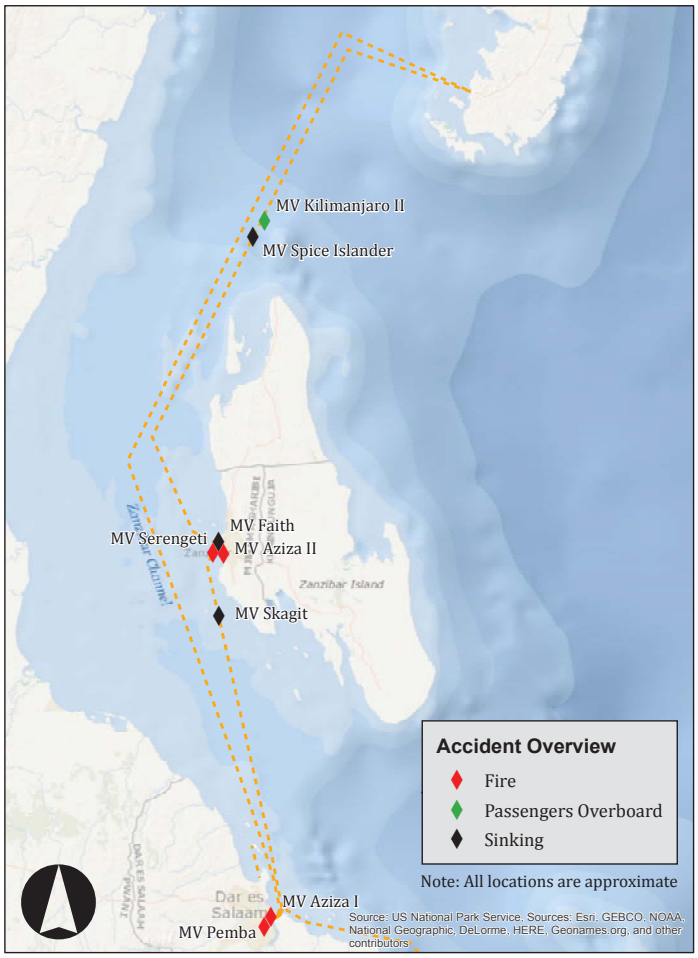
As part of the examination of current conditions, it is important to examine past Tanzania ferry accidents. Within the past 5 years, there have been at least nine accidents, with five resulting in fatalities for those onboard. The most fatalities were seen in the sinking of the MV Spice Islander (2011), a ship traveling from Stone Town, Unguja to Mkoani, Pemba with approximately 1500 casualties. The investigation found that it was severely overweight. A year later, the MV Skagit sank on its way from Dar Es Salaam to Stone Town, with about 150 deaths. This accident was blamed on a variety of factors, including the vessel being overweight, sailing in poor weather conditions, and the vessel not being "fit-for-purpose" to handle the high waves and strong winds of the corridor between mainland Tanzania and the island ("20 missing, 5 dead").

There was also another recent incident: in early 2014, the MV Kilimanjaro II had 20 passengers were thrown overboard ("Dozens killed in Zanzibar"). Although the pilot had been warned of rough seas, the company claimed that because weather forecasts are given only once a day, the official forecast was insufficient to persuade the captain to alter course ("20 missing, 5 dead").

Figure 10: List of Accidents

Vessel Name	Date	Fatalities	Outcome	Cause
MV Kilimanjaro II	2014	20	Passengers Overboard	Strong wind
MV Skagit	2012	150	Sank	Overweight Not Fit-For-Purpose Weather
MV Spice Islander	2011	1500	Sank	Overweight
MV Faith	2009	6	Sank	Capsized
MV Aziza I	2009	0	Destroyed	Fire
MV Aziza II	2009	0	Destroyed	Fire
MV Serengeti	2009	0	Destroyed	Fire
MV Pemba	2009	0	Destroyed	Fire

Figure 11: Accident Sites



There was also a cargo ship, the MV Faith, that capsized in Zanzibar's harbor in 2009, killing 6 crewmembers aboard ("Maritime Disaster"). In addition to the fatal accidents, there were four ships destroyed or damaged by fires in 2009. Two of these occurred in the Dar Es Salaam ferry port, while the other two were in the Stone Town port ("Maritime Disaster").

This tragic history of vessel incidents in recent history points to many issues with governance and organizational obstacles that prevent the safe operation of passenger ferries.

Ferry Governance

In both the earlier vessel disasters, and the more recent Kilimanjaro II accident, Khalid Salim Mohammed, Tanzania's Second Vice President, has failed to offer hope that the regulatory regime that has allowed such loss of life will undergo any major changes. Although Zanzibar's Minister of Infrastructure and Communication Hamad Masoud Hamad resigned after the sinking of the MV Skagit in 2012, Mr. Mohammed's comments invoked fate as the inescapable arbiter of life and death (Salma, Said). In response to a 2014 incident, Mr Mohammed went on to advise Tanzanians to avoid travelling by ferry during the stormy season. Neither of these reactions conveys the impression that the Tanzanian Ports Authority currently plans to investigate the root causes of the accidents. The contrast between the reactions of leaders in Zanzibar and Dar es Salaam is striking; resignations at the highest level from the former, and almost non-responses from the latter. This clear disconnect is perhaps indicative of a larger lack of coordination between Zanzibar's Maritime Authority and the Tanzania Ports Authority.

In 2006, the Zanzibar legislature passed the Maritime Transport Act, which established the standards and procedures for improving maritime safety in Zanzibar. It was several years, however, before the creation of the governmental body whose responsibility it would be to enforce these standards. To this end, the Act No. 3 of 2009 established the Zanzibar Maritime Authority (hereafter ZMA) ("Zanzibar Maritime"). Under this Act, the responsibilities of the ZMA are enumerated, and include a comprehensive list of duties meant to ensure the seaworthiness of vessels, capability of pilots, and navigability of waterways. One major area of responsibility is the regular and periodic inspection of vessels in the Zanzibar registry for seaworthiness and safety.

On paper, the ZMA fills all the functions one would expect from a well-run and effective maritime authority. In reality however, the registry of domestic vessels, under which ferries fall, is maintained by outside contractors, the Zanzibar Ship Survey and Consultancy. (Kazi, George Joseph). A lack of qualified personnel to audit the registry means that vessels may be registered without meeting established safety guidelines and standards. For international vessels, the Maritime Transport Act established a system of inspectors to cursorily examine the adequacy of safety and crewing for all incoming vessels. However, due to a lack of trained inspectors, these inspections have been largely unperformed on both cargo and passenger vessels. While the legislation is in place, the critical challenge is the fulfillment of the duties outlined in the organizing documents. The hope is that with time, trained and capable personnel and leadership with a strong mandate to comply with the letter of the Acts will assist in their full implementation.

On the mainland of Tanzania, maritime safety standards were codified in 2003 under The Merchant Shipping Act No. 21. In addition, the Act established the Transport Safety and Security Section of the Ministry of Communication and Transport, the powers of which are limited to "[giving] advice to national government and ministries on all maritime safety issues … [coordinating] all security information regarding maritime activity" ("The Merchant"). The weakness of the language describing the responsibilities of this body and lack of enforcement power has failed to bring about any real change in the safety regime around passenger service. While the TPA, which maintains the part infrastructure around Dar es Salaam and other mainland Tanzanian

ports ("Tanzania Ports"), has made much progress to bring its cargo facilities into compliance with international standards established by the IMO, there is little if any attention given to maritime passenger movement. Recent solid growth in exports has increased the need for improved management of port infrastructure, and the economic returns to investment in ferry infrastructure may appear relatively small to policy makers.

The individual challenges facing both Zanzibar and Dar es Salaam differ in several important ways. In Zanzibar, the key structures have been established by law but remain understaffed and under-skilled. In Dar es Salaam, the profile of ferry safety is quite small when compared to the larger issues of port management for economic development purposes; there is simply no current mandate to invest in the protection of ferry riders when the return on investment to improve cargo movement is so much higher, especially in the context of scarce resources.

The differences between the governments of Zanzibar and mainland Tanzania are relics from their complex history. Although the merger of Tanganyika and Zanzibar is nearing 50 years of age, Zanzibar has maintained its status as a semi-autonomous state, with its own president, legislature, and ministries. The coordination of policy between Zanzibar and mainland Tanzania remains uneven at best; two different maritime policy laws is the most relevant example. Perhaps the most critical operational inefficiency exists in the maintenance of dual vessel registries. Not only are the registries completely separate, inspection standards differ between areas, and ships from mainland Tanzania are treated as foreign vessels, while ships from Zanzibar are not. Furthermore, because of the different governmental structures of the two areas, it is unclear where the appropriate connections should even exist.

Organizational Obstacles

In summary, three major organizational issues currently prevent successful improvement of ferry safety. First, the lack of trained professionals to fill key inspection and ministerial roles remains an obstacle to the successful execution of operational mandates under existing statutes; in Dar es Salaam, all top talent is likely retained to support the development of commercial port infrastructure, while Zanzibar may suffer from a more acute lack of human capital overall. Second, the low profile of ferry management and safety within larger structure of maritime governance reduces accountability and priority for funding, especially in Dar es Salaam, where there is no office with a clear mandate to oversee ferry safety. Finally, the lack of coordination between the Zanzibar and Dar es Salaam ministries clearly leads to inefficiency in the implementation of any policy intended to improve ferry safety.

PROPOSED RECOMMENDATIONS

The International Maritime Organization (IMO) is a United Nations agency specifically concentrating on the safety and security of shipping and the prevention of marine pollution. The IMO is charged with setting worldwide standards for safety, security, and environmental performance of shipping vessels. It achieves this through creating regulations for ship design, construction, equipment, manning, operation, and disposal. As part of its duties, the IMO promotes maritime education and training, and facilitates summits to encourage interaction between maritime stakeholders. While the majority of IMO policy making and development of standards concerns ocean freight, three relevant domestic ferry meetings were held in the past three years, in Bali, Nanjing, and Fiji. These three forums have been highlighted below with a list of recommendations from each event.

These meetings were convened to address regional safety issues endemic in these Asian region, but their recommendations can act as guides for Tanzania. It should be noted that the recommendations put forth in all of these forums were non-binding and no action has been taken on the recommendations. This is due to a lack of follow-up from both stakeholders and those overseeing the implementation process.

Bali Action Meeting

In 2011, the Regional Forum on Domestic Ferry Safety met in Bali, Indonesia. The forum was focused on the Southeast Asian countries and their incidents with domestic ferry tragedies. The countries organized to develop a framework for the effective, safe operation of domestic ferry vessels. This framework includes several steps for governments to take individually to encourage and enforce safe practices. This forum's recommendations can provide a strong framework that Dar Es Salaam and Zanzibar should use as well.

Bali Summit Recommendations

- Continue effective safety dialogue
- Commit to enforcing rules
- Encourage & monitor use of compliant, fit-for-purpose vessels
- Encourage & assist in an effective safety culture in the industry
- Urge & support operators in fulfilling safety obligations
- Report facts & information on maritime incidents, and submit investigation reports
- Development of:
  - o Shipping safety policies & standards
  - o Fit-for-purpose regulations (also mentioned in Nanjing)
  - o Ship survey procedures
  - o Training for inspectors and crews (also mentioned in Nanjing)
  - o Operating procedures & best practices
  - o Tools to promote safety awareness of passengers

Fiji Pacific Forum

The Fiji Pacific forum took place in 2012 in Suva, Fiji. Its attendees included governments, maritme administrations, shipowners/operators, training providers, maritime industry associations, and shipbuilders/repairers. It continued the framework of safety that had been started in

Bali and provided further recommendations for improvement.

Fiji Summit Recommendations

- Encourage the implementation of conventions/ regulations, including adopting the Pacific Islands Maritime Laws
- Ensure legislation is user-friendly and easily understood
- Urge periodic review and continued development of marine guidelines and procedures
- Develop and implement effective passenger control and accountability mechanisms
- Urge adoption of a memorandum of understanding on a consistent regional approach to accident investigation
- Encourage stakeholders to develop multi-faceted safety management mechanisms
- Incentivize subsidies for new ferry procurement
- Encourage development of adequate infrastructure
- Encourage the exploration of means to reduce the excessive cost of lifesaving and fire fighting equipment
- Share best practices among stakeholders
- Encourage the development of long-term maritime personnel retention policies
- Encourage development of national and regional search-and-rescue response plans

The Nanjing Plan

In 2013, there was a follow-up to the Bali Action Plan, based on the 2nd Regional Meeting on Operational Safety of Domestic Ferries in Asia. The event took place in Nanjing, China and endeavored to continue the dialogue since the Fiji summit and advance more procedures and action items to further the safety protocols of domestic ferries.

Nanjing Summit Recommendations

- Update regulations to keep pace with technological advancements
- Ensure transparency and accountability in the enforcement of regulations
- Promote a safety culture among stakeholders
- Introduce a system of rewards and sanctions to encourage compliance with regulations
- Develop procedures for inspection and certification
- Require ship operators to have a safety management program
- Facilitate the distribution of navigation aids
- Investigate root cause of accidents and take appropriate action
- Ensure the provision of safe berthing facilities
- Elevate the issue of ferry safety to regional political organizations
- Encourage safer engineering standards and on-board search-and-rescue technology
- Ensure crews are trained and competent
- Ensure training of safety and environmental protection duties
- Ensure timely communication of weather bulletins
- Encourage passengers and the public to report non-compliance

Port Configuration & Boarding

Many of the ship fires reported took place in ports in Dar Es Salaam and Zanzibar while undergoing maintenance. The Nanjing plan recommends that inspection and certification programs are in place, and that there are safe berthing facilities for ships. Both Dar Es Salaam and Zanzibar should ensure that there are safe places for maintenance and fire crews nearby.

In order to avoid overcrowded ships in the future, boarding improvements are critical. It is imperative that operators monitor the volume of

goods and people boarding their ships in order to comply with weight limits and maintain the ships' stability. This can be achieved through a commitment to enforcing safety policies and sanctions against operators that show disregard for weight limits. Additionally, limits should be enforced on the number of tickets sold for individual ferries so as to be able to accurately count the number of passenger aboard.

In the same vein of increasing passenger safety, the organization Usizame endeavors to encourage passenger-reporting of non-compliant operators and vessels. The program, currently still in development, is a ferry check-in and alert system that will warn passengers who make a mobile "check-in" on their ferry if it is overweight and also if their ferry is anticipated to sail into severe weather conditions. This type of passenger-centered technology follows recommendations from both the Bali and Nanjing documents that stress the importance of keeping up with technological advances and ensuring there are checks and balances to guarantee ferry safety.

Ferry Routing

As was discussed in the first section, many of the ferry accidents have been caused, at least in part, by inclement weather. High winds and strong waves have been documented between Dar Es Salaam and Zanzibar, which often conflict with the structures of vessels that are in operation. As stated before, the MV Skagit was a pre-owned vessel that previously served areas around Seattle. When the MV Skagit sank, one of the reasons given for the tragedy was that the vessel was unfit to be operating in such rough waters. In the Bali and Nanjing documents, stakeholders reiterated the importance of ensuring the correct types of vessels were operating domestic ferry routes.

In addition to ensuring vessels are fit-for-purpose, the Nanjing document reinforces the importance of communicating weather bulletins in a timely manner. The Kilimanjaro II disaster may have been avoided had there been accurate weather bulletins published more than once a day.

Figure 12: Policy Recommendations

Policy Area	Monitoring Safety	Human Capital	Regulatory Control	Enforcement
 Inspections	• Adequate ferry safety inspections • Effective ferry registry management • Creation of pilot registry	• Training of internal inspectors and providing required tools • Pilot license requirements and training	• Clear guidelines on what type of ferries are appropriate for local conditions • Regular audit of inspections • Development of professional requirements for all authority staff	• Fines/suspension of ferry operations for companies with uninspected vessels
 Weather	• Weather monitoring infrastructure to maintain environmental awareness and waterway navigability	• Training for authority of personnel in monitoring and communicating weather conditions in real time • Training for pilots in avoiding/recognizing/navigating unsafe conditions	• Clear guidelines on what constitutes unsafe weather conditions	• Fines/suspension of ferry operations for companies sailing in unsafe conditions
 Overcrowding	• Monitoring of passenger and cargo volumes to avoid overcrowding • Monitoring of ticket sales to prevent selling beyond capacity • Real-time monitoring of ships in transit to improve disaster response time	• Empowering passengers to recognize unsafe conditions • Training pilots and staff to deal with emergency situations • Emergency training for passengers	• Clear limits for passenger and cargo capacity recorded as part of vessel registry • Capacity limits clearly marked on vessels • Required life-saving equipment/search-and-rescue technology	• Fines/suspension of ferry operations for companies that operate beyond capacity • Fines/suspension of ferry operations for companies that operate without necessary safety equipment in place

Ferry Design Features

In the event of a ferry emergency, future trips can be made safer through on-board safety features. The Bali document made recommendations to train crewmembers on their responsibilities in case of emergency, and Nanjing extended this recommended safety training to passengers. In addition to training requirements, the Nanjing plan encouraged vessels to be engineered in a safer design and have search-and-rescue technology available on the ships to expedite emergency response. It is also important for ferry operators to have safety policies and protocols in place that are enforced by government agencies.

Human Capital Development

One of the most pressing needs for the safe operation of vessels is the development of relevant navigational, managerial, and change management skills within, and specific to, the ferry sector. Previous maritime laws have established clear guidelines for key top personnel in terms of both educational background and relevant maritime experience. This precedent should be extended to personnel both within the associated governmental bodies and at the operator level as well. On the governmental side, clear training guidelines for effective execution of operational mandates must be articulated for inspectors, managers, and support staff, in line with recommendations in the Nanjing document. Training standards can be leveraged from governmental agencies in countries with strong organizational cultures of safety. Recognizing the scarcity of sufficiently-skilled local personnel, training programs should be established for those individuals selected to fill local roles. Ideally, these training programs would include exchange programs where locals might have the opportunity to apprentice to, or at least observe, operators who are currently filling these roles successfully; the application of best practices may be more likely to occur through direct hands-on experience than through purely academic training programs.

On the operator side, clear captain licensing requirements must be established and enforced. Captains should be able to produce proof of licensure, and spot checks are necessary to ensure only qualified individuals pilot ferries. The issue of captain licenses should include mandatory classes, followed by a written test for comprehension, mirroring standard operating procedure for issue of captain licenses for international cargo vessels. An independent registry of ferry captains should be maintained to prevent proliferation of counterfeit licenses.

Search and Rescue Planning

Even with robust training and comprehensive safety features, accidents may still occur. In the event of a ferry accident, a strong search and rescue (SAR) system may determine whether the loss of life is massive or minor. Per recommendation in the Fiji plan, the development of SAR response and communication is critical for improving safety conditions in the Dar es Salaam – Zanzibar corridor. A successful SAR system will both increase the speed with which rescue vessels can be directed to the site of any accidents and improves the ability of local authorities to rescue as many people as possible in the critical window of time immediately after the accident.

In order to improve response time, the first step is the relay of distress communications to the SAR dispatcher located on land. Because of high mobile phone penetration, many passengers have the capacity to call; an emergency contact number prominently displayed on the ferry would enable passengers to assist ferry crew in the prompt

report of emergencies. Although the trips to Unguja and Pemba islands are around 40 and 80 miles respectively, at no point are ferries more than 20 miles from land, a range comfortably within the maximum range of cell towers. Mandatory global positioning system (GPS) beacons on ferries would also assist SAR teams in quickly arriving at ferries in distress.

While the creation of a robust SAR force may be prohibitively expensive in the short term, the capacity of local, non-ferry boats may represent latent rescue capacity. A program whereby local fisherman receive small compensation or waived fees in exchange for participation in rescue activities would increase the number of vessels able to assist in accidents without incurring costs associated with maintenance and staffing of a large SAR force. While a dedicated SAR team remains critical to direct and coordinate rescue efforts, a network of trained fishermen connected to SAR dispatchers via cellphone could add a quickly scalable resource to rescue those otherwise without hope.

Coordination of policy

While both Zanzibar and mainland Tanzania have made strides to articulate and modernize their respective comprehensive maritime policies in recent years, the lack of coordination between the two areas breeds inefficiency. In terms of monitoring ferry seaworthiness, the existence of dual registries is completely redundant; the merger of these data assets would reduce the work of inspection, ease enforcement, cut administrative costs, and decrease susceptibility to graft. Additional cost savings and operational efficiency improvements could be realized by combining captain licensing databases, weather monitoring and warning systems, and emergency response infrastructure. New legislation to merge redundant assets between the TPA and ZMA should become a priority for local leaders who aim to increase the effectiveness of maritime safety in this critical passenger corridor.

While the creation of common maritime law would reduce shared costs, the best long-term solution may lie in the formation of an independent regional maritime transit authority, with inspection and enforcement over all Dar es Salaam-Zanzibar traffic. Perhaps the most critical change this would bring would be the creation of a group with clear responsibility to improve conditions in ferry safety and operational efficiency. The Nanjing document mentions the need to determine the root cause of ferry safety breakdowns, a task more easily accomplished through a single dedicated agency. While ferry-specific issues are only a very small portion of total operations at the port of Dar es Salaam, passenger transit is a considerable portion of Dar es Salaam-Zanzibar traffic; an independent authority would therefore have a clearer mandate to improve the operational outcomes, drive efficiency, and realize cost savings through the framework of joint policy-making.

CONCLUSION

For the majority of Tanzanians travelling between Dar es Salaam and Zanzibar, the ferry is the only way to cross the ocean. Driven by both strong domestic economic growth and unrelenting urban migration, the importance of this vital transportation corridor is only set to grow in the foreseeable future. The growth in demand for ferry services has created opportunities for new, large ferry operators to enter the market without displacing older, smaller companies. The ferries are still routinely overcrowded, however, revealing latent demand for additional transportation. Without clear regulations or expectation of enforcement, new firms face considerable uncertainty and are therefore discouraged from entering the market.

Additionally, in the absence of strong governance and enforcement in maritime passenger transportation, ferry operators are mostly on their own to determine how much to spend on safety. High-end ferry providers autonomously invest in safety, but without comprehensive government regulation and oversight, it is unlikely that safety investments will be comprehensive. Furthermore, lacking clear institutional support for ferry safety, positive change in the near future is doubtful.

It is clear that there are safety issues with the current operations of passenger ferries between Dar Es Salaam and Zanzibar. Past accidents due to fire, weather, and overcrowded ships have shown through the loss of human life that current regulations and practices are not sufficient. TPA and ZMA suffer from a lack of coordination and enforcement mechanisms, as well as a need for more human capital development in the area of safe ferry operation. Additionally, the passenger ferries themselves need regular inspection and monitoring to determine their seaworthiness and ensure they are fit for performing the journeys between Dar and Zanzibar.

As the guidance from regional Pacific summits shows, safe operation of domestic passenger ferries is a pressing need worldwide. In order to act as a leader for other coastal areas and bolster confidence in their ferry system, Tanzania should take a multi-faceted approach to strengthen their safety protocols for passenger ferries.

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Note: for this research, several attempts to reach in-country contacts both in Dar and on Zanzibar were unsuccessful. Looking forward, direct contact with officials from TPA and ZMA should be made, as well as a potential site visit made to view and inspect the ferry facilities and vessels.