

Trade Developments

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Port Congestion in Africa *Implications for Competitiveness and Economic Growth*

In the past eight years, global trade has increased dramatically in value (+45%) and volume (+50%).¹ The surge in cargo growth has strained the trade-related infrastructure of many countries. This is especially true of ports: maritime transport today handles about 90 percent of world trade by volume—nearly 13 billion tons of cargo a year.² In developed countries, ports with longstanding reputations for efficiency are challenged in handling ever-increasing cargo volumes. In developing countries, with poorer port facilities and fewer resources, the burden is even greater. In Africa, in particular, port congestion is undermining attempts to improve international competitiveness.

This report describes this challenge to competitiveness and outlines approaches for African governments and donors to take in addressing it.³ These approaches do not rely on costly investments in physical infrastructure; in most ports, dramatic improvements in efficiency are possible with existing infrastructure—provided that chokepoints in the port and transport logistics chain, including in the competitive and regulatory environment of transport infrastructure, are carefully assessed. In short, to improve its global competitiveness, African countries need to attend to privatization strategy, adopt or strengthen regulatory frameworks that safeguard competition and monitor pricing behavior, identify and address

transport chain chokepoints, and implement an institutional design that improves security within an efficient and competitive port and transport system.

Congestion in African Ports Harms Competitiveness

In Africa, shipping volumes have been rising even more rapidly than the global average. Consequently, Africa is facing the kind of congestion that India, the United States, and much of Europe has faced. This congestion undermines Africa's export competitiveness by increasing direct costs (e.g., port congestion penalties or surcharges) and indirect costs (e.g., inventory, idle ships, and trucks).

- In Ghana, for example, the port of Tema suffered until recently from low berth productivity because of a lack of gantry cranes. Increasing container volumes forced carriers to wait several hours for berths and, in turn, imposed congestion surcharges on shippers.
- In Durban, cargo-handling demand has exceeded the terminal's handling capacity, causing berth congestion and forcing carriers to impose penalty surcharges.

In addition to causing congestion at port terminals, increased cargo volumes cause congestion

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outside the terminal gates. The limited truck inventory in many African countries—combined with uncontrolled truck movements outside the port gates, inefficient intermodal exchanges, and extraordinary dwell times for containers—exacerbates this problem. (See Exhibit 1.)

Exhibit 1. Dimensions of Transport Inefficiency in Ghana

As in many developing countries, institutional, behavioral, and structural problems are hampering transport efficiency in Ghana. For example, a recent shipment of goods from Tema to Burkina Faso entailed 7 stops for Customs and 22 stops for security inspections along the route to the border—and this did not include border processing inspections. Despite the numerous inspections, Ghana appears to be inadequately ensuring the security of its shipments, particularly by truck.

On the institutional front, Customs, as a chief collector of revenue, is intent on inspecting an inordinately high proportion (about 80 percent) of containers, even though a "red-light/green-light" system is in place. Additionally, Customs fears that trucks claiming Burkina Faso as their destination will deviate from their itineraries in favor of destinations inside Ghana to smuggle goods. Customs is also concerned about illegal weapons smuggling to countries suffering conflicts.

The behavioral dimension involves the national police and opportunities for informal payments. Shippers (or truck operators) use cash for informal payments and suffer associated delays. And, as in most developing countries, trucks congregate along city streets on the approaches to the port gate. Drivers even set up hammocks under the truck chassis and camp out several days while waiting for their cargo to arrive.

The structural dimension involves road conditions and port gate congestion. Ghana has become a transit corridor for Burkina Faso and other countries (Ivory Coast) affected by regional conflicts. Burkina Faso relied on Abidjan as its port of entry until regional conflicts forced the country's shippers to use Tema and Takarodi (Ghana) as gateway ports. The influx of freight movements has caused damage to roads not designed for heavy flows, and many trucks are in violation of axle-load restrictions.

Furthermore, in the case of Ghana, a review of security requirements reveals a coverage gap in all the major U.S. and international protocols, particularly as applied to trucks. For example, several of these protocols cover containers but do not seem to be applied to truck movements (and possibly truck drivers) between the shipper's gate and the port gate.⁴ So the challenge in Ghana, and in many of Africa's countries, is to devise a system that secures cargo, trucks, and drivers without creating inefficiency in the freight transport system.

New Challenges Loom

Inefficient ports in Africa are eroding the competitiveness of African producers, but two changes pose further challenges: (1) the move to ever-larger ships and increasing use of transshipment

hubs, and (2) the need for international ports to comply with recommended or required international or U.S. security protocols.

Changing Deployment Patterns: Larger Ships and New Transshipment Hubs

Carriers now deploy much larger ships for "around the world" service, and increasingly rely on regional transshipment hubs and feeder ships to handle shipments to and from smaller ports, such as those in Africa. This practice, which will likely result in larger ships in many ports, will be reinforced if the Panama Canal is expanded as planned. (See Exhibit 2).

One scenario involving Africa's West Coast, is already becoming reality:

- Many in the industry expect that transshipment cargoes will be diverted from Algeciras (Spain) to a new, highly mechanized container terminal being built in Tangiers because of cheaper labor costs. Thus, transshipment cargoes will dominate activity in Tangiers, transforming it into a "pure transshipment port" (PTP). This means that Tangiers will likely provide regional feeding services to West Coast Africa, with regional hubs established at terminals offering fast turnaround times for vessels.
- Regional hubs are usually established in ports with substantial cargo volumes, making Abidjan (Cote d'Ivoire), with a capacity of 640,000+ TEUs, a likely candidate. But a new highly mechanized terminal, offering substantially more efficiency and berth productivity, will open in Tema (Ghana) before the end of the year. Though Tema has lower volumes (about 350,000 TEUs), this is enough to attract main regional feeding services, thus assigning Tema regional hub status. This means that in the mid-term, as cargo volumes continue to grow, Panamax-size vessels will begin calling to Tema. Of course, with the concession recently awarded for the container operation in Lagos (Nigeria) competition will emerge for regional hub designation. At this point, however, Tema will be the first to offer a terminal with the efficiency required for regional hub services.

A similar scenario is likely to emerge for East Coast Africa, with competition for regional hub status emerging from Mombassa (Kenya), Port Luis in Mauritius (if expanded), Maputo, Mozambique (if channel access is improved), and Durban, South Africa.

Post 9/11 Security Requirements for Transport Logistics

Since 2001, new protocols have been instituted to enhance security along the transport logistics chain. The protocols are embodied

Exhibit 2. What Does the Panama Canal Have to Do with Africa?

Having recently completed a \$1 billion capacity expansion program, the Panama Canal can now satisfy demand expected over the next few years, but the canal's current design will not satisfy continuing growth in demand. Today's Panamax vessel (with a capacity of 4,500 TEUs⁵) has to squeeze into the lock chamber, with only about six inches of clearance between the side of the ship and the chamber's wall. Expanding capacity will require constructing a set of larger locks and providing a deeper navigation channel.

Thus, the Panama Canal Authority is planning another expansion, with construction possibly beginning in 2007. Such expansion will encourage the deployment of larger vessels (perhaps three times as large as the Panamax vessels) to take advantage of economies of scale that an expanded Canal will permit. It will also lead to shifts in service patterns. Deployment practices, in fact, have already changed to take advantage of vessels of 8,000 TEU capacity and larger.

What does expansion of the Canal portend for shipping on the African trade lanes? Though larger carriers (post-Panamax, e.g., larger than 4,500 TEU capacity) will not call the African trade lanes in the near-to-mid term, larger and more expensive vessels will make fewer port calls and rely on more feeder vessels and transshipment activity. A mother (larger) ship will deliver a container to a port where it is then picked up by a feeder (smaller) vessel for delivery or for transfer to another feeder transporting the container to its final destination port.

Thus, the typical vessel calling ports such as Tema, Abidjan, Durban, Port Luis, and possibly Lagos, among others, will shift to larger capacity vessels as long as there are prospects for continued trade growth. But as vessels become larger, carriers will attempt to reduce the number of calls of these vessels. Ports with "smaller" domestic volumes will then be served by feeder vessels.

in the International Maritime Organization's Safety of Life at Sea Convention, including the International Ship and Port Facility Security Code (IMO/ISPS), the Container Security Initiative (CSI), and the Customs-Trade Partnership Against Terrorism (C-TPAT). Figure 1 delineates the jurisdictional authority of these protocols by area of transport logistics activity. Taken together, these protocols cover ports of entry and ports of call prior to entry, ports of container origin, and shippers of origin—the entire supply and warehousing chain.

African countries and their exporters are challenged to meet these requirements. For example:

- As of May 2005, the U.S. Coast Guard had identified ports in five countries as not having complied with IMO/ISPS requirements for ensuring port security. Four of the countries were African: Democratic Republic of Congo, Guinea-Bissau, Liberia, and Mauritania.

- Container security work has focused on the world's largest transshipment hubs. But of the 37 ports now in the CSI program, only one is from Africa: Durban.

Responsibility for assuring supply chain security and compliance with C-TPAT lies with shippers; those who wish to enjoy expedited cargo processing in the United States must assess the security of their supply chains, including foreign warehouses and the transport chain. This imposes a burden on U.S. importers, who must assess and strengthen the security of their supply chain following guidelines and reporting requirements developed by U.S. Customs. New requirements are in turn imposed on foreign exporters, who need to address container security (e.g. seals, inspection, and storage), physical security of warehouses/factories/industrial plants (e.g. fencing, lighting, video surveillance), and site access (e.g., ID verification, pre-employment verifications/background checks), among other items. These requirements are particularly onerous for small-scale exporters. Thus, if an African exporter is to be competitive in the U.S. market, it must cooperate with the U.S. importer in securing the logistics chain.

Improving Efficiency in African Ports

The efficiency of most ports can be improved dramatically using existing infrastructure—provided that chokepoints in the port and transport logistics chain, including in the competitive and regulatory environment of transport infrastructure, are carefully assessed.

Importance of Competition for Competitiveness

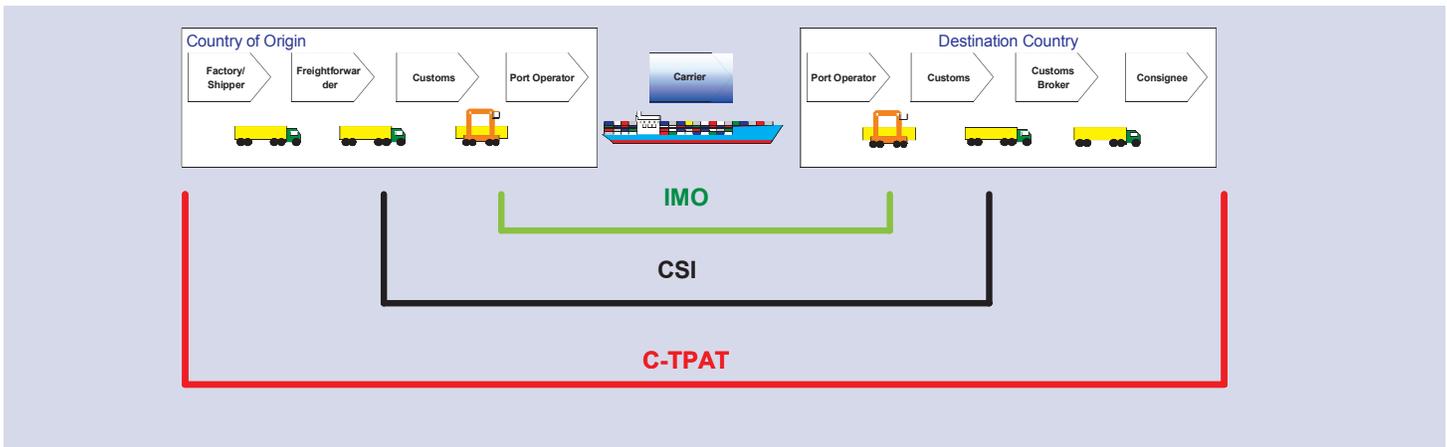
Achieving optimal efficiency in Africa's ports will require introducing—or inducing—competition. In the past two decades, reformers worldwide have avoided monopolistic settings when privatizing ports. The resulting competitive environments have made many ports more efficient and lowered their costs, to the benefit of both consumers and port users. Colombia, Argentina, and the United Kingdom are good examples of government efforts to avoid private sector monopolies.

Despite the international experience of the past decade and lessons derived from it, several countries in Africa are designing privatization transactions that minimize competition. Countries have two basic options when structuring a privatization strategy: (1) take an approach that leverages as much competition as the market will allow, or (2) take an economies-of-scale approach that tends to curtail competitors in the market, but then set permissible prices for the operator(s).

Even though most port privatizations of the 1980s and 1990s

Figure 1

Transport Logistics Chain Coverage by Existing Security Protocols



avoided transferring operations to private monopolies, they did not avoid oligopolistic settings and the attendant risks of anti-competitive behavior. Indeed, some African governments are even preserving government monopolies (Durban) or creating private ones (Tema).⁶ In part, African governments justify doing so on the basis of maximizing economies-of-scale advantages accruing to the operator(s).

Expanding competition, however, does not necessitate regulatory price setting. Depending on market conditions, countries can introduce new berths or terminals, divide an existing port into terminals, divide an operation within a terminal, or use short-term (contestable) contract mechanisms granting rights to operate a facility. The resulting level of competition defines the degree to which operators are to be regulated in light of antitrust concerns.

Where cargo volumes are relatively low, inducing competition is difficult. In such cases, common in Africa, an appropriate regulatory framework is essential. But in a number of African ports, monopolies operate without a regulatory framework to monitor for anticompetitive behavior (e.g., Maputo, Mozambique). Another potential source of anticompetitive behavior involves intermodal linkages in South Africa and Mozambique. The operator, Spoornet, can divert cargoes to routes offering higher margins. Hence, in serving Hauteng, South Africa's industrial center, Spoornet can divert cargoes to its profit advantage to one corridor by raising rail rates unjustifiably on the other.

Strengthening Regulatory Oversight

Most countries in Africa lack a regulatory framework and tools to monitor port and intermodal operators' anticompetitive behavior. Only South Africa has started establishing an economic regulator

to address port anticompetitive behavior.

In spite of the two waves of port privatization of the 1980s and 1990s, experience with regulation that ensures fair competition is rare. Only Peru, Australia, Colombia, and perhaps Mexico, have well-established economic regulators to address pricing regulation. Authorities in many countries, even those of the European Union, seem unprepared to manage port anticompetitive behavior, despite their authority to do so. Costa Rica, with its "Essential Services" Regulator, exemplifies the difficulty that utility-oriented regulators have in applying utility pricing theory to port operations: the regulator's refusal to allow the port to raise prices to cover the cost of expansion has resulted in congestion and pushed the port to the verge of bankruptcy.

Instances of limited market volumes, where price setting may be appropriate, present perhaps the most difficult regulatory challenge. Regulators must determine an appropriate price for a service, yet doing so requires knowledge of the terminal operators' cost structure. If an operator has monopoly control over anything, it is the information it provides to the regulator. Even with audit powers, regulators have difficulty fully understanding the cost structure of an operator's business—hence our emphasis on inducing competition where practical. Where this is not practical, regulators must apply a host of "higher economics" skills, not readily available in Africa, to either estimate cost structure and/or to determine appropriate standards (e.g., factor productivity analysis) to ensure acceptable terminal operator performance.

In several ports of Africa increasing cargo volumes could support inter-terminal competition. In addition to competition monitoring and price-setting authority, the regulator will need to be able to impose reviews of mergers and acquisitions. Otherwise, a return to (near) monopoly is likely.

How Can USAID Assist?

As African countries contemplate strategies for improving transport sector efficiency, USAID can encourage and support local efforts to

1. Improve the Efficiency of the Transport Logistics Chain

Events outside the port's gates affect operations inside the port. To minimize costs, governments should be concerned with the entire transport logistics chain, including ports and freight corridors. Governments can improve transport logistics by first identifying the chain's chokepoints and then applying a terminal operator's "factory line" approach to the transport logistics chain: optimizing equipment with cargo and always striving to reduce the idle time of each. USAID can assist countries in applying logistics chain diagnostics and in identifying institutional, regulatory, and structural impediments to efficiency. Countries will then know what to change and where to allocate limited resources.

2. Promote Privatization Strategies That Induce Competition

What assurance is there that operators will share with port users the benefits of transactions that maximize economies-of-scale savings? To promote competition, economies of scale savings must be balanced with the number of transactions offered. Further, competition is more effective in ensuring high efficiency at the lowest possible cost than regulation. Countries have many options for inducing competition, but this requires examining current cargo volumes and growth prospects as well as terminal capacity. Capacity building in market review, strategy design, and terminal planning considerations can be a very effective approach for formulating effective privatization programs.

3. Strengthen Regulations to Deter Anticompetitive Behavior

Where governments choose not to privatize, port services will remain government monopolies. And most privatization will result in monopolies or oligopolies. For monopolies, governments will need to set prices; for oligopolies, they will need to monitor competitive behavior. USAID can assist governments in establishing the port regulator as a functional entity in an existing regulatory body or as an independent entity, and in developing guidelines on competition monitoring and price setting.

4. Enhance Port Security

Not all of Africa's ports need be concerned with all security protocols. CSI is generally applicable to transshipment ports or to

ports with volumes sufficient to merit a call to U.S. ports without calling a transshipment port. But most countries will need to be IMO compliant, and shippers trading with countries must meet C-TPAT requirements.

Compliance with international security protocols can be facilitated by establishing secured transport logistics chains (STLCs) along a country's major freight corridors. The objective of an STLC is to reduce the security risk to trucks, cargoes, and drivers. The combination of inland container depots, truck staging areas, and technologies for monitoring truck and container movements can secure the transport logistics chain while improving efficiency, and negate the need for enroute inspections. USAID can promote the STLC concept in its corridor programs and assist countries in defining STLC requirements, including locations and technologies.

Endnotes

¹ WTO, *International Trade Statistics 2004*, Table A1, p. 165.

² UNCTAD Secretariat, *Review of Maritime Transport, 2004*, New York and Geneva, 2004, Table 4, p. 8.

³ This report is based on "Emerging Challenges in Africa's Port Sector: The Congestion Pandemic and Efficiency," prepared by Paul E. Kent, Ph.D., of Nathan Associates Inc for EGA, available at www.tcb-project.com.

⁴ The Carrier Initiative Program of U.S. Customs and Border Protection, which covers air, maritime, and land carriers, focuses only on trucks crossing U.S. borders.

⁵ TEU refers to twenty-foot equivalents, or the size of a standard 20-foot container carried on the ship. A 40-foot container, another standard size, is equal to two TEUs.

⁶ Durban, for example, has enough cargo volume to support several terminal operators, and thus introduce healthy competition. Yet before deciding to maintain its public monopoly at Durban, South Africa had considered a maximum of only two transactions for Durban's container business. Tema, with a record of strong growth, and with the proper terminal sizing and configuration, could leverage two operators given the volumes handled there. Yet the port authority is conducting one-on-one negotiations with a global operator in lieu of open bidding.

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