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IMPROVING TRANSPORT AND LOGISTICS FOR TRADE

Final Report for the TESS Special Study on the Impact of Transport and Logistics on Trade Competitiveness



December 2005

This publication was produced for review by the United States Agency for International Development as part of the Trade Enhancement for the Services Sector (TESS) Project. It was prepared by CARANA Corporation.

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Prepared by

CARANA Corporation

Providing Global Development Solutions

Contract No. PCE-I-07-97-00014

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PREFACE

This final report is part of Phase Three of the Trade Enhancement for the Services Sector Project (TESS), under contract for the United States Agency for International Development, Washington D.C. (Contract No. PCE-I-07-97-00014). The TESS Project is implemented by the CARANA Corporation.

The TESS Project is intended to encourage and support enhancement the trade and liberalization in services sectors to promote economic development and country competitiveness. Specifically, the project provides technical support in advancing the understanding of constraints and competition in services sectors such as transportation, and in developing and disseminating best practices for liberalization and enhancing systematic efficiency. More information can be found at www.tessproject.com.

This final report is the culmination of a two-year research and market testing program carried out at the request of the EGAT Bureau of USAID to better understand the systemic dimensions of transport and logistics (T&L) and to identify methods and approaches for USAID to better target and leverage its programming and interventions. The following report provides a summary of findings and conclusions from five distinct analyses. These include the Phase One report ‘The Role of Transportation and Logistics in International Trade: The Developing Country Context’ and on four separate country specific assessments under Phase Two that analyzed the impact of transport and logistic systems on trade competitiveness in Bulgaria, Indonesia, Mali and Nicaragua. These countries were selected as a sample to reflect different geographic, development and export scenarios, each with different transport and logistical problems and challenges.

- Nicaragua was selected as an example of a country with no major export port but in close proximity to the most important export market in the world—the United States.
- Indonesia is a country comprised of more than 17,000 islands almost spanning the width of the U.S., with a vast domestic market and close to a large regional market (ASEAN, China and Japan).
- Mali is an example of a very poor, highly indebted Sub-Saharan landlocked country with many transport and transit problems, heavily dependent on raw material exports with no significant manufacturing or value-added activities.
- Bulgaria is a country located in close proximity to EU markets and to major fabric producers in the Euro-Mediterranean zone. The country’s ability to compete in the increasingly competitiveness depend largely on the ability to provide low cost, rapid and reliable transport and logistics services and efficiently manage supply chains.

The purpose of this report is to:

- Sensitize readers to the critical importance of T&L systems in a global economy;
- Offer a diagnostic methodology for mapping T&L systems and identifying and quantifying key T&L bottlenecks; and
- Suggest T&L improvements and possible interventions, especially initiatives other than major infrastructure investments.

Acknowledgements

This paper was completed by Brett Johnson, Trade and Investment Economist, Santiago Sedaca, CARANA VP for Competitiveness Practices. Valeria Carou Jones provided research support. Maureen Rogers provided editing support.

EXECUTIVE SUMMARY

Overview

The dramatic integration of the global economy provides tremendous opportunities for developing countries to achieve sustained economic growth through expanded trade. Many countries, however, have weaknesses in their transport and logistics (T&L) systems that limit the extent to which their goods can reach destination markets in a timely and cost-effective manner and undermines their ability to take advantage of these opportunities. It is critical for efforts aimed at increasing export competitiveness to include initiatives to address priority issues in a country's T&L system. In this context, international donors can play a key role supporting the development and implementation of T&L assistance programs.

At the request of the Economic Growth, Agriculture and Trade Bureau (EGAT) at USAID, the TESS Project¹ carried out the *Special Study on the Impact of Transport and Logistics on Trade Competitiveness*. The study involved five separate analyses: a review of T&L issues facing developing countries in general and four country-specific assessments—in Bulgaria, Indonesia, Mali, and Nicaragua. The analyses (1) quantified transport costs for various product groups shipped from developing countries to global markets; (2) identified systemic and value-chain factors that lead to inefficiencies and higher transaction costs in the movement of goods; and (3) spotlighted opportunities to enhance export competitiveness through T&L improvements. This paper summarizes the findings of the analyses.

WEAKNESSES in T&L systems add costs and time to the shipment of goods. If not resolved, these issues can become a barrier to trade and have a detrimental effect on developing countries' ability to expand trade and benefit from integration into the global economy.

Demands of the Global Economy

To be competitive, developing country enterprises must be able to respond to global demands for faster and cheaper delivery, while operating within complex global manufacturing and distribution networks.

Although T&L has always been an important factor in global trade, various characteristics of the world economy are placing new demands on the way that goods move across borders. Not only must goods reach destination markets faster and at lower cost, but enterprises must also be able to operate within global manufacturing and distribution networks and security considerations that require efficiency, reliability and visibility throughout the trade transaction. This requires T&L systems with efficient intermodal networks, fewer border delays and tight supply chain and logistics management. Further, with the increased variety of trade goods, T&L systems must be able to accommodate product-specific transport needs, such as a cold chain for perishable goods. Unfortunately, many developing countries fall short of meeting these demands, reducing export competitiveness and their ability to benefit from opportunities emerging within a broad range of global value chains.

Opportunities to Improve Competitiveness through T&L Improvements

Even in its simplest form, an international trade transaction is complex, involving multiple steps and a myriad of players. There can be as many as 40 steps and just as many participants involved in a single transaction. Through its country studies in Bulgaria, Indonesia, Mali and Nicaragua, the TESS project found that at nearly each step of the process, potential problems can add time and cost to the movement of goods. By recognizing weaknesses in T&L systems it is possible to identify opportunities—at both value chain and systemic levels—to increase trade competitiveness through interventions targeting T&L.

CAPITALIZING on opportunities to improve T&L systems will have a large impact on export competitiveness through reduced costs and faster speed to market, critical success factors in today's global economy.

¹ The Trade Enhancement for the Services Sector (TESS) Project was financed by USAID and carried out by CARANA Corporation to support trade and liberalization of services in developing countries.

Opportunities to Address Value-Chain T&L Issues

The TESS Project found multiple opportunities to improve competitiveness through T&L improvements at the value-chain level. Most of these opportunities involve increasing the use of modern T&L services and practices. These include the following:

- **Improving utilization of modern preshipment practices**—Adding value to exports through steps to reduce spoilage, damage and packaging costs. Specific examples were highlighted in Indonesia (shrimp), Mali (mangoes), and Nicaragua (beans).
- **Improving availability and utilization of value-chain specific equipment and services**—Increasing use of specialized equipment and services needed to ship a particular product. For example, improvements in the availability of cattle trucks or cold chain facilities in Mali could provide significant opportunities to add to the per head value of cattle exports.
- **Improving utilization of value added services and supply chain management tools**—Increasing the use of integrated logistics services that provide door-to-door delivery and supply chain and logistics business solutions. This improves the efficiency and reliability of shipments, which is critical in industries that demand just-in-time-delivery. In Bulgaria, some experts feel that the extent to which manufacturers adopt modern supply chain management tools will determine, in part, whether the country’s apparel industry will be able to survive amid competitive pressure from Asia.

Responding to value-chain opportunities to improve the movement of goods does not require major interventions. Rather, significant impacts can be achieved through 1) increasing exporters awareness of T&L solutions—in terms of services, equipment or practices—that will increase the value and/or competitiveness of their products; 2) training in the application of modern packaging techniques, or the use of specialized equipment or supply chain management tools; and 3) investments in the development of value-chain specific services and equipment and other value-added logistics services. Often, these interventions can be carried out at the enterprise or value-chain level and involve limited resources.

VALUE-CHAIN interventions to improve the movement of goods can often be private sector led and cost effective, requiring relatively small investments at the enterprise and value-chain level. In many cases, significant effects can be realized in the short term.

Opportunities to Improve Systemic T&L Issues

Many times, broader T&L issues affect most, if not all, goods traveling to and from a country. By observing T&L systems in Bulgaria, Indonesia, Mali, and Nicaragua, the TESS Project identified the following priority systemic issues that add costs and delays to goods shipments:

- **Strengthening core transport infrastructure** – Targeted investments in key infrastructure (e.g., roads, ports, intermodal transfer points and cargo storage and handling facilities) required to operate an efficient intermodal transport network. Special attention should be paid to trade routes for priority products and the unique infrastructure challenges faced by land-locked countries. Examples from Bulgaria, Mali and Nicaragua are highlighted
- **Strengthening T&L Sectors** – Concerted efforts to improve policy and regulatory frameworks to improve competition and the operating environment for services providers and targeted policies and investment to encourage investment in new and improved services. Specific examples were highlighted in Mali and Indonesia.
- **Improving Customs and Border Processes** – Significantly improving the systemic movement of goods by reducing policies and procedures that lead to border delays and higher likelihood of corruption. Particular attention should be paid to the automation of border processes.

BECAUSE THE SCALE OF systemic T&L problems are so great, significant efforts and resources are required from public and private stakeholders. Addressing these challenges, however, creates opportunities for long-term effects on the movement of goods.

In general, solutions to these issues are on a larger scale than those at the value-chain level and likely to require significantly more resources, and greater public and private sector involvement—at national and regional levels—to resolve. It can take years for the benefits of interventions to be realized, with the possible exception of improvements at the border, which can have an immediate effect. Nevertheless interventions that address systemic problems can have a major impact on a country’s long-term ability to integrate and prosper within the global economy.

CONCERTED efforts to address customs and border encumbrances can result in significant benefits to the exporting community by reducing the cost and time of transportation.

Launching a T&L Assistance Program

Although it is possible to focus on T&L improvements on a piecemeal basis, it is likely that initiatives will have a larger impact as part of a broader development or assistance strategy. This strategy should be based on sound analyses—similar to those carried out by the TESS project in Bulgaria, Indonesia, Mali, and Nicaragua—and a national T&L dialogue involving public and private stakeholders, regional stakeholders, and international donors. Given that available resources are unlikely to address all aspects of a country’s T&L system, it is critical to prioritize opportunities in the following categories:

- **Reducing domestic transport costs**—Since a significant proportion of transport costs are accrued before a product crosses the border, special attention should be paid to address domestic costs.
- **Short-term intervention to improve value-chain competitiveness**—Value-chain interventions can have a significant short-term impact on profitability and competitiveness
- **Streamlining border processes**—Taking steps to reduce procedural impediments at the border is likely to have an immediate impact on the movement of goods
- **Medium-term interventions to improve value chain competitiveness**—Facilitating investment in specific equipment and services to better meet the needs of priority value-chains
- **Medium-term interventions to improve overall T&L system**—Concerted efforts to improve T&L services policy frameworks, strengthen operational infrastructure, and implement major customs modernization.
- **Long-term infrastructure improvements to improve overall T&L system**—Investments in major infrastructure priorities that meet both current and projected needs and have realistic potential impact.

Opportunities for Donors to Improve T&L in Developing Countries

INTERNATIONAL donors play an important role in efforts to improve T&L systems by:

- ✓ Facilitating development of T&L strategies
- ✓ Supporting value-chain T&L improvements
- ✓ Supporting systemic T&L improvements

Developing countries often require assistance in their efforts to develop and execute national T&L strategies. International donors can assist in strategy development and implementation of short-, medium-, and long-term initiatives that focus on value chain T&L issues or broader systemic issues. Prioritizing opportunities is critical when selecting appropriate interventions. Since donor funds are often limited, it is important for T&L assistance to align with a donor’s key objectives and time horizon. Since these activities are often complementary, it is important for donors to design and implement their T&L programs in an integrated framework that maximizes their overall impact on a country’s

ability to use T&L improvements to further integrate into the global economy

I. INTRODUCTION: UNDERSTANDING T&L'S INFLUENCE ON TRADE

The dramatic integration of the global economy provides a tremendous opportunity for developing countries to achieve sustained economic growth through expanded trade. In today's global economy, T&L plays an increasingly influential role in the integration process, comprising of a chain of behind-the-scene activities that affect the movement of goods before and during transport.

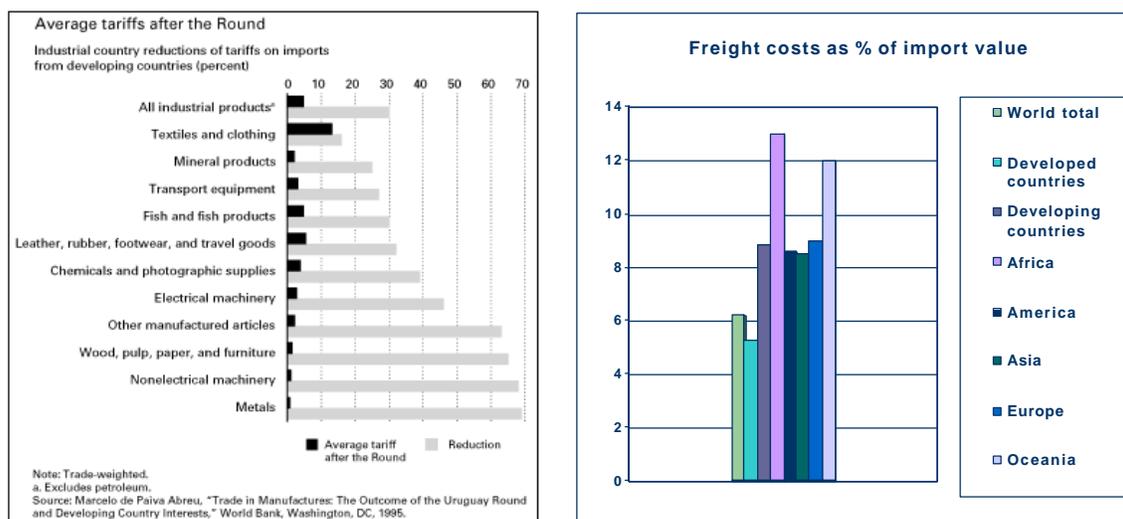
Clearly, international trade is a crucial component in creating successful economies. As **Table 1** shows, trade amount to more than 50 percent as a ratio of GDP in many countries and serves as a catalyst for economic growth. Of course, this growth can be partly attributed to reductions in tariff and nontariff barriers to trade through bilateral and regional trade agreements (e.g., CAFTA), trade preferences (e.g., AGOA (U.S.), ACP (European Union (EU))), and multilateral negotiations at the World Trade Organization (WTO). Because of these agreements, tariff rates in developed nations (e.g., U.S., Canada, EU, Japan) have fallen to an average 3.7 percent of export transaction prices. These efforts increase developing countries' access to key industrial country markets as their goods become relatively cheaper and global enterprises source more products from developing countries to leverage not only the lower tariffs, but also the lower cost of labor, inputs, and raw material.

Table 1, Goods Traded as Percentage of GDP (2003)

Region	Total Exports	Trade in Goods
East Asia	42.2%	70.5%
Europe and Central Asia	34.8%	66.7%
Latin America and Caribbean	24.3%	42.2%
Middle East and North Africa	34.3%	50.4%
South Asia	15.8%	24.1%
Sub-Saharan Africa	32.0%	52.7%
Countries Covered Under TESS Studies		
Bulgaria	53.2%	92.8%
Indonesia	31.2%	44.9%
Mali	24.4%	50.4%
Nicaragua	26.4%	61.0%
<i>Source: World Development Indicators Online, World Bank.</i>		

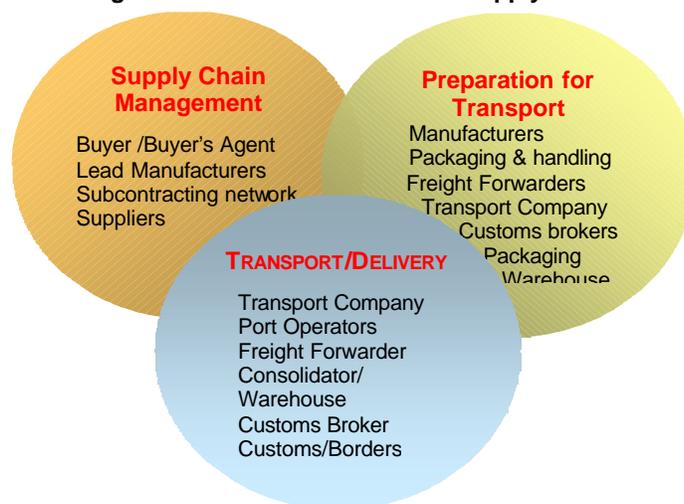
As **Figure 1** depicts, increased openness in international trade has helped level the playing field, thus increasing the importance of other success factors that determine competitiveness in today's export markets.

Figure 1. Lower Tariffs, Higher Transaction Costs Facing Developing Countries



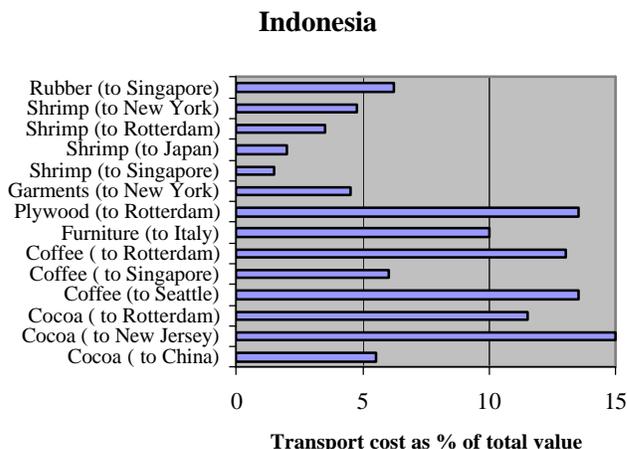
One such success factor is the ability of exporters to move goods efficiently and cost-effectively from a factory, warehouse, or port in the country of origin to destination markets. In this way, exporters or countries who can ship their goods to foreign markets ‘cheaper and faster’ have a competitive edge. Considering today’s global economy, this capability depends on a map of multiple players that includes buyers, manufacturers, suppliers, and T&L service providers. In a competitive system, these players are seamlessly linked in a continuum of T&L activities, as depicted in **Figure 2**.

Figure 2: Functional Links in the Supply Chain

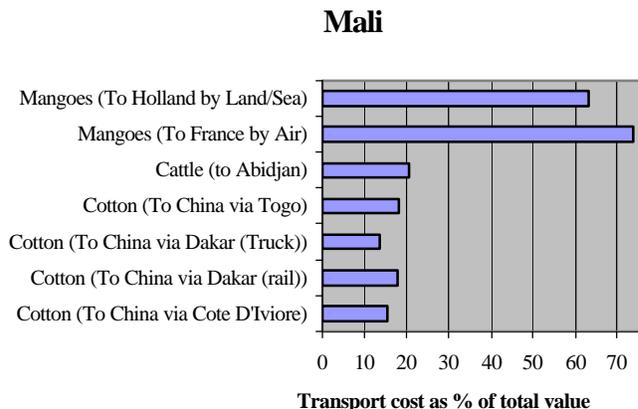


For many developing countries, weaknesses in this chain of activities add costs to the movement of goods. These costs—in terms of money and time lost due to delays and inefficiencies—can directly affect an exported good’s landed cost at its final destination. **Figure 1** depicts how the average cost of transport for developing countries’ exports is about 9 percent of the overall cost of the traded good—nearly double the freight costs of traded goods in developed economies. In Africa, freight as a proportion of the total value of traded goods is on average nearly two and a half times greater than the developed country norm. When looking at individual countries and products, costs can be even more staggering. **Figure 3** depicts how transporting some products can easily cost 10, 20, and even more than 60 percent of the total landed value of an export from some countries.

Figure 3. Transport Costs as Share of Total Value



Weaknesses in T&L systems can be attributed to several broader systemic factors, including inadequate core infrastructure, weak T&L services sectors, and border constraints. In many cases, problems in the movement of goods are also linked to problems at the enterprise or value-chain level, particularly in terms of inadequate use of modern preshipment practices, value-chain-specific equipment and services, and supply chain and logistics management tools.



As this paper demonstrates, these weaknesses limit the ability of producers, manufacturers, and exporters to become or remain competitive in the global economy. No matter the cause, T&L challenges are a critical barrier to trade, often negating the benefits gained from open markets and reduced tariffs, and accounting for many times the average tariff rate

(3.7 percent) applied to industrial country imports since WTO's post-Uruguay Round.² In Chile and Ecuador, transport costs exceed average U.S. tariff rates by more than 20 times.³ High T&L costs act as a 'tariff' or 'tax' on exports, making it more difficult for developing countries to be competitive in a global environment where even marginal cost differences have a significant impact in determining whether a business deal is made.

A COUNTRY with high transport costs is likely to have access to fewer markets and have a lower per capita income than a comparable country with low shipment costs.

In an overall development perspective, high transport costs can lead to lower income. In 1999, World Bank researchers found that countries with higher transport costs but identical factor endowments are likely to be excluded from transportation-intensive export sectors and have lower real incomes, as more resources are devoted to transportation.⁴ Similarly, in a 2001 study, researchers determined that the potential access of a country's manufacturing goods is determined in part by shipping costs, and estimated that this measure of market access can explain up to 70 percent of variations in country's GDP per capita in 1996.⁵ While more research is needed in this area, it is clear that a country's development prospects are linked to shipping costs.

Recognizing the importance of these issues, the USAID TESS Project carried out a *Special Study on the Impact of Transport and Logistics on Trade Competitiveness*. The study involved five separate analyses: a review of T&L issues facing developing countries in general and four country-specific assessments—in Bulgaria, Indonesia, Mali, and Nicaragua. The analyses (1) quantified the transport costs for various product groups shipped from developing countries to global markets; (2) identified systemic and value-chain factors that lead to inefficiencies and higher transaction costs in the movement of goods; and (3) identified opportunities to enhance export competitiveness through T&L improvements. This paper summarizes the issues identified through the TESS analyses.

HIGH T&L costs represent a trade barrier with the same overall impact as high tariffs or taxes. Consequently, efforts to integrate developing countries into the global trading system should consider the effects of T&L costs and their impact on competitiveness.

Sections II, III, and IV of this paper discuss (1) the global economy's demands on T&L systems; (2) opportunities to improve trade competitiveness through T&L at the value-chain and systematic level, using examples from the TESS country studies; and (3) recommendations toward launching a development program aimed at improving T&L services.

² Molnar, Eva, and Ojala, Lauri, "Transport and Trade Facilitation Issues in the CIS 7, Kazakhstan and Turkmenistan," World Bank (2003).

³ Dollar, David; Micco, Alejandro; Clark, Ximena. Maritime transport costs and port efficiency, World Bank, 2002.

⁴ Venables, Anthony J, and Nuno Limao, "Geographical Disadvantage: a Heckscher-Ohlin-von Thunen Model of International Specialization." Policy Research Working Paper No. 2256. World Bank, 1999. Excerpt from World Bank, Global Economic Prospects and the Developing Countries 2002

⁵ Redding, Stephen, and A. J. Venables. 2001. "Economic Geography and International Inequality." Centre for Economic Performance Discussion Paper, No. 495. London School of Economics, 2001. Excerpt from World Bank, Global Economic Prospects and the Developing Countries 2002

II. GLOBAL DEMANDS ON T&L SYSTEMS

A. CHARACTERISTICS OF THE MODERN GLOBAL ECONOMY

T&L has always been key to moving goods across borders globally. Given the demands of the current world economy, however, goods must move to destination markets faster and cheaper than ever before. Similarly, producers, manufacturers, exporters, and T&L service providers must have a sophisticated understanding of how to operate in the context of (1) integrated global production and distribution networks; (2) increased demand for just-in-time (JIT) delivery; (3) new security considerations; and (4) increased variety of goods traded.

Global Production and Distribution Networks

In today's economy, global enterprises seek to lower costs by sourcing products from, or locating production in, areas that offer a competitive advantage (e.g., plentiful raw materials, low cost and/or skilled labor, proximity or access to markets, favorable investment incentives). Many companies develop global networks with facilities and/or affiliates across multiple countries in various regions. A German automobile manufacturer may produce engine parts in Germany, export them to a plant in Mexico for assembly, and export them to the U.S. for further assembly (along with other imported components), so that the final product can be offered for sale in the U.S. Similarly, although many garments sold in Europe are manufactured in Bulgaria, finished products are often manufactured from fabric produced in Turkey, Italy, or China, using cotton from West Africa or Central Asia and buttons and zippers produced by a British or German company.

Since a product cannot be sold until all its components are available for final assembly and delivery, global enterprises depend on T&L service providers to ensure that all components are shipped in time without causing delays in production or final delivery. Countries with T&L service providers who cannot reliably operate in these manufacturing and distribution networks will find themselves at a distinct disadvantage when attempting to attract investment or become integrated into global value chains with demanding production networks (e.g., automobiles, apparel, electronics, furniture).

JIT Economy

As global enterprises develop production and distribution networks across the world, they also aim to boost the productivity of these networks. One way they achieve this is through just-in-time (JIT) inventory management. At the core of this process is the matching of supply and demand in a real-time or

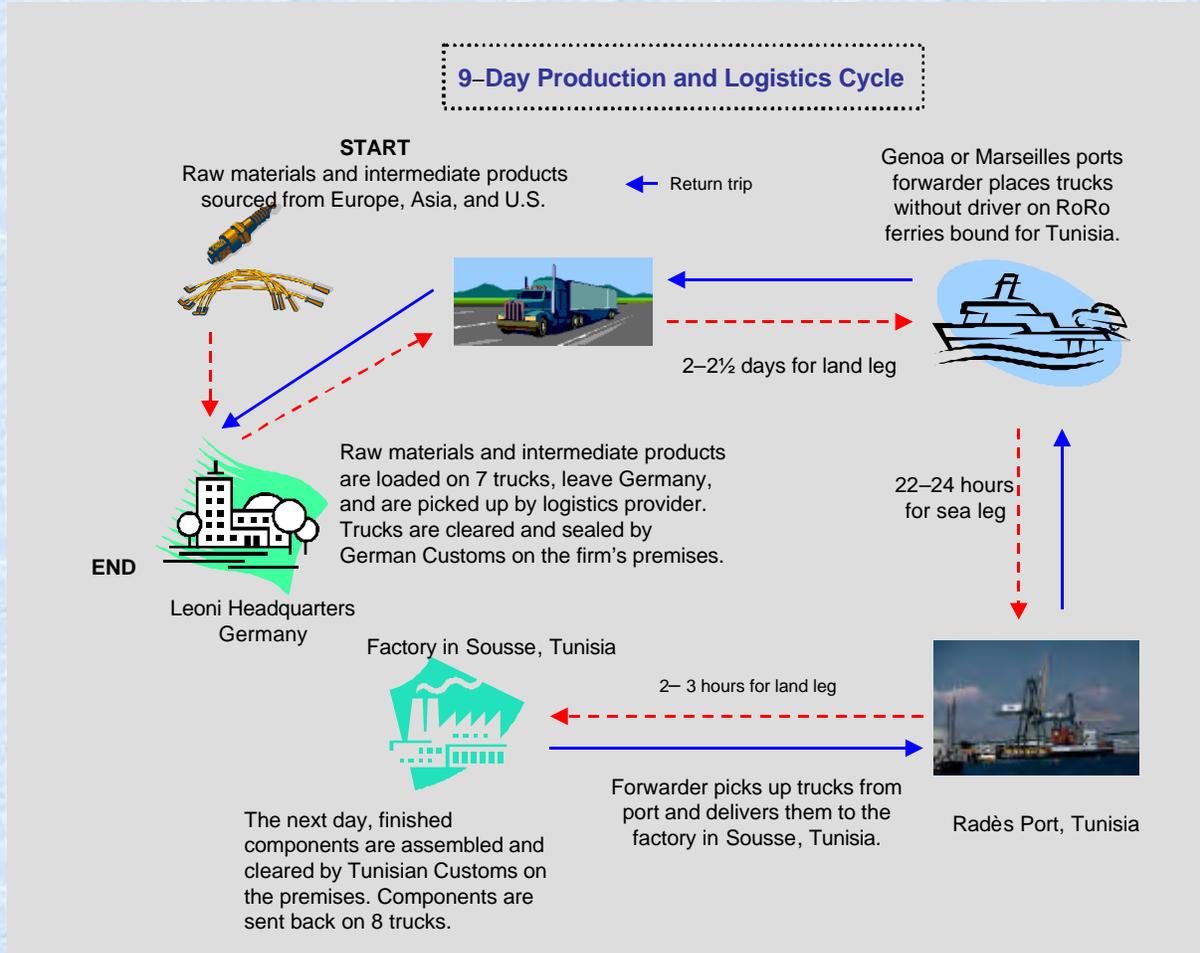
If shipments are unreliable, enterprises are forced to keep "just-in-case" inventory, negating any JIT business strategy benefits. Countries lacking JIT reliability will find it difficult to compete in industries where they would otherwise enjoy a competitive advantage.

near-real-time basis—companies plan production and shipments of components and final products so that goods go straight to the shelf when the market demands, even if it results in more frequent and time-sensitive international trade shipments. This reduces inventory, freeing up working capital that has traditionally been allocated to inventories and warehouses. Increasing inventory turnover and lowering inventory-carrying costs significantly increases the competitiveness and profitability of firms. JIT delivery, however, requires an efficient and well-managed system of T&L services that has reliability and visibility throughout the supply chain.

Case Study 1 and **Case Study 2** present examples of how auto parts' manufacturers in Tunisia and apparel exporters in Bulgaria are under increasing pressure to develop JIT capabilities.

CASE STUDY 1: JIT LOGISTICS' NEEDS OF A GERMAN AUTO PARTS' MANUFACTURER IN TUNISIA

Leoni Tunisie S.A. produces cable and electronic components for DaimlerChrysler and other European auto manufacturers. Because the JIT supply chains in the auto industry place extremely high demands on logistics' systems, Leoni has outsourced all logistics needs to an international forwarder, which has a subsidiary in Tunisia.



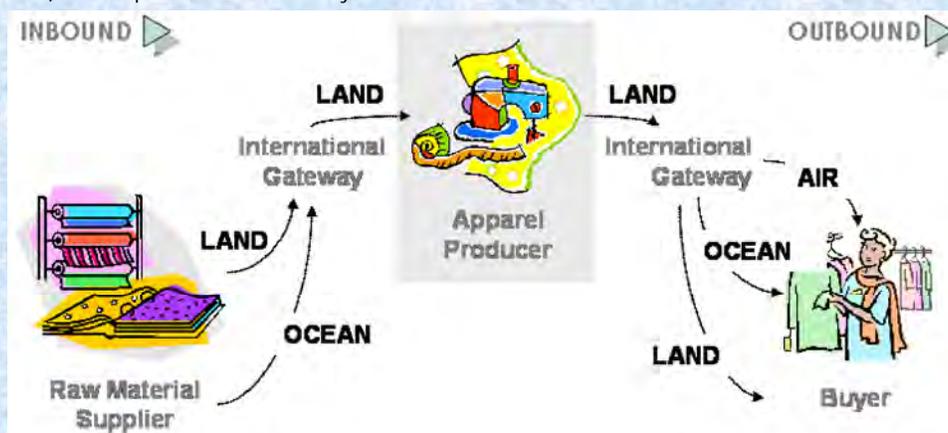
Leoni considers the chain efficient and reliable. Nevertheless, JIT demands are so high, they now pose a threat to Tunisia as a production base. Instead of the current cycle of 9 days, clients increasingly demand 6-day cycles. Internal production processes have been streamlined to such an extent (incoming orders are produced in 24 hours), any additional time savings must come from logistics. Leoni faces competition from subsidiaries in Eastern Europe (e.g., Romania), recently losing an internal company competition for a completely new factory with 1,700 jobs and a €-12 million investment to Leoni's Romanian subsidiary. The reasons were not wages or the investment environment—but Eastern Europe's logistics advantage. The land journey between Romania and Germany takes 1 day less in each direction, saving €1,000 per trailer load. To remain competitive in time-sensitive industries, Tunisia will need cheaper and better air cargo connections or high-speed ferries to Europe.

Source: Mueller-Jentsch, Daniel. (2002). *Transport Policies for the Euro-Mediterranean Free-Trade Area. An Agenda for Multi-modal Transport Reform in the Southern Mediterranean. World Bank Technical Paper 527. Washington, D.C.*

CASE STUDY 2: DEMANDS FOR REDUCED LEAD TIME—GLOBAL APPAREL INDUSTRY

Fast production cycles and reduction of “lead time” are key issues in the apparel industry, with buyers preferring JIT delivery. As part of a business strategy to keep costs down and respond rapidly to changing market demands, international buyers like Wal-Mart and Krasdale Quelle aim to reduce inventories by developing global supply chains. With little patience for products sitting in warehouses or waiting at a border instead of being in production or on store shelves, these buyers ensure that products are delivered when shelves must be stocked—not before and not after.

Orders for small-series fashion goods often require short periods between order and delivery. In Bulgaria, some producers deliver finished goods to a European retail store or warehouse within 21 days of receiving an order. Even when all parts of the production process work well, delivery times are tight. If problems or delays occur along the logistics chain, it is likely that the order will deliver late. Although buyers occasionally forgive late shipments, consistently late shipments cause producers to be seen as unreliable, even if other players in the logistics chain (e.g., border agencies) are responsible for the delays.



A global apparel supply chain has goods flowing in two directions, moving from overseas suppliers of raw materials (e.g., textiles, accessories, trim) to a lead manufacturer. The manufacturer produces the entire garment or subcontracts part (or all) of the order to a network of subcontractors (micro, small, and medium enterprises), who produce the goods according to predefined specifications. Once produced, the goods travel to the retail shelf in an overseas destination via a network of consolidation and distribution warehouses. At each step in the process, freight forwarders, Customs’ brokers, and/or transport providers play a critical role in linking different steps/players in the supply chain. How apparel manufacturers and their respective T&L service providers manage the flow of goods in their sphere of influence determines how efficiently, reliably, and cost-effectively goods reach their destination markets.

Security Considerations

If global networks and JIT demands were not enough, global trade is further complicated by security considerations implemented after 9/11. To reduce the possibility of terrorists using the international transport system to smuggle weapons of mass destruction (WMD) and terrorists across their borders, many governments—particularly the U.S.—have imposed heightened security regulations that challenge global trade and distribution networks. Under the U.S. 24-hour manifest rule, all shippers must provide Customs and Border and Protection with complete details of a shipment 24 hours before cargo is loaded on a ship. Noncompliance can result in significant delay at the U.S. port of entry. Countries with ports or warehouses that cannot ensure the integrity of shipments against threats like bioterrorism and WMD will also likely experience occasional, if not regular, delays when entering a destination country. In turn, such delays would affect shippers’ ability to meet delivery deadlines or integrate into global value chains.

Increased Variety of Goods Traded

In recent decades, the global economy has undergone a sea change in the increased variety of goods traded. Where many were once produced for local consumption and not generally considered tradable—

due to trade or transport barriers—goods sought by today’s consumers originate from all parts of the world. Bangladesh and Vietnam supply the U.S. shrimp market, once served almost exclusively by U.S. fisheries; Brazil and Argentina export beef to the U.S.; and South America, the Middle East, and Africa supply the U.S. and EU flower markets. Where apparel and automobiles were once produced in one area or country—even if for export—final products today feature components imported from around the world. This increase in the variety of tradable goods presents several opportunities for developing countries’ efforts to diversify their exports from raw materials and commodities toward higher value, niche-market, or value-added goods. At the same time, however, this variety adds complexity to transport demands.

SINCE many newly tradable products require more complex packaging and transport provisions, countries must have T&L systems that can provide services beyond shipping bulk or dry containers to penetrate these new markets.

B. LEVERAGING T&L SYSTEMS AND SERVICES TO MEET DEMANDS OF GLOBAL ECONOMY

From a business case standpoint, developing countries that demonstrate they are capable of playing by the new rules of the global trading game stand not only to become integrated into global value chains but also to benefit greatly from emerging export opportunities. Developing this capability, however, requires viewing T&L systems—as well as the chain of services that ensure products reach their final destination undamaged, on time, and at competitive cost—in new and modern ways. This section, therefore, discusses four critical factors in effective T&L systems: (1) more efficient intermodal service networks (and related infrastructure); (2) greater use of value-chain/product-specific services; (3) fewer border delays; (4) and tighter supply chain and logistics management.

More Efficient Intermodal Service Networks

Thanks to global production and distribution networks and demands for JIT delivery, today’s most competitive economies boast of rapid, predictable, cost-effective transport. Moving goods is increasingly carried out on a “door-to-door” or intermodal basis, using one or more transport modes (maritime, road, air, or rail). Although transport has often had intermodal aspects, the most effective T&L systems can move goods seamlessly across modes because of the following backbone elements:

- *Adequate infrastructure*—Includes not only the main infrastructure required for different transport modes, but also the equipment and facilities or transfer points to move goods from one mode to another, as well as the warehousing and consolidation facilities to store goods before, during, and after transit.
- *Competitive, capable modal services sectors and service providers*—Includes mode-specific transport services, related auxiliary services, and intermediate services to coordinate the movement of goods. Individual service providers or shipping companies that assume all roles under a single designation (e.g., Maersk) can supply these services.
- *Precise coordination across modes*—Effective management of equipment, facilities, services procedures, and intermediaries is required across all modes to produce the benefits promised by intermodal transport.

WEAKNESSES in intermodal networks can directly affect the movement of goods. This is especially true in developing countries, where costs and inefficiencies add up as goods move across transport modes.

Although weak infrastructure often plays a role, issues related to lack of competition and/or services’ liberalization, regulatory frameworks, market conditions, and mode-specific factors also lead to higher costs and lower quality transport services sectors. **Figure 4** summarizes modal cost factors common in many developing countries that lead to higher total transport costs in different transport modes.

Figure 4. Factors Increasing Modal Transport Costs in Developing Countries

Maritime Transport Cost Factors

Carrying more than 90 percent of the world's cargo and at the core of intermodal shipments, maritime transport costs have a significant impact on the final cost of exported goods. Factors affecting the cost of ocean freight include:

- Reliance on transshipment and feeder services, raising the cost of transport as each transshipment increases shipment distance, transit time, and handling costs.
- Directional imbalances—a discrepancy between inbound and outbound traffic, resulting in empty backhauls and divergent freight rates and representing an effective subsidy for exported shipments but increasing the cost of production for value chains using imported inputs.
- Limitations on cabotage (right to carry cargo between ports of the same foreign country), increasing the cost of repositioning equipment, critical when imbalances exist and intermodal transport networks are used.
- Anticompetitive practices such as cargo reservation schemes, monopolistic rights granted to maritime service providers, and collusive private agreements, reducing competition and increasing freight rates.
- Weak maritime auxiliary services in countries with inadequate port infrastructure or competitive markets, resulting in generally lower quality/efficiency and increasing costs.

Road Transport Cost Factors

A critical link for intermodal transport, regional trade, and landlocked countries, road transport factors can account for more than half of door-to-door transit time and cost. Factors affecting the cost of road transport include:

- Weaknesses in domestic road transport market conditions (e.g., regulatory framework, business environment, age and of truck fleet and sector standards) impact the time, cost and reliability of domestic transport.
- Poor road conditions in developing countries, increasing vehicle operating costs and leading to higher road user costs. Poor roads lengthen travel times and increase the likelihood of spoilage of perishable goods.
- Challenges facing landlocked countries (i.e., longer distances, varying road conditions in neighboring countries, and multiple border crossings) can increase transport costs 50 percent higher.

Air Transport Cost Factors

Air transport is at the core of the time-definite logistics system—especially for high-value and perishable goods. For landlocked countries, air transport is a fast alternative to reach distant markets. Cost factors include:

- Limited lift capacity and directional imbalances, resulting from low shipping volumes and lack of dedicated freight services. Freight is often shipped on passenger airlines.
- Competition with tourist/passenger baggage, resulting in unreliable transport supply and cargo occasionally being left behind.
- Changing schedules and cancellations, leading to unpredictable transport supply and forcing customers to pay a premium for guaranteed airfreight services.
- Changes in demand for air cargo services, due to the export of seasonal goods, exacerbating problems related to limited lift capacity, directional balances, and volatile transit costs by season.
- Market regulations, restricting competition for handling facilities and operations and increasing the price of air shipments.
- Anticompetitive bilateral agreements and landing rights, reducing competition and limiting overall lift capacity.
- Differing regulatory environments, affecting the ability of express air couriers like FedEx and DHL to provide efficient, low-cost, and integrated services.

Inadequate Infrastructure and Facilities for Cargo Storage, Handling, and Transfer

Highly developed supply chains rely on sophisticated and reliable IT to manage, control, and track shipments. Relevant issues in developing countries include:

- Inadequate warehousing facilities for all goods and limited cold storage for perishable goods.
- Limited use of sophisticated warehouse management systems that enable efficiency and visibility.

As countries attempt to integrate into the international economy, it is critical for them to address these modal cost factors through policy reforms or investments in priority infrastructure and facilities. Since such initiatives can be both costly and lengthy, it is important to focus on services most critical for efficiently moving a country's exports, which may differ depending on its geographic circumstances or primary export sectors and value chains.

Greater Use of Value-Chain/Product-Specific Services

The increased variety of goods traded places new demands on T&L systems. Although some products may only require bulk shipment or dry containers, many value chains—including higher-value products—require specialized equipment and services throughout the transit process to maintain quality, retain value, and meet the delivery needs of international buyers. One important example includes perishable goods prone to spoilage unless provided with adequate refrigeration. Perishable products include seafood, meat, dairy products, many fresh vegetables, and some processed foods. These goods require a reliable cold chain involving cold storage at packaging, warehousing, and intermodal transfer points; refrigerated containers and transport assets; or vehicles able to move these

INTERMODAL and JIT logistics have changed the relative importance of transport modes. Maritime transport—the dominant model and accounting for two-thirds of world trade—is at the core of intermodal container shipments. Road transport also remains an important component of trade transactions, providing a seamless link between ports and inland waterways and rail and road systems, dominating the movement of goods to and from airports and seaports, and a key mode of transport for landlocked countries. Further, truck transport has increased due to intraregional trade in blocks like the EU, NAFTA, and Mercosur. At the same time, airfreight has become increasingly important, shipping higher valued products with shorter life cycles or goods that require JIT delivery. Although air transport accounts for only 0.1% to 0.6% of Latin American foreign trade on a volume standpoint, it represents between 8% and 21% of imports and exports in Latin America. (*Kumar & Hoffmann*)

THE garment industry is an example where specialized equipment is required to meet industry demands. Many garment buyers now require manufacturers to provide final goods on hangers for shipment 'straight to the shelf' without further packaging. This requires transport services able to furnish containers specially rigged for hanging garments. Manufacturers unable to secure these specialized services find it more difficult to find buyers in some high-value garment markets.

containers. Even if some countries have a cold chain, the availability and reliability of these services can be limited, constraining potential export opportunities and affecting the value of shipments at destination markets, as spoiled food cannot be sold. As countries attempt to become more competitive in various product markets, it is important for them to develop the capacity—at the enterprise, value-chain, and systemic levels—to meet the specific shipping needs of priority products. This can be achieved by facilitating investment in new equipment, infrastructure, facilities or services, or strengthening the capabilities of existing service providers.

Fewer Border Delays

Because borders (or ports or exit or entry) play a central role in determining whether a product reaches its destination on time, countries will do well to set up efficient, predictable border procedures (e.g., customs, passport control, vehicle inspection, safety and phytosanitary inspections) that ensure products move smoothly across borders. Unfortunately, border encumbrances present one of the largest impediments to the movement of good in many developing countries. Frequently, goods are delayed for hours, days, and even weeks. This not only creates uncertainty that shipments will be delivered on time, but also contributes to higher transport costs through (1) lost time and productivity as a truck, ship, or airplane waits for clearance; (2) spoilage (especially for perishable goods); (3) pilferage; and (4) corruption as bribes are paid to 'move the process along.'

PRODUCERS or manufacturers that export from countries with border delays may be considered unreliable and find it harder to succeed in time-sensitive industries. To combat this stigma, developing countries must facilitate trade through Customs' and border modernization programs that streamline and automate procedures, improve traffic flow, and reduce opportunities for graft.

Tighter Supply Chain and Logistics Management

To succeed in a trading system with global production and distribution networks, intermodal transport networks, and demands for JIT delivery requires logistics management capabilities that ensure goods move smoothly from buyer to seller and from material or component supplier to the manufacturer that produces the final product. In an ideal environment, all supply chain participants (e.g., buyers, manufacturers, suppliers, service providers) are seamlessly linked in a continuum of trade and transport related activities (see Figure 2 in Section I). For this to occur, precise coordination of activities along the supply chain is critical and may include the following tasks:

- Coordinating among input providers, manufacturers, buyers, and transport service providers to ensure that the following occurs: (1) inputs arrive on time; (2) final products are manufactured and ready for transport and delivery to the final market; and (3) buyers are prepared for delivery.
- Coordinating the use of different transport modes and services' providers, using the most efficient and cost-effective routes and modes.
- Consolidating shipments to achieve economies of scale, even with small orders.
- Tracking shipments as they move across modes and borders and responding to problems and bottlenecks as they occur.
- Ensuring that all customs and transit paperwork is filled out properly to avoid delays at borders.
- Maintaining visibility and control over a shipment to assure authorities that appropriate security considerations have been taken.

To meet the demands of the global economy, successful global enterprises (and their respective supply chains) often use internal logistics departments or procure service providers with supply chain and logistics management capacity. This involves the use of robust processes for working with partners and transport service providers, for increasing product visibility along the supply chain, and for increasing predictability to ensure reliable access to inbound materials (when necessary), as well as timely delivery to customers. Often, this requires trained and experienced logistics managers and the use of information technology (IT) solutions for supply chain and logistics management. Because major companies recognize the competitive advantage they gain from logistics and supply chain management, they seek partners with the capacity to operate in tight, time-sensitive supply chains while keeping costs down.

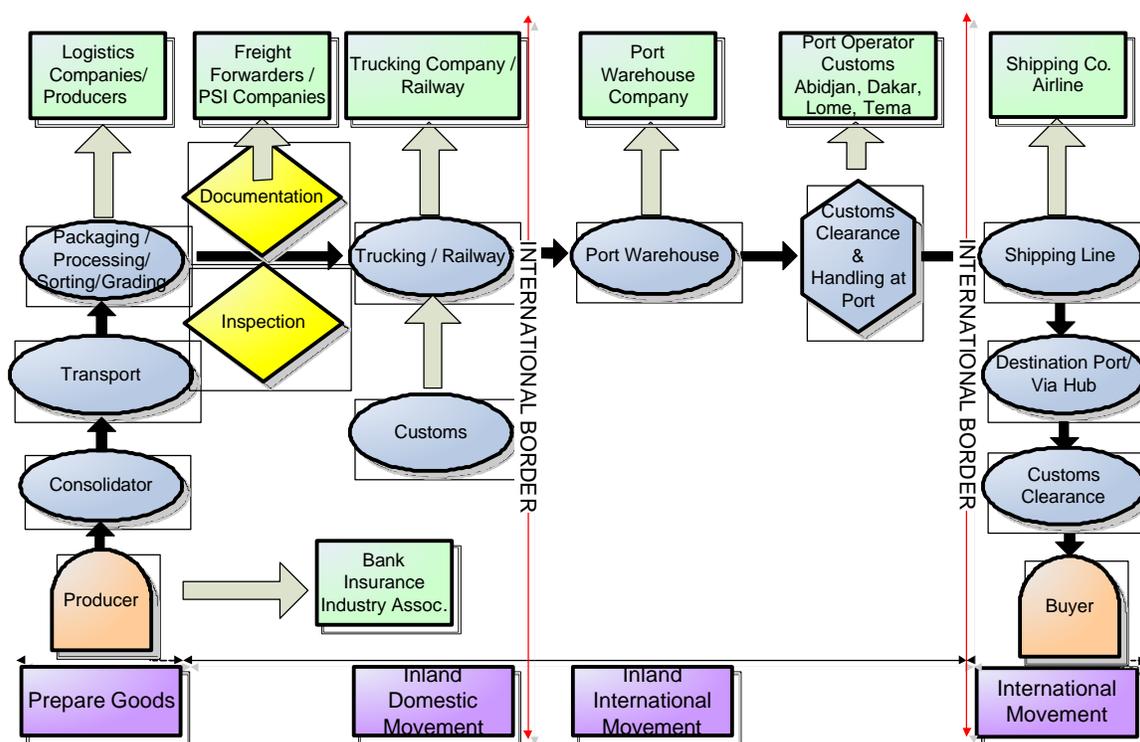
FIRMS lacking sufficient supply chain and logistics management capabilities will find it more difficult to integrate into global value chains or remain competitive in the global marketplace.

It is clear that developing T&L capacity to respond to the demands of the global economy is a critical—albeit not sufficient—element for countries to enjoy the benefits of integration into the global economy. The steps required to achieve this goal will vary from country to country, depending on country-specific factors and priorities. For example, the ability—or inability—to respond to the demands of the global economy will vary from country to country depending on the state of development of T&L systems and services sectors. Further, the actual demands that countries and exporters wish to address may vary depending on priority sectors in which a comparative advantage—outside T&L—exists. For example, a country with agribusiness potential may focus primarily on establishing a cold chain versus developing the capacity to manage complex manufacturing networks. As such, it is important for countries to identify weaknesses affecting priority industries and undertake initiatives that best meet the demands of those industries.

III. OPPORTUNITIES TO IMPROVE COMPETITIVENESS THROUGH T&L IMPROVEMENTS

Even in its simplest form, an international transaction is complex, involving multiple steps and a myriad of players. In a single transaction, there can be as many as 40 steps—with their own infrastructure needs, legal and regulatory frameworks, and administrative processes—and just as many participants—with their own roles and interests. **Figure 5** depicts a simplified model of the steps and processes required to export agricultural goods from Mali. **Figure 6** depicts a more complex movement of imported goods and exported final products in the Bulgaria apparel industry.

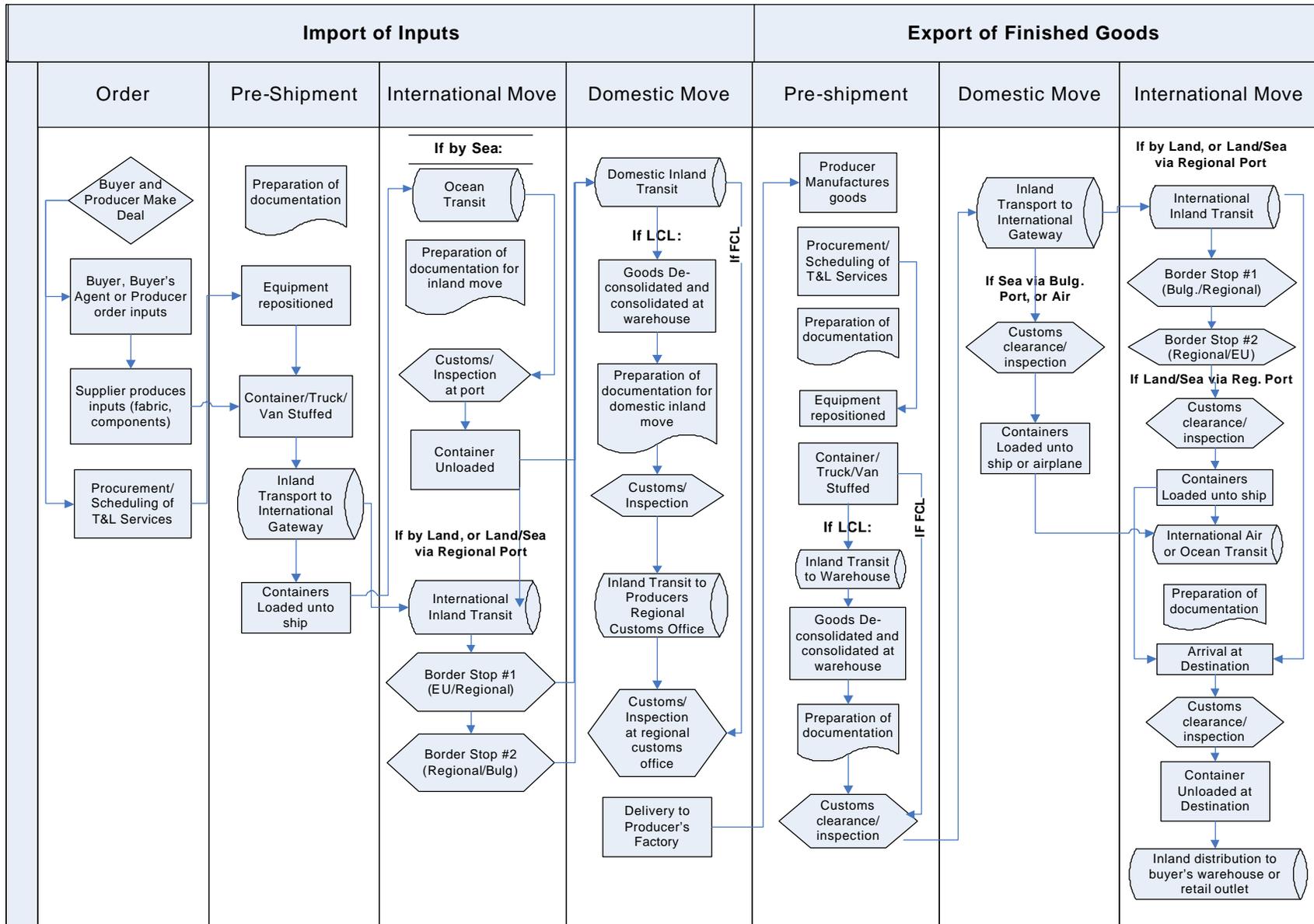
Figure 5. Formal Export Process: Mali Agriculture



At nearly each step of the process, potential problems can add time and cost to the movement of goods, possibly delaying delivery to the ultimate customer. At times, these problems can be linked to such value-chain-specific factors as poor supply chain and logistics coordination, preshipment and packaging practices, or availability or utilization of value-chain-specific-equipment and services. Many times, problems are also linked to broader or systemic factors that affect most, if not all, goods traveling to and from a country, including infrastructure, service sectors, and border processes.

By recognizing weaknesses in T&L systems—whether value chain specific or part of a systemic problem—and performing targeted T&L interventions, value-chain service providers can further their integration into the global economy and increase their individual trade competitiveness. While analyzing T&L systems in Bulgaria, Indonesia, Mali, and Nicaragua, the TESS Project identified key weaknesses in the main components of a shipment—preshipment, domestic transit, and international transit. The project recommended ways that authorities, T&L service providers, and value-chain participants could undertake initiatives to address the critical issues that increase costs and limit the ability of countries and firms to respond to the demands discussed earlier.

Figure 6. Process Flow Diagram for Movement of Inputs and Finished Goods in Bulgarian Apparel Industry



A. VALUE-CHAIN AND PRIVATE-SECTOR OPPORTUNITIES FOR IMPROVING EXPORT COMPETITIVENESS THROUGH T&L

Often, firms operating in a value chain must meet a combination of industry-specific success factors (e.g., factor costs, access to market, enabling environment, infrastructure) to be globally competitive. Two factors, also linked to the global demands discussed in Section II, involve the manner in which goods are delivered to the customer, including the following:

- *Maintenance of product value throughout movement of a shipment*—Damaged or spoiled goods have little or no value to the seller or the customer.
- *Fast speed to market*—Ensuring that goods are on shelves when customers demand, allowing firms to reduce inventory and cut spoilage of goods with limited shelf life at the lowest cost possible.

Meeting these success factors benefits a producer, manufacturer, or exporter in several ways. Reducing damage and speed to market can turn them into a more reliable partner in the eyes of buyers or the anchor companies of global manufacturing and distribution networks, thus increasing their importance and value in a value chain. This is important in such competitive industries as apparel, automotive, electronics, and even agribusiness—where buyers are able and willing to find another supplier in the same country or another that better meets their needs.

MANY T&L issues can be found at the value-chain level. Most involve underutilization of modern preshipment practices, value-chain-specific services and equipment, and supply chain and logistics management tools. Interventions addressing these issues can often be private sector led, high impact, and cost effective.

The ability to maintain product value and reduce time to value can also have a large effect on a firm's ability to maximize potential market value. For example, **Case Study 3** depicts how logistics efficiency can determine whether a Yemeni exporter earns either \$1 or \$4 per kilogram (kg) of tuna exported.

By observing T&L costs and processes involved in shipping a particular product, it is possible to identify specific issues that limit the ability to meet these success factors. Using this value-chain analysis makes it possible to highlight specific opportunities that enhance export competitiveness through targeted T&L interventions. In many cases, these issues can be resolved through private-sector-led activities—at the enterprise or sector level—that involve changes in their current systems and practices, or the use and development of specialized equipment and services. Value-chain level interventions not only can have a major impact on the competitiveness of priority export products, but also can achieve significant benefits with fewer resources than may be required to address systemic issues at a broader level.

During analyses of T&L systems in Bulgaria, Indonesia, Mali, and Nicaragua, the TESS Project identified several issues that increased the cost of transport—through lost value and service costs—or otherwise affected firms' ability to operate efficiently in a given value chain. Many of these issues were linked to underutilization of modern T&L services and practices, including preshipment options to enhance value and reduce spoilage, logistics management tools, and value-chain-specific equipment and services. In some cases, the issues were linked to lack of adequate T&L services required to meet value-chain-specific needs. In others, underutilization resulted from poor awareness or lack of interest on the part of producers, manufacturers, and exporters of services or tools that could enhance the way they shipped their goods. Examples of these issues follow, along with a list of potential T&L interventions that could enhance value-chain competitiveness.

CASE STUDY 3: LOGISTICAL EFFICIENCY AND THE PRICE OF TUNA

A major Yemen exporter of fresh and frozen tuna, exports fresh fish to the EU for \$4.00–\$4.50 per kg, while frozen tuna is usually exported to East Asia for about \$1 per kg. Fresh tuna is time sensitive because the product life of the fish in premium condition is about 7 days from the time it is caught and unloaded from the fishing boat. The company must get the fresh tuna to its buyer in the EU within 48 hours to ensure enough marketing time for the buyer to sell the fish.

This race against time begins when an order (typically 10 tons) is placed for fresh tuna. Processing the order involves extensive planning of the consignment's inbound logistics, in-plant operation, and outbound logistics. Fresh tuna, purchased from local fishermen, is landed in grounding sites directly onto the beach although high waves often prevent fishermen from landing the catch, a delay lasting several hours or the better part of a day. This occurs 30% of the time. Once landed, the tuna is delivered to a nearby auction where it is sold to buyers. Facilities at the site are inadequate, with limited space and lack of cooling. At the plant, the fresh tuna undergoes a three-step processing method (chilling, gutting, grading) and is packed into heavy-duty Styrofoam containers purchased from Oman. With duty included, each of the 200 cartons costs about \$0.50. The shipment is loaded onto refrigerated trucks owned by a local company and shipped to Sana'a airport. Trucks break down 1 in 5 trips—delaying shipments. Sometimes an emergency truck is called. Typically, however, the shipment returns to the plant and is sold in the frozen tuna market at a significantly **reduced price of \$1 per kg**.

While trucks are en route to Sana'a airport, the Mukalla processing plant transmits all necessary information to the company's Sana'a office so that documents can be prepared for the export shipment. Trucks arrive at Sana'a International Airport 3–5 hours before departure. On arrival, the shipment of 200 cartons is unloaded. Getting the required quantity of tuna aboard Yemeni Air, however, is not always certain since the aircraft is used for passenger service and the captain gives priority to passenger luggage. Once passengers are checked in, the consignment of 200 cartons of fresh tuna, or part of it, could be bumped at the last moment. According to the company, shipments are bumped at least once a week.

The transaction is completed when the cargo arrives in Frankfurt nearly hours/days later, is processed through the cargo terminal, and cleared through Customs—either by the buyer or forwarding agent. The weak level of performance in the logistics chain, however, incurs a total logistics cost of 55% of the product price. Not only are trucking and airfreight charges high, but also lack of efficiency in these transport modes incurs additional losses. Truck breakdowns and airline bumping of cargo incur a value of shelf loss in transit, estimated at \$4,800, created by the **severe price markdown of fresh (\$4 per kg.) to frozen tuna (\$1 per kg)**.

Source: Devlin and Yee in *Global Links to Regional Networks: Trade Logistics in MENA Countries*. World Bank, 2002.

Underutilization of Preshipment Practices

Preparing a product for shipment is one of the most important steps in the transport process. How well a product is packaged or stored before shipment largely determines the state in which it arrives at its destination, thus affecting its market value. Inadequate packing or preshipment storage can result in damaged/spoiled goods with limited or no value, resulting in lost revenue. The loss of market through damage or spoilage during transit or a 'waiting stage' during the transit process represents an opportunity cost that should be calculated as part of the total transport cost. In multiple product chains, the TESS Project found examples where the lack of attention to preshipment or underutilization of modern packaging equipment and techniques significantly reduced the market value or profitability of products:

- **Mangoes in Mali**—Enjoying tremendous growth potential in the European market, mangoes from Mali face challenges relating to packaging and spoilage, which greatly affect overall transport costs. Although high-value mangoes ship by air, a significant number ship by a land/rail/sea chain taking 17 days. The cost to package and warehouse this perishable commodity is high, approximately \$276 per ton, accounting for more than 40 percent of total transport cost for mangos shipped by land/sea. Often, poor packaging leads to 10 percent (500 of 5,000 boxes) of mangoes being crushed or spoiled

in transit (mangoes shipped by land/sea), resulting in a loss of approximately \$108 per shipment. When considering spoilage as a transport cost, the cost of packaging increases to \$384 (57 percent of total transport cost and 36 percent of mangoes' value). Malian exporters could raise profitability by reducing packaging and warehousing costs or by using more packing material and techniques less likely to cause spoilage during the journey.

- **Beans in Nicaragua**—Nicaragua ships beans to the U.S. and other parts of Central America in 20-foot dry containers. More than 40 percent (\$2,745) of the transport cost is attributable to preshipment costs (packaging and transport to exporter). A significant portion of these costs is attributed to the number of times beans are handled before shipment. On average, beans are sold three times before being shipped internationally, each time adding loading/unloading (most often done manually) and warehousing costs. Packing the beans in sacks costs \$1,215, approximately 17 percent of the total transport cost. Nicaraguan exporters could decrease overall transport costs by streamlining the packaging and handling of beans.
- **Shrimp in Indonesia**—As a higher-value export for Indonesia (versus rubber, coffee, and cocoa), shrimp is valued at \$125,000 per 40-foot container when shipped to New York. Although it appears that transport cost is not an issue, accounting for just over 4 percent of market value, the hidden costs relating to damage and spoilage of shrimp before its journey overseas can be significant. A TESS team learned that up to 70 percent of shrimp in some remote areas is unfit for export because of spoilage that occurs between local fishermen and final quality inspection at the port consolidator. This means that the value of a ton of shrimp landed by local fishermen—more than \$80,000 in potential revenue—is lost from the perspective of the entire value chain. If these costs were included, the logistics cost (as an opportunity cost) would be significantly higher per ton of shrimp. The Indonesian shrimp value chain could increase the value of catches by investing in cold storage or even packaging facilities at landing sites.
- **Furniture in Indonesia**—Furniture shipments exported to Italy are valued at approximately \$34,000 per 40-foot container. Due to overstuffing and poor packaging, however, about 10 percent of the exported furniture arrives damaged, representing a \$3,500-loss in revenues. By improving the way they load containers for export, Indonesian furniture manufacturers could achieve gains similar to productivity improvements.

In all these examples, additional market value could be captured through changes in practices and packaging to prepare goods for shipment. In most cases, improvements could be achieved at either the enterprise or value-chain level without requiring significant financial resources. Opportunities where donors could assist in these efforts are shown in **Table 2**.

Table 2. Opportunities to Increase Value-Chain Competitiveness: Preshipment/Packaging Costs

How to Reduce Preshipment/Packaging Costs
<ul style="list-style-type: none"> • Training for producers and exporters on adoption and use of packaging options and equipment likely to result in less spoilage or damage. • Technical assistance at value-chain level—for firms and logistics service providers—to introduce ways to reduce handling costs and frequency. Introduce options limit number of intermediaries involved (number of times sold). • Assistance in developing and using supply chain techniques, infrastructure, and equipment that reduce spoilage and damage. For perishables, requires strengthening incentives or financing assistance to promote investments in value-added (e.g., cold chain, packaging facilities) logistics services that reduce preshipment costs and spoilage/damage. Can be in with collaboration T&L service providers, business associations, and/or potential investors who see potential for these services. Such assistance can be part of cluster/value-chain development activities focusing on multiple aspects of value-chain competitiveness.

Underutilization of Value-Chain-Specific Equipment and Services

As discussed earlier, using specialized equipment and services to ship products affects exporters' ability to maintain product value (i.e., reduce damage or spoilage) or to meet the specific demands of a particular value chain. In Mali, the TESS Project identified the following two examples where lack of availability—and, thus, underutilization—of certain services (i.e., cold chain or airfreight), limited exporters' ability to maximize the value of their products or leverage market opportunities abroad:

- ***Cattle in Mali***—Since the overall value of cattle—Mali's most important regional export—is based on weight and quality, the transit of cattle (live or slaughtered) can be an important factor in market value. Currently, Mali's primary market for cattle exports is Côte d'Ivoire. Cattle are herded 100 miles or more to a domestic market (most often Segou in south central Mali) and loaded on trucks to Abidjan, where they are sold to abattoirs. In analyzing this scenario, two opportunities emerge to capture value through the use of different transport services.

First, the shrinkage/loss of weight that occurs during the drive reduces the value of each head of cattle. Higher market values could be realized if herders transported cattle by truck to markets in Segou or even Abidjan (skipping one intermediary). This would reduce shrinkage, allowing herders to get more income for each head of cattle sold. Unfortunately, weaknesses in the Malian truck sector mean that (1) trucks rigged for cattle movement are not widely available; (2) transport costs are high; and (3) demand for trucks during cotton harvests creates seasonal trucking shortages.

Second, Mali could gain value by slaughtering cattle at abattoirs in Malian cattle regions and shipping the meat to regional markets, rather than moving cattle to more distant abattoirs in Côte d'Ivoire. Unfortunately, Mali lacks a reliable cold chain—both in terms of cold storage and refrigerated transport assets—particularly in the areas where cattle are raised. Even if investors wished to establish Malian abattoirs, significant market share could be lost as a result of spoilage during transit.

- ***Mangoes in Mali***—As discussed earlier in “Underutilization of Preshipment Practices,” a significant number of mangoes ship by land/sea through Côte d'Ivoire, taking around 17 days, reducing speed to market, and increasing the likelihood of spoilage. This transport route is used despite underutilized existing and potential transport options. High-value mangoes (i.e., those that are twice the market value of mangoes shipped by land/sea) already ship by air, taking 1–2 days to reach market. Because air transport is so expensive, it accounts for 84 percent of total transport costs and 62 percent of mangoes' market value. The high cost of transport is attributed to the lack of direct airfreight services, so that mangoes shipped on passenger flights compete with other freight and passenger baggage. The limited supply of cargo space helps keep freight costs high. If mango exporters could ship products via dedicated airfreight flights, cargo space would be guaranteed, with the per-kg cost of shipments reduced significantly. Currently, exporters are not sufficiently organized to guarantee the threshold volume to convince an airfreight carrier like Air France to add dedicated air cargo capacity.

Another unused transport option is exporting mangoes by rail to Dakar, Senegal. Examples of cotton shipments suggest that exporting goods by rail/sea via Dakar versus road/sea via Côte d'Ivoire can save 18 percent in transport costs (not including preshipment). Shipping through Senegal would also avoid the challenges—and related security costs—presented by ongoing civil unrest in Côte d'Ivoire. The current rail link, however, is unreliable (yet improving) and lacks a cold chain, so that exporting via Senegal would result in significant spoilage. Problems with congestion at Dakar affect the efficiency of intermodal transfers, creating a potential for delays that could lead to greater spoilage.

Although Mali must take a number of steps to strengthen its transport services sector at the systemic level (see Section B), targeted efforts to improve the availability of services needed to respond to specific transport needs in priority industries like cattle and mangoes would result in added value and access to higher-value markets. While collaboration at the national level—involving public and private

stakeholders—would be important, many activities could be driven at the enterprise and value-chain level to facilitate necessary investments in required equipment (e.g., cattle trucks, refrigerated containers) or facilities (e.g., cold storage) or better organize users of specific services (e.g., airfreight, cold chain) as a means of strengthening demand and attracting investors or service providers. Opportunities for donor assistance in these efforts are discussed in **Table 3**.

Table 3. Opportunities to Increase Value-Chain Competitiveness: Value Chain Specific T&L Options

Promote Investment in Value Chain Specific T&L Options
<ul style="list-style-type: none"> • Training to increase awareness among producers and exporters of potential gains from use of specialized logistics services. Knowledge of transport options may increase demand for specialized services. • Support interfirm collaboration at cluster or value-chain level (i.e., business associations) to enhance shipment consolidation and aggregation efforts to strengthen sustainable demand for specialized transport services (i.e., cattle trucks, cold-chain infrastructure and equipment, air cargo). Develop organizational capacity of producer groups to demonstrate sufficient demand to justify introduction of dedicated transport services such as air cargo. In some cases, collaboration across multiple value chains may be required. • Technical assistance, incentives and/or financing assistance to support investments that increase the availability and/or quality of specialized services. Can be in with collaboration T&L service providers, business associations, and/or potential investors who see potential demand for these services. Such assistance can be part of cluster/value-chain development activities focusing on multiple aspects of value-chain competitiveness.

Underutilization of Value-Added Services and Logistics Management Tools

Using value-added logistics services and logistics management tools provides opportunities for producers, manufacturers, and exporters to improve the speed and reliability of their deliveries, while reducing costs. For example, firms can use integrated logistics service providers who take responsibility for all aspects of a product's shipment—from pickup to warehousing and consolidation (for small shipments), to intermodal transfer, to customs clearance, and to final delivery. Logistics management tools—which include several IT-enabled services—help value-chain participants and T&L service providers better manage and track the movement of inputs, components, and finished products as they move along the supply chain. In fact, some Internet-enabled technologies allow all participants in a transaction to coordinate and track a shipment with ease. In the following examples, the TESS Project identified several instances where these services and tools were underutilized, leading to higher transport costs and inefficiencies that affected the ability of firms to operate competitively in some value chains:

- **Indonesia**—Although advanced logistics services are well established in certain Indonesian industries (e.g., apparel, electronics), some exporters resist the trend—possibly due to a lack of awareness. Many Indonesian producers exporting small orders (e.g., less than full container) could reduce their per-unit transportation costs by sharing T&L services with other producers in similar situations. This could be achieved by using an integrated logistics provider who (1) consolidates multiple small shipments into one container to leverage economies of scale; (2) ships the container to a transshipment point (where the product may be deconsolidated and reconsolidated into different containers); and (3) ships the goods to a final destination. Many Indonesian producers, however, prefer to retain 100-percent control over their goods. Rather than use a consolidator to ship goods to a destination market and get a higher price when their goods reach market, they would rather sell to a local or regional intermediary and get the money now.⁶ In one case, rubber exports from Indonesia are sold to wholesalers in Singapore who repackage the rubber and export it at a profit. Using consolidation strategies would reduce costs through better use of economies of scale, as well as reduce rents earned by intermediaries along the supply chain.

⁶ It should be noted that a tendency to use intermediaries may be due to the lack of working capital in certain value chains. Many producers do not have the finances to tide themselves over until payment arrives from abroad.

Similarly, many sellers handle their own trucking and packaging to reduce costs and maintain control, rather than hire professional transport services. Unless they are large producers, these exporters are unlikely to achieve the economies of scale to keep the unit cost of transport down, when compared to a transport company with multiple customers and transport assets. Producers are also less likely to have the specialized equipment to ship some items (e.g., perishable goods requiring a cold chain). This results in increased spoilage of goods, as well as limited market opportunities, as perishable goods moved in unrefrigerated vehicles have a shorter shelf life. For example, a manufacturer of pasteurized milk from Surabaya chose to export its product directly to Singapore rather than procure the services necessary to reach the more lucrative market of Jakarta.

According to the TESS Project, even if producers use value-added T&L services, many are unaware of their product’s destination markets, thus limiting their ability to offer viable cost-effective transport solutions to meet buyers’ needs. An Indonesian furniture manufacturer for an Italian firm could arrange faster and cheaper delivery if it knew that its buyers move the furniture to German markets, which may be served by shipping directly to Hamburg instead of requiring transshipment through Italy. If this manufacturer truly understood its products’ markets and transport options, it could become a more effective and valuable link in the Italian company’s supply chain.

Thanks to this general lack of focus on logistics management, many Indonesian exporters share profit margins with intermediaries who are more sophisticated in their understanding of buyers’ service requirements or logistics’ cost management. Indeed, buyers in Singapore and Rotterdam perform this role for many Indonesian products—purchasing goods from Indonesia, transshipping them to their final destinations, and retaining profits that could otherwise belong to Indonesian exporters.

- **Bulgarian Apparel Sector**—The apparel industry is renowned for global manufacturing and distribution networks and demand for JIT delivery of inputs and final products. Given the importance of these demands on competitiveness, one would expect Bulgarian apparel manufacturer exporters to eagerly use services or develop logistics capacity to ensure that they meet these success factors. The TESS Project, however, found a disturbing lack of the use of available logistics tools and services. Evidence suggests that many garment exporters do not see how value-added or integrated logistics services can enhance competitiveness by improving the efficiency and reliability of their shipments. Instead, they prefer to procure services piecemeal, based primarily on cost.

ALTHOUGH the integrated logistics sector is improving in Bulgaria, representatives from the T&L industry note that demand for integrated services is weak, negatively affecting investment in new or improved equipment (e.g., specialized equipment for hanging garments) or integrated services (e.g., door-to-door delivery), which would enable manufacturers to respond better to buyers’ JIT needs and delivery specifications.

It is also evident that many manufacturers do not see value in long-term T&L service contracts. A large proportion of T&L services are contracted on a shipment-by-shipment basis and awarded based on lowest price.⁷ In the short term, the use of spot contracts adds time and costs to each shipment—for the user and service provider—through inefficiencies resulting from fragmented planning and procurement. Further, using spot contracts does not allow either party to use potential efficiencies that result from regular interactions. For example, the cost of document preparation can be reduced when a customs broker regularly prepares documents for the same customs agency, using information from previous shipments. From a long-term perspective, using spot contracts also gives service providers less incentive to make costly investments in specialized services (e.g., equipment for hanging garments) even if it would better meet the needs of the apparel industry.

⁷ Even if service providers offer discounts, long-term contracts often imply premium services, which may cost more.

In its Bulgaria analyses, the TESS study found that manufacturers had a distinct lack of overall logistics capacity (see **Case Study 4**). Although certain firms feature highly developed processes and approaches to manage the movement of goods along production networks, many do not use the modern supply chain and logistics management tools commonly used elsewhere in the apparel industry. Most companies interviewed in the TESS study did not have a logistics department and had only the most basic of logistics management capabilities. Transportation and logistics management are performed by warehouse clerks, purchasing department staff, or manufacturing personnel. In many companies, logistics management tools and strategies are not seen as vital elements for developing competitiveness. In general, management practices are ad hoc; business management processes—if they exist—are poor; and there are few metrics to measure for improving logistics performance.

CASE STUDY 4: OPPORTUNITIES TO INCREASE COMPETITIVENESS OF BULGARIAN APPAREL THROUGH LOGISTICS

In their search for global competitiveness, international apparel buyers seek relationships with producers who contribute an additional competitive advantage to their supply chain. Bulgaria's export advantage as a low-cost manufacturing center is eroding, as new competitors emerge in Asia with significant advantages in cost of capital and labor and as wages are expected to rise in Bulgaria following accession to the EU. The dominant model in Bulgaria—the cut-make-trim (CMT) production model—centers on managing production alone and passes many non-production responsibilities to the buyer. By focusing exclusively on production, CMT exporters fail to take advantage of emerging opportunities to develop competitiveness in other critical areas, which would help them compete with global competitors who have lower cost structures. Exporters must critically assess their buyers' requirements and their own capabilities and supplement manufacturing with additional services that will differentiate their capabilities.

Bulgarian manufacturers can differentiate themselves from apparel suppliers elsewhere by developing tighter, more responsive supply chains that respond to the demands of the rapid-production market cycles of Europe's fashion markets. This involves identifying areas of value to customers in transportation services, procurement, materials management, and distribution and developing unique ways to deliver these competencies. Additionally, they should look for ways to reduce cycle times (production and demand to retail shelf).

These new approaches will require new competencies in supply chain management, which they must develop in house or partner with world-class logistics companies. Many Bulgarian manufacturing firms have neither a full understanding of how T&L systems work nor do they have the capacity or know-how to effectively manage logistics' processes. Currently, buyers hesitate to delegate T&L process management because previous producers were unreliable and they no longer trust the average factory. If producers developed sufficient logistics capabilities and earned buyers' trust, they could achieve greater margins and improve their competitiveness and value in the apparel supply chain.

Finally, despite the complexity of garment supply chains, firms continue to operate with gaping holes in their supply chain and logistics management practices, including the following:

- Coordination of activities is often carried out with little or no use of IT solutions that facilitate integrated supply chain management.
- Often, only the most rudimentary tools are used to manage key processes, such as load optimization, warehouse management, or transportation scheduling.
- Many T&L service providers have yet to develop systems that provide real-time shipment status information to customers, making it difficult for manufacturers to plan ahead or react to delays.

By closing these gaps in value-added logistics services and logistics management tools, firms will experience a world of competitive opportunities in global value chains. Opportunities include steps to increase firms' awareness and use of value-added services from providers who can manage and control

the movement of goods and use economies of scale to ensure timely, undamaged delivery at a lower per unit cost. Firms can also strengthen their own capacity to use supply chain and logistics management tools in such areas as order management, transportation, subcontractor management, and production scheduling. There are also opportunities, on the part of firms and service providers, to use various e-solutions that enhance the visibility of goods' shipments as a means to improve operating efficiency. As shown in **Table 4**, there are many ways that to support these efforts.

**Table 4: Opportunities to Increase Value-Chain Competitiveness:
Logistics Services and Management Tools**

Enhance Use and Development of Logistics Services and Management Tools
<ul style="list-style-type: none"> • Provide training to producers, exporters and business associations to increase awareness of importance and value of value-added logistics services and management tools and their potential to increase profitability and competitiveness. Training should be value chain specific and present potential costs and benefits in the use of various logistics services and practices. • Training for producers, manufacturers and exporters in the application of modern logistics services and supply chain management techniques. • Introduce and assist in the use of technologies that optimize the performance of individual activities such as warehousing, transportation scheduling, load planning and routing. • Introduce and assist in the use of information, workflow management and tracking technologies to improve coordination among supply chain partners (e.g., exporters, T&L service providers). • Facilitate investment in new and/or improved value-added/integrated logistics services. • Facilitate efforts at the sector level to improve coordination between T&L providers, buyers, manufacturers (and any subcontractors), and buyers. • Work with universities, training organizations, and/or industry association to develop logistics training and certification capability to respond to international logistics standards. Encourage manufacturers to use these training programs to strengthen their internal logistics capabilities.

In some instances, focusing on these issues will be critical to maintaining a country's viability in a particular industry. For example, **Figure 7** shows how competitive pressures from China are forcing Bulgarian apparel manufacturers to strengthen their logistics capacity to reduce speed to market, or risk losing its market share in the European market, a disturbing situation that is already starting to occur.

Figure 7. Improving Supply Chain Management in Bulgarian Apparel Sector

The TESS Project collaborated with the USAID Bulgaria Labor Market Project (LMP) to raise manufacturers' awareness of the importance of supply chain and logistics management in today's global apparel industry. The LMP has followed up with training and pilot programs that help firms use modern supply chain and logistics management tools. Further, the LMP is exploring the possibility of establishing a 'center of excellence' for supply chain management to develop a cadre of managers with supply chain management capabilities. A number of industry experts feel that the outcome of such efforts could help determine whether Bulgaria remains a major apparel exporter to the EU.

B. OPPORTUNITIES TO IMPROVE EXPORT COMPETITIVENESS THROUGH T&L—SYSTEMIC PERSPECTIVE

As Section A showed, there are many areas where targeted interventions at the value-chain level—often driven by the private sector—can result in significant improvements in the export of products. In the broader scheme, however, systemic T&L challenges will often affect the movement of most, if not all, goods moving to and from a country.

By observing T&L systems in Bulgaria, Indonesia, Mali, and Nicaragua, the TESS Project identified priority systemic issues that add costs and delays to goods' shipments. Although the context and implications of these issues varied by country, many were linked to infrastructure challenges, weaknesses in T&L services sectors, and border and customs encumbrances. In general, these issues are on a larger scale than those at the value-chain level and likely to require significantly more resources and greater public- and private-sector involvement—at national and regional levels—to resolve. Often, the magnitude of these systemic problems is such, it could take years for the benefits of specific interventions to be realized, with the possible exception of improvements at the border, which can have an immediate effect. Interventions that address systemic problems present opportunities for a major impact on a country's long-term ability to integrate into and prosper in the global economy. Examples of priority systemic issues identified in TESS country studies follow, along with potential T&L interventions that could enhance export competitiveness across a cross-section of sectors in a country.

Infrastructure Challenges

A country's portfolio of transportation infrastructure is an important determinant of transportation costs and efficiency. Infrastructure issues play a large role in shaping export competitiveness and are often a top priority for both developed and developing countries. During its country studies, the TESS Project focused on two key infrastructure challenges facing many developing and transitional countries: weak physical infrastructure and the particular challenges faced by landlocked countries

Weak Physical (Core) Infrastructure—Bulgaria, Mali, and Nicaragua

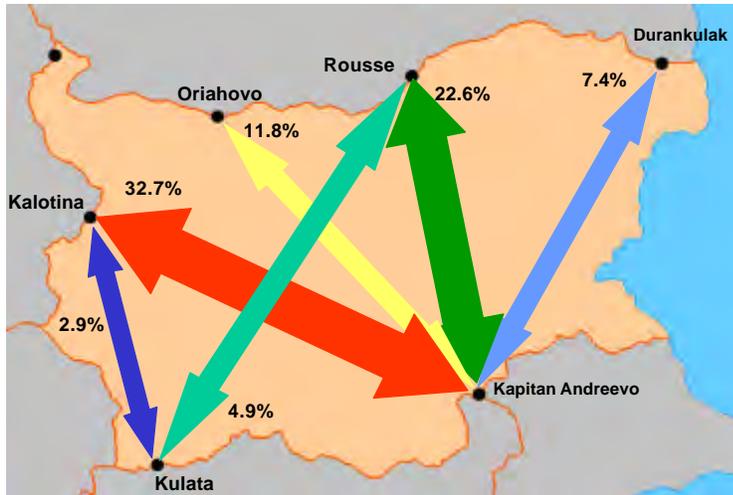
Many developing countries lack the physical backbone to operate an efficient transport network. Often, key infrastructure like roads, ports, intermodal transfer points, and cargo storage and handling facilities are inadequate to meet the demands on T&L systems. To identify critical infrastructure issues, the TESS study observed the quality, quantity, and location—in relation to the direction of trade—of infrastructure assets in TESS target countries.

Infrastructure Issues Affecting Bulgaria

Road Network—Although relatively more developed than other TESS countries, Bulgaria's road infrastructure lacks the capacity and quality to facilitate the movement of inputs and finished products in the apparel industry. A limited part of the road network is either motorways or first-class roads well suited for heavy transit. Conditions vary greatly, with approximately 37 percent in the 'bad' condition category and only 33 percent in the 'good' condition category, as shown in **Table 5**. Due to insufficient maintenance funds and postponed repair work, the percentage of roads in the 'good' and 'average' categories is likely to increase. The current infrastructure is under pressure from increased domestic and international traffic. Tonnage traveling by road has jumped 45 percent from 2000–2004. Although most of this increase involves domestic freight, international transit flows are also increasing. Between 2002 and 2003, the volume of transit operations

Table 5. Condition of State Roads (2003)

Condition	Length (in km)	%
Good	6,212	32.8%
Average	5,729	30.2%
Bad, including:	7,004	37.0%
Motorways	13	3.9%
First class	909	30.7%
Second class	1,320	32.9%
Third class	4,762	40.9%
Total	18,945	
<i>Source: Ministry of Transport and Communications.</i>		

Figure 8. Volume on Bulgarian Transit Routes in 2003

grew by 14 percent. The number of vehicles transiting the country increased by nearly 20 percent, exceeding 1,000 vehicles per day. **Figure 8** presents transit route volumes, by proportion of total transit, in 2003.⁸

Bulgaria's road infrastructure does not have the capacity to absorb growing traffic flows. Although traffic density is 50–60 percent of capacity, some road segments experience densities exceeding 100-percent capacity. On the Sofia ring road—part of the Turkey–Bulgaria–Serbia route that carries most transit—traffic density has reached

between 200–240 percent of capacity.⁹ The insufficient number of ring roads around cities forces traffic to travel through populated areas, further exacerbating capacity issues.

WITHOUT adequate interventions to improve the road network, infrastructure weaknesses, and limited capacity, bottlenecks will occur that will impede the movement of goods throughout the country, affecting such export sectors as textiles and apparel that depend on efficient supply chains to remain competitive.

Ports—Bulgaria has two important domestic ports along the Black Sea—Varna and Bourgas, both aging facilities with insufficient, obsolete equipment. Incredibly, the last time Varna purchased a crane was 30 years ago. Although the state-owned port operator recently purchased modern container stackers and tractors, private-sector representatives complain that inadequate infrastructure and equipment affect the rate of cargo handling and lead to delays at the ports, thus increasing costs for ship owners and charterers. It should be noted that Varna's utility as an international gateway is undermined by the lack of sufficient road infrastructure linking the port to other parts of Bulgaria. For example, many sections of the road link between Varna and Sofia are two-lane roads not suited for high levels of truck traffic.

Moving goods through the ports is also hampered because many berths are multipurpose/multifunctional, making them less efficient when compared to specialized container ports. All types of cargo—including bulk goods, passengers, containers, and liquids—use the same port facilities, with little specialized equipment for efficient handling of cargo and reducing berth time. On average, the rate of loading or unloading a ship is 18 containers an hour. To date, there are no bottlenecks in terms of available berth; however, concerns are rising that given recent cargo volume growth rates of 14–25 percent annually since 2000 (see **Table 6**), the port's limited ability to efficiently move goods will be further strained.

Weaknesses in Bulgaria's ports have caused some exporters to use other regional ports with greater capacity. A significant numbers of goods move to and from Bulgaria by sea and land transit through the Greek port of Thessoloniki and, to some extent, Constanta, Romania. Constanta and Thessoloniki are regarded as more efficient, with better facilities and services—due in large part to major investments.

Infrastructure Issues Affecting Mali

Road Network—All trade to and from Mali is affected by the poor condition of the road network, which adds costs, time, and uncertainty to transportation activities. Although primary roads in the southern part of the country are paved and well maintained, there are only 3,000 kilometers (km) of paved primary

⁸ Bulgaria Ministry of Transport and Communications. National Transport Strategy, 2005.

⁹ Ibid.

roads in a country 2.5 times the size of France. Secondary and tertiary roadways are packed earth—difficult to navigate under the best conditions and impassable under the worst conditions—and cannot accommodate large trucks. Travel time on Malian roadways varies as well. For example, trucks from Bamako to Kayes (toward the Senegalese border) are driven at speeds 66 percent lower than from Bamako to Sikasso (toward the borders of Burkina Faso, Côte d’Ivoire, Ghana, and Togo).

As a landlocked country, Mali’s export infrastructure includes the road networks of its neighbors, which can create problems. During the crisis in Côte d’Ivoire, one of the better export routes was closed for a few months. The Nouachott–Bamako (to/from Senegal) corridor is often overcome by sand dunes; the Lomé–Bamako (to/from Togo) corridor is narrow and mountainous; and the Conakry–Bamako (to/from Guinea) corridor is the shortest by distance, segments of the road are not paved, increasing travel time.

Rail System—There is only one railway—Bamako to Dakar—that links Mali to international shipping lanes, serving approximately 25 percent of the country. Although a recent concession of the rail operations to a private company is likely to improve the situation, the Dakar railway system has been plagued with serious issues related to limited capacity, poor maintenance, train derailments, bridge collapses, and infrastructure failures. The problems lead to frequent delays that induce exporters toward other modes of transport—even if rail is generally a more economic mode of transport for many products (such as cotton).

Ports—A landlocked country, Mali is captive to infrastructure constraints at regional ports (see the following discussion on the infrastructure challenges of landlocked countries). For example, because Abidjan is a comparatively shallow port at 10.5 meters, only 200 containers (roughly 25 percent of a typical ship) can be loaded on an oceangoing ship for it to be able to clear the port. At Dakar, congestion and narrow streets limit port access to trucks with 20-foot containers or less. In the port, inadequate organization and facilities and limited warehouse capacity delay clearance of goods. Intermodal links are in disrepair (e.g., rail tracks leading to the quay had sunk into the ground, not leaving enough clearance for trains to make it to the quay, resulting in inefficiencies in transshipping commodities). Congestion is a constant issue at Tema, with many containers left outside the terminal, which is at overcapacity.

Cold Chain—Although refrigerated services are available in Mali, the supply of reefer containers is limited as is the reliability of the entire cold chain. Generally, cold chain transport services are only available along the Abidjan–Bamako corridor, which has been affected by the civil unrest in Côte d’Ivoire. Investment in cold storage infrastructure is also inadequate, resulting in losses in the agricultural sectors as significant amounts of product spoil before reaching market. Further, the current status of the cold chain makes it difficult for Mali to capture additional value in certain sectors like meat.

Infrastructure Issues Affecting Nicaragua

Road Network—Most, if not all, of Nicaragua’s trade is affected by the road network, whether its destination is a regional city in Central America or an international market farther abroad. Although the internal transportation network in Nicaragua is improving, its size and capacity is limited in the best of times and degrades substantially in wet weather. The primary road artery is North–South, with no major artery connecting East–West traffic. Given the high cost of constructing roads in Nicaragua (US \$250,000.00 per km according to the Ministry of Transport and Infrastructure), major improvements linking East to West would require expensive projects and significant amounts of time.

Ports—Nicaragua’s major ports (Corinto, Sindino, and San Juan del Sur) on the western coast (see **Figure 9**) align with centers of production and are best suited for bulk and break bulk trade. Non-bulk goods are shipped on Atlantic trade routes, with Miami a major destination). Unfortunately, Nicaraguan ports serving the Caribbean and Miami (e.g., Cabezas, El Bluff, El Rama) have severe capacity restrictions. With virtually no road network connecting the eastern and western parts of the country, it is

difficult for transport service providers to access these ports in an efficient, cost-effective manner.¹⁰ Some Nicaraguan ports are not just difficult to access, they have less capacity than other Central American ports. Corinto, the highest-ranking Nicaraguan port, ranks lowest among leading Central American ports, with an average of five ship calls per week. Nicaragua’s limited port capacity forces exporters to use regional ports (Honduras). Although transit infrastructure used to access these ports is of good quality, other constraints related to customs and security requirements hold up shipments.

Figure 9. Nicaraguan Ports



Improving Infrastructure

Developing a country’s transport infrastructure is costly, making it crucial to prioritize infrastructure improvements that will maximize long-term return on investment (See **Table 6**). To improve infrastructure, there must be a dialogue between public and private stakeholders to identify priority issues along high-volume/high-value corridors that affect the competitiveness of critical economic sectors. Priorities for infrastructure investments must support the broader strategy for transporting global trade. “White elephant” projects or investments that do not reflect an economy’s demands represent economic opportunity costs, in terms of funding used and potential gains lost from other more important infrastructure issues not addressed. One effective way to expand the pool of available infrastructure financing—and likely increase operational efficiency—is through initiatives that attract private-sector funding. This may include public-private partnerships (PPPs) or private concessions in the ownership and operation of infrastructure assets. In many countries, this would require policy and regulatory reforms that allow greater private involvement in infrastructure activities. If trade corridors involve regional infrastructure, cross-border collaboration is required to adopt regional strategies that address priority issues and maximize potential efficiency and cost-reduction gains.

Table 6. Options for Improving Core Infrastructure in Bulgaria, Mali, and Nicaragua

Roads	Rails
<ul style="list-style-type: none"> • Road maintenance/rehabilitation • Expand road network • Widen roads and improve capacity • Focus on priority producer/consolidator/market and network efficiency • Use of tolls to finance (through PPPs) road improvements and maintenance 	<ul style="list-style-type: none"> • Rail maintenance/rehabilitation • Increase connectivity of railway sections across track gauges • Converting freight wagons for transportation of containers • Use of PPPs, or concessions, in ownership or operation of assets
Airports	Logistics
<ul style="list-style-type: none"> • Improvements in cargo handling and storage facilities and equipment • Investments to allow larger or more flights • Investments that increase cargo security 	<ul style="list-style-type: none"> • Investments in container terminals at ports that facilitate efficient handling and storage of containers • Investment in cold chain infrastructure
Maritime	Intermodal
<ul style="list-style-type: none"> • Upgrading port efficiency with modern container-handling facilities and equipment • Improve road/rail access to port facilities • Use of PPPs or concessions in ownership and operation of ports 	<ul style="list-style-type: none"> • Development of intermodal transfer points, with easy modal access and modern handling and storage facilities • Development of inland ports in landlocked countries

¹⁰ Map Nicaragua-Red Vial Basica: Government of Nicaragua–Ministerio de Transporte e Infraestructura.

Infrastructure Challenges for Landlocked Countries—Mali

Given the importance of maritime transport as a mode linking countries, landlocked countries face unique infrastructure issues that affect the cost and efficiency of cargo movements. For this reason, the TESS Project observed ways that Mali's landlocked status affects its T&L system. Although Mali lacks its own international gateway for exports, approximately 95 percent of its trade volume is shipped by sea through ports in neighboring countries. The closest practical deep-sea port is 765 miles from Mali's primary consolidation cities (i.e., key starting points for international shipments), which adds transportation costs and travel times (reducing speed to market).

WITH major road segments and port administration outside the hands of Malian stakeholders, the movement of goods is captive to the efficiency and capacity of its neighbors' roads, rails, and ports, as well as their respective border and customs constraints,

In the past, Abidjan and Dakar were the most important transit routes for Malian food, accounting for nearly 80 percent of the country's export traffic volume. At the onset of civil unrest in Côte d'Ivoire, however, Malian exports by volume to Côte d'Ivoire dropped by 75 percent. Initially, Dakar received a significant portion of Malian goods; however, because it is smaller and subject to congestion, Dakar quickly became saturated. The impact of the war in Côte d'Ivoire on these traditional routes of Malian commodities forced Malians to explore alternate African port options. Unfortunately, there is no ideal port among these choices for Malian exporters who are not willing to assume the risk of shipping via Côte d'Ivoire or deal with the congestion in Dakar:

- Although Lomé in Togo captures more than 45 percent of Malian cotton exports as a result of redirected trade flows, the Lomé–Bamako corridor is a long, difficult trucking route. Further, the port is designed for car imports, reducing the efficiency of moving other goods.
- Ghana's port of Tema requires a long road transit (5–6 days) and has insufficient storage facilities. Nevertheless, this route has proved to be a good alternative during the crisis.
- Conakry in Guinea is a long, incomplete, and difficult trucking route, with the port seen merely as a feeder port with no hope of expansion.

Currently, regional ports are seeking to retain or attract additional clients through modernization and infrastructure improvements. That said, it is not clear whether peace in Côte d'Ivoire would cause some exporters to revert to using Abidjan as their primary port. Nevertheless, it is in the long-term strategic interest of Malian shippers to have competition among ports for Malian business and alternative routes to ensure uninterrupted flows of trade.

Further exacerbating Mali's challenges with transport routes are the regional treaties, laws, and regulations that are ignored or incompletely implemented. Although these treaties hold much potential to facilitate the movement of trade, the weak/inconsistent application of trade and transport-related measures create uncertainty and confusion among transport service providers and exporters, increase the likelihood of customs and border delays, and provide opportunities for corruption. It is critical for Mali to work with WEAMU and ECOWAS countries to ensure that transit regulations are applied uniformly across countries, particularly along key transport corridors (see **Table 7**).

Table 7. Options to Encourage Development and Use of Alternate Trade Routes

Issues		Intervention
Lack of ideal port/route options for efficient movements during civil unrest in Côte d'Ivoire and lack of real competition for Port of Abidjan during peacetime.		<ul style="list-style-type: none"> • Promote regional collaboration amongst Malian and regional stakeholders to develop transport corridors, and enhance regional port efficiency • Encourage cross-border public-public, and PPPs for investments toward the joint development of transport corridors and port facilities
Incomplete implementation of regional transport treaties undermine effective access to regional ports, create uncertainty and increase likelihood of corruption.		<ul style="list-style-type: none"> • Promote collaboration at regional level to implement measures to ensure that transit regulations are applied, particularly along key transport corridors.
Traditional exporter preference toward port of Abidjan.		<ul style="list-style-type: none"> • Educate exporter on the potential benefits of competition amongst ports to decrease costs. • Enhance awareness of corridor and port improvements (as they occur) across the region.

Weak T&L Services Sectors

After infrastructure challenges, the condition of transportation and logistics service providers plays a large role in determining the cost and efficiency of cargo shipments. The ability of these sectors to meet global demands on T&L systems are driven by a number of factors, including the following:

- Transport and sector policy and regulatory frameworks, including the extent of competition/liberalization in the sector (e.g., certain services are provided by a monopoly or can be provided by foreign firms).
- Overall business climate, including the ease of doing business, investment incentives, tax policy, and availability of finance for private services investments.
- Capacity of private sector to provide effective services.
- Availability of service infrastructure, including transport infrastructure, electricity (needed for cold chains for example), and telecommunications infrastructure.

An analysis of transport services providers, and weaknesses thereof, presents opportunities to facilitate trade from developing countries, including steps to improve service delivery, through policy reforms, liberalization, and/or the facilitation of investment in new or existing services. The TESS study observed critical service issues affecting the movement of goods. Examples from the country studies include a weak trucking sector in Mali and inefficient maritime feeder services in Indonesia.

Weak Trucking Sector—Mali

As discussed earlier, Mali's landlocked status means that primarily all goods exported from Mali to destinations abroad by sea require extensive land transport via road and rail. As such, cost attributed to the trucking sector (represented in **Figure 10**) has a large impact on the competitiveness of Mali's exports, particularly cotton, as well as the cost of imported goods. For example, the cost of inland trucking to the ports of Abidjan (Côte d'Ivoire), Lomé (Togo), or Tema (Ghana) ranged from 60 percent to nearly 65 percent of the total cost of transportation, and approximately 10 percent of the value of the exported cotton.

Although the sector is highly competitive, Mali's trucking industry suffers from structural and policy issues that reduce the quality of service and add costs to transport. First, Mali has few large trucking companies due to weak transport policies.¹¹ The domestic tax structure for vehicles provides different fiscal treatment for trucking companies, with a bias toward smaller firms. For firms operating fewer than three trucks, a flat tax is applied; for firms operating more than three trucks, tax is based on turnover. This encourages the establishment of many small firms and encourages larger firms wishing to expand operations to do so by spinning off smaller firms and using loopholes in the tax system to take advantage of lower tax rates. Ultimately, this prevents the sector from benefiting from efficiencies of scale.

Figure 10. Mali Trucks



Nearly 80 percent of the fleet—which is aged and poorly maintained—is more than 15 years old. Inadequate maintenance services, constant overloading, and poor infrastructure further degrade Mali's trucks, making it difficult for exporters to obtain adequate, clean, affordable trucking. Exporters unable or unwilling to pay higher rates for premium (new) trucking services are relegated to using whatever trucking services remain. The poor condition of the fleet can be attributed, in part, to excessive duties and other taxes imposed on the import of new trucks and replacement parts. Although some companies negotiate lower duty rates to import multiple trucks, duties remain prohibitive to an operator purchasing a single truck or ensuring an adequate stock of parts. Most often, used trucks are imported and these older trucks require more maintenance because of their age. These duties constrain investment in the trucking industry, limiting both the supply of reliable trucking services and investments in value-added trucking services that would better meet the needs of Mali's export value chains.

Enforcement of trucking regulations is also weak. Trucks are constantly overloaded to capture greater revenue, undermining safety and accelerating the deterioration of an already weak road infrastructure. Poor enforcement of rules governing truck quality encourages companies to continue using aged trucks long beyond their lifespan.

These factors contribute to a trucking sector unable to meet the demands of key export sectors, such as cotton, cattle, and fresh fruit. For example, during the cotton harvest season of October–February, demand for trucking services far outstrips supply. This not only leads to higher transport costs for cotton exports, but also increases costs for other exports that require trucking services. Additionally, high import duties have contributed to limited investment in equipment and services required by some value chains. For example, a significant amount of cotton is shipped in open trucks due to the lack of dry containers.

Similarly, Mali is yet to develop a more reliable cold chain. As discussed earlier, both the cattle and fruit and vegetable industries would benefit from an increase in a cold chain with a refrigerated truck capacity. For cattle, refrigerated trucks would allow slaughtering and value-added meat cutting and packaging to occur in Mali. For mangoes, the inadequate supply of reefer services forces exporters to use transport methods that result in high levels of spoilage.

Currently, few incentives exist to develop state-of-the-art services. Without changes in tax policy, standards, and tariff structures, it is unlikely that the private sector will take the steps to provide trucking services that better meet the needs of Mali's export sectors. There are, however, a number of opportunities for governments and donors to strengthen trucking services, as shown in **Table 8**.

¹¹ Large is defined as a company with more than five trucks.

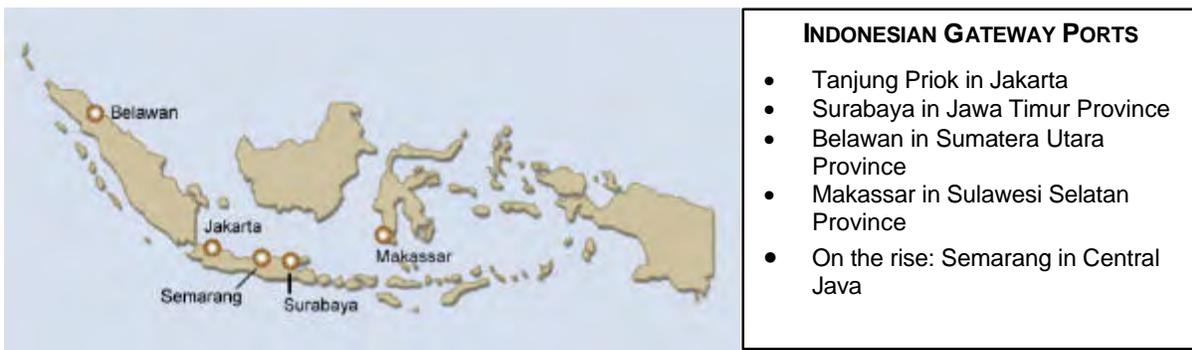
Table 8. Options to Enhance Quality, Efficiency, and Competitiveness of Trucking Services

Issues		Intervention
Fragmented trucking sector dominated by small trucking firms lacking economies of scale.	➔	<ul style="list-style-type: none"> • Change domestic tax structure for vehicles such that larger firms are not taxed more, promoting the development of larger, better-organized, and more efficient trucking companies. • Design tax to encourage purchase of new vehicles.
Aged and poorly maintained fleet	➔	<ul style="list-style-type: none"> • Promote Importation of New or Used Trucks, Replacement Parts and refrigerator trucks by lowering or eliminating tariffs in collaboration with regional trading partners.
Inadequate investment in modern transport and maintenance services	➔	<ul style="list-style-type: none"> • Develop policies and incentives that encourage growth and investment in the trucking transportation sector such as newer trucks, maintenance facilities, container capacity, and refrigeration
Inadequate compliance of regulations designed to enhance safety, fleet quality and protect infrastructure.	➔	<ul style="list-style-type: none"> • Enforce Transport Regulations: Enforce load limits on trucks to protect the public and the road network from undue deterioration and enforce regulations governing truck quality.

Inefficient Maritime Feeder Service—Indonesia

In some cases, geographic circumstances place unique demands on a country’s T&L services sector. As an archipelago of 17,000 islands, Indonesia (see **Figure 11**) depends on its seaways and maritime services to connect communities and traders to domestic and international destinations. The wide distribution of economic activities across Indonesia presents several challenges in the movement of goods, as it is difficult to use economies of scale. For Indonesia’s ‘island economies’ to access global markets, they must be integrated into a network of feeder, collector, and/or transshipment ports. More than 140 operational ports, including 43 collector and truck ports, feed into 4–5 major Indonesian gateway ports,¹² which act as feeders for regional/international hub ports in Singapore and Malaysia, where high volumes of cargo attract world-class shipping services. Indonesian cargo is transshipped through these international hub ports for further transportation throughout Asia, Europe, and North America.

Figure 11. Indonesia



Approximately 75 percent of Indonesia’s export shipments go through hubs in Singapore or Malaysia. Competition between these ports has led to highly efficient transshipment processes, relatively low freight costs, and excellent service to major export markets worldwide. The cost that Indonesian exporters pay to

¹² Most major shipping lines operating in Indonesia (e.g., Maersk, P&O Nedllyod, Hanjin) maintain regular feeder service from gateway ports in Indonesia to hub ports in Singapore and Malaysia.

access these services, however, remains inordinately high, paying approximately \$800 per container to access Singaporean or Malaysian ports from Indonesian ports. For many commodities, this cost is a significant part of the overall cost of international export. For example, the 600 miles from Samarang to Singapore represent only 10 percent of the distance but account for 45 percent of the total international freight costs for furniture moving to Italy. Typically, around 20–50 percent of international freight costs for exports are incurred in the first 1,000 miles accessing the regional hubs. A number of factors relating to the provision of maritime feeder services (and related infrastructure) add inefficiencies and cost to the transport of Indonesian goods. These include the following:

- **Repeated Handling**—As goods move along the feeder and transshipment systems, it is possible for containers to be handled at three separate ports before arriving at the regional hub in Singapore or Malaysia. Each of these steps adds extra handling costs and time to the shipment.
- **Inefficient Ports**—Many existing Indonesia ports are noncompetitive, not meeting international standards and lacking equipment and facilities to reduce costs. Failing to attract frequent and competitive direct liner services and with cargo dispersed over a large number of smaller ports, port volumes are insufficient to attract increased investment. Facilities are often general or multipurpose—used for container ships, bulk goods, passenger ships, and frozen goods. Although these ports serve multiple constituencies and social needs, they are inefficient vehicles for international trade.
- **Limited Port Capacity**—Indonesia container volume has increased dramatically over the last few years, particularly in the number of domestic shipments. This growth in volume, coupled with limited port capacity, is creating bottlenecks. Container yards have grown and spread over several areas, with many requiring trucks to travel through traffic in densely populated urban areas to gain access. Many yards are not optimally laid out, affecting cargo tracking and movement. Portside facilities like warehouses and cold storage are also similarly dispersed, thus creating efficiency problems.
- **Decentralized Port Development**—Indonesian port authorities have traditionally operated in a highly decentralized structure, which has made it more difficult to develop a coherent national port development strategy. There is, however, a move toward embarking on a port rationalization program under the Ministry of Transport. This will focus investment on improving the efficiency of a few ports, while smaller less viable ports would be turned over to local authorities or privatized.
- **Vessel Size**—Rules that require domestic cargo to be handled by Indonesian shipping lines¹³ limit opportunities for foreign companies to invest in or provide newer, larger, faster vessels. As a result, ports are served by older vessels not able to provide as efficient or as high-quality services.

Indeed, few countries have to contend with Indonesia’s geographic circumstances and transport challenges. Nevertheless, significant improvements could be achieved in the context of a longer-term port development strategy that aggregates cargo into a small number of highly efficient international gateway ports. As **Table 9** shows, this includes improving national and regional coordination in port development, investing in port capacity (e.g., cargo storage, handling) that focuses on ports used to move priority exports, and liberalizing the maritime sector to encourage greater foreign participation and investment in maritime and cargo aggregation services.

¹³ In an effort to “empower” the domestic shipping industry, a new draft decree stipulates that only national shipping lines with Indonesian flag vessels will be allowed to move domestic cargo. Additionally, all international cargo belonging to the government or state-owned enterprises will be required to use national shipping lines. Foreign shipping lines have to nominate a national shipping line for any foreign agency activity.

Table 9. Options to Enhance Efficiency of Feeder Service and Integration with Regional Shipping Hubs

Issues		Intervention
Large number of ports inhibits cargo aggregation, increasing transportation and port handling costs		<ul style="list-style-type: none"> • Work with private and public (national and regional) stakeholders to identify mechanisms to rationalize port network. • Support coordination across port authorities to develop/strengthen cargo aggregation and transshipment services within gateway ports.
Local ports require supporting infrastructure and services to be cost effective		<ul style="list-style-type: none"> • Identify required investments that will most effectively raise port efficiency and capacity. Focus on investments that affect logistics chains for higher valued goods (e.g., improving access, warehousing, cold chain, handling). • Prioritize gateway and feeder ports for targeted investment. Focus on ports where improvements will have most significant impact on movement of important exports.
General or multipurpose ports do not necessarily provide efficient services for export goods		<ul style="list-style-type: none"> • Promote targeted investments that enhance specialization in ports handling goods from important export sectors.
Access to regional hubs is costly		<ul style="list-style-type: none"> • Promote higher competition in Indonesian waters. Reassess rules that domestic cargo be handled by domestic shipping lines. • Promote investment in larger, faster vessels to carry cargo between Indonesian gateways and regional hub ports.

Customs and Border Encumbrances—Bulgaria, Indonesia, and Mali

In a global economy that demands JIT delivery, any factor that may halt or delay the movement of goods should be considered a constraint to export competitiveness. In this context, what happens at the border or internal customs points requires the attention of any efforts intended to facilitate the movement of trade. In many developing countries, customs and border encumbrances (e.g., inefficient processing systems, slow clearance times, high inspection and clearance fees, complex compliance requirements) represent a major impediment to trade. In addition to delaying shipments, these problems add to transport costs in several ways, particularly for countries whose goods must cross multiple borders before reaching their destination. Inefficient border processes lead to long waits, incurring real and opportunity costs since both transport assets (e.g., trucks, boats) and drivers are not being productive. Inefficient processes and complex regulations also encourage corruption, as officials demand or accept bribes to move the process along and avoid ‘penalties’ for incompliance. Although the cost of corruption may not be included in a shipper’s invoice, it is incorporated in the overall cost of transport. Finally, the uncertainty attributed to possible border delays places an additional burden on supply chain and logistics management activities.

Addressing customs and border issues is one of the most effective ways to improve the movement of trade—at a systemic level—and capture short-term benefits through transport cost reductions and faster speed to market. During its country studies, the TESS Project identified multiple problems attributed to customs or border encumbrances.

Customs and Border Encumbrances in Bulgaria

Although the Bulgarian government has made improvements in recent years, customs and border issues remain an area of concern for Bulgarian shippers, including those expected to ensure that time-sensitive apparel shipments arrive on time at lowest cost possible. As **Table 10** shows, the cost of waiting at borders comprises 8–34 percent of total freight costs on select European routes.

Table 10. Overland Transport and Border Delays for Selected Routes

Route	# of Borders	Average Transit Time (hours)	Average Wait Time per Border (hours)	% of Transit Time Spent at Border	Wait Cost (\$12.5/hour)	Wait Cost (% of freight)
Sofia–Rome	4	110	6–9	43%	\$568	34%
Sofia–Berlin	4	100	5.5	31%	\$372	20%
Sofia–Athens	1	22	5	22%	\$58	8%
Sofia–Istanbul	1	33	10	30%	\$119	22%

Source: Adapted from The World Bank, Reducing the 'Economic Distance' to Market—A Framework for the Development of the Transport Systems in South East Europe. December 2004.

Aside from long average wait times, the table demonstrates a significant differential between minimum and maximum waiting times for different border crossings. Logistics' service providers confirm that the waiting time for any given crossing can vary greatly. This lack of predictability, critical for modern logistics' systems, is of great concern as shippers and exporters must include significant extra time (about a day from Bulgaria to Central Europe) when estimating delivery times to ensure they meet their commitment.¹⁴ Above all, unpredictable delays are considered a business risk and competitiveness impediment. If not addressed, they could lead to a loss of market share for such critical industries as textiles and apparel since buyers may forego business transactions and use more predictable suppliers. According to interview stakeholders, border problems relate to many factors, including the following:

- *Poor Coordination Across Border Agencies*—There are as many as six border agencies that must approve a shipment before it leaves Bulgaria. Where approvals and payments are required, the transportation provider must approach each agency separately, versus using a one-stop shop. At the Port of Varna, it takes 1.5 hours for all relevant agencies to clear a vessel before unloading can begin.¹⁵ Since the approval or payment processes are not integrated and data across agencies is not shared, there are significant opportunities to streamline the administrative process.
- *Lack of Border Crossing Coordination with Regional Neighbors*—Border crossing coordination is a problem at both the national and regional level. Although trade facilitation is routinely mentioned as a primary objective by regional border agencies, border-crossing coordination between regional neighbors remains a secondary priority when compared to other objectives, such as increasing government revenue or applying international and national laws. Long-standing rivalries between headquarters and border crossing points, as well as a tradition of police control over borders, has led some border agencies to closely protect their individual mandate, versus the overall objective of optimizing the efficiency of border crossing points as a whole.¹⁶ According to officials, border coordination is a particular problem with Turkish border agencies. Although border coordination with Greece and Romania will become automatic at EU accession, coordination with Macedonia, Serbia, and Turkey will likely remain necessary. Given the transit flows from Turkey, coordination efforts with Turkish authorities should be a priority.
- *Volatility in Border Traffic*—Customs officials note that one reason for delays at border crossings is the high variability of daily traffic during the week. For example, regulations in some EU countries prohibit heavy vehicles from traveling on weekends. Trucking firms in Turkey, therefore, organize

¹⁴ World Bank, *Reducing the 'Economic Distance' to Market—A Framework for the Development of the Transport System in South East Europe*. December 2004.

¹⁵ This not only impacts the overall efficiency of port operations, but also represents an overhead cost in time and money, which is passed from the vessel operator, to the producer, and to the buyer.

¹⁶ PLANCONSULT HOLDING GmbH, *Interim Report II, Trade and Transport Facilitation in South East Europe Program: Provision of Consulting Services in User Survey Design and Implementation*, 2003.

operations so that trucks transit Bulgaria and Serbia on weekends to arrive at an EU border Monday morning. Daily traffic at the border can fluctuate from 300 mid-week to 800 on Thursday or Friday. Even with efforts to improve the efficiency of border processes, such fluctuations are likely to turn the border into a bottleneck and create long queues.

- *Corruption*—Although the level of corruption in Bulgaria has fallen due to ongoing efforts by the government, it remains a source of additional cost and nuisance in the movement of goods. A recent survey¹⁷ showed that informal payments are made at Bulgarian borders 11.4 percent of the time. The average bribe is said to be approximately €80 per truck. Informal fees are even more of a problem, considering truckers interact with officials from other countries at regional borders. For example, more than 50 percent of trucks passing through Serbian border crossings pay some type of bribe, averaging €110 per crossing.

Customs and Border Encumbrances in Indonesia

Given the size and porosity of its borders, Indonesia's customs agency has a difficult job. Shippers repeatedly cite customs processes as a hindrance to trade. Issues include the following:

- *Incomplete Automation*—Customs has adopted widespread automation in recent years. What seems to have emerged, however, are numerous separate islands of automation (see **Figure 12**). Currently, shippers still need the full set of documents and paperwork to process a customs entry. Additionally, because the customs system is not linked to the port authority, numerous copies of documents are required.
- *Multiple Uncoordinated Offices*—Some customs jurisdictions have several offices, which often run independently.
- *Arbitrary Rulings*—Customs processes are interpreted differently by different offices, and up and down the hierarchy. If an unfavorable ruling is given, shippers try again, either elsewhere or by involving others in the hierarchy.
- *Improper Penalties*—Penalties are imposed without adequate cause and fines are extracted, which one must pay to have repealed.
- *Customs Department Raises Fees Unilaterally*—Fees are raised to cover administrative costs, without adequately finding other avenues to reduce expenses or without conducting public dialogue. In 2004, customs announced new fees would be incorporated in the state budget as nontax revenue, of which it would receive 80 percent. The new fees would range from US \$3.50 to \$52.50 per service performed by customs.
- *Inefficiency of Inbound Clearance Process*—At times, customs clearance can be quite lengthy. Automobiles, for example, take an average of 10 days to clear customs. The inventory cost from this wait is ultimately passed on to the consumer.
- *Informal Fees/Corruption*—Customs is viewed as a frequent recipient of informal fees. Although relatively small compared to the market value of the containers, the fees add unnecessary stops, time, and burden to businesses. This type of breakdown in management control could be addressed by reforming the process for levying, collecting, and redeeming improperly levied fines.

Customs and Border Encumbrances in Mali

Interviews with shippers and exporters in Mali revealed that problems with customs procedures were a major problem affecting the movement of goods. Given that the customs problems that exist in Mali prevail in most other African countries, the impact of these issues is exacerbated by the need for Malian goods to go through at least one neighboring country before reaching a port of exit:

¹⁷ Ibid.

Figure 12. Opportunities to Use Automation and Electronic Data Exchange (EDI) to Increase Customs' Efficiency and Transparency: Mali and Indonesia

Customs' processes not only include the physical clearance of goods, but also the flow of information. In developed countries, Customs' authorities operate electronic systems to process trade transactions. The Internet and EDI play an increasingly large role as managing information becomes as important as managing the shipment itself. Automation eliminates common documentation errors, and repeated transaction failures can be quickly pinpointed and rectified. Further, providing remote access through the Internet gives shippers early knowledge of problem shipments or documentation errors so they can be solved before they become critical, saving them time and the requirement to be physically present for every shipment. Since each step of the transaction is recorded, auditable, and available for other participants to see, it may deter arbitrary or improper behavior on the part of officials involved. In 2004, the EDI program initiated by **Indonesian Customs** became compulsory. Although a good portion of the system is automated, manual gaps remain. Since the Customs' system is not linked to the port authority, numerous copies of paper documents are required. There is an opportunity to improve the Customs' process by linking disparate islands of information so that the end-to-end process is automated and shippers and their agents can have remote access.

To reform **Malian Customs**, a comprehensive modernization and automation program is required, with the full commitment of senior officials to ensure completion and implementation of modernization activities. Provided that it is properly implemented, installation of a new version of the ASYCUDA++ Customs' software system funded under a French grant could improve Customs' efficiency, increase transparency, and help lessen the impact of Customs' corruption on exporters.

As the ASYCUDA is introduced, Mali and international donors should strengthen its application by developing simpler, more efficient, and cost-effective Customs procedures. In setting up these new procedures, Malian government authorities should avoid the tendency to set up parallel manual systems 'as a backup.' This would lengthen the actual application time of the system and maintain avenues for officials to demand informal payments. Staff training at all levels of the Customs' authority on the ASYCUDA system and the new procedures is necessary for proper implementation.

As an example of automation success, the Customs process in Tema, Ghana, was recently streamlined with a software used for documentation called GC Net. It can be accessed by exporters/importers/freight forwarders, etc. As long as the paperwork is in order, it is a fairly smooth process. Documentation can be started at the exporter's office before shipment and by the time goods arrive at port, the paperwork is ready. Some informal payments and negotiations come into play if documents are not in order or false declarations are furnished.

As Mali's West African partners are getting their own system (often the same ASYCUDA system), there is an opportunity to integrate the systems through a client/server architecture, which should facilitate data exchange and cross-checking among participating Customs' agencies, further enhancing transparency and ease of Customs' clearance across borders.

- ***Corruption/Informal Fees***—At in-country and border crossing customs stops, customs officers collect the appropriate state fees as well as their negotiated "facilitation fees" that range from \$2 to \$20 per transaction. Coupled with demands of informal payments throughout the entire process, the persistence and perceived acceptability of these payments represent a serious form of corruption that adds costs to the overall movement of goods.
- ***Lack of Transparency***—Customs officers interpret and enforce rulings or laws as they choose, with no uniformity in enforcing export laws and regulations except, probably, formal gold exports. Trucks routinely reach and cross the border without export documents. Export documents can be obtained through freight forwarders or can be forgotten altogether with the appropriate facilitation fee.

- *Multiple In-Country Customs Checkpoints*—Although paperwork is prepared and cleared at the borders, Mali’s customs agency sets up multiple customs checkpoints along internal transit arteries to ‘verify proper paperwork.’ A trucker may pass through as many as five in-country customs checkpoints that are literally hundreds of miles from any border. It is unclear what benefit these checkpoints provide. The checkpoints, however, are conducive to corruption. At each stop, truck drivers are required to negotiate the appropriate informal payment before continuing on their route.
- *Incomplete Process Automation*—Although Mali’s customs processes are partially automated, full paper documentation is still deemed necessary (see **Figure 12**). This not only reduces the efficiency of customs processes, but also creates an avenue for customs officials to collect informal fees.

Improving Customs and Border Processes

Concerted efforts to address customs and border encumbrances would pass on significant benefits to the exporting community. Although actual reform processes will vary by country, programs to address these issues should include some common themes, including reducing/streamlining administrative processes, documentation, and compliance requirements; increasing process transparency (to reduce corruption); clarifying or simplifying customs-related regulations (to ease doing business and reduce corruption); improving coordination of border agencies at national and regional levels; and harmonizing with global customs processes (see **Table 11**). All these activities should be carried out in a modernization process with automation and IT solutions that increase efficiency, transparency, and visibility for exporters, buyers, shippers, and government officials.

Table 11. Options to Reduce Customs and Border Encumbrances

Issues		Intervention
Customs processes are complex, inefficient, and manual and lack transparency		<ul style="list-style-type: none"> • Identify redundant, unneeded steps and establish streamlined procedures and documents. • Develop automated customs process with remote access for shippers and data exchange across border agencies (national and regional).
Multiple border agencies do not share information or coordinate workflow, leading to delays		<ul style="list-style-type: none"> • Create a one-stop shop by coordinating processes across agencies and sharing information to facilitate faster border clearance.
There is poor coordination among regional border and customs agencies		<ul style="list-style-type: none"> • Enhance communication/coordination between national and regional border authorities. • Development of ‘shared’ or joint border crossings with consolidated clearance services. • Encourage harmonization of transit documentation and procedures. • Integrate customs software with regional agencies
Arbitrary and frequently changing regulations governing transportation (nationally, regionally)		<ul style="list-style-type: none"> • Regularly disseminate information (both with paper and electronically) that clarifies procedures and documentation requirements.
Corruption and informal fees commonly demanded or accepted by officials		<ul style="list-style-type: none"> • Use automated transaction management systems to reduce opportunities for corruption. • Reduce number of in-country roadblocks.

LAUNCHING A T&L ASSISTANCE PROGRAM

This paper presents a business case for focusing on T&L issues to facilitate integration of developing countries into the global economy. If developing country producers, manufacturers, and exporters are to become more competitive in global markets, it is critical for their goods to reach destinations faster and cheaper without losing value due to damage or spoilage. A comprehensive national development or assistance strategy focusing on expanding trade, investment, and economic growth requires attention to the topics—both value chain specific and systemic—discussed in this paper. These strategies require proactive involvement on the part of multiple stakeholders, including the following:

- **Government**—Financing public investments in priority transport infrastructure, enhancing policy and regulatory frameworks for T&L services, and reducing impediments at the border.
- **T&L Service Providers**—Investments to develop new services that meet the demands of specific value chains, upgrade overall service quality, and improve logistics management.
- **Producers, Manufacturers, and Exporters**—Improve supply chain management and increase the use of available value-added and integrated T&L services.

International donors can play a critical role in designing and executing transportation and logistics programs that enable countries to better meet the demands of the global economy. This includes helping to identify priority T&L issues, promoting collaboration among stakeholders in the development of T&L strategies, and offering targeted assistance to address value-chain and systemic challenges affecting the movement of goods (see Tables 2 to 11 in Section III for specific examples to provide assistance). **Figure 13** depicts a sequence of steps that should be incorporated into an assistance strategy aimed at enhancing export competitiveness through improvements in T&L.

Undertake Country-Specific Analyses

Factors affecting the cost and competitiveness of T&L services vary greatly, depending on a country’s geographic circumstances, infrastructure portfolio, priority exports and value chains, and policy frameworks, as well as the capabilities of its export firms and T&L service providers. Country-specific analyses like those carried out by the TESS Project are an effective means through which developing countries and their donor counterparts can focus on the primary issues

Figure 13. Key Programmatic Steps to Enhance Competitiveness through Improvements in T&L



affecting the movement of goods—at both the value-chain and systemic levels. Effective analyses include the following:

- An evaluation of the quality, quantity, and location of a country’s transport infrastructure in relation to the production location and destination of exported products and the needs of priority export chains.
- A T&L map that identifies all participants in a shipment—including exporters, service providers, government authorities and the ultimate buyer—and evaluates their ability to effectively play their respective roles in the T&L system.
- A cost and constraints analysis of sample cargo shipments, including identifying costs and potential problems at each step along an export or import shipment, from preshipment to domestic transport to international transit.
- An evaluation of the operating environment for the provision of T&L services, including overall business climate, services-related policy and regulatory frameworks, regional issues (e.g., treaties), and security considerations.

Using these analyses, it is possible to identify key opportunities to improve competitiveness through T&L interventions. This includes opportunities to add value to shipments by developing reliable cold chains in Indonesia (shrimp) and Mali (mangoes and cattle); upgrading service availability, quality, and efficiency through policy reforms in Indonesia (maritime ports and feeder services) and Mali (trucking sector); and responding to competitive pressures through improved supply chain management in Bulgaria’s apparel sector. Identification of these opportunities helps sets the stage for stakeholder collaboration and prioritizing activities most likely to have the largest impact.

Engage Stakeholders

In addition to identifying challenges and opportunities, country analyses identify who should be involved in developing any national development or assistance strategy. This includes the following:

- ***Government officials and regulatory bodies***, including commerce, transportation, and finance ministries, and border and customs agencies.
- ***T&L service providers***, including port authorities, transport providers, and logistics service providers.
- ***Users of T&L services***, including producers, manufacturers, and exporters.
- ***Other stakeholders***, such as business associations and regional authorities and service providers.

On completion of country-specific analyses, it is important for these public and private stakeholders to become engaged to increase their awareness of T&L issues, begin discussions toward a strategy to strengthen their T&L systems, and encourage buy-in for developing successful initiatives. As **Figure 14** depicts, country analyses are an important catalyst for public-private engagement.

Develop National Strategy to Improve T&L Services

Country analyses and stakeholder forums can be used as a springboard for developing a national T&L strategy. Even if such a strategy is in place, analyses similar to TESS country studies help refine planned activities, introducing more information to the decisionmaking and implementation processes. Activities

Figure 14. Nicaragua Study: Facilitating Discussion on T&L Issues

Stakeholders involved in the TESS Nicaragua T&L study said the study and discussions that followed served as a catalyst for different protagonists (e.g., government officials, T&L service providers, exporters and importers, merchants, agricultural producers, business associations) to take part in an informed exchange of ideas and work together toward a more agile T&L system, which is critical as the country prepares for CAFTA. For some, it represented the first time private and public stakeholders had come together to discuss and prioritize Nicaragua’s T&L issues and deliberate over an action agenda.

to develop this strategy require two key tasks: prioritizing opportunities and developing action plans for short-, medium-, and long-term initiatives.

Prioritize Opportunities—Even with donor assistance, the available financial and human resources—both public and private—are not sufficient to address all T&L issues identified in either country analyses or stakeholder forums. It is critical, therefore, for country analysis and stakeholders to identify opportunities to address T&L issues that most affect value-chain competitiveness and overall movement of goods. In general, countries should prioritize activities that fall into the following six categories:

- *Reducing domestic transport costs*—As **Figure 15** depicts, domestic costs can account for a significant portion of the cost of transport. Priorities should focus on key factors affecting domestic costs, including preshipment, inland transportation, and border crossings. Most domestic costs will also fall into one of the categories discussed below.
- *Short-term interventions to improve value-chain competitiveness*—As noted in earlier sections, a number of value-chain interventions can have a significant short-term impact on profitability and competitiveness. This includes improving packaging and handling (e.g., use of stronger boxes for mangoes in Mali) and promoting value-added logistics services and supply chain management tools (e.g., Bulgaria apparel sector).
- *Streamlining border processes*—Taking steps to reduce procedural impediments at the border is likely to have an immediate effect on the movement of goods through shorter waiting times, fewer administrative costs in preparing documents and planning for uncertainty, and less corruption.
- *Medium-term interventions to improve value-chain competitiveness*—A number of high-impact, value-chain-specific interventions can be carried out within 2–3 years. In particular, this includes facilitating investment in value-chain-specific equipment and services, such as cold chains with cold storage, an adequate supply of refrigerated containers, and trucks and train cars able to operate in the cold chain. It could also include efforts to attract specialized service providers (e.g., direct airfreight to serve mango producers in Mali).
- *Medium-term interventions to improve overall T&L system*—This includes the following: (1) efforts to improve policy and regulatory frameworks related to T&L services, such as liberalization reforms that enhance competition and greater involvement on the part of the private sector and foreign service providers (e.g., shipping companies, transport firms, logistics service providers); (2) investments in operational infrastructure, such as cargo storage and handling facilities at airports and ports; and (3) major customs modernization programs involving regional harmonization, computerization, and full automation of customs processes.
- *Long-term infrastructure improvements for overall T&L system*—Most major infrastructure projects take years to complete and for their benefits to be realized. Given the time and resources required, it is important to prioritize infrastructure improvements by current and projected needs and realistic potential impact. These investments should include wider development agendas.

Figure 15. Taking Action to Reduce Domestic Transport Costs

One area where countries can achieve significant cost savings in moving goods is through actions to address weaknesses and cost factors within their own borders. The TESS country studies revealed that a significant proportion of transport costs accrues domestically. For example, domestic costs amounted to more than 50 percent of total transport costs for some goods exported from Indonesia. If one were to consider preshipment costs and inland freight rates for cotton exported from Mali (through neighboring countries), the inland cost before international ocean freight exceeded 60 percent of the total transport costs. In Nicaragua, inland costs ranged from 25–50 percent.

Once issues are prioritized, stakeholders may have to return to the source of a problem and gain the “issue-specific” information that is hard to collect in the context of the broader country-specific analysis.

Develop Action Plans—Once a list of short-, medium-, and long-term priorities is developed, participating stakeholders must develop effective action plans for implementing the national T&L strategy, including the following:

- *Implementation plans*—An outline of the steps required to achieve a particular objective. This should include clear delineation of stakeholders’ roles and responsibilities, project time lines, issues related to government procurement, and any required technical support from donors or other sources. Although implementing particular solutions will involve separate initiatives (e.g., addressing road transport versus maritime services or customs procedures), it is important for these initiatives to complement each other to ensure that improvements in the T&L sector best meet the needs of the country in the context of its interests and position in the global economy.
- *Funding plan*—Delineation of financial resources for implementing activities, including investments by private service providers, PPPs, government revenues or borrowing, and donor grants or loans.
- *Monitoring and evaluation plan*—Detailed program to monitor ongoing developments in the T&L system. Monitoring and evaluation will not only provide information on the overall impact of the strategy’s implementation, but also provide a means for identifying emerging problems.

Due to the international nature of T&L, it is important for development of a national strategy to include public and private consultations at the national level, as well as consultations with international stakeholders—including regional governments, regional and international T&L industry associations, and international donor and development agencies (e.g., USAID, World Bank, regional development banks) that may be asked to finance action plans. Since regional issues can have a large effect on the movement of goods, development of a national strategy should involve serious bilateral/plurilateral consultations with regional authorities and T&L organizations.

Role of the Private Sector—Although issues related to T&L are considered a primary responsibility of the public sector, it is critical for the private sector to play a larger role in both strategy development and implementation. There are numerous areas where the private sector can play a leading role in efforts to enhance T&L systems. This includes the management of infrastructure through concessions and PPPs, private investment in key infrastructure, investments to upgrade T&L services (e.g. transport assets, value-chain-specific equipment, integrated logistics services), and enterprise and value-chain level initiatives to use supply chain and logistics management business solutions. Without the active participation of the private sector, it will be difficult to maximize the potential impact of a national T&L strategy.

Opportunities for Donors to Improve T&L in Developing Countries

In many cases, developing countries will require outside assistance to develop and execute national T&L strategies—with international donors providing various types of assistance to help countries address their short-, medium-, and long-term priorities. This assistance falls within three categories: strategy development, T&L assistance at the value-chain level, and T&L assistance at the systemic level.

Strategy Development

Donors can work with public/ private stakeholders to support strategy development in the following areas:

- Funding country-specific T&L studies
- Facilitating T&L stakeholder forums
- Technical support in development of national strategy short-, medium-, and long-term action plans.

T&L Assistance at Value-Chain Level

Working primarily with private-sector stakeholders—and collaborating with appropriate public authorities—donors can help improve the competitiveness of value chains through a range of activities:

- *Promoting the benefits of using modern T&L options* that increase competitiveness. This includes use of packaging techniques that reduce spoilage and damage, value-chain-specific equipment and services, value-added logistics services, supply chain management tools, and IT business solutions.
- *Technical assistance that enables producers, manufacturers, and exporters to use modern T&L options*, particularly in terms of improving packaging and handling before shipment and applying supply chain management tools.
- *Providing technical and financial assistance to T&L service providers to facilitate investments and upgrades in facilities, services, and systems* necessary to respond to the needs of priority value chains, including development of a cold chain, specialized transport services (e.g., cattle trucks, hanging garment containers), and integrated value-added logistics services.
- *Strengthening industry associations' ability to organize producers and exporters to establish sufficient demand for unavailable services* (e.g., direct airfreight from Mali), improve supply chain coordination, and lobby for changes in policies affecting the movement of goods (e.g., customs procedures, tariffs on new equipment) in a particular sector.

T&L Assistance at Systemic Level

Working with public and private-sector stakeholders, donors can help address the impact of systemic issues on the movement of goods through the following types of activities

- *Supporting core infrastructure development*, such as roads, rail, and ports, through financing (e.g., grants and loans) and technical assistance (e.g., design, procurement implementation).
- *Supporting Customs modernization programs* that include computerization, process automation, process reengineering, Customs policy reform, and investments in border infrastructure. Although these activities can be done in piecemeal fashion, comprehensive programs are more effective.
- *Providing technical assistance in T&L service policy reforms*, including policy and regulatory reforms (e.g., liberalization, taxes, tariffs, standards) that lead to more competitive services sectors and reduce impediments in the services operating environment.
- *Providing technical support in the privatization of public transport assets* and development of PPPs for joint ownership and operation of transport services.
- *Facilitating capacity-building efforts to address critical knowledge and skill gaps* in the T&L chain. Programs could focus on government officials (e.g., customs, policymakers), service providers, and the export community. Topics could include service quality, modern logistics practices and IT solutions, supply chain management tools, and best practices in customs and services policy.
- *Supporting initiatives to improve regional T&L issues*, with a focus on landlocked countries. Initiatives could include efforts to enhance regional transport networks, policy harmonization, and border-crossing collaboration.

In closing, prioritizing opportunities is critical when selecting appropriate interventions for developing countries. Since donor funds are often limited, it is important for T&L assistance to align with a donor's key objectives and time horizon. A donor focusing on immediate impediments to export development may wish to provide targeted assistance on value-chain and customs issues. This option would also be viable for a donor wishing to have a large effect in a short time period with limited funding. On the other hand, donors with substantial resources and an interest in upgrading the overall T&L system of a country would likely provide assistance addressing regional issues, services sector reform, and major infrastructure development. Since these activities are often complementary, it is important for donors to design and implement their T&L programs in an integrated framework that maximizes their overall impact on a country's ability to further integrate into the global economy.

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