



Caribbean Regional Action Plan on Freight Logistics, Maritime Transport and Trade Facilitation

Coordinated by Krista Lucenti

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ABBREVIATIONS AND ACRONYMS

ABR	Advance Binding Rulings
AEO	Authorized Economic Operator
ASEAN	Association of Southeast Asian Nations
BPO	Business Process Outsourcing
CARICOM	Caribbean Community
CARIFORUM	Forum of the Caribbean Group of African, Caribbean and Pacific States
CILT	Chartered Institute of Logistics and Transport in the United Kingdom
CRAFTS	Caribbean Community Regional Aid for Trade Strategy
DOM	Dominican Republic
ECO	Electronic Certificate of Origin
ESW	Electronic Single Window
EU	European Union
FIATA	International Federation of Freight Forwarders Associations
GAFTA	Greater Arab Free Trade Agreement Area
GDP	Gross Domestic Product
H&S	Hub and Spoke
ICT	Information and Communications Technology
IDB	Inter-American Development Bank
IMF	International Monetary Fund
IMO	International Maritime Organization
IT	Information Technology
KPI	Key Performance Indicator
LAC	Latin America and the Caribbean
LAZ	Logistics Activity Zone
LCL	Less-Than-Container-Load
LPI	Logistics Performance Index
LSCI	Liner Shipping Connectivity Index
MERCOSUR	Southern Common Market
NPX	New Panamax
OECD	Organization for Economic Cooperation and Development
OECS	Organization of Eastern Caribbean States
PPP	Public-Private Partnership
RMT	Risk Management Techniques
SADC	South African Development Community
SAFE	Framework of Standards to Secure and Facilitate Global Trade
SME	Small and Medium-Sized Enterprise
SWOT	Strengths, Weaknesses, Opportunities and Threats
3PL	Third-Party Logistics
TEU	Twenty-foot equivalent unit
UNCTAD	United Nations Conference on Trade and Development
U.S.	United States
VSA	Vessel Share Agreements
WCO	World Customs Organization

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EXECUTIVE SUMMARY

The Caribbean's location at the crossroads of global container shipping routes gives the region excellent maritime connectivity that could translate into significant commercial opportunities. Given its heavy dependence on trade, Caribbean authorities are increasingly vested in improving the efficiency of supply chains and addressing issues related to maritime transport and logistics. In the context of the Panama Canal expansion, it is of the utmost important that steps be taken immediately to strengthen the Caribbean's position in global maritime trade routes. The *Caribbean Regional Action Plan on Freight Logistics, Maritime Transport and Trade Facilitation* reviews the status of trade and transport infrastructure in the Caribbean Basin, with particular emphasis on CARIFORUM countries. The study highlights the main trends in global and regional trade flows in the region, estimates the impact of these trends on the shipping industry and selected Caribbean Basin ports, and proposes a regional Action Plan for taking advantage of new commercial opportunities.

Caribbean Maritime Trade

Caribbean exports are still heavily concentrated towards the U.S. market, representing 50 percent of total volume exports in 2012, followed by the EU 28 (10 percent) and intra-regional CARIFORUM (15 percent). In comparison to other trade communities, this share of intra-regional trade is very low. At the same time, though merchandise trade growth has slowed in 2014, the IMF still projects that its growth will be greater than that of GDP in 2015 as global recovery strengthens. Increased cargo volume and traffic will put pressure on maritime shipping networks, port infrastructure, and connectivity in the region.

Global Shipping Industry: Main drivers

The shipping industry is under considerable pressure to reduce costs, increase efficiency and respond more agilely to fluctuations in supply and demand. Though there are three types of maritime services - direct services, intra-island maritime services, and transshipment (Hub and Spoke and Relay) - this report focuses primarily on the impact of transshipment services due to the availability of data, the impact on the region of changes to the industry, and governments' ability to put in place reforms and investments to meet these changes. Hub and Spoke transshipment (H&S) refers to the transfer of a container from a liner container vessel (e.g. deep sea) to a smaller feeder for onward shipment to a regional destination port. Relay transshipment

(RTS) is the transfer of a container from one liner container vessel to another liner vessel of similar size (e.g. deep sea to deep sea) to another hub or destination port.

The main drivers of trends in containerized shipping include:

- Panama Canal expansion and cascading vessels: The Panama Canal expansion will allow for 12,500 twenty-equivalent units (TEU) capacity Panamax vessels to operate through the Canal while smaller vessels will be cascaded to other routes, including those that cover the Caribbean.
- Increasing ship size: Almost half of all containerships now on order are for capacity of more than 10,000 TEUs, and an additional 21 percent are for vessels between 7,500 and 10,000 TEUs. Size increases will put pressure on Caribbean ports to adjust their maritime services to respond to the needs of these larger vessels.
- Increased coordination among shipping lines: With the introduction of more and bigger tonnage due to increased trade and vessel size, shipping lines are expected to increase their cooperation to share space with partner lines. With larger vessels being cascaded to Caribbean routes, increased transshipment volumes, and vessel share agreements, there is likely to be a reduction of direct calls, connectivity to the smaller islands, and competition levels overall.
- Fewer primary hub ports: Changes in ship size and expansion of vessel share agreements will push shipping lines to adopt strategies to maximize vessel utilization, namely by increasing hub port concentration. Fewer hub ports and more feeder services carry the risk that some smaller islands will require three or even more transshipments for their containers to reach their final destination port, resulting in a loss of competitiveness for their economies.
- Consolidation of feeder services: Some rearrangement of feeder services is expected as a result of increases in feeder volumes. With increased demand for feeder services, it is possible that some of the regional lines may be useful to global operators and perhaps be taken over by them.

The volume of H&S and RTS has been growing steadily over the last decade. Forecasts in this report estimate an increase in current transshipment containers from 4.4m TEUs to 8.4m TEUs by 2020, an average growth rate of 6.6 percent. The projections also show a continued concentration of transshipment services in a small number of principal hub ports. The share of

H&S services using the port of Cartagena are expected to increase from 15.8 percent to 32.4 percent and those using the Kingston port would rise from 24.8 percent to 34.6 percent. Meanwhile the shares of all other hub ports would decrease (Freeport, Miami, and Port of Spain). With respect to RTS, three ports appear to be about equally attractive: Cartagena (30 percent share), Kingston (26 percent) and Colon (22 percent). The Panama Canal expansion, as well as forecasted growth of global exports, will drive relay transshipment services growth.

Caribbean Ports: Heavy Demand as Shipping Volumes Increase

In response to the newly expanded Panama Canal, all of the Caribbean ports with the exception of Freeport (Bahamas) will need to increase their capacity to accommodate larger ships by upgrading access channels and increasing berth depths and lengths. In addition, larger vessels mean more containers being loaded and unloaded, and more storage space required for containers. This is often difficult to find in a port located in a downtown area (which is the case for most of the region's ports). Moreover, space will be required to inspect containers within the port (or at least at an in-bond location near the port) as well as for additional landside port access. Often, this need for space cannot be met within the confines of an existing port facility. Consequently, additional costs must be incurred to provide off-port capacity at inland container terminals, or even higher costs to develop new green field ports that can provide the necessary space and maritime/land access.

Logistics and Trade Facilitation: Efficiency Gains and Simplification

In the Caribbean, it takes an average of 15 days to move a container to the port of departure, compared to 11 days for OECD countries. Even with relatively short maritime transit times to major overseas markets, long domestic transits resulting from inefficient logistics and trade facilitation measures reduce the competitiveness of Caribbean exports. Total access time (domestic logistics plus maritime transport) for exporters in the Dominican Republic is just 13 days to the U.S. and 21 days to the EU. This is slightly faster than Bajan exporters (15 and 21 days) and almost two weeks faster than for their counterparts in Jamaica (25 and 33 days). Slow domestic transit and logistics undermine the region's competitive advantage to the United States, its principal market.

At the same time, all Caribbean countries need to improve upon their trade facilitation measures, particularly those not positioned to gain much traffic from increased transshipment traffic.

Strong, efficient trade facilitation measures ensure that smaller countries maintain existing traffic. Trade facilitation measures are aimed at improving the regulatory interface between government bodies and traders by minimizing trade cost, time, and inventory expenses, and maximizing reliability and flexibility. Evidence suggests that delays in just one component of trade facilitation—customs clearance—can increase trading costs by between four and 12 percent.

Costs to export in the region have been relatively stable and remained below the global average between 2005 and 2013. However, for the same period, the cost to import has grown by 26 percent. This is mainly related to the high imbalance of imports over exports which results in imports subsidizing export costs. Not only does this have an impact on local industry (particularly tourism), but it is a crippling barrier to entry for participation by Caribbean exporters in markets increasingly dominated by global value chains.

Freight Logistics, Maritime Transport and Trade Facilitation: Action Plan

Investment in infrastructure, logistics, trade facilitation and information and communications technologies, not to mention policy and regulatory reforms are needed if Caribbean countries are to realize the benefits from changes in the global trade. Though improvements have been made, the region still underperforms in terms of the quality and efficiency of its trade and transport infrastructure and services.

The Strengths, Weaknesses, Opportunities and Threats analysis done for freight logistics, maritime transport and trade facilitation revealed the challenges and gaps that need to be addressed if the region is to capture the potential benefits offered by the changing economic and geographic environment. These challenges were prioritized, through analysis and through stakeholder consultations, into 13 primary challenges which can be mitigated by putting in place the actions proposed in this report. These challenges include: (1) Lack of logistics data; (2) Underdeveloped logistics sector; (3) Misalignment between demand and supply of less-than-container load (LCL) services; (4) Lack of cold chains; (5) Insufficient port investment needed to handle New Panamax (NPX)-class vessels; (6) Ports' long turn-around times and low efficiency; (7) Inadequate maritime services to small islands; (8) Lack of trade facilitation integration; (9) Lack of coordination among agencies involved in trade; (10) Lack of standardized customs

procedures at ports; (11) Excessive port inspections; (12) Slow information technology (IT) development; and (13) Lack of risk management systems.

Accordingly, the report specifies ten priority actions that can help address these challenges:

#	Priority Action	Expected Outcomes
1	Develop a regional logistics observatory	<ul style="list-style-type: none"> • Improved competitive conditions in the Caribbean maritime sector • Better visibility of prices charged by shipping lines
2	Develop logistics platforms near ports	<ul style="list-style-type: none"> • Stronger offering of comprehensive logistics services • Augmented reefer storage capacity
3	Foster development of LCL cargo services	<ul style="list-style-type: none"> • Expanded development of LCL exports particularly for small and medium-sized traders
4	Promote the use of PPP schemes	<ul style="list-style-type: none"> • Increased number of new port developments/expansion plans in the region • Strengthened port infrastructure able to respond to the requirements brought about by the Panama Canal expansion
5	Develop indicators to improve port productivity	<ul style="list-style-type: none"> • Greater number of port productivity improvement projects linked to key performance indicators • Improved regional quality brand for ports
6	Improve coordination among trade-related agencies	<ul style="list-style-type: none"> • Better mutual understanding and more fluid exchange of information between agencies • Upgraded IT systems to facilitate the exchange of trade data between agencies
7	Increase intra-regional trade by reducing trade formalities and conditions	<ul style="list-style-type: none"> • More efficient logistics and trade facilitation leading to new inter-island maritime services and an increase in intra-regional trade
8	Expand electronic single window schemes	<ul style="list-style-type: none"> • Simplified import and export procedures • Greater alignment with international best practices
9	Develop a single inspection system (one-stop shop)	<ul style="list-style-type: none"> • Increased coordination of inspections • Augmented export potential for Caribbean companies
10	Improve logistics training and education	<ul style="list-style-type: none"> • Improved training and education for logistics sector workers • Larger number and creation of a regional pool of skilled workers • Improved quality of service at ports

1. A FREIGHT LOGISTICS, MARITIME TRANSPORT AND TRADE FACILITATION ACTION PLAN FOR THE CARIBBEAN

Slowing regional growth rates and declining demand for traditional exports (commodities and tourism services), which have driven exports below pre-2008 levels, underscore the urgent need for not only productive diversification but also a concerted effort on the part of the Region to address its systemic supply side constraints. These restraints, which serve as formidable barriers to trade, include deficient economic infrastructure, such as ports, freight logistics, internal transport and communications networks, and inadequate resources to engage in production for export.

Caribbean Community Regional Aid for Trade Strategy 2013-2015,
Caribbean Community Secretariat, February 2013

The recent Caribbean Community Regional Aid for Trade Strategy (CRAFTS) highlighted the importance of ports, logistics and trade facilitation to the competitiveness of Caribbean merchandise exports. The CRAFTS identified five priority projects that would capitalize on the geographical proximity of CARICOM countries¹ to many of its bilateral trading partners, as well as actions to increase the productivity and the export competitiveness of the region's private sector. These projects are primarily in the areas of maritime transport, information and communications technology, energy, and private sector development.

The proposed actions identified in the **Caribbean Regional Action Plan on Freight Logistics, Maritime Transport and Trade Facilitation** build on the maritime priorities of the CRAFTS while also extending the geographical analysis to include the wider Caribbean Basin.²

The driver for most of the plan's actions is the Caribbean's location at the intersection of major East-West and North-South global trading routes. Fifteen percent of containerized global merchandise trade passes through the region by virtue of its proximity to the Panama Canal and the major markets of the east coast of North and South America.³ The Caribbean's exports already benefit from the wide range of maritime services used by this sizeable trade to a degree far greater than could be attracted by its own trade volume.

¹The Member States of CARICOM are: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago.

²To ensure a comprehensive study, several ports in the Caribbean Basin (beyond CARICOM membership) were taken into consideration and are mentioned when relevant (see Annex I for the complete list of ports.) The Caribbean Basin is defined as the area running from Florida westward along the Gulf coast, then south along the Mexican coast through Central America and then eastward across the northern coast of South America. However, throughout this report, emphasis is on CARIFORUM members, which include all CARICOM Member States, the Dominican Republic and Cuba.

³Information on top trade routes and volumes shipped can be found at: <http://www.worldshipping.org/about-the-industry/global-trade/trade-routes>.

However, as the next chapters point out, the pattern of these services is changing rapidly. In fact, their continued relevance could be at risk as shipping lines respond to continued pressures to reduce costs, increase efficiency, and address changes in the supply and demand of merchandise trade. Factors impacting on trade patterns include:

- Increased demand for relay services as China-Brazil trade (and that of other countries on the east coast of South America) grows
- Slower growth rates in the consumer markets of the United States (U.S.) and the European Union (EU)
- Higher risk that some Asia to U.S. East Coast trade will pass through the Suez Canal route and not transit the Caribbean, as the latest container ships are too large to transit even the expanded Panama Canal
- Reduced maritime trade from Asia to the U.S. East Coast as insourcing of production and assembly of U.S. imports from China to Mexico grows
- Increased distributed manufacturing and assembly which will drive opportunities for value-adding activities at the region's hub ports

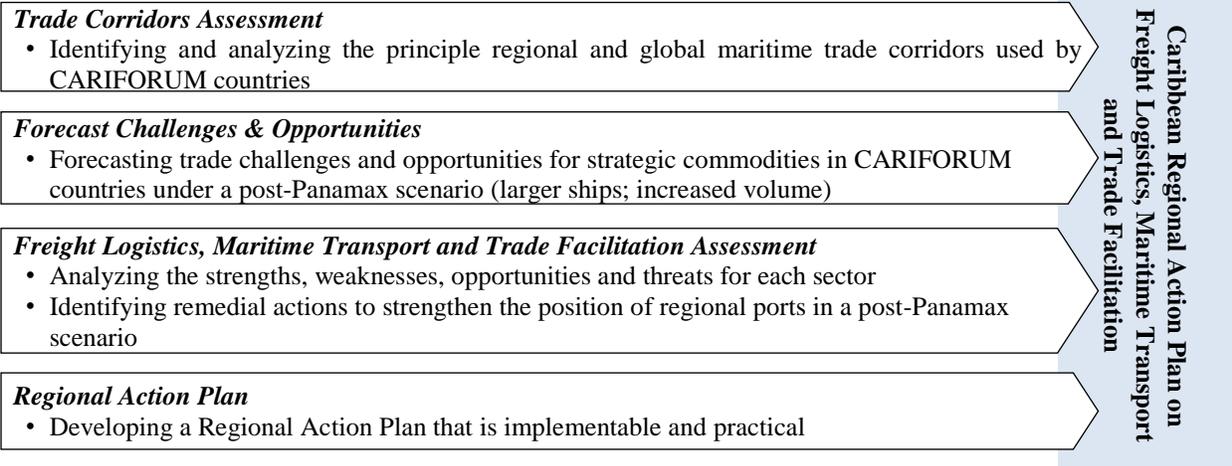
There is little if anything that the governments of the region can do to influence these changes. However, they can act to minimize their potential negative impacts and even bring about positive outcomes for the region. These are the objectives of the Action Plan proposed here.

This report addresses the needs of the entire Caribbean region, with emphasis on CARIFORUM countries. In some instances, special attention is given to three countries (Barbados, the Dominican Republic, and Jamaica.)⁴ First, the Caribbean's maritime trade flows are assessed. Using collected data, an empirical model was then developed to understand better the probability that the region stands to gain from future growth of shipping volumes. These empirical results were then discussed with the region's stakeholders during consultations. Information collected during these meetings, coupled with the analysis as to the winners and losers from an increase in future shipping traffic, led to the identification of 13 primary challenges facing the region.

⁴ Though the analysis and recommendations are, for the most part, applicable to all CARIFORUM countries, due to limited resources, this Action Plan focuses more on the Dominican Republic, Jamaica, and Barbados. These three were identified as particularly important in Caribbean maritime trade based on observed data. Barbados is a transit point for intra-regional trade between the larger and smaller islands while Jamaica and the Dominican Republic capture the highest volumes of extra-regional trade.

Lastly, these obstacles and challenges guided the development of ten recommendations tabled in the Action Plan. The methodology is summarized in the following diagram (Figure 1-1).

Figure 1-1: Methodology of Action Plan



This report contains five chapters. The first chapter introduces maritime trade flows for the Caribbean region. Chapters 2, 3, and 4 examine the issues faced by the Caribbean in the three sectors of interest: Freight Logistics, Maritime Transport and Trade Facilitation. Tables summarizing the Strengths, Weaknesses, Opportunities and Threats (SWOT) for the respective sectors are found at the end of these chapters. Finally, Chapter 5 summarizes the 13 primary freight logistics, maritime transport and trade facilitation challenges in the region and details a recommended Action Plan that contains ten priority actions.

Supplemental information is made available in the four annexes attached to this report. Annex I contains the list of ports considered in the study. Annex II consists of a background note on the maritime shipping industry and recent developments relevant to the region. Annex III describes the mathematical foundations of the model used to predict the volume and direction of trade flows in this study. The last Annex presents all actions that were proposed by Caribbean stakeholders during the consultation phase and a list of stakeholder consultations.

1.1 Trade Context of the Caribbean

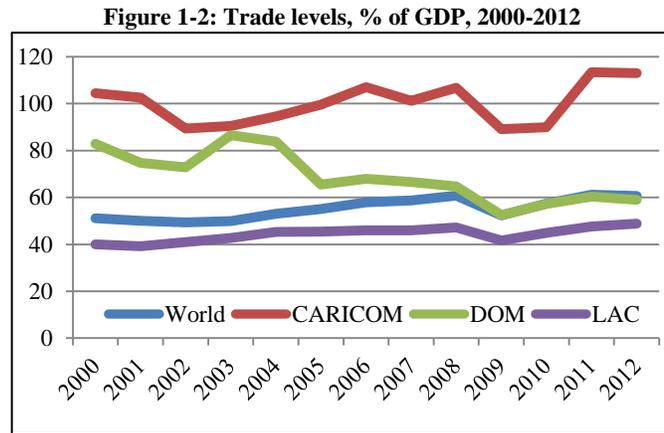
In order to be successful, a strategy to enhance export competitiveness should be driven by improved international freight logistics, better trade connectivity through maritime transport, and more efficient trade facilitation procedures. Knowing which trading partners benefit most from

such measures requires knowledge on the current patterns of global maritime trade⁵ and the role Caribbean nations play in that trade.

The region’s demand for maritime services is determined by three important factors: 1) The region’s trade flows; 2) Projections on merchandise trade growth (Caribbean and main trade partners) and; 3) Balance of trade between imports and exports.

1.1.1. Caribbean Trade Flows⁶

The Caribbean is primarily composed of small island economies for which trade, mainly imports, is vital to satisfy their domestic demand and to ensure the region’s prosperity. As shown in Figure 1-2, this heavy reliance on external trade (exports + imports) represents close to 100 percent of the Caribbean region’s gross domestic product (GDP), a figure that is significantly higher than in other parts of the world, including the Dominican Republic (DOM).



Source: Authors’ calculations using World Bank data. www.wits.org

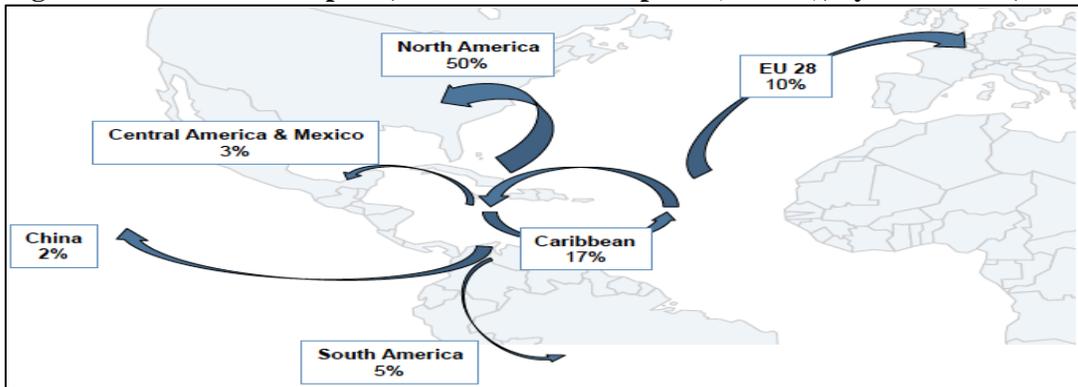
Extra-regional trade

Figure 1-3 shows the share of Caribbean’s exports by destination. North America, most importantly the United States, continues to be the main destination market with 50 percent of total Caribbean exports. The European Union is a secondary market destination with 10 percent of total exports. Twenty-five percent of exports are destined for Latin America and the Caribbean (LAC).

⁵ For an overview of international trade and shipping terms, see: <http://www.gaclarer.co.za/index.php/shipping-terms/Glossary-of-Shipping-Terminology-1/T/>.

⁶ The concept of key flows refers to certain commodity flows, described by a country of origin, a country or region of destination, and a commodity (using 2-digit codes for product categories). Intra-regional flows with origin and destination within the CARIFORUM community, as well as non-regional commodity flows, for which the destination are economic blocs rather than individual countries, are used.

Figure 1-3: Caribbean Exports, % share of total exports (volume), by destination, 2012



Source: Authors' calculations using COMTRADE data. www.comtrade.org

For the period 1997-2012, North America represented the most important export destination market, peaking at 73 percent of total exports in 1999. Figure 1-4 highlights that exports have steadily declined since then, reaching a low of 52 percent in 2007 and have remained stable ever since. In fact, Caribbean trade authorities have signaled their intention to diversify their export destinations in order to reduce their dependency to the U.S. economy. As shown in Figure 1-5, exports from most countries in the region are concentrated in the U.S. market.

Figure 1-4: Caribbean Exports to North America, % of total exports, 1998-2012

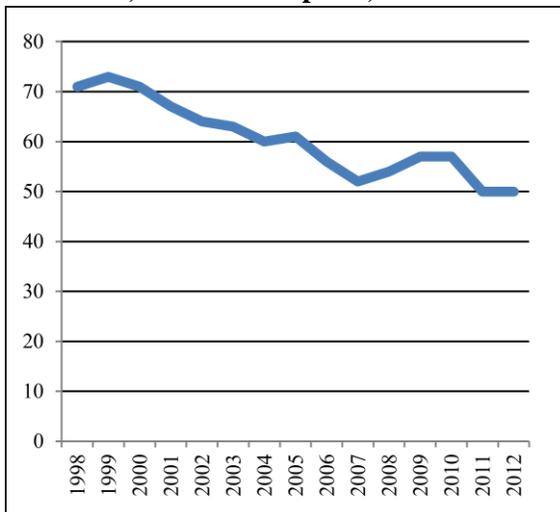
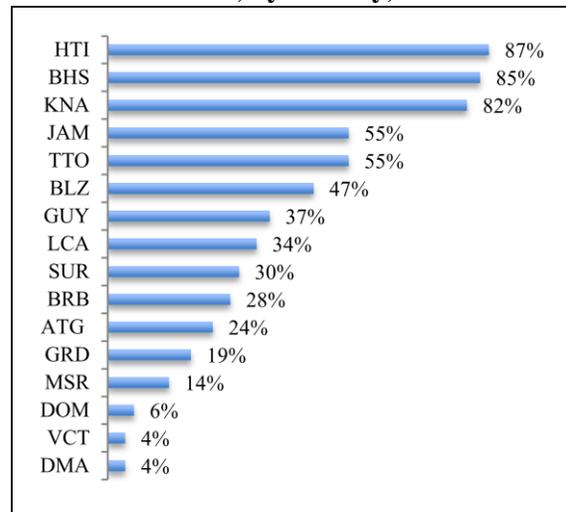


Figure 1-5: % Share of Total Exports to North America, by country, 2012



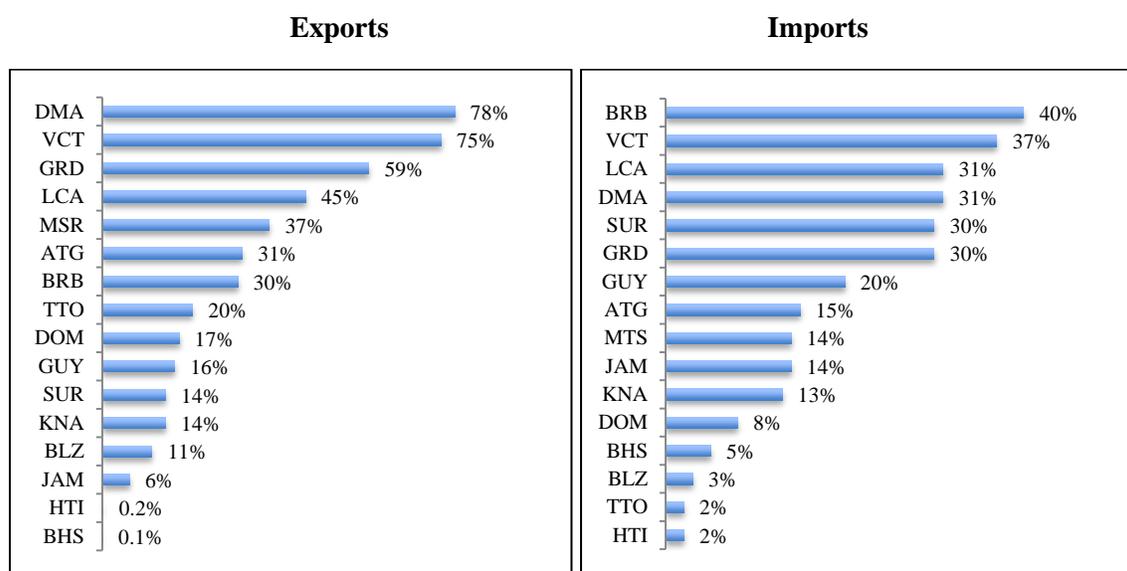
Source: Authors' calculations using COMTRADE data. www.comtrade.org

Intra-regional Trade

The region's intra-regional trade presents a similar picture to that of its global trade, with low volumes and large imbalances between countries. The share of regional trade varies significantly between the different members of CARIFORUM. Most economies of the Organization of

Eastern Caribbean States (OECS), such as Dominica, St. Vincent and the Grenadines and Saint Lucia, account for a high proportion intra-regional trade (see Figure 1-6). Barbados is the largest importer of regional goods. On the other hand, the larger economies (Jamaica, the Dominican Republic, and Trinidad and Tobago) trade less with their regional partners.

Figure 1-6: Intra-Regional Exports/Imports, % share of total (volume), 2012



Source: Authors' calculations using COMTRADE data. www.comtrade.org

Only 17 percent of trade within CARIFORUM as a whole is intra-regional. Table 1-1 indicates that this share of intra-regional trade is low in comparison with that of most other trading communities and groups indicating a potential opportunity for trade growth. Some of these communities have been successful in increasing intra-regional trade through improved trade facilitation, although the process may require some time to generate concrete results.

The Caribbean has had some success in promoting intra-regional trade, which has increased by more than 10 percent per year over the last decade. Despite this growth rate, the intra-regional share of total trade is still lower than the average of other regional trade arrangements.⁷

Table 1-1: Intra-Group Trade, by % Share of Overall Trade

Trade Community/Group	Acronym	Intra-Group % Share
European Union (2011)	EU 27	63
North Atlantic Free Trade Area (2011)	NAFTA	40
Association of South East Asia Nations (2012)	ASEAN	24

⁷ See www.wits.org.

Trade Community/Group	Acronym	Intra-Group % Share
Southern Common Market (2011)	MERCOSUR	16
Community of Independent States (2009)	CIS	16
<i>Caribbean Community (2012)</i>	<i>CARICOM</i>	<i>17</i>
Greater Arab Free Trade Area (2010)	GAFTA	11
Andean Community (2011)	CAN	8
Common Market for Eastern and Southern Africa (2005)	COMESA	5

Source: Authors' calculations using COMTRADE. www.comtrade.org.

Note: Latest years available in parenthesis.

1.1.2. Projections on Merchandise Trade Growth

The IMF projects global GDP will increase from 3.3 percent in 2014 to 4.0 percent in 2019.⁸ If this rate of growth were to continue to 2020, global GDP would be roughly US\$106 trillion, an increase of more than one third from 2012. Slower growth is projected for Latin America and the Caribbean (2.2 percent in 2015) but up from 1.3 in 2014. In the case of the U.S., CARIFORUM's main trading partner, GDP is expected to grow at an average of less than 3 percent per year. Though merchandise trade growth has been slower than expected, the IMF still projects that its growth will exceed that of GDP in 2015 as global recovery strengthens. Global and LAC growth is expected to average about 5.6 and 5.8 percent respectively by 2017. U.S. merchandise trade is expected to recover after 2015 and average 4.1 percent growth until 2020. Taking the global GDP and merchandise trade projections together, the trade share of GDP should recover to near its peak of 52 percent in 2008.⁹ The merchandise share of GDP for CARIFORUM has changed little over the last five decades, and now stands at approximately 90 percent. In contrast, the global share over the same period has increased from less than 20 percent to more than 50 percent.

1.1.3. Balance of Trade between Imports and Exports

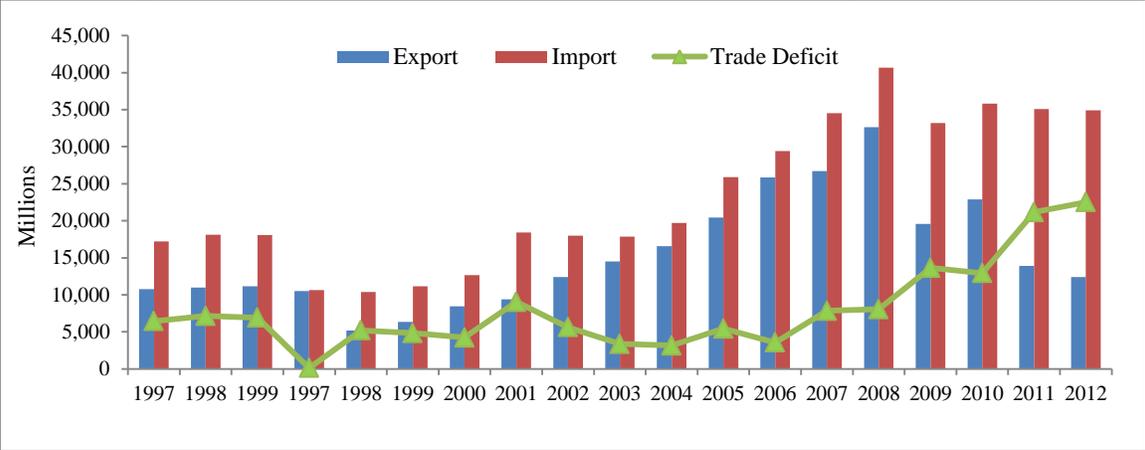
Despite the many trade agreements aimed at attracting foreign investment and boosting exports, the region still has a large negative balance of exports over imports (Figure 1-7). This gap grew steadily until 2008 and is expected to persist unless much more is done to promote goods and services exports at the national and regional levels. In terms of maritime services, this imbalance is reflected in the difference between merchandise flows from Asia to the East Coast of the U.S.

⁸ See *World Economic Outlook (April 2014 and October 2014)*, International Monetary Fund.

⁹ *World Economic Outlook (October 2012)*, International Monetary Fund.

via the Caribbean. Maritime tariffs are largely determined by the import/export balance. In cases where import and export flows for each type of maritime service are more balanced, tariffs will be lower on average than where there exists a gap. In the event of a large imbalance, tariffs for the lesser of the two flows can be very low while those for the larger flow can be very high. Indeed, there are high tariffs for imports to the Caribbean from Asia but relatively low tariffs for imports from the East Coast of the U.S. because the latter can take advantage of the otherwise unused capacity of returning containers.

Figure 1-7: Evolution of Trade Deficit in the Caribbean Region, 1997-2012



Source: Authors' calculations using World Trade Organization data. www.wto.org.

1.2 Emerging trends in shipping services

At least six emerging trends will bring about changes in the pattern of maritime services in the Caribbean region. See Annex II for a more comprehensive discussion on future trends and strategies in the Caribbean shipping market. While there is little that the countries of the region can do to influence these trends, they can adopt measures to ensure positive impacts and mitigate negative ones.

1.2.1 Panama Canal expansion and cascading vessels

The current configuration of ports as main hubs, secondary hubs, and feeder ports will likely be accentuated with the completion of the Panama Canal expansion. A “cascading down” effect will result in larger vessels operating in the region. The new 12,500 TEU capacity Panamax vessels will operate on routes through the Panama Canal, and previous Panamax vessels will be cascaded to other routes, including those that cover the Caribbean, with the 4,500 TEU vessels being used for relay services. This is particularly the case for intra-American services, which can

offer some Caribbean calls between North and South America and allow the lines some double-dipping opportunities to maximize their vessel’s utilization. Orderbook commitments for vessels highlight this “cascade down” effect (Table 1-2).

Table 1-2: Top Ten Container Liner Companies orderbook commitments

Vessel Size (TEU)	2012	2013	2014	2015	2016	Total
1,000-1,999	0	0	0	0	0	0
3,000-3,999	4	6	0	0	0	10
4,000-5,999	17	0	0	0	0	17
6,000-6,999	0	0	0	0	0	0
7,000-7,999	4	0	0	0	0	4
8,000-8,999	14	20	9	2	0	45
9,000-9,999	7	10	1	0	0	18
10,000+	27	22	23	9	8	89
Total	73	58	33	11	8	183

Source: Authors’ calculations.

1.2.2 Increasing ship size

The Panama Canal expansion was designed to accommodate the largest ships expected to be built in the foreseeable future. However, the largest container ships now in service are already too large to transit the expanded Panama Canal, and are operated on routes from Asia to Europe and the East Coast of the U.S. via the Suez Canal. This increase in container ship size reflects the long-term increase in average container ship size that has been taking place since the beginning of the container revolution.¹⁰

Almost half of all containerships now on order are for capacities of more than 10,000 TEUs, and an additional 21 percent are for vessels between 7,500 and 10,000 TEUs. The average size of vessels delivered this year is more than double that of a decade ago. In 2000, the average size of new containerships was only 2,900 TEUs and the largest was 8,200 TEUs. In 2014, the average size is 6,100 TEUs, and the largest delivery in 2013 was 18,000 TEUs.¹¹

1.2.3 Increased coordination among shipping lines

There has been an increase in vessel share agreements (VSA) in recent years. Under these VSA, shipping lines are sharing cargo capacity when they are unable to fill their vessels with their

¹⁰ More on the container revolution can be found at: <http://www.worldshipping.org/about-the-industry/history-of-containerization>.

¹¹ Source: Authors’ elaboration. Suggested additional references on the topic are: www.alphaliner.com/liner2/research_files/liner_studies/nofleet/BRS-FleetMthly.pdf and www.alphaliner.com/top100.

merchandise alone. As such, VSA help shipping lines ensure that their capacity is fully utilized to take maximum advantage of economies of scale to minimize unit costs. At present, 31 out of 138 identified routes in the region already have at least one VSA in place.

With the introduction of more and bigger tonnage due to increased trade and vessel size, shipping lines are expected to increase their cooperation to share space with partner lines. With larger vessels being cascaded to Caribbean routes, increased transshipment volumes, and VSA, there is likely to be a reduction of direct calls, connectivity to the smaller islands, and competition levels overall.

1.2.4 Fewer primary hub ports

Changes in ship size and expansion of VSA will push shipping lines to adopt strategies to maximize vessel utilization, namely by increasing hub port concentration. Based on this analysis' 2020 forecasting results for maritime services – including direct, transshipment and relay - only three Caribbean ports can expect to continue as primary hubs: Cartagena, Colon and Kingston (see Section 3.1.4).

Fewer hub ports and more feeder services carry the risk that some smaller islands will require three or even more transshipments for their containers to reach their final destination port, resulting in a loss of competitiveness for their economies. These islands are already suffering from the slow service and high cost of schooner services and will need to improve efficiencies if they are to retain current traffic levels.

A different trend that might slow concentration on fewer primary hub ports is for global shipping lines to pursue a “more than one hub” strategy. The aim would be to create competition between the various ports in the Caribbean region as a means of achieving better productivity ratios and limit the ports' negotiating power. Yet another trend is for regional services, particularly those operated by regional shipping lines, to use smaller hub ports and avoid the same transshipment hubs as the major shipping lines so as to avoid the risk of long berthing delays. Smaller, strategically placed ports are likely to serve this market as secondary hubs.

1.2.5 Consolidation of feeder services

Some rearrangement of feeder services is expected as a result of increases in feeder volumes. Currently, third-party feedering in the Caribbean is carried out by niche operators, such as

Seaboard Marine, Crowley, Bernuth, and Tropical, with more traditional feeder services being offered by Caribbean Feeder Services and X-Press Feeders. With increased demand for feeder services, it is possible that some of these regional lines may be useful to global operators, and perhaps be taken over by them. Another possibility is for their services to be advertised as part of the global network of larger operators through service consolidation, or some kind of regional VSA or slot sharing.

Under these agreements, independent feeder operators will continue to feed the hub ports of the mainline operators. Their services will duplicate some calls already offered by larger operators and to destinations where the combined volumes can make the service economically viable.

1.2.6 Emergence of New Players

Given Cuba's strategic position in relation to the Panama Canal, its port could be a serious competitor in the region. In fact, some port developments are already taking place, notably a new container port development at Mariel, on the northern coast, which the government has awarded to PSA International of Singapore.¹² The project's first stage, set for completion in 2014, includes 700 meters of berths to allow access for ships of up to 15.2 meters draft. The terminal will have capacity to handle 850,000-1,000,000 TEUs.

1.3 Maritime and Logistics Strategies and Action Plans: Other Regions

Maritime strategies are relatively uncommon, in part because shipping lines - and not countries or regions - have been the primary shapers of the maritime sector and the services they provide. The role of the public sector has been marginal to the scale and patterns of maritime services. In recent years, however, the invention of the container and its impact on the relationship of production and shipping costs has redefined this dynamic. While each country can pursue individual maritime and logistics strategies to further national interests, commonalities often exist within a region that would justify the need for regional planning. So far, only two regions – the EU and the Association of Southeast Asian Nations (ASEAN) - have developed anything resembling a regional maritime or logistics strategy.

¹² For more information on the Mariel port development, see: <http://in.reuters.com/article/2014/01/27/cuba-brazil-port-idINL2N0L10XO20140127>.

European Union

In 2007, the European Union promulgated a series of measures under the title “Logistics: Keeping Freight Moving,”¹³ which includes a freight logistics action plan. The EU plan was designed to promote freight transport logistics, make rail freight more competitive, create a framework to help European ports attract investment for their modernization, and put maritime freight transport on an equal footing with other transport modes.

Measures included an EU Ports Policy and a Maritime Policy that called for the development of *Motorways of the Sea*.¹⁴ The four specific “motorways” proposed are designed to introduce new intermodal maritime-based logistics chains in Europe, bring about a structural change in Europe’s transport organization, and make Europe’s supply chains more sustainable and commercially more efficient. There was a notable lack of explicit trade development or expansion objectives. Instead, the EU logistics action plan addresses the key role of logistics in ensuring sustainable and competitive mobility as well as other objectives that include a cleaner environment, security of energy supply, and transport safety and security.

ASEAN

The ASEAN nations have an elaborate trade integration strategy in which member states have committed to implementing a series of trade facilitation measures to reduce internal trade barriers. The strategy’s aim is to increase intra-regional trade above its 2012 level of 25 percent. This trade facilitation agenda includes a Logistics Road Map, a Strategic Transport Plan, a Trade Facilitation Framework, and a strategy to improve the facilitation of goods in transit. This agenda was first promulgated more than two decades ago and has met with some success: intra-ASEAN trade was only 21 percent at the time of its founding in 1997 and reached approximately 24 percent in 2012.¹⁵ However, the agenda has made slow progress despite concerted efforts to increase intra-regional trade, an indication of the task that lies ahead for the Caribbean.

¹³ Documents on the EU’s strategies to promote freight transport logistics may be found at: http://ec.europa.eu/transport/themes/strategies/2007_logistics_en.htm.

¹⁴ Details on Motorways of the Sea available at: http://ec.europa.eu/transport/modes/maritime/motorways_sea/.

¹⁵ Source: Trade statistics from Malaysia Ministry of International and Industry, see: http://www.miti.gov.my/cms/content.jsp?id=com.tms.cms.section.Section_8d46f140-c0a81573-1bef1bef-9524c069.

Other

Some individual countries have their own logistics strategies aimed at giving them a leading logistics role within their region. This is the case for Uruguay in the Southern Common Market (MERCOSUR), Thailand in ASEAN, Jordan in the Greater Arab Free Trade Agreement Area (GAFTA), and South Africa in the Southern African Development Community (SADC).

2. FREIGHT LOGISTICS

Freight logistics link producers and exporters to the ports that provide maritime services and connectivity to international trading partners. This Action Plan focuses more on logistics services for international trade than for the domestic transport infrastructure needed by these services. Apart from land access to ports, international logistics services make much less use of the national transport infrastructure than other road users. In some circumstances, port truck traffic can make a significant contribution to local road congestion, but the evidence gathered during the consultation process indicated that this is less of a problem in most Caribbean port cities than in other developing regions.

2.1 Logistics Efficiency in the Caribbean

The logistics efficiency of a country or region is directly determined by the level of development of its infrastructure, by its standards and regulations framework and the quality and accessibility of its logistics services. The Logistics Performance Index (LPI) is a benchmarking tool designed to help countries identify the challenges and opportunities they face in the area of trade logistics.¹⁶ Of the 160 countries included in the latest version of the LPI (for 2014), only six are from CARIFORUM: The Bahamas, Cuba, Dominican Republic, Guyana, Haiti and Jamaica. The average LPI score improved during the 2007-14 period, increasing from 2.22 to 2.59. As a comparison, the top performing country in the 2014 ranking was Germany with a score of 4.12.

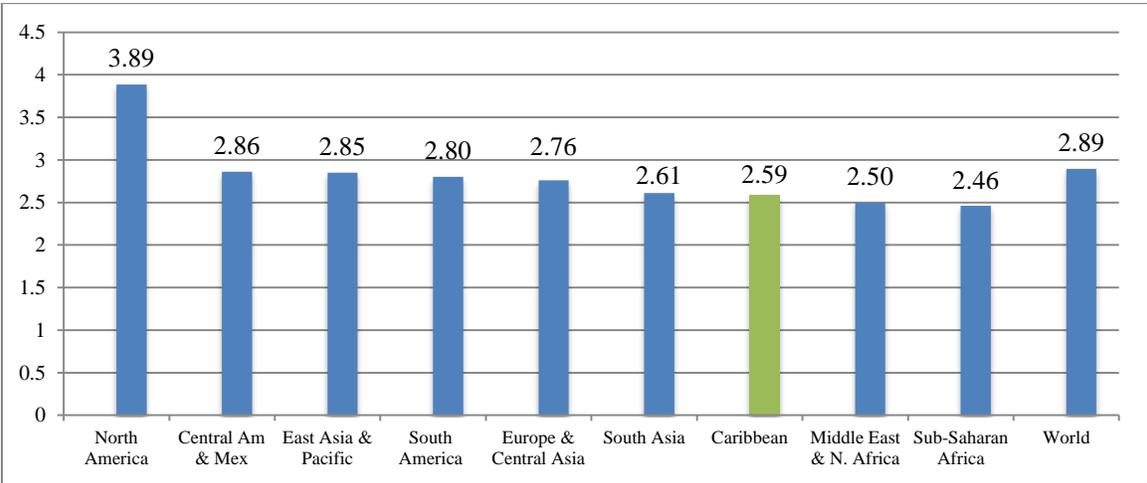
Another measure of interest is the comparison of global average LPI scores and rankings. Over the period 2007-2014, the CARIFORUM average score increased by almost 16 percent, compared to the global average increase during that same period of only 6 percent. In addition, the average CARIFORUM country rose in the rankings from 120 to 104. Despite these

¹⁶ The LPI is made up of the average evaluations of six components: 1) Efficiency of the customs clearance process; 2) Range and quality of logistics (mostly transport) infrastructure; 3) Efficiency of dealing with international shipment; 4) Competence of the local logistics industry; 5) Ability to track and trace shipments (traceability); and 6) Timeliness of shipments reaching their destinations.

improvements, the score was still low for a region that is very dependent on logistics to support its international trade. When compared to other regions, the LPI ranking for these countries is on the lower end though it is slightly higher than the Middle East and North Africa and Sub-Saharan Africa (see Figure 2-1).

In 2014, the LPI components on which the Caribbean scored lowest were: infrastructure, logistics quality and competence, and tracking and tracing. The Caribbean’s region results highlight the need for continued effort to enhance logistics performance, which would in turn stimulate trade growth.

Figure 2-1: Global LPI by region, 2014



Source: World Bank (2014). *Connecting to Compete 2014: Trade Logistics in the Global Economy*.

2.2 Interface between Domestic Logistics and Maritime Services

Together, domestic logistics and international maritime services determine the competitiveness of a country’s supply chains as well as the time required to get an exported product from its source to the destination market.

Table 2-1: Export Times to U.S. & EU from Emerging Regions

Port	United States			European Union		
	Domestic logistics	Maritime transit	Total	Domestic logistics	Maritime transit	Total
Santo Domingo (Dominican Rep.)	8	5	13	8	13	21
Bridgetown (Barbados)	9	6	15	9	12	21
Cartagena (Colombia)	14	6	20	14	15	29
Dakar (Senegal)	12	11	23	12	8	20
Kingston (Jamaica)	20	5	25	20	13	33
Hong Kong (China)	6	20	26	6	23	29

Port	United States			European Union		
	Domestic logistics	Maritime transit	Total	Domestic logistics	Maritime transit	Total
Alexandria (Egypt)	12	16	28	12	4	16
Santos (Brazil)	13	15	28	13	17	30
Mumbai (India)	16	25	41	16	13	29

Source: Authors' calculations and World Bank (2014).

Table 2-1 compares export times from various origin points to the U.S. and the EU.¹⁷ In the case of the Dominican Republic and Barbados, the significance of domestic logistics is reflected in the short overall transit times to both destinations. With a domestic transit time three days faster than the next fastest, and a week faster than the rest of the Caribbean, their exporters are a week closer to the U.S., giving them a significant competitive advantage. For the other Caribbean countries, slow domestic transit times result in longer total transit times to reach the U.S. and EU despite their competitive maritime transits. It requires an average of 15 days to move a container to the port of departure,¹⁸ compared to the average for OECD countries of 11 days. This comparison is of concern considering the relatively small size of the Caribbean countries.

To some extent the Caribbean's proximity to the U.S. (its largest market) compensates for its poor domestic logistics performance. The region also has relatively close proximity to the EU compared with some of its export competitors. However, despite the potential advantages of this proximity, only China and Brazil have longer maritime transit times to the EU. In short, even with relatively short maritime transit times to major overseas markets, long domestic transits resulting from inefficient logistics reduce the competitiveness of Caribbean exports.

2.3 Importance of a Strategic Location

Manufacturers have responded to increasing consumer pressures for products that are globally produced but tailored to the needs of national market demands by reorganizing their activities and realigning their global strategies. Earlier manufacturing strategies (based on centralized, vertically integrated and single-site manufacturing facilities) have been replaced by one of geographically dispersed networks of resources and distributed manufacturing. The primary attraction of distributed manufacturing is its ability to create value in geographically dispersed

¹⁷ For domestic freight segments, the value for the country in World Bank's Doing Business: Trading Across Borders (2014) report was used. For maritime segments, it was assumed that a regular destination port for exports with a determined origin would be used (Rotterdam/Naples in the EU, New York/Los Angeles in the U.S., according to origin). Source: www.searates.com/container/transit/.

¹⁸ See: *Doing Business 2014: Regional Profile – Caribbean States*, World Bank/International Finance Corporation (2014). The Caribbean countries included are: Antigua and Barbuda, The Bahamas, Barbados, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Puerto Rico St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.

locations.¹⁹ The preferred locations for these distributed manufacturing facilities are in the free trade zones of logistics hubs associated with hub ports. As customs free facilities, the manufacturer does not pay import duties and taxes or have to engage in the often-complex procedures of reclaiming such duties and taxes, including local value-added taxes on re-exported goods. As such, location in a logistics hub allows manufacturers to source local components at lower costs, which often means by local firms located in the same hub as the free zone. In this way, association with a hub port maximizes opportunities to bring together components from various other locations in the supply chain, and to export the products to the next stage of the manufacturing process or to their final markets.

2.4 Logistics Hub Services: Adding Value

If a hub port does no more than handle transshipment containers, it adds little to the national economy. A country can fully benefit from a hub port only by adding value through distributed manufacturing to the contents of the transshipped containers, which requires the establishment of an associated logistics hub. The most successful hub ports in developing countries in terms of total container throughput are Jebel Ali (Dubai); Singapore; Tanjung Pelapas (Malaysia); Laem Chegang (Thailand); Jeddah, (Saudi Arabia); and Colombo (Sri Lanka). All of these ports have associated logistics hubs, which provide extensive value-added services. The lessons of these successes have been applied in the Caribbean region in Colón, Panama.

Logistics platforms with value added services portfolio are mostly unavailable in the CARICOM region. In the Dominican Republic, there are 51 industrial Logistics Activity Zones (LAZs), with 578 companies accounting for more than 60 percent of the country's exports. In addition, there is an initiative to promote a new LAZ in the port of Caucedo, and the development of a logistics and industrial area next to the port of Manzanillo, located in the northern part of the country, is under study. In Jamaica, numbers are much lower: five LAZs with a few companies offering logistics services. The Caymanas Logistics Hub Project will include value-added logistics services, operating as a free port and multi-use facility catering to the information and communications technology (ICT), manufacturing, and agro-processing sectors, with particular

¹⁹ Products manufactured in several small facilities distributed throughout the supply chain can be customized to meet individual or regional tastes. Manufacturing components from different physical locations are then brought together for final assembly at a location close to the product's final market destination.

emphasis on manufacturing, logistics management, and services (ICT/Business Process Outsourcing (BPO)) operations included) under the framework of an integrated industrial zone.

In addition, the region exhibits deficiencies in cold storage infrastructure and related services. Specifically, the region has limited availability of temperature controlled transport means (i.e. trucks), few temperature controlled storage areas in ports and airports, and a lack of appropriate training in the field. SMEs with limited own means struggle to start export operations of perishable goods. In cases where successful hub port/logistics hub combinations were achieved, the following value-added services were offered:

- Location at a convenient point along a large number of international supply chains
- Minimum threshold of transshipment services
- Adequate storage space for offloaded containers and sufficient berth length for the extended stay of vessels with many container movements
- Part of or adjacent to the port to avoid significant landside container movement by truck/rail
- Availability of a free zone and conventional manufacturing areas
- Full range of efficient trade facilitation procedures and efficient transfers from the local manufacturing area to the free zone
- Reliable utility services, particularly electricity and communications
- Easy access to an airport with a wide range of passenger services so that goods that need faster delivery can be exported in the cargo holds of regular passenger flights

2.5 Strengths, Weaknesses, Opportunities and Threats for Freight Logistics in the Caribbean

Table 2-2 summarizes (SWOT) for freight logistics.

Table 2-2: SWOT Assessment for Freight Logistics in the Caribbean

Strengths	Weaknesses
<ul style="list-style-type: none"> • Economically and politically stable market of over 23 million people creates demand for high quality logistics services • Recognition of need to update logistics systems to support international trade • Strong national trade agencies able to exert pressure for logistics growth 	<ul style="list-style-type: none"> • Lack of data to assess logistics industry and for potential clients to assess quality of operators • No institutional or regulatory responsibility for logistics • Lack of development of third-party logistics (3PL) and fourth-party logistics (4PL) services • Few trained and experienced specialists, reinforcing the need for multinational operators • Inadequate logistics services for less than

Strengths	Weaknesses
	container-load (LCL) cargo <ul style="list-style-type: none"> • Trucking industry is under-invested and companies too small to offer full services • Lack of cold chains to support international trade in perishables
Opportunities	Threats
<ul style="list-style-type: none"> • Recognition of a need for a regional logistics training program • Public and private sector interest in developing logistics data observatory • Public sector interest in establishing instructional structure for regional logistics industry • Wide recognition of advantages of logistics platforms associated with ports • Competitiveness of international trade creates environment to improve logistics services • Many small regional traders offer a niche market for small logistics operators 	<ul style="list-style-type: none"> • Competition among countries impedes creation of regional logistics institutions • Fierce competition from multinational logistics operators squeezes out Caribbean-based companies • Competition within trucking industry prevents cooperation needed to provide more comprehensive services Weak institutional cooperation (at the national level) impedes development of logistics platforms

Source: Authors' elaboration.

Though there are several identified weaknesses in this freight logistics SWOT, the primary challenges which were prioritized during national and regional stakeholder consultations (see Table A4-4 for a comprehensive list) are summarized as:

- (1) Lack of logistics data
- (2) Underdeveloped logistics sector
- (3) Misalignment between demand and supply of LCL services
- (4) Lack of cold chains

These primary challenges will be addressed as part of the ten recommended actions detailed in the Action Plan (Section 5).

3. MARITIME TRANSPORT

This chapter addresses two separate but closely integrated subjects: maritime services and ports. Maritime services connect the region to its trading partners and to a large extent determine the competitiveness of its exports. Nowadays, the nature of these services determines the characteristics of the ports, a causality that reverses the former scenario in which the characteristics of the ports determined the shipping services. This new trend has been

emphasized by the restructuring of the maritime transport sector in response to the containerization revolution.²⁰

The liner service companies and their intense competition now determine the supply of maritime services. Ports can continue to meet the ever-changing demands of shipping lines only by continually improving and updating their infrastructure while keeping their tariffs as low as possible. Before large containerized vessels came into general use, the traditional ports located close to the downtown areas of the cities they served were more than adequate to deal with the demands of cargo ships, whose size and handling methods had remained basically unchanged since the invention of the steamship.

Today, however, many such downtown ports can no longer deal with the size of ships that want to use them and the demands related to the ships' loading capacity and ground transport requirements. Meeting these demands will be difficult and costly. For example, deeper, wider, and straighter access channels require considerable investment as well as potentially environmentally damaging dredging.²¹ On land, the ever-increasing demand for container storage space and higher capacity access roads are incompatible with downtown commercial land uses.

The rapidly changing nature of maritime services and the container ships that provide them drives the need for changes in port characteristics. Section 3.1 reviews both the current maritime services and expected changes in response to larger size container ships that will serve the Caribbean, and provides predictions for the region in the Hub and Spoke and Relay transshipment services markets. Section 3.2 continues the discussion with an analysis of the characteristics ports will need to provide such services.

3.1 Maritime Services

The maritime component of the Action Plan has two objectives: 1) Improving the connectivity of the region to its global markets; and 2) Improving the connectivity of the small islands to the larger islands. This section begins with a review of the Caribbean's container shipping

²⁰ Modern shipping via containers began in the mid-1950s. This new approach revolutionized international trade as containers represented a more efficient way to transport goods across a variety of transportation modes without mishandling the goods. More information available at: <http://www.worldshipping.org/about-the-industry/history-of-containerization>.

²¹ Based on the consultants' own estimate, dredging costs can range between 40-70 million dollars USD. Large vessels are demanding at least 14 m draught when many downtown ports barely reach 9 meters.

connectivity, the types of maritime services currently available and the projected changes driven by large size vessels.

3.1.1 Connectivity

Efficient maritime services should connect a country to global trade markets at the least possible cost and time. The most generally accepted measure of connectivity is the Liner Shipping Connectivity Index (LSCI), a composite measure of shipping services and port capacity.²² Table 3-1 provides LSCI results for most Caribbean countries. In 2013, Panama was the Caribbean Basin country with the highest ranking (25) and the only one in the top 30. Bahamas ranked 49th, while the Dominican Republic and Jamaica followed close behind in the 51st and 52nd places, respectively. Trinidad and Tobago and Belize were the only other CARICOM countries to rank in the top 100. Jamaica was notable for the drop in its score and ranking from 2010 by 8 percent and 17 places respectively.

Table 3-1: Liner Shipping Connectivity Index, Connectivity and Ranking, 2010 and 2013

Country	2010	2013	Rank 2013 (of 160)
Bahamas	25.7	26.4	49
Dominican Republic	22.3	25.6	51
Jamaica	33.1	25.3	52
Trinidad and Tobago	15.8	17.3	69
Barbados	4.2	5.2	122
Saint Lucia	3.8	4.9	125
Suriname	4.1	4.9	126
Grenada	3.7	4.6	129
Guyana	4.0	4.3	131
St. Vincent and the Grenadines	3.7	4.1	138
St. Kitts and Nevis	2.8	2.6	149
Antigua and Barbuda	2.4	2.4	150
Dominica	1.9	1.6	155
Panama	41.1	44.9	25
Caribbean Average	12.0	12.4	
Global Average	21.6	24.0	

Source: UNCTAD (2013) *Liner Shipping Connectivity Index*. www.unctad.org

²² The LSCI is measured each year and is published by the United Nations Conference on Trade and Development (UNCTAD). The measurement consists of the average of five components, each one of which is considered a contributor to overall maritime connectivity. The components are the following: 1) Number of shipping companies that provide container services from/to a country's ports; 2) TEU capacity of the largest ship deployed on services from/to a country's ports; 3) Number of container shipping services that connect a country's ports to other countries; 4) Total number of container ships deployed on services from/to a country's ports, and 5) Total TEU capacity of container ships that provide services from/to a country's ports.

The countries of the Caribbean and Central America rank lower on the LSCI than all of their trade competitors other than Sub-Saharan Africa, making it essential for the region to address its shortcomings in the components measured by the LSCI if a regional action plan is to improve connectivity (see Table 3-2).

Table 3-2: Liner Shipping Connectivity Index, Regional Comparisons, 2013

Region	LSCI Average Score
East Asia	71.4
Middle East and North Africa	28.0
Central and South America	27.9
South Asia	23.2
Caribbean	12.5
Sub- Saharan Africa	12.2
Global average	24.0

Source: UNCTAD (2013)

3.1.2 Shipping companies: Major players

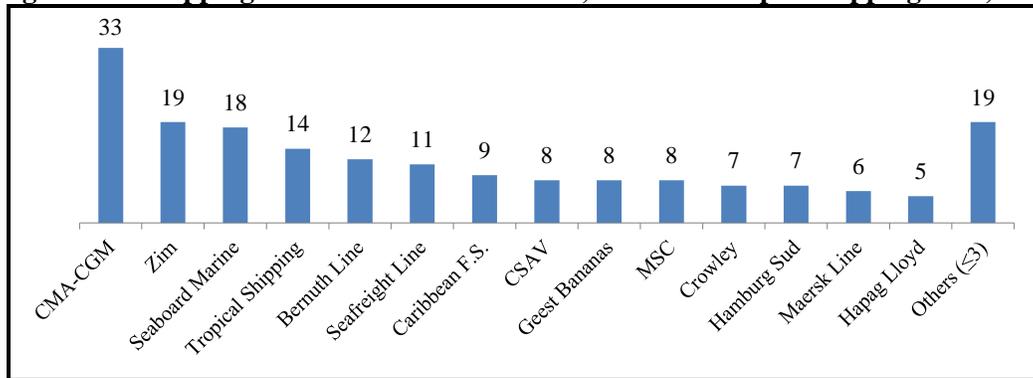
The LSCI components that mostly affect the Caribbean concern the number of shipping companies and services. The major shipping companies operate from the region’s primary and secondary hubs, while regional shipping lines - and a few of the major shipping lines as well - use ports in the smaller islands. Relatively few shipping lines serve the region compared to those serving comparable regions of the world. Figure 3.1 provides an indication of the degree of concentration of Caribbean shipping line services. Fourteen shipping lines provide almost 90 percent of the 184 identified shipping routes serving the region.²³ Only four of the world’s 10 largest container lines (based on TEU capacity) provide services to the region. In terms of capacity, CMA-CGM has 18 percent of the market, followed by ZIM and Seaboard Marine, with about 10 percent each. Profiles of these three lines are as follows:

- CMA-CGM provides 33 services at 18 ports, with multiple calls at Kingston (4), Port of Spain (4), Caucedo (3), Vieux Fort (3), Bridgetown (2), and St. John (2)
- ZIM has 19 services at 15 ports, with multiple calls in Kingston (4) and Caucedo (2)
- Seaboard Marine runs 18 services at 12 ports, with multiple calls at Kingston (3), Rio Haina (3), Puerto Plata (2), and Port-au-Prince (2)

²³ All information provided in this section is based on primary data collected by the consultants during stakeholder consultations listed in Annex IV.

Of the smaller lines, the largest providers to secondary hubs and feeder ports are Bernuth, Caribbean F.S. and Geest Bananas.

Figure 3-1: Shipping Services in the Caribbean, # of Services per Shipping Line, 2012

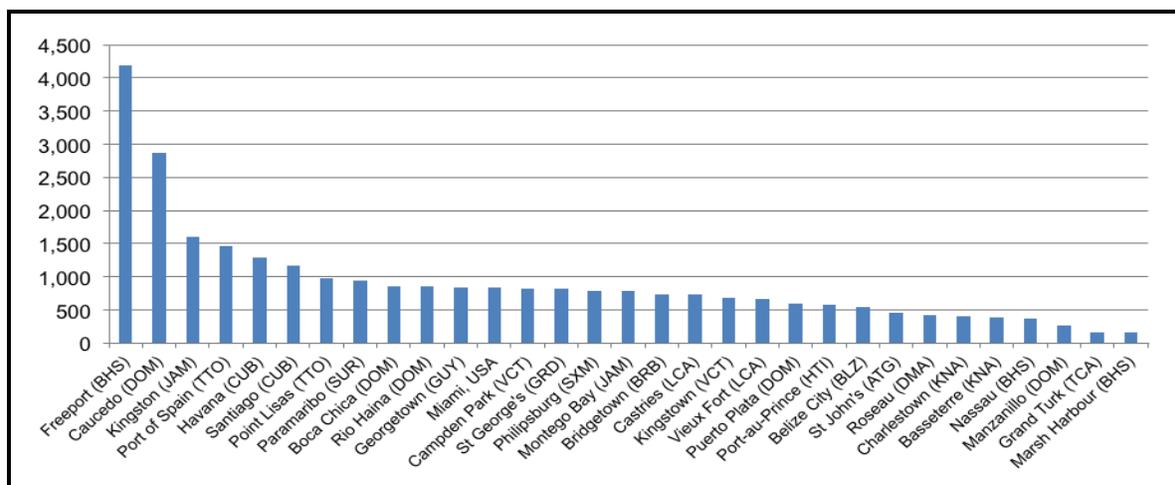


Source: Authors' calculations.

Size of vessels

The other three components of the LSCI that impact the Caribbean's low ranking are related to the size and number of ships. The index's scores take into account maximum and average vessel sizes, with secondary hubs having smaller average vessel sizes than primary hubs, and larger vessels serving feeder ports. The maximum size of vessels using Caribbean ports is constrained by the capacity of the locks on the Panama Canal and the depth of Gatun Lake, which comprises part of the canal route. The current maximum vessel size is about 4,500 TEUs with a draft of about 12.4 meters. All Caribbean hub ports can handle vessels of this size.

Figure 3-2: Average Vessel Size, by TEUs, by Port, 2012



Source: Authors' calculations.

Apart from countries with primary hub ports (The Bahamas, Dominican Republic, and Jamaica), maximum vessel size would need to be increased in order to achieve higher LSCI scores. However, even in the primary hubs, the average vessel size actually transiting through the ports is much less than 4,500 TEUs (averaging under 1000 TEUs) with the exception of Freeport, which primarily handles vessels that have transited the Canal, and to a lesser extent Caucedo, which also has a high proportion of transshipment services (see Figure 3-2).

3.1.3 Types of maritime services

Not all shipping services are the same, and not all of them provide the same level of connectivity. To better understand these differences, maritime services can be categorized into three main types: Direct (origin to destination); Intra-island maritime services (local distribution services that connect the smaller islands for mostly intra-regional transit); and Transshipment which includes both Hub and Spoke (deep sea to feeder vessels via one or more transshipment ports) and Relay (deep sea to deep sea via a relay port and/or via one or more transshipment ports).

(i) Direct services

While it is customary to distinguish between direct and transshipment services, in practice there is a large overlap between them. Services that provide direct services between some countries also provide feeder services via transshipment to other countries. This distinction is important as it impacts on the time and costs of a country's maritime trade. From the shipping lines' perspective it is irrelevant whether the vessels are transporting containers directly between ports or via transshipment at an intermediate port since their objective is to maximize their market share while minimizing their costs.

(ii) Intra-island maritime services

Intra-island shipping services have very different characteristics than the other two categories and respond differently to future trends. Though this report was not focused on small intra-island vessels, it is nevertheless relevant for the region, and is treated to a more lengthy analysis below.

Feeder services to and between larger islands

While maritime services between the larger islands are limited, they tend to be reliable and

Figure 3-3: Caribbean Routes to/from U.S.



Source: Crowley Maritime Corporation. www.crowleys.com

frequent (despite high tariffs), because the trade flows are sufficiently large to attract services by regional shipping lines and feeder services to some of the regional hub ports. Feeder services are undertaken by vessels of 400 TEUs or more as least on a weekly basis. Most of the routes are circular and include a base or hub port. Regional services generally use a port in Florida,

whereas feeder services go to the hub ports of the main shipping line, such as ZIM's Caribbean Express service, based in Kingston, and CMG-CMA CARIFEED, based in Cartagena. Some of the larger islands are also served by direct routes to the U.S., such as those served by Crowley and CMA-CMG; and to Europe, such as those served by CMA-CMG and Geest Lines (see Figure 3-3 for an example). Though this avoids the need for transshipments, the cost savings of doing so are largely offset by the higher tariffs for using a small vessel for the trans-Atlantic or inter-regional portion of the voyage. In addition, some of the time savings resulting from avoiding transshipment (which can take more than five days) are offset by the multiple port calls either within the Caribbean or in the destination region.

Maritime services to smaller islands

The economies of many of the smaller islands are insufficient to sustain regular, conventional freight shipping services. Without these shipping services it is difficult for the smaller islands to take advantage of the potential markets on the larger islands, such as supplying produce for cruise liners, or of markets external to the region. The ability to supply these markets depends on having reliable and relatively low-cost shipping between the islands.

Several attempts have been made to provide regular freight services to the smaller islands that are more reliable than those provided by schooner services. However, most of these attempts have been predicated on over-optimistic projections of demand, a dependence on public subsidies, or both.

Some of these attempts, such as the short-lived Trinidad and Tobago service using the Windward II, have used large vessels that had passed their prime, and had a low initial capital cost but relatively high operating and maintenance costs. Typical of the freight ferry services common in the Caribbean, the Windward II was a combined passenger-freight vessel with an operating emphasis more on passengers than freight.

Other attempts pinned their hopes on specially designed small vessels, but these proved to be too expensive in terms of original investment and operating costs, although their size was appropriate for the market.

Purpose-designed high-speed small passenger/freight vessel

The typical very small inter-island passenger-freight ferries that operate within some of the island groups are too small to handle full-sized containers, but a few of them do carry up to 10 20-foot containers. These vessels could provide a wider range of services so long as the demand became more than seasonal.

At least one surviving service indicates what might be sustainable on a larger scale. It uses a previous generation vessel that is relatively robust but with an unsophisticated technology (a converted landing craft), resulting in both a low initial cost and relatively low operating cost. As with many services using older vessels, the insurance costs can be prohibitive.

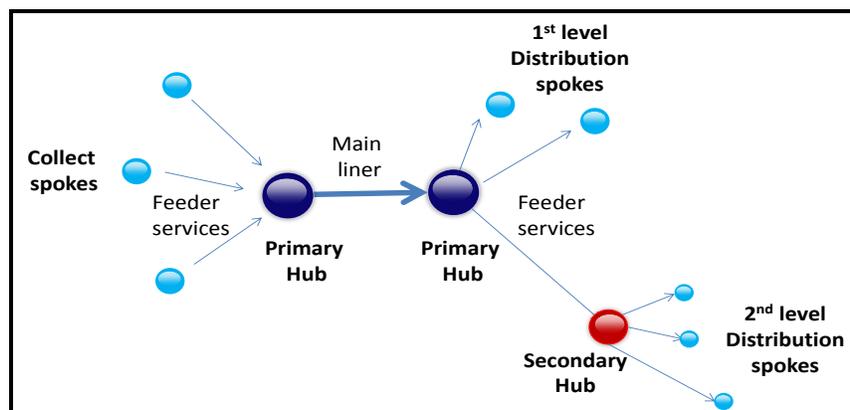
In other island-based regions of the world, such as the Philippines, Indonesia, and the southern Pacific Ocean, the shipping services that have proved most viable have similarly adopted an approach based on low capital cost combined with technology. However, one distinguishing feature that has not been available to the small islands of the Caribbean is the ability to bypass conventional ports with their high charges, high safety and security requirements, and congestion, in favor of small ports or even landing ramps with no infrastructure costs or charges, less demanding security arrangements, more friendly trade facilitation measures (particularly customs), and no congestion.

Making small island freight services commercially viable requires the use of vessels with low initial and operating costs which have the freedom to operate outside of conventional ports and with minimum customs, security, and trade facilitation formalities.

(iii) Transshipment services (Hub and Spoke; Relay)

In the **H&S transshipment** model, containers are shipped into or out of the Caribbean region in large deep-sea vessels via local hub ports, and then distributed onwards in smaller container vessels to or from local markets. The main advantage of this system is its simplicity: In a network of “n” nodes, only “n-1” routes are necessary to connect all nodes (see Figure 3-4). This system also maximizes vessel efficiency by using larger vessels on main routes that operate close to capacity, and thus have low unit costs. Smaller vessels with higher unit costs are restricted to the feeder routes where there is less demand. The H&S model minimizes transit times and costs for shipping containers between hub ports, but it also involves much higher container costs and transit times to countries served by feeder ports.

Figure 3-4: Hub and Spoke Transshipment Model



Source: Authors' elaboration.

The increased usage of H&S services will result in extended (and thus uncompetitive) lead times, ultimately involving a loss in competitiveness for the affected islands. Two or even three transshipment operations might be required for shipments between the worst serviced islands. In addition, small vessels do not provide the economies of scale of large ones leading to higher fees imposed by shipping companies for loading and unloading relatively small consignments per port call.

More destinations in the Caribbean are served by H&S transshipment services than by either of the other service types. This reflects the situation at the global level in which only 17 percent of country pairs are directly connected, 62 percent require one transshipment, and the remaining 21

percent require two or more transshipments.²⁴ The few exceptions involve countries for whom connectivity is provided by the services operating on the four major global routes²⁵ and which use a Caribbean port as a local hub. The other countries are served by transshipment services via these hub ports.

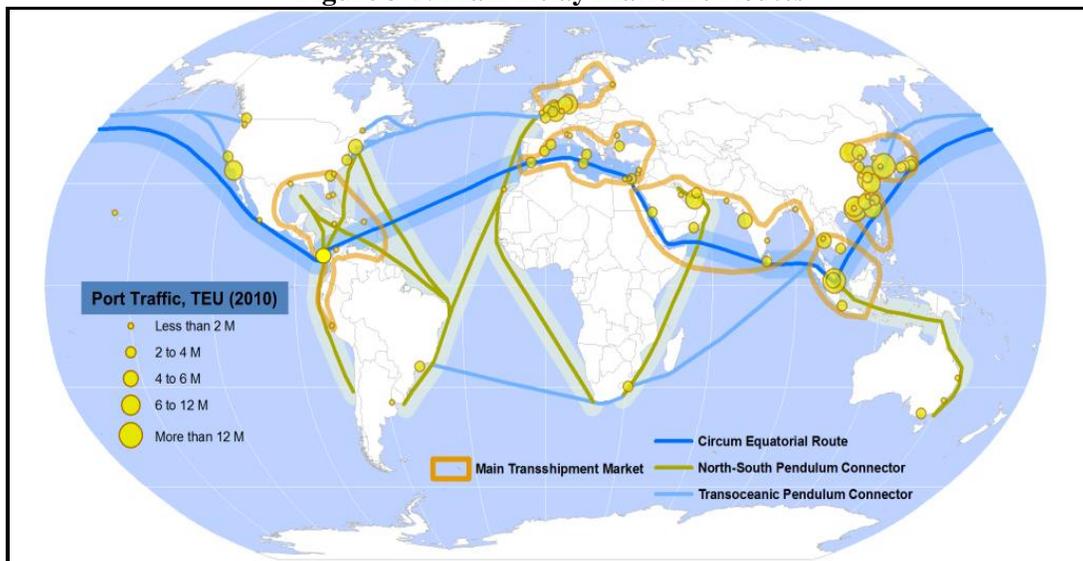
H&S transshipment gives some Caribbean ports a good opportunity to expand their services beyond just serving regional demand through feeder services, and tap into international cargo flows and the correspondingly higher profits. A transshipment port would also gain access to feeder line networks, which serve spoke ports, in this way giving the port good connectivity and a stronger position. In fact, Caribbean ports are gaining competitive positions for H&S transshipment traffic.

Relay transshipment model links deep-sea routes between regions at relay ports that also often serve as transshipment ports. In cases of shipment to a hub port, subsequent transshipment will be made there to a feeder vessel. At relay ports, containers are transshipped between large vessels rather than from large to smaller vessels, as is the case at H&S ports. Relay services are typically used where East-West and North-South liner services cross. This corresponds to the Caribbean's reality where East-West routes from Asia to the East Coast of the U.S. intersect with North-South routes from the East Coast of the U.S. to the East Coast of South America. However, relay services provide only minimal connectivity between Caribbean countries. Figure 3-5 maps the principle relay maritime routes.

²⁴ Source: Rodrigue, Jean-Paul (2010). *Maritime Transportation: Drivers for the Shipping and Port Industries*. International Transport Forum.

²⁵ The four major routes are: 1) North America to South America; 2) Europe to South America; 3) Asia to South America; and 4) Asia to North America.

Figure 3-5: Main Relay Maritime Routes



Source: Authors' modification, based on Rodrigue, J-P. (2013) *The Geography of Transport Systems*, 3rd edition.

With the increase in size of liner container ships and the reduction of the number of ports where they call, transshipments alone can no longer meet demand. Liner shipping companies developed the concept of relay ports to overcome this problem, although the solution requires another movement of containers between vessels to service many destinations. As such, many routes now involve a feeder service from the origin to the first transshipment port, a liner service to a relay hub, then another liner service to a second transshipment port, and finally a feeder service to the final destination port. While this service pattern maximizes the occupancy of vessels and allows them to be optimized by the size to their routes, it comes at the cost of multiple transshipments and relays between many smaller origins and destinations.

3.1.4 Predictions for Caribbean Shipping Services (H&S and Relay Transshipment) by 2020

As mentioned earlier, the global transshipment market is set to change primarily by the expansion of the Canal and increased global trade volumes. However, will Caribbean ports capture some of these gains? If so, and in order to tailor the recommendations made later in this Action Plan, which will gain and what are the options for those ports which will lose market share?

Accordingly, this section sets out to answer what the future share of the transshipment (H&S and RTS) market would be for Caribbean ports given the probability of being chosen by shipping companies. The economic modelling is described in detail in Annex III. For the sake of brevity

in the main body of this report, the methodology for the modelling can be broken down into three simple steps:

- i. Isolate the current share of transshipment (H&S, RTS) services using COMTRADE and OSC proprietary data on ports' historic volumes. The residual will be goods using direct services.²⁶ Once known, a linear regression provides estimates of how sensitive (elastic) TS services are to aggregated trade flows. The coefficients obtained from this regression, together with IMF growth rate forecasts, provide predicted values for H&S and RTS services to 2020.²⁷
- ii. Once the predicted future values of H&S and RTS services are known, what is the probability that one port in the Caribbean will be chosen over another? Using a Multinomial Logit as the estimation approach, the model estimates a probability of a port being chosen based on a series of explanatory variables: For the H&S estimation these explanatory variables are *Port Costs, Facilities Suitability*,²⁸ *Productivity, and Local Cargo Volume*, whereas for the RTS estimation these variables correspond to *Port Costs, Facilities Suitability, Productivity, and Hub & Spoke share*. Seven ports are considered for H&S while only five are for the RTS since the remaining two do not offer these services. Details and assumptions of these explanatory variables are available in Annex III.
- iii. What would the share of the transshipment market be if a port was chosen (or not chosen) and the relative increase (decrease) in their share of the market? The H&S/RTS probabilities estimated for each port in the previous stage can be directly interpreted as the ports' market share of the total forecasted regional demand for H&S/RTS services. The 2020 expected TS volumes by port are obtained by multiplying these shares by the total aggregated demand for H&S/RTS services computed in Step 1.

Output Step 1

For ports in the Caribbean, the relative shares of transshipment (H&S and RTS) vary considerably (see Table 3-3). For primary hub ports, H&S trade usually dominates, followed by the relay trade, and then the host country trade (direct). For feeder ports, feeder services account

²⁶ Insufficient data prevented the authors from forecasting the future share of the small island freight services. Further, this was not the subject of this report.

²⁷ Data used from IMF Global Economic Outlook. Since data is only available for a four year period (2012-2016), two assumptions were made for the period 2016-2020. First, that the GDP growth rate will be flat and equal to the previous five years average; and second, that the yearly growth rates for this period of global trade volumes are equal to those of GDP.

²⁸ Facilities suitability is an index of the suitability of a port being able to handle future volumes and assumes the full implementation of expansion plans foreseen by 2020. For a list of these plans, see Table A3-1.

for the largest share by far, followed by some direct/feeder services from the smaller islands.²⁹ For the primary hub ports of the region, import/export containers make up an average of 24 percent of shipments for which services are provided. However, this figure masks a considerable variation among ports, ranging from 54 percent in Port of Spain, to less than 10 percent in Kingston and Freeport, with Colon, Caucedo, and Cartagena closer to the average. At Kingston port, more than half of the containers are on H&S transshipment services, whereas in Freeport more than 50 percent are on relay services.

Table 3-3: Type of Maritime Services, by % Share of Total Container Volume, by Port, 2011

Port	Direct %	H&S Transshipment %	Relay %	Total (mm of TEUs)	Total %
Cartagena	38	22	40	1.85	17
Caucedo	21	49	30	0.99	9
Colon	27	40	33	3.37	31
Freeport	2	44	54	1.12	10
Kingston	10	56	34	1.76	16
Miami	55	41	5	1.26	12
Port of Spain	54	46	0	0.36	3
Share of total market	27	41	32	10.71	100

Source: Authors' calculations based on data collected for the period 2000-2011.

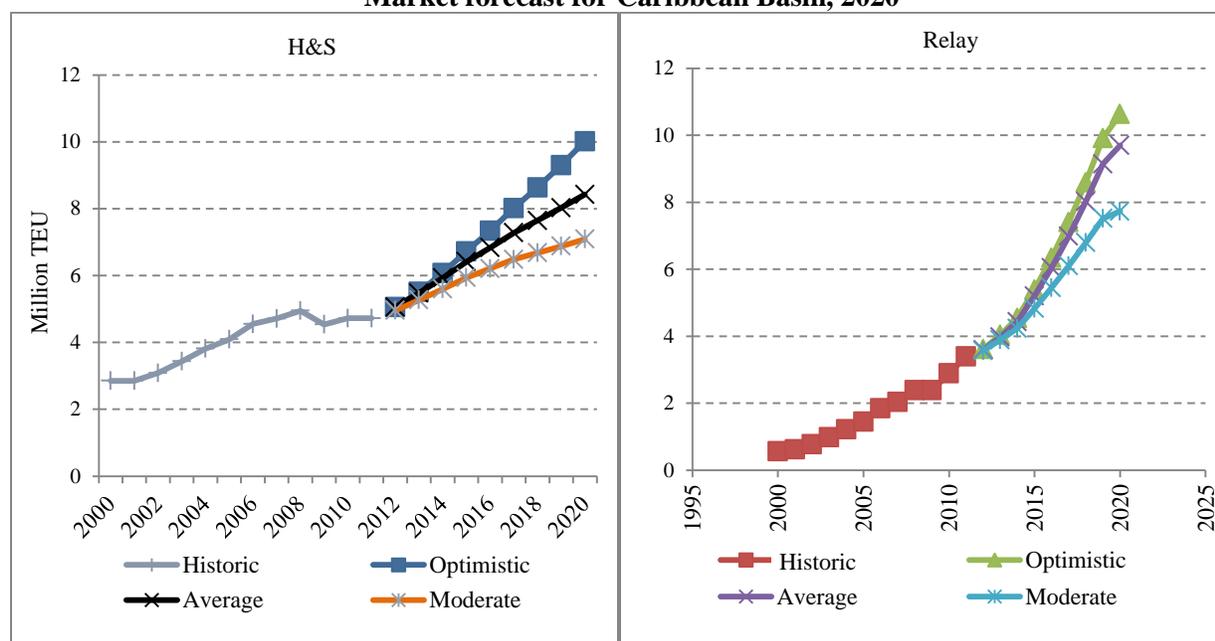
An increasing share of total container movements is concentrated at the primary hub ports, to such an extent that most secondary ports experienced very low growth in the 2000-11 periods. Exceptions were Barranquilla (Colombia); Santa Marta (Colombia); and Point Lisas (Trinidad and Tobago), which saw an average yearly growth of over 5 percent during the period. The opening of Caucedo resulted in a significant volume reduction in Rio Haina (Dominican Republic). The lower maritime costs and transit times made possible by a hub port constitute a substantial competitive advantage to a country's international trade. However, the investment and operating costs of hub ports are very high. Therefore, the hub port must attract high volumes of transshipment and relay of containers to ensure recovery of its investment and operating costs, which are mostly fixed.

Forecasts of maritime services in the Caribbean region by the year 2020 depend on two future sources of demand: the region's imports and exports, and the shipment of containers coming from and going to other regions which are transferred from one vessel to another at a Caribbean

²⁹ Ports classified as "primary hub ports" in this Action Plan include: Cartagena, Caucedo, Colon, Freeport, Kingston, Miami, and Port of Spain. Ports classified as "secondary hub ports" include: Barranquilla, Santa Marta, Point Lisas, and Rio Haina. Ports classified as "feeder ports" include: Bridgetown, Barranquilla, Rio Haina, Kingston, Colon, and Port of Spain.

port. Figure 3-6 details the results from the forecasts under average, moderate and optimistic scenarios.³⁰ In all cases, forecasts call for a significant and steep increase in traffic by 2020.

**Figure 3-6: Hub and Spoke and Relay Transshipment Services
Market forecast for Caribbean Basin, 2020**



Source: Authors' calculations.

The forecast of services for the import and export demand³¹ is further divided into direct services and transshipment services. Forecast results for the demand of the three types of services are summarized in Table 3-4. As mentioned in an earlier footnote, predictions were not made for small vessels due to the lack of credible data.

Table 3-4: Projected % Share of Total Demand for Maritime Services, 2020

Port	Direct %	H&S Transshipment %	Relay %	Total (mm of TEUs)	Total %
Cartagena	24	32	30	6.70	30
Caucedo	7	9	15	2.49	11
Colon	32	19	22	5.03	22
Freeport	1	4	6	0.96	4
Kingston	6	35	27	5.79	26
Miami	24	1	0	1.10	5
Port of Spain	7	0	0	0.29	1

³⁰ Average scenario assumes IMF growth rates 2012-2016 and held constant between 2016-2020. Moderate scenario assumes a 10 percent decrease in growth rates while an optimistic scenario assumes a 20 percent increase.

³¹ The import and export forecasts were based on IMF estimates (from the *World Economic Outlook - October 2012*), for Latin America and the Caribbean, with the assumption that the share of bulk products would be the same as for 2012. The demand for containerizable export/import trade for 2020 is forecast to be 24.1m TEUs compared to 15.5 m TEUs in 2011.

Port	Direct %	H&S Transshipment %	Relay %	Total (mm of TEUs)	Total %
Share of total market	100	100	100	22.36	100

Source: Authors' calculations.

There is a direct relationship between the transshipment and direct services since containers can be transported in direct services or feeder services to a hub. The direct service container trade of each country is analyzed on the basis of the total import/export forecast of containerizable trade less the transshipment share. The result for the most probable growth scenario is a modest increase in containers transported by direct containers from just under 3 million TEUs in 2011 to about 4.4 million TEUs in 2020. Colon would continue to have the largest share of this market, with 32 percent, followed by Cartagena and Miami, each with a 24 percent share. Estimates using the Multinomial Logit Model were not done for direct service since these are not using a transshipment port. By 2020, the proportion of import/export containers transported to destination via direct services will drop to 65 percent (compared to 70 percent in 2011.)

The variables that impact the transshipment share include the size of main liner vessels operating in the region, handling costs at ports, saturation of port capacities, and bunker prices, summarized in Table 3-5.

Table 3-5: Variables Impacting Transshipment

Variables	Impact on Transshipment	Potential Evolution
Size of main liner vessels operating in the region	Larger vessels result in pressure to reduce the number of direct calls at smaller ports	Potential effect of cascading current tonnage from main lines to secondary trades, resulting in larger mainline vessels on all mainline trades
Handling costs at ports	Reduction of handling costs favors transshipment	Increased competition and improved equipment and operations will favor transshipment
Saturation of port capacities	Capacity constraints: lucrative local imports/exports cargo will take priority	A constraint in capacity is not envisaged during this forecast period
Bunker prices	Larger costs favor direct services (less distance and more fuel efficiency of larger vessels)	Undetermined

Source: Authors' elaboration.

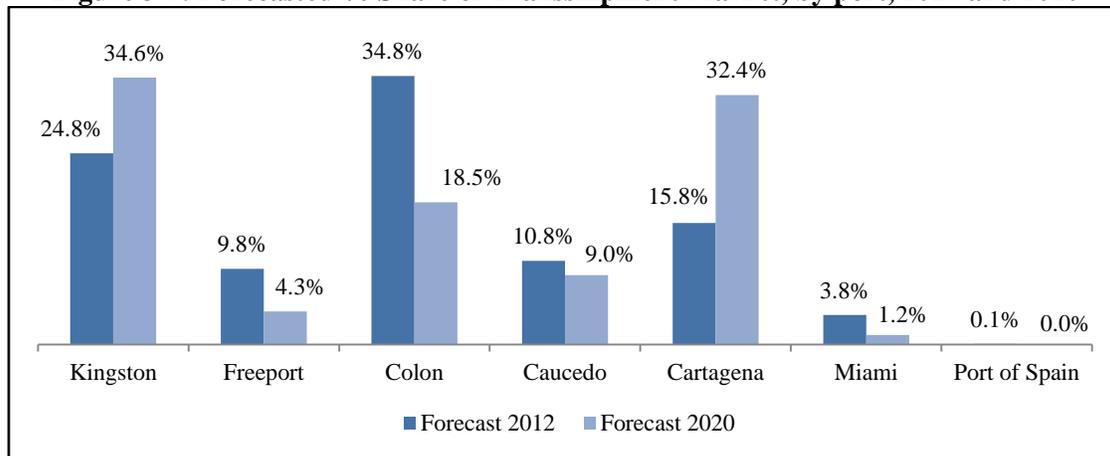
The projected transshipment share is based on the regional transshipment share during the past decade. It took into account the variables in Table 3-5 and modified to incorporate an expected maximum share of about 35 percent. The result was a projected increase in current transshipment

containers from the present 4.4m TEUs to 8.4m TEUs by 2020, representing an average growth rate of 6.6 percent.

Output Steps 2 and 3

The projections show a continued concentration of transshipment services in a small number of principal hub ports. In the case of **H&S transshipment**, the share of services using the port of Cartagena would be expected to increase from 15.8 percent to 32.4 percent, and that using the Kingston port would rise from 24.8 percent to 34.6 percent (see Figure 3-7). These shares would translate into transshipment volumes of 2.9 million TEUs for Kingston and 2.7 million TEUs for Cartagena. Meanwhile, the shares of all the other hub ports would decrease, with Freeport, Miami, and Port of Spain attracting less than 5 percent between them. Colon would suffer the largest percentage reduction, from almost 35 percent to less than 20 percent.³²

Figure 3-7: Forecasted % Share of Transshipment Market, by port, 2012 and 2020



Source: Authors' calculations based on data collected in 2010-2011.

Main conclusions for H&S transshipment

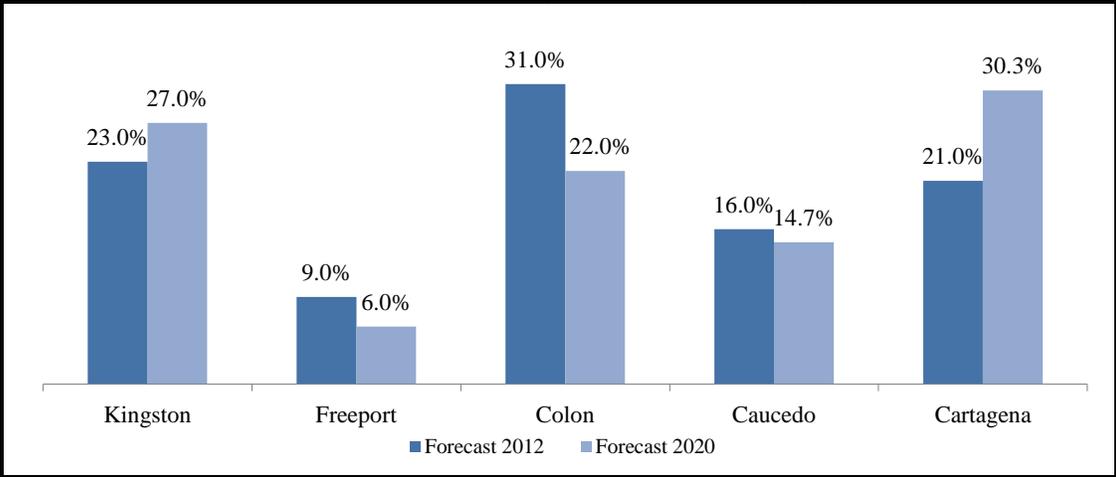
- H&S share of the total non-relay market is forecasted to increase slightly to 35 percent
- The ports of Cartagena and Kingston have a high potential provided they execute all the expansion plans being contemplated. The other ports could still retain some market share if they improve on key variables, such as productivity, transit costs, and facilities
- The potential of Cartagena exceeds the existing expansion plans and will require additional investments to capture its full potential

³² The model includes predictions for 2012 since the original data was collected in 2010 and 2011. The same applies to the relay services model.

Relay transshipment shipping volumes in the four routes with potential relay activity increased by between six to eight percent annually until 2008. Although the financial crisis resulted in a drop in volume of about 20 percent in 2009, by 2011 volumes had exceeded their pre-crisis levels.

The results of the projections of demand for RTS were similar to that for H&S containers, although they showed somewhat less hub port concentration (see Figure 3-8). Three ports appear to be about equally attractive to future relay traffic: Cartagena, attracting a 30 percent share of total relay traffic in the region; Kingston, 26 percent; and Colon, 22 percent. The only other hub ports that attract any relay traffic are Caucedo, with 15 percent, and Freeport, with 6 percent. These allocations indicate a loss of market share by Freeport and Colon of about 11 percent each and substantial gains by Kingston and Cartagena of about 12 percent each. These projections assume all projected investments and reforms are made.

Figure 3-8: Forecasted % Share of Relay Services Market, by port, 2012 and 2020



Source: Authors' calculations based on data collected in 2010-2011.

Main conclusions

- The volume of relay transshipment has been growing steadily over the last decade. This growth has resulted from both increased trade volume in the key shipping routes passing through the region, as well as an increase in the percentage of relay in relation to total traffic.
- The Panama Canal expansion will cause a large boost - up to 60 percent - in this Caribbean relay-ratio, which is currently about 35 percent.
- Forecasted growth of the world export of goods will also drive relay transshipment growth.

- Even with a reduction of market share, Caucedo and Colon would still benefit from the overall market growth.

3.1.5 Strengths, Weaknesses, Opportunities and Threats for Maritime Services in the Caribbean

Table 3-6 summarizes the SWOT for maritime services.

Table 3-6: SWOT Assessment for Maritime Services in the Caribbean

Strengths	Weaknesses
<ul style="list-style-type: none"> • Strategic location at a crossroads of four global maritime routes • Good offering of maritime connections 	<ul style="list-style-type: none"> • Most large ports in the region need to invest to create draft necessary to accommodate NPX vessels • Limited development of logistics services beyond global shipping companies • Small domestic markets competing against large markets outside the region • High transit times and maritime fees to main export destinations for small islands
Opportunities	Threats
<ul style="list-style-type: none"> • Forecasted growth of transshipment market due to anticipated growth of trade in the region • Forecasted growth in global export of goods will drive relay services growth • High transshipment potential for the ports of Cartagena and Kingston provided they execute all expansion plans contemplated • Despite having a lower potential, Caucedo and Colon might still benefit from a growing transshipment market • Development of secondary hubs for regional services • Panama Canal development may bring about new markets for Caribbean ports • Development of a consolidation services industry to serve the smaller islands 	<ul style="list-style-type: none"> • Inability to adapt to the new scenario resulting from the Panama Canal expansion • Development of an alternative to the routes through the Panama Canal • Doubts about the capacity to secure financing for the Kingston port expansion • New industry trends (rise of VSAs + larger vessels) leading to lower number of calls for big vessels, resulting in lower connectivity in the smaller islands • Poor connectivity from the smaller islands to the key U.S. market

Source: Authors' elaboration.

3.2 Ports

The Caribbean's ports will need to develop and adapt to the trends in shipping services if they are to successfully address the export needs of the regional and national economies. The three potential roles for the region's ports are:

- (1) Primary hub: Ports which principally serve the RTS and H&S transshipment trades, but in doing so, encourage better maritime services to serve their national economies;

(2) Secondary hub: Ports focused more on H&S transshipment than relay trade and acting as hub ports for Caribbean regional services;

(3) Feeder: Ports concentrated on serving the trading needs of their own economies without attempting to engage in either H&S or relay transshipment services, although many successful feeder ports can evolve into this role.

Table 3-7 details the characteristics of the primary ports in the Caribbean Basin.

Table 3-7: Characteristics of Primary Ports in Caribbean Basin

Port	Terminal Operator Name	Terminal Operator Public / Private	Category	Max Draught (m)	Max Length berth (m)	Storage Area (TEU)	Throughput (Thousands TEU, 2011)	% increase (CAGR, 2007-2011)
Kingston	Kingston Container Terminal (KCT)	Public	Hub (CMA CGM, Zim)	12.5	535	77,155	1,757	-2.9%
	Kingston Wharves Terminal (KWT)	Private		13	1,600	5,600		
Freeport	Freeport Container Port Hutchinson Port Holdings	Private	Hub (MSC)	16	1,036	28,327	1,116	-9.1%
Caucedo	DP World Caucedo	Private	Hub (Hapag Lloyd, NYK Line)	13.5	922	40,000	994	5.6%
Port of Spain	The Port of Spain (PPOS)	Public	Subsidiary hub	12	514	2,800	362	0.3%
Rio Haina	Rio Haina East Terminal	Public	Service	10.4	765	2,800	274	2.5%
	Rio Haina West Terminal	Public		9.7	451			
Point Lisas	Point Lisas Industrial Port Development Corporation Limited (PLIPDECO)	Public	Subsidiary hub	11.8	200	7,000	169	2.0%
Port au Prince	Autorité Portuaire Nationale	Public	Service	10	800	18,000	124	0.2%
Bridgetown	Barbados Port Inc.	Public	Service	11	366	5,200	77	-6.3%
Puerto Plata	Autoridad Portuaria Dominicana (APORDOM)	Public	Service	9.4	300	n.a.	42	2.5%

Source: Authors' calculations.

For the purposes of this analysis, since its focus is on H&S and relay transshipment, the following section will focus primarily on primary hub ports.

3.2.1 Features of Primary Hub Ports

Determining what role a port is intended to play, and what port infrastructure is needed to fulfill that role, will be key for ports competing to become primary hubs in the Caribbean. Primary hub ports will need to be dredged to accommodate the 15.2-meter draft requirement of the NPX-class vessels, which will be able to carry a 12,500 TEUs load. Table 3-8 shows the permitted increase in vessel dimensions with the new Panama Canal locks.

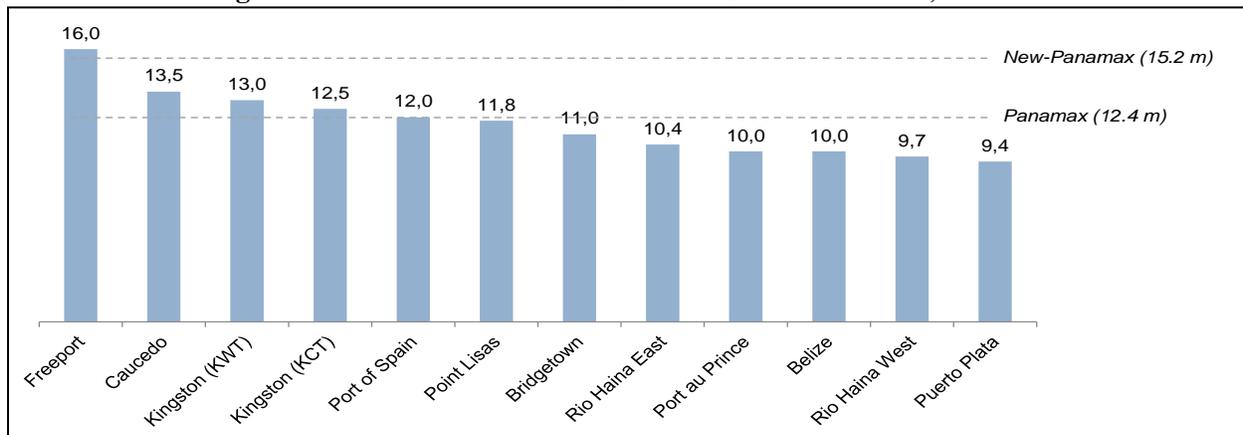
Table 3-8: Maximum Vessel Dimensions for Panama Canal Locks

Dimension (meters)	Existing Locks	New Locks
Length	294.1	366
Breadth	33.5	55
Draft	12.4	15.2

Source: Panama Canal Authority. www.pancanal.com

Of all the hub ports in the Caribbean region, only Freeport currently has sufficient draft³³ for the NPX vessels as indicated by Figure 3-9. Therefore, the other ports will require investment to increase berth depth, berth lengths and container storage capacity (use of larger vessels results in more container moves per port call, in turn requiring more space to store the containers.) Beyond the main hubs, the secondary hub ports will have to be prepared to hold 4,400 TEUs (12.4-meter-draft) vessels, while feeder ports will have to be ready to serve vessels of up to 2,000-3,000 TEUs (under 10-meter-draft) by 2015.

Figure 3-9: Maximum Draft for Selected Caribbean Ports, in meters³⁴



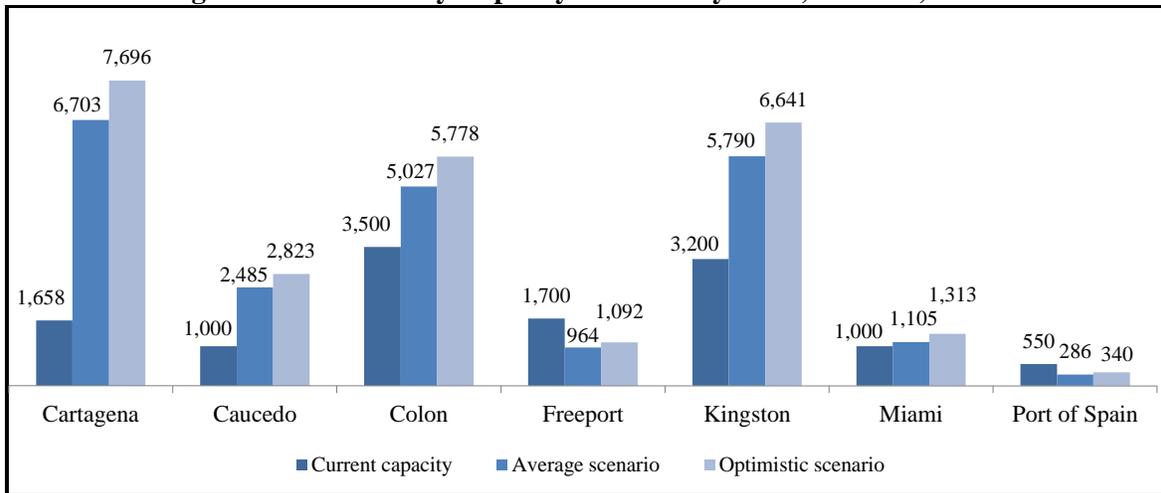
Source: Authors' calculations.

³³ It is important to distinguish between the draft of a vessel and the draft needed in berths and access channels to accommodate ships of a particular draft. All channels and berths require a minimum under-keel clearance (UKC), which needs to be added to the draft of the vessels to determine the minimum depth of the channels and berths. The UKC is usually on the order of 1 meter to 1.5 meters. Unless otherwise stated, draft in this report refers to that of the vessels, to which the particular UKC for each port needs to be added.

³⁴ Note that Kingston (Jamaica) has two main container terminals managed by different bodies. Kingston Container Terminal (KCT) is managed by the Port Authority of Jamaica and Kingston Wharves Terminal (KWT) is managed by a private company. KCT captures the biggest share of the total trade volume.

Figure 3-9 compares the current capacity of seven primary hubs to their projected trade volumes in 2020 based on average and optimistic scenarios. The average scenario predicts a 5 percent growth in trade while the optimistic scenario predicts 5.5 percent. The results show that Cartagena, Caucedo, Colon and Kingston would each require significant investments to accommodate their forecasted trade volumes.

Figure 3-10: Necessary Capacity for Primary Hubs, in TEUs,³⁵ 2020



Source: Authors' calculations.

Port Expansion Plans

In order to accommodate larger vessels, ports must face other costs beyond those related to upgrading access channels and increasing berth depths and lengths. Larger vessels mean more containers being unloaded/loaded and more storage space required for containers, which is often difficult to find in a port located in a downtown area. Even if most of the containers are destined for H&S or relay, some will be used for national trade, which is to be expected given that the main objective of becoming a hub port is usually to provide better maritime services for national trade.

Larger vessels and a greater number of containers for national trade also imply a need for space to inspect containers within the port (or at least at an in-bond location near the port) as well as for additional landside port access. Often, this need for space cannot be met within the confines of an existing port. Consequently, additional costs must be incurred to provide off-port capacity at inland container terminals, or even higher costs in developing new green field ports that can

³⁵ Capacity calculations are based on reports by ports and information collected by the consultants in previous projects.

provide the necessary space and maritime/land access. Since it is unlikely that these high investment costs will be recovered from user charges, they must be justified as a means of achieving significant increases in international trade. The relatively small size of the Caribbean economies reduces the prospects for such increases, while the predominance of small- and medium-size enterprises makes it difficult for them to pay higher port charges to contribute to meeting the investment costs.

In this context, all hub ports have expansion plans to cope with NPX vessels requirements and forecasted volume growth, but financial constraints will determine whether these plans are executed. The most relevant plans are presented in Annex III, Table A3-1. Attention should be paid to access to ports since the congestion that affects access to most of them also interferes with import and export operations.

Operation of Ports: Public vs. Private sector

With the exception of a few selected hubs, most port terminals in the Caribbean region are still operated by public entities (see Table 3-9). This is relevant because the involvement of the private sector in the management of terminals often brings improved productivity.

Table 3-9: Operator and Ownership of the Main Port Terminals in the Caribbean

Port	Terminal Operator	Ownership
Kingston	Kingston Container Terminal (KCT)	Public
	Kingston Wharves Terminal (KWT)	Private
Freeport	Freeport Container Port (Hutchinson Port Holdings)	Private
Caucedo	DP World Caucedo	Private
Port of Spain	The Port of Port of Spain (PPOS)	Public
Rio Haina	Rio Haina East Terminal	Public
	Rio Haina West Terminal	Public
Point Lisas	Point Lisas Industrial Port Development Corp.	Public
Port-au-Prince	Autorité Portuaire Nationale	Public
Bridgetown	Barbados Port Inc.	Public
Puerto Plata	Autoridad Portuaria Dominicana (APORDOM)	Public

Source: Authors' elaboration based on interviews held in 2010-2012.

Other arrangements to manage ports have been developed. For example, in the Dominican Republic, concession schemes have been promoted for new ports and upgrades to existing infrastructure. Such schemes have helped the country to adopt best practices. As a result, Caucedo, operated by DPW, is considered a best-in-class port in the region. Meanwhile, in Jamaica, Kingston Wharves Terminal is also privately managed, although the country's main

container terminal, the Kingston Container Terminal, is still owned and operated by the country's Port Authority.

3.2.2 Competitiveness of Ports

In addition to the small size of the national economies and traders, there are structural issues that affect the competitiveness of the regional port service industry. These include:

- High maritime costs in certain routes resulting from the small size of the markets (i.e., small vessels, limited service offer, and high transshipment) as well as from the imbalance between imports and exports
- With few exceptions, most terminals in the Caribbean region are operated by public entities
- Misalignment between demand and supply of LCL services
- Lack of availability of transport and logistics indicators and data
- Logistics sector and related services still in early stages of development

The main competitive qualities that ports should have in the post-Panama Canal expansion scenario are summarized in Table 3-10. Ports expecting to become primary hubs in the new scenario will have to offer an infrastructure that is able to accommodate the NPX vessels, in particular due to their increased draft and berth length. They will also need the appropriate equipment to load and unload NPX vessels in a timely manner in order to maximize the efficiency of their port operations. Secondary hubs will have to provide consistent turnaround times in order to successfully compete, since inefficient ports will not be chosen as ports of call.

Table 3-10: Main Competitive Factors, by Type of Port

Port type	Competitiveness Factors
Primary hub	<ul style="list-style-type: none"> • Develop appropriate infrastructure suitable for NPX vessels in terms of draft, berth length, etc. • Ensure high efficiency of port operations • Provide competitive port fees • Have a strong domestic demand
Secondary hub	<ul style="list-style-type: none"> • Ensure consistent turnaround times • Ensure high efficiency of port operations • Provide competitive port fees • Provide a tailored service to mid-size operators
Feeder port	<ul style="list-style-type: none"> • Provide LCL services to increase volumes • Provide competitive port fees • Attract 3rd party feeder offers in addition to that of the main liners

Source: Authors' elaboration.

Critical success factors to maximize efficiency depend on better equipment, efficient processes, and IT solutions. Objectives in this area include the following:

- Improved productivity through a combination of investments in equipment, management systems, processes, and organization to apply sectorial best practices and ensure predictable and reliable turnaround times
- More attractive port costs through simpler tariffs schemes that are also suitable for smaller exporters and importers
- Increased flexibility as a result of working with unions to find ways to accommodate regulations to shipping line needs (e.g., flexibility in working hours)

Greater use of the landlord model - in which private operators handle port management duties - can contribute to these goals. However, it will require political determination to negotiate public-private partnerships with global operators. It will also be necessary to overcome hurdles in the areas of customs, documentation, and IT.

3.2.3 Strengths, Weaknesses, Opportunities and Threats for Ports in the Caribbean

Table 3-11 summarizes the SWOT for ports.

Table 3-11: SWOT Assessment for Ports in the Caribbean

Strengths	Weaknesses
<ul style="list-style-type: none"> • Strategic location at a crossroads of four global maritime routes • Available existing infrastructure in primary hubs • Increasing number of ports managed by private consortiums using efficiency criteria • Numerous maritime connections available from the region’s main ports 	<ul style="list-style-type: none"> • Small domestic markets competing against large markets outside the region • Long turnaround times and low efficiency at ports • High transit times and maritime fees to main export destinations for small islands • Need for most large ports to invest in increasing draft to accommodate NPX vessels • Lack of cold chain infrastructure and management practices • Limited availability of 3rd-party logistics services • Misalignment between demand and supply of LCL services
Opportunities	Threats
<ul style="list-style-type: none"> • Growth of trade flows that pass through the region, with high potential for relay services • Consolidation of position of current primary hubs • Creation of secondary hubs for regional services 	<ul style="list-style-type: none"> • New industry trends (rise of VSA + larger vessels) leading to lower number of calls for big vessels, resulting in lower connectivity in the smaller islands (particularly to U.S.) • Increased use of H&S services resulting in

Opportunities	Threats
<ul style="list-style-type: none"> • Development of a consolidation services industry to serve the smaller islands • Introduction of logistics platforms that provide value added services • Growth of modern reefer services • Improvement of operations in non-concessioned ports • Introduction of IT solutions for logistics 	<p>uncompetitive lead times and ultimately in a loss in competitiveness for the affected islands</p> <ul style="list-style-type: none"> • “More than one hub” strategy by shipping lines to foster competition between ports, which may generate uncertainties that will affect decision-making on public investments • Higher maritime fees to other Caribbean islands than those to Europe or the U.S. • Strong competition from new port developments (e.g., Cuba and Costa Rica) • Development of alternative routes to the Panama Canal

Source: Authors' elaboration.

Though there are several identified weaknesses in both the Maritime Services and Ports SWOTs, the primary challenges addressed by the recommendations in the Action Plan are summarized as:

- (5) Insufficient port investments needed to handle NPX-class vessels
- (6) Long turn-around times and low efficiency at ports
- (7) Inadequate maritime services to small islands

The misalignment of LCL cargo services is a challenge impacting both freight logistics and maritime transport.

4 TRADE FACILITATION

While international trade is a private sector activity, public administrations play an important role in facilitating trade relationships by establishing the conditions required to promote commercial exchanges beyond their national borders. The efficiency with which public sector agencies play their respective roles in trade facilitation greatly influences the volume of trade. Improved efficiency of physical inspections, document inspections, and confirmations that all appropriate taxes and duties have been paid can reduce export times by several days, and to a lesser extent, import times as well.

This section looks at how procedures and controls affecting the movement of goods through the ports of the Caribbean region can be improved, and in this way reduce the costs of international trade, while safeguarding legitimate regulatory, safety, and security objectives.

4.1 Trade Facilitation Performance

Trade facilitation performance impacts on five trade attributes that are of interest to traders. The aim of trade facilitation is to minimize three of these attributes (cost, time, and inventory) and maximize the other two (reliability and flexibility).

(1) **Cost:** Minimizing the cost of trading goods is one of the primary ways of ensuring the competitiveness of international supply chains. In highly service-dependent economies like those of the region, high import costs are pushed down the supply chain to the customer resulting in reduced operating margins and competitiveness. Evidence suggests that delays in customs clearance in Latin America and the Caribbean increase transport costs by between 4 percent and 12 percent.³⁶

While measuring trade facilitation costs (per container, per TEU, or per ton) is straightforward, assessing their impact on a particular trader is less so. For example, the cost of exporting a container is not the same for high- and low-volume exporters, or for regular and sporadic exporters. Most international cost benchmarks are derived from surveys of very large and frequent multinational traders or their agents. These benchmarks require adjustment when applied to the smaller and less frequent traders that are more the norm for the Caribbean. Variations in unit costs can be driven by the following: 1) Logistics factors such as transportation, storage, and handling of products; 2) Trade facilitation issues including cost of compliance with all types of inspection and other trade processes; and 3) Tariffs.

(2) **Time:** Competitive pressure to minimize transit times is intensifying. Competition on delivery times is as important as that on costs for many exports such as electronics, fashions, and pharmaceuticals. Many traders defer purchasing decisions to the last possible moment to minimize working capital requirements, which further increases time pressure on trade facilitation procedures.

(3) **Inventory:** Inventories become an issue in cases of excessive process times, unreliable lead times, or unpredictable demand. Inventories also become an important consideration in cases of infrequent transport services, particularly in maritime services. Maintaining high inventory levels to account for the system's inefficiencies, in addition to different recurrent unforeseen

³⁶ Guasch (2011): *Logistics as a Driver for Competitiveness in Latin America and the Caribbean*, Americas Competitiveness Forum V. Santo Domingo, Dominican Republic, October 5-7, 2011.

events, is expensive because it locks up capital, which has a high cost particularly in the Caribbean region. This situation ultimately increases unit costs and reduces competitiveness and productivity. Estimates show that, assuming an interest rate of 15 to 20 percent, inventory holdings made necessary by poor trade and logistics systems cost Latin American economies more than 2 percent of GDP.³⁷

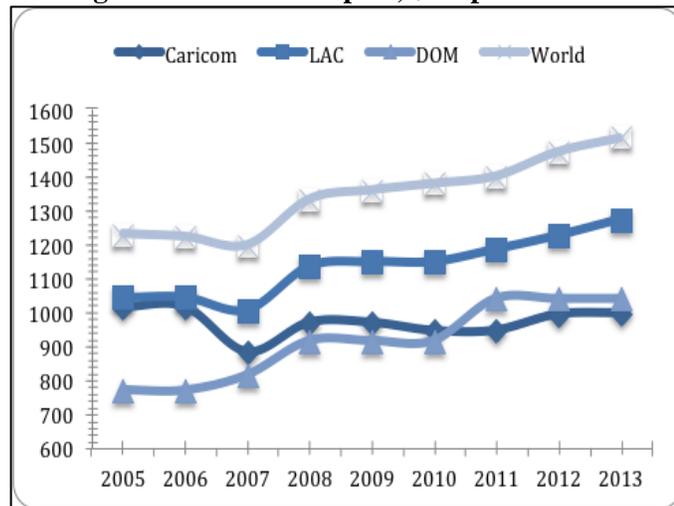
- (4) **Reliability:** One pivotal aspect of any supply chain is the capacity to perform reliably in terms of time and cost. In many cases, it is preferable to have a longer service lead-time with high reliability than a shorter and unreliable service lead-time. Many trade facilitation procedures unnecessarily add to the uncertainty of delivery times. Standardization and automation of administrative and custom processes is one pillar of improved reliability.
- (5) **Flexibility:** Market demand variability leads exporters to adapt quickly to market signals, adjusting their volumes and products to the current requirements to take advantage of opportunities. Administrative and customs procedures must react with the same speed and accuracy. Development of strong third-party logistics (3PL) services and markets are not as far advanced in the Caribbean as in competing trade regions, slowing the ability of traders to outsource logistics and trade facilitation.

The following section will look more closely at the first two issues (cost and time) given the availability of data and the relevance of these two to the public sector.

4.1.1 Trade Costs in the Caribbean

Costs to export from CARIFORUM countries have been relatively stable and remained below the global average between 2005 and 2013 compared to

Figure 4-1: Cost to Export, \$US per container



Source: World Bank (2005-2013). *Doing Business reports*.

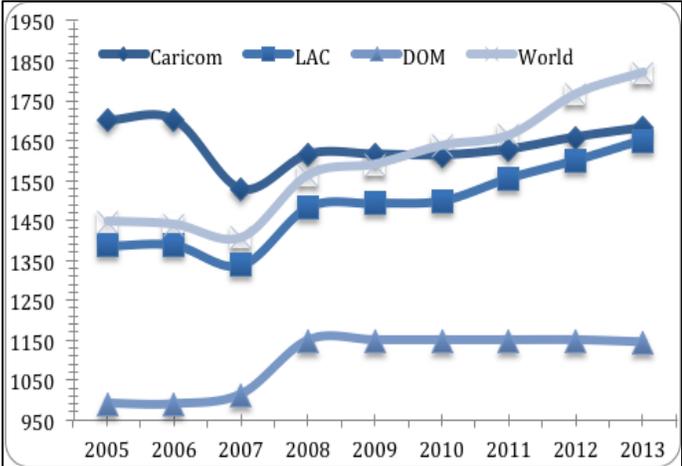
³⁷ Guasch, J.L. and J. Kogan, (2001): *Inventories and logistic costs in developing countries: levels and determinants – A red flag for competitiveness and growth*, World Bank Policy Research Working Paper # 2552.

other regions (see Figure 4-1).³⁸ One explanation is the development of the region as a maritime hub, which has increased available services and competition among the ports. Changes in the Dominican Republic, such as the establishment of a new competing port (Caucedo), and the increase in shipping connectivity, have not prevented a cost increase of 35 percent, which can only be explained by the persistence of conditions that limit free competition, especially in land transportation.

Stable trade facilitation costs can be jeopardized by the growth of the large hubs and the reduction in frequency and vessel size for small ports. Addressing these risks requires effective action by port authorities to improve operational performance to remain attractive to shipping lines.

For the same period, the cost to import has grown by 26 percent on the global scale (see Figure 4-2). Though the CARIFORUM countries

Figure 4-2: Cost to Import, \$US per container



Source: World Bank (2005-2013). *Doing Business reports*.

did not see their costs to import grow at such a high rate, there is nonetheless an important difference within the region. CARICOM countries consistently have much higher costs to import than the Dominican Republic. For example, in 2013, the cost to import to the Dominican Republic was approximately \$US 1,150 per container compared to approximately \$US 1,650 for CARICOM. The relatively high cost for the CARICOM countries is mainly related to the high imbalance of imports and exports which results in imports subsidizing export costs.

Extra costs

The World Bank’s *Doing Business* methodology does not account for informal charges or tariffs in the calculations of import/export costs. However, consultations with several traders of the region revealed that informal payments are needed to expedite trade facilitation processes. Non-

³⁸ Estimates were calculated using annual data from the *Doing Business reports* compiled for the period 2005-2013. Note that CARIFORUM countries included in this report are: Antigua and Barbuda, The Bahamas, Belize, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines and Trinidad and Tobago.

payment of these can lead to processing and inspection delays and rejection of documents for spurious reasons, resulting in trading costs several times greater than the amount of the informal charge. These practices particularly hurt the small traders and low-volume exporters. Moreover, Caribbean traders face additional costs which take the form of administrative fees and licenses required to access some port installations or gain access to electronic portals.

Tariffs

Earnings from international trade are the most important source of revenue for smaller service-based economies, and can account for more than half of total public revenue. The Caribbean is progressively reducing tariff barriers, with intra-CARICOM tariffs now nearly eliminated.

For countries highly dependent on custom duties as a form of national income, this progressive reduction has put an additional burden on already tight budgets and created tensions that in some agencies can lead to graft or corruption, as reported by the private sector. Reduced tariffs have also created strong movements by local industry associations and other pressure groups to impose other types of non-tariff barriers to limit the entrance of international competitors. These measures include the following:

- Product quotas
- Specific artificial quality or sanitary requirements
- Only-local purchasing rules by public institutions
- Complex import licensing requirements
- Minimum import prices
- Artificial delays in clearance of imported good
- Changes in valuation criteria

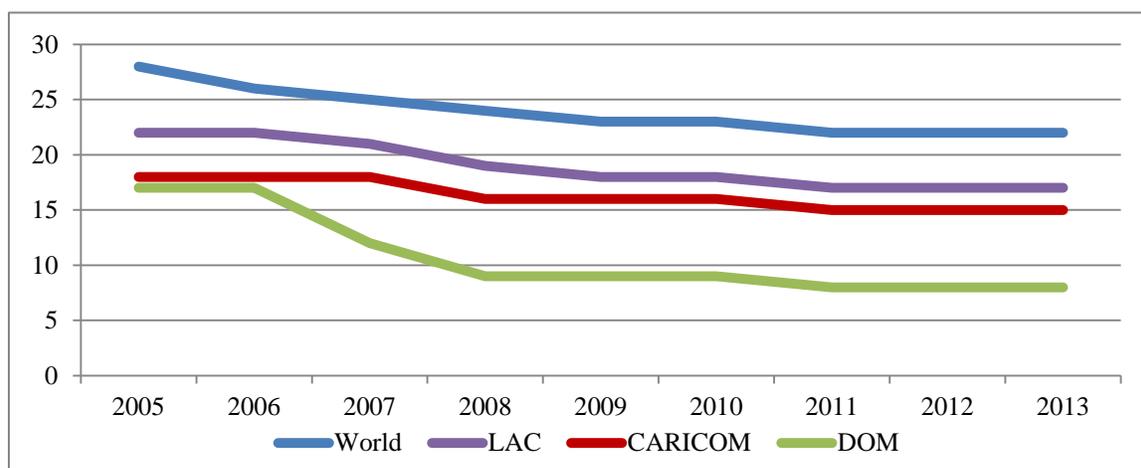
Stakeholders also mentioned the issue of security and drug enforcement as an important barrier to some imports. Among major issues were, the lack of adequate security during transport and port operations to prevent tampering with goods and containers and the resulting legal and administrative liability of the importers.

4.1.2 Time performance in the Caribbean

Indicators of time performance only partially measure the average performance of large and repetitive operations for key commodities. The region's custom agencies and related institutions

have been working to simplify processes and reduce the number of documents required to trade. One result of these efforts has been the dramatic improvement of performance of the Dominican Republic, which cut export times by 55 percent in the past eight years. Likewise, CARICOM countries included in the World Bank study cut their time by 16 percent (see Figure 4-3).

Figure 4-3: Time to Export, number of days



Source: World Bank (2005-2013). Doing Business reports.

The reasons behind the Dominican Republic's improvement are related to a strong political commitment to trade facilitation objectives. This commitment has resulted in one of the first implementations of an Electronic Single Window (ESW) (along with Trinidad and Tobago) and the Authorized Economic Operator (AEO) - Trusted Trader program - in the region.

In addition, the Dominican Republic reduced import times from 17 to 10 days between 2005 and 2013, during which time the CARICOM countries reduced import times from 20 to 15 days. However, during consultations, stakeholders from the private sector mentioned other time-related issues that are not reflected in the global indicator, including:

- Need to pay informal charges to expedite the processes
- Lack of coordination between inspecting agencies resulting in delays
- Extensive exercise of discretion by customs officials
- Non-electronic processes resulting in lack of visibility and poor performance consistency
- Delays caused by lack of adequate and sufficient inspection equipment
- Bottlenecks in port infrastructure and priority for passenger traffic

- Lack of flexibility of port operations in adapting to variable operating times without incurring excessive extra costs

4.2 Institutional and Organizational Requirements

Complex national projects require a structured approach and strong political commitment for successful implementation. In the case of trade facilitation, the first step, and generally the most difficult one, is to shift focus from tariff revenue generation to economic development. Such a shift requires the recognition that trade efficiency boosts the competitiveness of all economic sectors and therefore can improve economic conditions.

Institutional requirements for successful execution of these projects include the following:

- Sponsorship at the highest level of government, either by the Prime Minister or the head of a strong Ministry, as a means for solving potential coordination disputes
- Effective governance models for administering the projects and making decisions on processes that typically involve many different agencies and public institutions
- Structured approach employing international best practices on project management to carry out complex projects with many stakeholders, competing objectives, and strong pressures to maintain the status quo. Projects involving IT require specific methodologies and rigorous processes to guarantee that they comply with business needs, technical design, and construction. A successful implementation must be supported by training for all users
- Creation of consensus among all public and private sector stakeholders before going ahead with a project
- Adaptation of relevant laws and regulations to support new processes, technological platforms, and operating structures
- Establishment of a funding mechanism for projects that involve the private sector where possible and that leverage the support of multilateral institutions

4.3 Trade Facilitation Initiatives

National strategies for trade facilitation must address all issues related to the performance of the import and export supply chain in all the key competitiveness dimensions (cost, time, inventory, reliability, and flexibility). Most of the initiatives that could be included in these strategies deal with process simplification, standardization, automation, and leveraging information

technologies. However, they also include initiatives related to better coordination and/or simplification of public administration and related agencies as well as strengthening the private sector. Some of the most relevant initiatives are described in greater detail in the following section.

4.3.1 Electronic Single Windows

Electronic Single Windows have been part of government agendas for a long time, and most stakeholders recognize their great potential for improvement. An ESW is an electronic platform containing all trade-related documentation submitted or collected by private companies and public agencies. The single window streamlines processes, avoiding multiple submission of information, eliminating data duplication, and providing automatic processes wherever possible. Typical documentation managed by an ESW includes customs declarations, applications for import/export permits, and other supporting documents such as certificates of origin and trading invoices.

The benefits of ESW systems include the following:

- Reduced processing time, fees, and interactions with public agencies
- Visibility of the status of processes and traceability of actions
- Increased security and transparency
- Single entry point for information, documentation, claims, payments, etc.
- Facilitated data collection, storage, transmission, and processing
- Better coordination among involved parties
- Key performance indicators on processes
- Increased productivity and competition in the private sector
- Improved revenue yields for the government

Single window schemes differ according to the role of customs and whether the customs IT solution is the focus of the ESW gateway or just one more component of an integrated system. In some cases the ESW can also be developed around a port community system (e.g. Jamaica).

Operational and governance structures affect the speed at which a single window can be implemented. A typical bottleneck is disagreement between customs and quasi-customs entities over whether the ESW is part of the customs system, and which entity is charged with its

coordination. In addition, the need to reorganize management in order to implement ESW schemes explains the resistance that it often faces from both public and private stakeholders. Intermediaries frequently complain that automation and traceability undermines their role. Other obstacles to implementing ESWs include the following:

- Resistance to providing information and/or to simplifying processes
- Lack of expertise in applying risk analysis
- IT asymmetries between customs and quasi-customs platforms and developments
- IT asymmetries and problems with databases and manual processes
- Exclusion of private entities that participate in trade facilitation

In addition, small economies might not recognize the value-added by an ESW, since it might appear that costs outweigh benefits due to their limited volume of trade. A special effort must be made to communicate their long-term benefits to both public stakeholders and future users, while keeping in mind that expensive solutions may not be required. Based on best practices, recommendations for a successful implementation include:

- Taking a modular approach rather than attempting to complete the project all at once; develop modules progressively and add different agencies as the project's scope increases
- Applying proper budgeting and procurement processes
- Using specific IT project management techniques to guarantee scope, time, and cost of implementation
- Engaging business process analysis and reengineering if enough political support is available. If not, map the current process and defer optimization to later project phases
- Harmonizing and simplifying data, converging as much as possible with international standards

Electronic Single Windows are in operation in the Dominican Republic (currently limited to Customs) and Trinidad and Tobago, while Jamaica, Barbados and The Bahamas are in the design phase. Guyana, Suriname and Belize are exploring options for their national single windows.

The customs agency in the **Dominican Republic** runs on a platform called SIGA, which was developed by a consortium of the Hyundai/Interdev/Autoever in 2007. SIGA has an ESW that handles import processes relatively well; its application to export process is still being

implemented. This ESW provides services related only to custom processes and does not integrate with other agencies. A global project to develop an expanded ESW based on the technology of the company CROWN was agreed at the end of 2011. As of October 2014, the ESW is still under the pre-implementation phase with the development of a pilot project with three agencies: Ministry of the Interior, the Ministry of Agriculture, and the Dominican Institute of Quality (INDOCAL).³⁹

Trinidad and Tobago's ESW project was launched in 2009; the initial work until the first quarter of 2011 dealt with the identification and implementation of required legal changes. The project's Phase I implementation budget was US\$17 million. The system, which was based on CrimsonLogic technological platform, went live at the start of 2012. The system in the current phase can accommodate the processing of the following documents electronically: import/export permits and licenses; import duty concessions; cargo manifests; goods declarations; company registrations; certificates of origin; fiscal incentives; and work permits. Extensions of the system, including e-maritime, risk management, port module, and e-utilities, are currently underway and are in line with the next generation of single window solutions.

The development of the Single Trade Electronic Window (STEW) is underway in **Jamaica**. In addition to providing the customary services provided by a single window, the STEW seeks to integrate the recently adopted ASYCUDA World system by Jamaica Customs and the Port Community System recently tendered by the Port Authority of Jamaica. This will be a challenge from a technical perspective but more so at the political and institutional level. To date, business process reviews for all relevant agencies, upgrading of existing systems, and Memorandums of Understanding between Agencies have been realized. However, a clear political commitment as a necessary condition for carrying out an ESW project and overcoming the typical challenges of conflicting interests among stakeholders.

Once single windows have been implemented, and indeed even in the design phase, pursuing interconnectivity between national windows should be a priority. Political traction for creating this inter-operability of ESWs is underway in other geographic regions.⁴⁰

³⁹ Source: http://issuu.com/revistaaduanas/docs/revista_aduanas_sept_2013__31/49.

⁴⁰ More information on regional trade facilitation measures negotiations within the Pacific Alliance available at: <http://alianzapacifico.net/en/trade-and-integration-group/>.

4.3.2 Authorized Economic Operators

The Authorized Economic Operator concept is a main building block within the WCO Framework of Standards (SAFE). SAFE aims to ensure that customs will provide benefits to businesses that meet minimal supply chain security standards and best practices. To this end it performs certain actions on behalf of the national customs administration. AEOs are deployed in each country through the development of a national program to assure compliance with the SAFE framework.

Mutual recognition of AEO authorizations between customs authorities in different countries is considered to be a principal benefit of the AEO concept. Many customs administrations are already working on bilateral mutual recognition arrangements. A longer-term goal is a global system of mutual recognition.

AEO implementation has been slow in the Caribbean region mainly due to weak institutions and lack of training of customs officials. Poor IT infrastructure and legacy systems further hinder the AEO implementation efforts. In interview, some private sector stakeholders felt that the limited results of AEO schemes are not worth the effort associated with their deployment. Hence, in order to encourage buy-in, it is critical to set clear implementation schedules that provide short-term benefits to users. One such short-term benefit would be mutual recognition between countries, which would be far more attractive to exporters than benefits at the domestic level. It should be acknowledged that a global system of mutual recognition of AEOs would require some time to accomplish. For this reason, WCO members and its Secretariat have suggested that the SAFE framework be implemented in a progressively phased approach, including the future application of mutual recognition of customs' systems of control for AEO schemes.

Customs and business enterprises both stand to gain in the areas of security and facilitation of the international supply chain by capturing the momentum of the SAFE framework and implementing its provisions as soon as possible.

The current status of implementation of SAFE and AEO schemes in the Caribbean are as follows: **Dominican Republic** - AEO in place since 2012; **Jamaica** - Launched in July 2014; **The Bahamas** - The Bahamas Customs Department has signed a letter of intent to implement the WCO SAFE Framework of Standards. The AEO may not be as critical for smaller islands given

the fewer number of traders; however, incentives would change with mutual recognition between countries.

4.3.3 Single Inspection Systems (One-stop Shop)

Cargo inspections by multiple agencies involved in the import and export of goods can add layers of bureaucracy and delays to trade transactions. Overlaps between entities and duplication of processes in the clearance of cargo also prevent the efficient and optimum use of available resources. Creating a single inspection system (One-stop Shop) mandates that regulatory agencies are housed together and collaborate during inspection processes. This system creates a central facility for handling exports close to air and sea ports, provides a sanitary environment for the inspection and processing of agricultural exports, tightens security, and improves the quality of agricultural produce due to reduced handling. Agencies participating include, *inter alia*, Customs, Police, SPS Agency, Health, Quarantine, and, in some cases, the U.S. Department of Agriculture. Services provided in a One-stop Shop include the inspection and certification of agricultural imports and exports, cold-storage facilities, pre-clearance for agricultural exports to the U.S., and general Customs clearance for agricultural and non-agricultural goods. Few of these One-stop Shops exist in the region, with the exception of **Kingston port**. Though many countries have expressed a commitment to these single inspection systems, the level of cooperation is significant and requires support at the highest level of government.

4.3.4 Risk management techniques

A recurring complaint at the regional level is the slow adoption of risk management techniques (RMTs) in customs procedures. RMTs provide the best cost-benefit balance from any given country’s point of view by optimizing resources and reducing costs. In this way, the country can more effectively set priorities and efficiently allocate resources needed to maintain a proper balance between controls and facilitating legitimate trade. RMTs also help to limit corruption by automating part of the process and decreasing the number of discretionary inspections.

Table 4-1: Status of the Deployment of RMTs in Selected Caribbean Countries

Country	RMT status
Dominican Republic	A risk management system linked to the SIGA system controls 5-7 percent of physical inspections by customs, but there is no RMT used in sanitary and security controls.
Jamaica	Customs has a proprietary risk management system called Valuations Intelligence Risk

Country	RMT status
	Management System, but this is currently outdated, providing limited functionality.
Barbados	Customs acquired a risk management system in 2008

Source: Authors' elaboration.

RMTs use advanced electronic information systems to identify high-risk cargo and transport conveyances. Using automated targeting tools, customs administrations identify high-risk shipments as early as possible in the supply chain, at or before the port of departure. Customs agencies in each country should promote RMTs to create risk profiles of traders, which would allow traders with a good reputation to submit to fewer inspections. Physical inspections would be integrated into a single system with referrals to other relevant border control agencies. However, the slow adoption rate of IT solutions for trade, such as an ESW and single inspection (one-stop shop) schemes, delays the chance of creating synergies in this area.

Countries should implement the approach outlined in the World Customs Organization's Risk Management Compendium, which ensures Customs administrations across the globe use the same methodology to identify and treat risks.

4.3.5 Other Trade Facilitation Management Instruments

An Electronic Certificate of Origin (ECO) is an international trade document showing that goods in a particular shipment are wholly obtained, produced, manufactured, or processed in a particular country. This is relevant because countries take into account the origin of imported goods when determining what duty to assess on the goods or, in some cases, whether the goods may be legally imported at all. The development of ECOs simplifies these procedures, thus facilitating trade. No such ECO scheme yet exists in the Caribbean. When launched, such a scheme should be based on a common certificate model for all countries in the region.

Advance binding rulings (ABRs) are decisions made by customs on specific details relating to goods, typically their classification and origin, in preparation for import or export operations. ABRs facilitate the declaration and consequently the release and clearance process, because the goods already have been classified, and the classification is binding on all customs offices party to the agreement for a specific period of time. Such data exchange between private and public stakeholders should be included as a mandate in upcoming revisions of free trade treaties affecting the region. Despite their complexity, ABRs are a very useful tool, since they provide

legal assurance that is critically important to private companies. In addition, as an input to RMTs and fiscal programs, they minimize mistakes in tax declarations.

4.4 Strengths, Weaknesses, Opportunities and Threats for Trade Facilitation in the Caribbean

Table 4-2 highlights the SWOT for trade facilitation in the Caribbean.

Table 4-2: SWOT Assessment for Trade Facilitation in the Caribbean

Strengths	Weaknesses
<ul style="list-style-type: none"> • Willingness to develop modern customs IT systems (single window & single inspection) • Self- identification of needs and political will to improve in most countries • On-going efforts in place to modernize national customs laws 	<ul style="list-style-type: none"> • Same customs procedures not applied at the different border points • IT solutions / coordination measures not fully deployed in public agencies • Lack of risk management principles • Limited private sector training on procedures • Laws and procedures not fully aligned with international best practices • Excessive inspections required to achieve customs' goals • Lack of coordination among agencies • Government initiatives to improve trade facilitation in the region have lacked an integrating global vision (e.g., AEO)
Opportunities	Threats
<ul style="list-style-type: none"> • More rapid implementation of single window and single inspection schemes • Improved risk management techniques to optimize efficiency in inspections • IT development to improve trade facilitation • Homogenized import-export procedures across border points • Development of regular training for the public and the private sectors • Increased exchange of information between trade partners • Possibility of subscribing to MOUs to cooperate, share experiences with trade partners, and foster technology transfer. 	<ul style="list-style-type: none"> • Regional disputes that slow down the Caribbean integration process • Lack of implementation of certain free trade agreement commitments • Different solutions advocated in different countries to respond to same issues • Inability to adapt to the new scenario that arises from the Panama Canal expansion

Source: Authors' elaboration.

Though there are several identified weaknesses in the Trade Facilitation SWOT, the primary challenges addressed in the Action Plan are summarized as:

- (8) Poor integration of trade facilitation initiatives
- (9) Lack of coordination among agencies involved in trade

- (10) Insufficient standardized customs procedures at ports
- (11) Excessive port inspections
- (12) Slow adoption of IT solutions
- (13) Lack of risk management systems

5 GOING FORWARD: SPECIFIC RECOMMENDATIONS FOR A REGIONAL ACTION PLAN

Previous chapters have sought to present the current state of transport and trade in the Caribbean, estimate the market for future maritime services, and identify the specific challenges facing Caribbean governments and operators. In order to meet forecasted transshipment demand and retain market share for Caribbean ports too small to transship, reforms and investments are necessary. As mentioned earlier, Governments must meet the demands of shipping services through investments in port infrastructure and services, stronger logistics, and streamlined trade processes.

This section summarizes these obstacles to growth and efficiency in logistics, transport and trade into 13 primary challenges:

- ✓ Lack of logistics data
- ✓ Underdeveloped logistics sector
- ✓ Misalignment between demand and supply of LCL services
- ✓ Lack of cold chains
- ✓ Insufficient port investments needed to handle NPX-class vessels
- ✓ Long turn-around times and low efficiency at ports
- ✓ Inadequate maritime services to small islands
- ✓ Poor integration of trade facilitation initiatives
- ✓ Lack of coordination among agencies involved in trade
- ✓ Insufficient standardized customs procedures at ports
- ✓ Excessive port inspections
- ✓ Slow adoption of IT solutions
- ✓ Lack of risk management systems

The following section presents the Action Plan proposed to address these challenges.

5.1 Ten Priority Actions

The priority actions have been selected from an initial list of 73 actions (Annex IV) identified as important for addressing key issues that affect trade competitiveness. Many of the 73 actions were designed to address 13 primary challenges that were highlighted during an extensive consultation process that included traders, trade associations, logistics specialists, shipping lines, port and terminal operators, customs and other inspection agencies, and representatives of government departments with responsibilities related to trade and transport (see Annex IV for a complete list). Other actions were designed to address issues that emerged from the analyses contained in the previous chapters.

While regional and national interests often overlap, the Caribbean region is also known for its diversity and development asymmetries, which at times rendered the task of identifying regional priorities somewhat complex. Three types of actions were identified: 1) Regional actions that must be implemented in a concerted effort; 2) National actions that support regional objectives; and 3) National actions that support national objectives. Consistent with the regional objective of this Action Plan, emphasis is on the first type of actions and to a lesser extent on the other two.

The long list of actions was prioritized in two ways to produce a short list of 10 actions. The first is through the application of the following four criteria:

- Efficiency in terms of expected outcomes on export growth relative to the time and cost of their implementation
- Feasibility of their implementation
- Contribution to addressing the 13 primary challenges prioritized in the consultation process
- Coherence of the resulting short list of actions in contributing to a regional strategy rather than just being independent activities

Application of these criteria did not necessarily result in the inclusion of measures to address the most important issues, because such measures score relatively low in terms of feasibility. Instead, the short list includes actions that are relatively easy to implement while at the same time have a significant impact on trade competitiveness.

The second way in which the actions were prioritized in through three stakeholder workshops held in Barbados, the Dominican Republic, and Jamaica in 2012-2013. The long list was also circulated to the regional organizations and national focal points in other Caribbean countries.

Table 5-1 summarizes the resulting 10 priority actions which address the 13 primary challenges. These form the core of this Action Plan. These actions are not listed in order of priority since they result from an intensive prioritization process and were all assigned a high priority. Although they relate to a wide range of issues, as a group they comprise a set of integrated activities such that the success of any of them will be greatly enhanced by the implementation of the others.

The recommended actions include three related to freight logistics, two to maritime transport and four to trade facilitation but these may respond to supply chain issues across sectors. Training and education of all participants in the supply chains of traded products are considered fundamental to address all issues and are therefore recommended across the board.

Table 5-1: List of Priority Actions

#		1	2	3	4	5	6	7	8	9	10	11	12	13
	Actions/Challenges	Lack of logistics data	Underdeveloped logistics sector	Misalignment between demand and supply of LCL services	Lack of cold chains	Port investments needed to handle NPX-class vessels	Ports' long turn-around times and low efficiency	Inadequate maritime services to small islands	Poor integration of trade facilitation initiatives	Lack of coordination among agencies involved in trade	Insufficient standardized customs procedures at ports	Excessive port inspections	Slow adoption of IT solutions	Lack of risk management systems
	Freight logistics													
1	Develop a regional logistics observatory	X												
2	Develop logistics platforms near ports		X	X	X		X							
3	Foster development of LCL cargo services		X	X				X						
	Maritime transport													
4	Promote the use of PPP schemes		X			X	X							
5	Develop indicators to improve port productivity	X	X				X	X						
	Trade facilitation													

#		1	2	3	4	5	6	7	8	9	10	11	12	13
	Actions/Challenges	Lack of logistics data	Underdeveloped logistics sector	Misalignment between demand and supply of LCL services	Lack of cold chains	Port investments needed to handle NPX-class vessels	Ports' long turn-around times and low efficiency	Inadequate maritime services to small islands	Poor integration of trade facilitation initiatives	Lack of coordination among agencies involved in trade	Insufficient standardized customs procedures at ports	Excessive port inspections	Slow adoption of IT solutions	Lack of risk management systems
6	Improve coordination among trade-related agencies									X	X	X	X	X
7	Increase intra-regional trade by reducing trade formalities and conditions			X				X						
8	Expand single window schemes								X	X			X	
9	Develop a single inspection system (one-stop shop)								X	X	X	X	X	X
	All Sectors													
10	Improve logistics training and education	X	X	X	X	X	X	X	X	X	X	X	X	X

Source: Authors' elaboration.

The following sections provide details for each of the 10 priority actions. Six of these could start implementation in less than 3 years. Few could be implemented immediately, because the necessary feasibility studies have not yet started. In the case of others, regional and national negotiations need to be completed and interagency and international agreements must be reached. At the same time, measures are already being taken that would support the implementation of all the actions included in the priority list, and there are indications that reaching the necessary agreements will not be a protracted process. Where this is not the case, the time frame for implementation will be somewhat longer: 3 to 5 years.

Freight Logistics

1. Develop a Regional Logistics Observatory

Identified need

A common problem across the Caribbean is the lack of updated reliable data and statistics on the logistics and maritime sectors including port performance statistics and prices charged by shipping lines. The first problem will be targeted by specific actions at national level (see Action 5). The second problem requires a regional approach.

Description

A logistics and maritime regional observatory should be created to monitor compliance with free market conditions and provide price visibility to exporters. Such observatories have operated successfully in Europe for many years as well as in some developing regions, such as South East Asia and North and Southern Africa. Observatories are now being established in South America.

Main tasks

- Define the functions of the observatory body in coordination with the national maritime authorities in each country
- Define location and financing scheme

Expected results

- Improved competitive conditions in the Caribbean maritime sector
- Better visibility of prices charged by shipping lines

Risks

- Difficulties in achieving agreement between countries on which data to monitor and how to carry out the monitoring
- Resistance from shipping lines

Stakeholders

- Port Authorities, Ministries of Trade and Transport, traders and the organizations that represent them, and service operators

Time frame

Medium: less than 3 years

Source: Authors' elaboration.

Freight Logistics

2. Develop Logistics Platforms near Ports

Identified need

Few Caribbean countries have logistics platforms other than in free trade zones. Where they do exist, they offer limited value-added services. Introducing a network of strategically located platforms across the region, including dedicated reefer areas for refrigerated perishable goods, would upgrade the Caribbean's overall logistics system. While some countries are well advanced in this context, achieving all the conditions needed in a highly competitive environment is far from assured.

Description

A study on regional logistics platforms should be undertaken to identify key locations for the platforms, followed by measures to foster their development and secure financing. This would include an assessment of public-private partnerships and their applicability under the different national laws. It is important to include each country's port authority in this effort because logistics platform developments are best located close to ports, which are critical nodes of international supply chains. Logistics centers close to a port increase the port's competitiveness within the region and help attract new cargo and foreign investment to generate value-added activities in the country.

Main tasks

- Identify technically feasible locations for the development of logistics platforms near ports
- Conduct a study to determine services to be provided through such platforms.
- Foster and help finance the development of the platforms using inputs from the assessment of PPP schemes in Action 4

Expected results

- Stronger offering of comprehensive logistics services (including solutions for reefer or refrigerated cargo) to provide improved services to both logistics operators and loaders
- Augmented reefer storage capacity

Risks

- Difficulties in attracting private investment and fiscal constraints on sovereign-borrowing
- Lack of a culture in the region for using PPP schemes to develop logistics infrastructure

Stakeholders

- Port authorities
- National competitiveness councils or similar bodies

Time frame

Long: more than 5 years

Source: Authors' elaboration.

Freight Logistics

3. Foster Development of LCL Cargo Services

Identified need

Much of the region's export potential is composed of small and medium-sized traders who have insufficient volume of exports to fill a container alone. Consequently, they bear higher costs and/or incur longer delays waiting for shipments to be dispatched. This situation seriously degrades the quality of services they can offer. Though there are companies doing LCL services, these should be expanded.

Description

LCL cargo services could be developed through industry-specific organizations (e.g., using an online tool managed by freight forwarders/loaders associations) or through policies that promote the development of a local logistics industry that includes not only the large operators, which often focus on their larger global customers, but also on small and medium-sized enterprises. The LCL issue has been already been addressed with some success by shipping agents in Guyana for cargo shipped to the U.S. Lessons learned from this operation could be applied to other countries in the region.

Main tasks

- Carry out a lessons-learned assessment on the Guyana experience and initiatives in other regions
- Assess and propose a suitable scheme for the different countries in the region i.e. an online tool managed by freight forwarders/loaders associations and policies that promote such services or a combination of both
- Implement the selected scheme in each country in close collaboration with representatives of the potential users, such as industry associations

Expected results

- Expanded development of LCL exports particularly for small- and medium-sized traders

Risks

- Lack of financial support
- Lack of a dedicated consolidation infrastructure

Stakeholders

- National SME associations
- National freight forwarders associations

Time frame

Short: less than 3 years

Source: Authors' elaboration.

Maritime Transport

4. Promote the Use of PPP Schemes

Identified need

Caribbean governments have fewer resources to invest in the development of new transport infrastructure. PPP schemes provide a feasible alternative for investments in this area. While such schemes are still at an incipient stage in the Caribbean, they are common in other regions. With the exception of a few selected hubs, most container terminals in the Caribbean are still operated by public entities. Considering the proximity of the Panama Canal expansion and coming changes in the pattern of maritime services, PPPs could play a much greater role in the development of new or improved port infrastructure.

Description

Changes in the operation and funding of ports and container terminals occur only when all interested agencies and operators perceive these changes to be to their advantage. Several tool kits and other materials are available that can help to design and implement such changes through the principle of stakeholder buy-in. This proposed action would provide policymakers and practitioners with decision-making support for undertaking sustainable and well-planned reforms of public institutions that provide, direct, and regulate port services.

Main tasks

- Review literature to identify best practices
- Identify port projects in the different countries that could be financed through a PPP scheme
- Support local authorities in structuring port PPP schemes

Expected results

- Increased number of new port developments/expansion plans in the region
- Strengthened port infrastructure able to respond to the requirements brought about by the Panama Canal expansion

Risks

- Difficulties in attracting private investment in a context of economic crisis and regional debt exposure
- Lack of a culture in the region in the use of PPP schemes

Stakeholders

- National competitiveness councils or similar bodies
- Port Authorities
- Ministries of Economy/Finance

Time frame

Medium: 3 to 5 years

Source: Authors' elaboration.

Maritime Transport

5. Develop indicators to improve port productivity

Identified need

Ports expecting to have a central role in the new scenario created by the expansion of the Panama Canal will need to increase efficiency. However, port performance statistics or quality indicators that can be used to assess and improve port services are not well developed in the Caribbean.

Description

Improve port productivity by developing key performance indicators (KPIs). These would provide a baseline that would make it possible to identify areas in which opportunities to improve the efficiency of port operations still exist. Examples of such opportunities include better equipment, efficient processes, IT solutions, and flexibility in working hours. This is a necessary preliminary step in developing incentives schemes in each terminal to target improvements. Over the longer term, such indicators will make it possible to develop specific port services guarantee schemes for vessels and import/export procedures (i.e., limited time to allocate berth, limited time to start vessel operations, maximum time for cargo clearance, etc.).

Main tasks

- Develop KPIs to monitor productivity in port operations
- Identify areas in which productivity can be improved at the different ports according to KPI schemes
- Create incentives to target port productivity improvement
- Assess and define steps towards integration in a wider regional quality brand for ports

Expected results

- Greater number of port productivity improvement projects linked to key performance indicators
- Improved regional quality brand for ports

Risks

- Lack of interest from port operators in participating in a nationwide scheme
- Difficulties in agreeing on the terms for a supra-national quality brand

Stakeholders

- Port Authorities
- Private port operators
- National freight forwarders associations

Time frame

Short: less than 3 years

Source: Authors' elaboration.

Trade Facilitation

6. Improve coordination among trade-related agencies

Identified need

The lack of coordination between the governmental agencies involved in the clearance of goods is a recurrent complaint by both exporters and importers in most Caribbean countries.

Description

Capacity building programs would train multi-functional officials from the Customs agency, Ministry of Agriculture, and Ministry of Health in each country. The program will improve the ability to exchange personnel between agencies, in this way contributing to better mutual understanding and a more fluid exchange of information. Parallel to the training, IT systems should foster inter-operability and technology improvement in the different governmental agencies involved in the clearance of goods. This refers to capacity not only for exchanging data, but also for creating common processes in a secure environment and the level of capacity required to achieve these goals. Risk analysis is an essential part of the development of such systems, and should be developed on an interagency basis with all institutions involved in border inspections. Also, the transit or export destination countries could receive the information for use in their own risk analyses and release of goods.

Main tasks

- Conduct workshops with officials from the different agencies to share their know-how/experiences
- Perform an audit to identify the IT systems used at each agency and their features
- Define a list of common processes used by the agencies
- Analyze interface options to exchange information and share processes
- Define a proposal to integrate systems

Expected results

- Better mutual understanding and more fluid exchange of information between agencies
- Upgraded IT systems to facilitate the exchange of trade data between agencies

Risks

- Resistance from current agency staff
- Lack of commitment by some of the public agencies to participate
- Training programs with an excessively academic orientation
- Agencies attempting to impose their own IT systems as the shared solution

Stakeholders

- Customs agencies
- National Anti-Drug Enforcement Agencies
- Ministries of Agriculture and Health
- Port Authorities

Time frame

Short: less than 3 years

Source: Authors' elaboration.

Trade Facilitation

7. Increase intra-regional trade by reducing trade formalities and conditions

Identified need

The level of development of intra-island shipping services is currently insufficient to support a large increase in intra-regional trade. The most useful support that can be provided is improved landside facilities for commercially-oriented maritime operators. However, demand is lacking due, in part, by the excessive requirements for port documentation and formalities.

Description

The dwell time for imported containers in many Caribbean states is more than five days, which is far too long for the perishable products that make much of actual and potential intra-island trade. Reducing this time to 24 hours or less would have a significant positive effect on trade. The time reduction could be achieved by simplifying formalities, giving priority to intra-regional trade over other imports and exports, and by allowing intra-island services to be operated to and from smaller ports (or even just ramps) to minimize vessel-berthing times.

Main tasks

- Survey potential traders to see what logistics and trade facilitation measures would constitute an incentive for increasing intra-regional trade
- On the basis of this information and a projection of demand, assess the financial feasibility and cost effectiveness of possible logistics and trade facilitation measures
- Coordinate the public agencies involved in ports and maritime services, logistics and trade facilitation, to develop and implement a plan for cost-effective measures that have been identified

Expected results

- More efficient logistics and trade facilitation leading to new inter-island maritime services and an increase in intra-regional trade

Risks

- Lack of agreement between multiple agencies on feasibility of possible measures
- Lack of agreement over how measures to achieve cost effectiveness should be implemented
- Projected demand does not materialize and improved maritime services are not implemented

Stakeholders

- Small and medium-sized enterprise traders
- Intra-island shipping lines and other service providers
- Port Authorities
- Ministries of Trade, Economy, Finance and Agriculture
- Customs agencies

Time frame

Short: less than 3 years

Source: Authors' elaboration.

Trade Facilitation

8. Expand Electronic Single Window Schemes

Identified need

A slow and burdensome administrative process is often cited by Caribbean traders as a major impediment to their activities. The need to obtain documents from different agencies in order to clear goods is costly. As a solution, Single Windows are electronic platforms that streamline processes, avoid multiple submissions of information, and provide automatic processes wherever possible. As such, the ESW can retain all trade-related documentation submitted or collected by private companies and public agencies. Support for ESWs would involve different measures in different countries, as these schemes are in different stages of implementation. For instance, in the Dominican Republic, several public bodies are working together to develop a comprehensive solution, which builds on the current SIGA customs system. In some of the smaller islands, such support would entail working from scratch to develop first generation single window schemes, if it is cost effective to do so.

Description

The first step should be the issuance of a high level mandate obliging the different stakeholders in each country to cooperate and participate in the scheduled activities. Laws and regulations should be updated to accommodate e-procedures and follow international best practices and the latest developments in the IT field. Strong leadership is a critical aspect that should be supported by legal mandate.

Main tasks

- Gather feedback from the RedVUCE (IDB's Single Window Network) regarding best practices
- Set baselines for documents and requirements by the different agencies in each country
- Simplify, unify, and automate requirements and procedures
- Initiate dialogue on interoperability of ESWs

Expected results

- Simplified import and export procedures
- Greater alignment with international best practices

Risks

- Attempts by institutions to impose their own solutions
- Resistance from current customs agencies

Stakeholders

- National customs agencies
- Ministry of Trade and other line agencies (Agriculture, Health, Standards etc.)
- Port Authorities
- National freight forwarders associations

Time frame

Medium: 3 to 5 years

Source: Authors' elaboration.

Trade Facilitation

9. Develop a Single Inspection System (One-Stop Shop)

Identified need

Importers and exporters in the Caribbean must undergo several inspections by different agencies (customs, sanitary, anti-drug, etc.) These inspections represent a cost, since company personnel might need to be present each time, and they lead to delays in the clearance process. This problem should be addressed by coordinating the inspections among the public agencies such that containers are opened only once.

Description

A proposed single inspection solution (one-stop-shop) should be developed to coordinate inspections among the public agencies such that containers are only opened once. The one-stop-shop should adhere to international best practices and be supported by an IT platform.

Main tasks

- Conduct a study to assess best practices in the field
- Develop a system to simplify, unify, and automate requirements and procedures

Expected results

- Increased coordination of inspections
- Augmented export potential for Caribbean companies

Risks

- Attempts by different institutions to impose their own solutions
- Resistance from customs institutions

Stakeholders

- Customs agencies
- National Anti-Drug Enforcement Agencies
- Ministries of Agriculture and Health
- Port Authorities

Time frame

Medium: 3 to 5 years.

Source: Authors' elaboration.

All Sectors – Cross Cutting

10. Improve Logistics Training and Education

Identified need

Deficiencies in logistics training and education in the Caribbean limit the number of skilled workers available to the sector in the region. This lack of skilled labor reduces the efficiency of logistics operations and ultimately the quality of the service provided by logistics operators. Poor practices in some areas (e.g., not following cold chain procedures or the inspection procedures required by customs officials) can even lower the quality of the products themselves and reduce their value. Logistics training to address these issues should focus on two long-term goals, as recommended by the OECD: 1) Build up a qualified workforce and; 2) Respond to new developments in the field. The ultimate purpose of the training is to build logistics capacity throughout the entire supply chain.

Description

A transport and logistics institute should be created that would be managed by both public and private stakeholders from the concerned sectors to ensure that the training needs of private companies are met. The institute will also represent an opportunity to integrate skilled professionals in the region.

Main tasks

- Conduct a study to define the best location for the transport and logistics institute, taking into account population, local support available, existing institutions, etc.
- Set up a steering committee for the institute's development that includes both public and private sector stakeholders
- Define a curriculum that meets the needs of the private sector

Expected results

- Improved training and education for logistics sector workers
- Larger number and creation of a regional pool of skilled workers
- Improved quality of service at ports resulting in more competitive ports

Risks

- Difficulties in reconciling the needs of public and private stakeholders
- Countries disagreeing on the institute's location
- Excessively academic approach to teaching course materials

Stakeholders

- Ministries of Education
- National competitiveness councils or equivalent entities
- National freight forwarders associations
- International organizations and institutions with established logistics experience such as FIATA, CILT, IMO, and Georgia Tech

Time frame

Short: less than 3 years

Source: Authors' elaboration.

ANNEX I LIST OF PORTS

Port Name	Country
Barranquilla	Colombia
Basseterre	St. Kitts and Nevis
Belize	Belize
Boca Chica	Dominican Republic
Bridgetown	Barbados
Campden Park	St. Vincent and the Grenadines
Cartagena	Colombia
Castries	Saint Lucia
Caucedo	Dominican Republic
Charlestown	St. Kitts and Nevis
Colon	Panama
Freeport	Bahamas
Georgetown	Guyana
Grand Turk	Turks and Caicos
Havana	Cuba
Kingston	Jamaica
Kingstown	St. Vincent and the Grenadines
Manzanillo	Dominican Republic
Marsh Harbor	Bahamas
Miami	United States
Moín	Costa Rica
Montego Bay	Jamaica
Nassau	Bahamas
Paramaribo	Surinam
Philipsburg	St. Maarten
Point Lisas	Trinidad and Tobago
Port-au-Prince	Haiti
Port of Spain	Trinidad and Tobago
Puerto Plata	Dominican Republic
Rio Haina	Dominican Republic
Roseau	Dominica
San Juan	Puerto Rico
Santa Maria	Colombia
Santo Domingo	Dominican Republic
Santiago	Cuba
St. John's	Antigua and Barbuda
St. George's	Grenada
Vieux-Fort	Saint Lucia

Source: Authors' elaboration.

ANNEX II TRENDS AND STRATEGIES IN THE CARIBBEAN SHIPPING MARKET

During the elaboration of this report, several factors that currently drive (or may perturb) the Caribbean shipping industry were identified. In this Annex, these factors – either major or minor - that were considered in the application of the model are presented. Furthermore, some of the most common strategies used to cope with the changing shipping industry are highlighted.

Drivers of Change

(i) Vessel Sizes

There is currently an ongoing vessel size revolution in the shipping sector at the global level. Major shipping lines are continually ordering larger mainline vessels in an attempt to gain market share. This will have the effect of cascading current tonnage from the Asia-Europe service to secondary trade, resulting in larger mainline vessels on all mainline trade, including those immediately affecting the Caribbean.

The Caribbean will also be affected by the widening of the Panama Canal, which will result in a further step up in the size of mainline tonnage entering the region, and therefore in an increasing need for more and bigger feeder vessels. Since major global operators such as Maersk, MSC, and CMA-CGM have been heavily involved in the Caribbean and Latin American markets since 2005, together with more niche operators such as Zim Line and Hamburg Sud, the effect of the ship size revolution will be felt more immediately in the Caribbean region.

Anticipated effects of increases in vessel size include the following:

- Vessel share agreements: The introduction of more and bigger tonnage, which is extremely expensive and will mean that lines must ensure that the vessels are utilized as much as possible by sharing space with partner lines.
- Productivity and port rotation: Shipping lines will seek to turn the vessels around quickly and therefore insist on increased efficiencies at each port of call.
- Number of calls: Shipping lines will reduce the number of direct calls to minimize their risk. This reduction in the number of direct calls will also result from the smaller number of ports able to physically handle larger vessels while meeting the new productivity requirements.
- Transshipment and feeder services: The overall result will be a greater reliance on transshipment and the need for more (and bigger) feeders. The main global operators

currently utilize their own feeder services in the Caribbean, but with a greater need for more or bigger feeder vessels, together with announcements of exceptionally poor operating results by the shipping lines, it may well be that the shipping lines will look to third-party feeder vessel operators to meet the requirement for additional space, rather than investing in further chartered tonnage.

- Reduced slot costs: Slot costs will benefit from the use of larger vessels, assuming that companies manage to maintain or improve the level of occupancy.
- Port infrastructure needs: The deployment of NPX vessels in the region will influence draft requirements at all major hubs. However, the rest of the ports should be well prepared to attend the vessel size increase in the expected ranges.

(ii) Hub Strategies

Since 2005, the major global operators have concentrated their transshipment services at the Panama ports (Colon, Cristobal, and Manzanillo), Kingston, Freeport, Caucedo, and Cartagena. Although lines have moved services among these alternatives and increased the amount of cargo they ship via the latter two, in general the transshipment hubs have remained the same. This scenario will continue in the immediate future, although lines will target more than one hub in the region for the following reasons:

- Expected increases in volumes.
- Actions to foster competition between the various facilities in an attempt to achieve better productivity or reduce fees.
- Reshaped services due to VSAs to call in both partner hubs.

Lines will also look at ports such as Port of Spain to provide them with a secondary hub for more specific, limited volumes. Lines may also look at other alternatives in the future that are not currently utilized, i.e., Cuban ports (PSA's Mariel facility) and Costa Rican ports (APMT's Moin facility), which may become more important over time.

Other alternatives include utilizing coastal or way port space on North-South services calling in the Caribbean as feeder space, although transit times tend not to be particularly good. Another alternative would be cooperating with one or more partners or like-minded lines on feeder ventures in order to reduce costs and maximize scale efficiencies of the assets deployed.

(iii) Third-Party Feederling

Market fragmentation: Third-party feederling in the Caribbean is currently carried out by niche operators such as Seaboard Marine, Crowley, Bernuth, and Tropical, while more traditional feeder services are offered by Caribbean Feeder Services and X-Press Feeders. In the context of an increased demand for feeder services, some of these regional lines may prove to be useful to global operators, not just on an ad hoc basis, but on a more permanent basis by way of formal takeovers. While such move has yet to take place, some form of integration between regional lines and major global operators would seem like a natural evolution for all concerned parties to reduce overhead costs.

Secondary hubs: Niche operators choose different transshipment hubs than the main global carriers in order to obtain a certain degree of priority and some service level guarantees. Such guarantees can currently be obtained at Eastern Caribbean ports such as St. Maarten, St. Croix, St. Thomas, and Bridgetown, as well as at U.S. port facilities in Florida (Miami and Jacksonville). Conversely, niche operators would be of secondary importance to ports such as Kingston and Freeport. This might change if a closer relationship between global operators and niche carriers is developed.

(iv) Organization of LCL Consignments

The shipment of LCL consignments from most Caribbean countries is not particularly well organized. This is especially true in Barbados, Trinidad and Tobago, and Jamaica, where the absence of a central control prevents LCL shippers from consolidating loads swiftly and efficiently.

The result is that these small consignments are either priced out by having to use airfreight or by paying the price of a Full Container Load consignment. A single organization to bring shippers together would be all that is required to ensure that LCL shipments can be dispatched without having to wait for weeks.

Coping Strategies

(i) Multiple Hubs for Each Line

Strategies and policies applied by the major global shipping lines will shape the way in which smaller liner companies will be able to do business in the Caribbean region. Despite the secrecy

surrounding the major global lines' pro-forma services in the post-Panama expansion scenario, it is clear that each major shipping line will aim to have two or more transshipment hubs in the region in order to offer the best possible transit time.

Such an approach will also allow the major global lines to protect themselves against poor performance by one or more of their transshipment hubs of choice. It is also extremely unlikely that any one hub could handle all the volumes of a large container line such as a Maersk or MSC. Thus, the services and volumes of these major lines will have to be split between two or more transshipment hubs.

(ii) Opportunities for Hubs with Larger Areas of Operation

It remains likely that major shipping lines will utilize one or two traditional transshipment hubs, such as Kingston, Freeport and Panama (Colon, Cristobal or Manzanillo), which they will supplement with another call that also has significant local volume potential and access to other markets, i.e., Caucedo, Cartagena, and Cuba (if/when the political situation eases). This move would be driven by significantly higher operating margins for local import/export volumes than for only-transshipment volumes.

(iii) Hubs in Niche Markets

Major shipping lines will also look for another secondary hub for niche markets. These could be ports in Costa Rica (Port Moin and Amega) and Trinidad & Tobago (Port of Spain and Point Lisas). They could even join the regional carriers with a hub in the Eastern Caribbean.

(iv) Opportunities for Secondary Hubs for Regional Services

Regional services will tend to avoid utilizing the same transshipment hubs as the major shipping lines in order to reduce berthing delays. This is a major reason why Tropical Shipping is not already calling at Kingston, but instead concentrates its hub strategy in Florida with secondary hubs for the Eastern Caribbean region at St. Maarten, St. Croix, and St. Thomas. Bernuth Line also uses Miami as a hub, whereas both Crowley and Seaboard Marine prefer to use ports in the U.S. Gulf: Seaboard at Houston (with Miami as back-up) and Crowley at Jacksonville.

All of these operators tend to utilize transshipment opportunities at St. Maarten, St. Croix, St. Thomas, and Bridgetown for niche markets in the Eastern Caribbean.

(v) Increase in Vessel Share Agreements

Shipping lines will be keener than ever to guarantee that the tonnage they deploy is well utilized in order to take maximum advantage of economies of scale. Lines that are unable to fill their vessels themselves will seek to establish short- or long-term alliances with lines with similar characteristics, or enter into less formal VSA. This process is already underway, and is influencing port service rotation configurations.

(vi) Feeder Service Rearrangements

Third-party and independent feeder vessels will have to follow where the mainline vessels go as their services will partially replicate the calls offered by the major shipping lines. In addition, these feeder vessels will offer services to areas where the major lines do not already operate through their own feeder services. Changes in service offerings could also result from consolidation or collaboration in two areas:

- a) Collaboration or integration with main liners if sufficient volumes can be achieved to make it attractive for main liners.
- b) Integration with other regional players, which could be in the form of consolidation (mergers and acquisitions) or some kind of regional VSA or slot sharing.

(vii) Liner Shipping Connectivity Changes

Despite big differences among countries, ports in the CARIFORUM region are overall well covered by the group of shipping lines presently operating in the region. In most cases, countries with poorer coverage simply do not have the necessary demand to make a call economically viable for shipping lines (global or feeder) under current conditions of productivity, costs, and/or throughput times.

The increase in transshipment activity due to vessel size increases will emphasize this trend, effectively reducing connectivity and extending total lead times from the worst serviced countries in the Caribbean to certain key markets, and requiring one, two, or even three transshipment operations to reach them. For this reason, and to provide good services to some of the outports within the region, it is essential that lines offer simple port-to-port feeder rotations from their hub of choice to ensure that the lowest possible transit times are available.

(viii) Multiple Calls

Another way for shipping lines to maximize the use of assets is to make two or three port calls in the Caribbean with multiple functionalities. These might include the following:

- a) Transshipment hubs for East-West cargo connecting to a North-South rotation, and vice versa.
- b) Direct Caribbean calls to/from the U.S. and to/from South America.
- c) Way port or feeder calls that act as a feeder rotation within an overall North-South rotation.

This form of “double-dipping” or using ports of call for more than one function can be extremely attractive. It has the added bonus of allowing larger tonnage ships to offer a short-sea service on a limited stretch of a particular rotation.

(ix) Smaller Ports’ Competitiveness

For ports in small markets, local authorities can influence the minimum profitable volumes to attract shipping lines by improving the following:

- a) Productivity: Achieving increases by applying best practices through a combination of investments in equipment, management systems, processes, and organization.
- b) Port costs: Creating fairer and simpler tariff schemes that are also suitable for smaller exporters and importers, reducing general operating overheads, etc.
- c) Flexibility: Working with unions to find ways to accommodate regulations to shipping line needs i.e., working hours flexibility.
- d) Private sector participation: Fostering the introduction of new private port operators and strengthening the use of the landlord model.

(x) Public-Private Partnerships with Global Operators

Countries face a considerable pressure to improve the capacity and productivity of their ports. In many cases, this has led to the development of PPP schemes to tap into the resources of global port operators. The expansion of such schemes has been spurred by the need for funds to

improve the functionality of ports to meet additional volume requirements resulting from the growth of the market.

Further expansion of PPP schemes will come about by fast-tracking changes and reforms with the involvement of private or public agents (unions, port authorities, sector agencies, etc.), and by making greenfield sites available. PPPs will be attractive only after the resolution of some fundamental issues related to customs, labor unions, adoption of a single political strategy, and documentation requirements.

ANNEX III FORECASTING METHODOLOGY FOR HUB AND SPOKE TRANSSHIPMENT AND RELAY TRANSSHIPMENT SERVICES

This Annex describes the methodology for estimating the ports' future market share of the demand for sea-sea transshipment services in the Caribbean. These TS services can be divided into two categories, Hub & Spoke Transshipment (H&S) and Relay Transshipment (RTS).

Hub & Spoke Transshipment refers to containers proceeding from distant markets in deep-sea vessels that are transferred to smaller feeder ships at an interim port, to be distributed to one or more ports inside the region. Relay Transshipment on the other hand, refers to containers proceeding from distant markets that are transferred from deep-sea vessels to other deep-sea vessels at an interim port, in order to be shipped to other global regions.

To recall, the objective of these estimations is to understand better the future demand at Caribbean Basin ports for transshipment services in order to complement the analysis and to provide the rationale for implementing the recommendations provided in this Action Plan.

Based on proprietary data from the Ocean Shipping Consultants (OSC), one of the partners in the IDOM-OSC Consortium that produced this report, and that collected by the consultants during the initial data gathering stage, two criteria were used to select the sample of ports to include in the estimations: First, the ports' infrastructure capabilities⁴¹ and second, their current volumes of H&S and RTS services. According to these, the most important ports providing H&S services in the region are Kingston (JAM), Caucedo (DOM), Freeport (BAH), Port of Spain (TTO), Colon (PAN), Cartagena (COL), and Miami (USA), whereas the most important ones for the provision of RTS services are Kingston (JAM), Caucedo (DOM), Freeport (BAH), Colon (PAN), and Cartagena (COL).⁴²

The estimation of each of these ports' future market share in the provision of H&S and RTS services was performed as follows:

1. Computation of ports' current market share of H&S and RTS services

Using COMTRADE data combined with OSC proprietary data on ports' historic volumes, the difference between the ports' handled volumes and the aggregated region's reported trade flows is computed to obtain the total yearly volume of transshipped goods. Then, based in the OSC

⁴¹ Depth, berth, gantries and capacity (in TEU).

⁴² The terminal being developed at Moin by APM Terminals is also expected to be a significant supplier to the market.

historic TS data and current market shares, this total transshipment volume is split into H&S and RTS volumes for each of the ports in our sample.

2. Computation of future regional demand for H&S and RTS services (2011 - 2020)

Future regional demand for TS services will depend in part on future GDP growth. However, *IMF Global Economic Outlook* forecasts of GDP growth were available for a four year period (2012-2016) and infrastructure investment is more long-term. Accordingly, two assumptions about growth between 2016 and 2020 are made, since data is not available. First that the GDP growth rate between 2016 and 2020 will be flat and equal to the previous five years average, and second that the yearly growth rates for this period of global trade volumes are equal to those of the GDP.

To estimate the future regional demand for TS (H&S and RTS) services, we perform a linear regression for each kind of TS service to get the elasticity of TS services due to changes in aggregated trade flows:

$$\Delta\%Y_t = \beta_0 + \beta_1^Y(\Delta\%T_t) + \varepsilon_t \quad (1)$$

, where t is the year sub-index, $\Delta\%Y_t$ is the growth rate of the regional demand for TS services in both of its categories (i.e. $Y=H\&S$ in one estimation and $Y=RTS$ in the other), and $\Delta\%T_t$ is the growth rate of the total global trade in year t . The resulting coefficients, $\hat{\beta}_1^{H\&S}$ for the H&S estimation, and $\hat{\beta}_1^{RTS}$ for the RTS estimation, measure the common underlying factors of variation between each type of TS services and the total global trade flows.⁴³

These coefficients, together with the IMF growth rates forecasts, provide predicted values of H&S and RTS services up to 2020.

3. Estimation of the future ports' market share of H&S and RTS services

For each type of TS (H&S and RTS) service, a Multinomial Logit is used to determine the probability of choosing a port for the correspondent TS service. Recall that the purpose is to understand better which ports in the region might see an increase in demand for TS services and therefore plan their reforms and investments accordingly.

A Multinomial Logit is the estimation approach used since the values that the dependent variable (*Ports List*) take do not assume any sort of ranking of the ports. That is to say, if the port of

⁴³ Sample: COMTRADE and OSC proprietary data, yearly from 2000 to 2011.

Cartagena is represented by the number 1 and the port of Caucedo by the number 2, this does not mean that the port of Cartagena is either better or worse than the port of Caucedo.

In a Multinomial Logit, the probability of using a particular port (a) for the provision of TS services is estimated as:

$$\Pr(p = a | X) = \frac{e^{\gamma X_a}}{\sum_{p=1}^P e^{\gamma X_p}} \quad (2)$$

, where p is a sub-index of ports that takes up to seven values for the H&S case ($P^{H\&S} = 7$) and up to five values for the RTS case ($P^{RTS} = 5$), as per the list of most significant ports listed earlier. X_p is a ($K \times P$) matrix that contains K explanatory variables which are used to control for ports' individual characteristics. For the H&S estimation these explanatory variables are *Port Costs*, *Facilities Suitability*, *Productivity*, and *Local Cargo Volume*, whereas for the RTS estimation these variables correspond to *Port Costs*, *Facilities Suitability*, *Productivity*, and *Hub & Spoke share*.

The γ coefficients⁴⁴ are estimated using a linear prediction function $f(x_{t,p})$:

$$f(x_{t,p}) = \gamma X_{t,p} + \varepsilon_{t,p} \quad (3)$$

Summing up, estimations are undertaken for both H&S and RTS cases. Then using the estimated coefficients ($\hat{\gamma}$), plus the variables with the ports' characteristics (X), the individual probabilities that each port will be used for the provision of TS (H&S and RTS) services are computed, as implied by equation 2.

The explanatory variables were constructed as follows:⁴⁵

(i) Port Costs

Using proprietary data, port costs represent the weighted average of different cost measures. For the H&S estimations these are:

- Transit costs (38% weight): cost to transship one TEU in each of the hubs from/to mother vessel to feeder vessel. The index (= 100) constructed demonstrates that Caucedo has the

⁴⁴ The constant term is included in the γ matrix.

⁴⁵ Due to the use of OSC proprietary data, further detail on the construction of the explanatory variables is available only upon request to IDOM (as the primary interlocutor for this consultancy).

most competitive position (70), followed by Jamaica and Cartegena (81). Colon's privileged position enables it to operate with higher prices (104). Miami's costs are significantly higher than the other ports (227).

- Deviation costs for the mother vessel (42% weight): cost to deviate from the mother vessel to call at a hub port which is not an optimal route from Panama. A route from the Far East to the East Coast of the U.S. (i.e., New York) via the Panama Canal has been used as the most representative optimal reference from which the deviation costs to all the main hubs have been calculated. The index (= 100) highlights that Colon (0) and Kingston (19) are the most competitive for capturing this traffic. Port of Spain (385) is the least competitive.
- Feeder vessel costs (20% weight): weighted cost to transport one TEU from a potential hub to a common port in an average feeder vessel. Using a pool of 27 significant ports weighted by the size of the local market and the level of H&S usage. The index (= 100) highlights that Kingston has the best overall location (81), followed by the rest of the ports (where costs are 13 to 19 percent higher). Port of Spain has costs that are 45 percent higher relative to Kingston (136).

For the Relay estimations, only port transit costs and deviation costs were used (since there are no feeder vessels used in relay services). The weights – 30% for transit costs and 70% for deviation costs - were obtained from proprietary surveys of the current cost structure across the ports, by type of service.

(ii) Facilities Suitability

The facilities suitability index (0-10) measures the suitability of existing or planned infrastructure and its ability to accommodate NPX vessels from 2014 onwards. Four components - berth, water depth, gantries, and handling capacity (in TEU) of each port – were assessed using OSC proprietary data. This variable is computed twice, once evaluating the existing infrastructure and then again for 2020 assuming the successful implementation and completion of existing expansion plans shown in Table A3-1.⁴⁶

⁴⁶ The model assumes that all expansion plans will be completed by 2020.

Table A3-1: Expansion Plans for Key Ports, Completion Expected Before 2020

Port	Facility	Expansion Plan	Capacity (mm TEUs)
Kingston	Container T	Dredge to 17m	2.00
		Upgrade berth facilities - Gordon Cay +1300m (potential to 1700m); 17m deep	
		Add equipment	
		MOU to be signed with CMA CGM for 35-year lease	
	Wharves	Develop Fort Augustus site	
		Dredge to 14m	1.00
		Invest US\$100m in upgrading facilities	
Freeport	HPH	Phase 5: US\$250m investment; +500m (Total = 1536m); +6 super post Panamax cranes	5.00
		12 new berths	
Caucedo	DPW	Feeder berth scenario +300m; +2 mobiles	0.25
		Dredge from 14.5 to 15m; +500m berth expansion; +50ha; +1 super post Panamax crane	0.25
Colon	Container T	+370m; +9 super post Panamax cranes; US\$200m investment	1.00
Port of Spain		Improve yard efficiencies	0.20
		US\$2 bn capex for new equipment; utilize flour mill space; back fill into ocean area	
Cartagena	Contecar	Expansion to 630m; 3spp (Phase 1)	0.38
		Land reclamation and dredging (Phase 2)	0.10
		+387m berth expansion (Phase 3)	0.40
		+6 super post Panamax cranes; +400m; 16.5m deep (Phase 4)	2.50
	SPRC	+2 super post Panamax crane	0.35
	Mardique	Greenfield site development (800+250m; cranes to be announced; 13m due access)	0.45
Miami	SFCT (T.Link/APMT)	Dredge to 15.2m (50 ft.)	0.20
Moín	APMT	Deep-water facility opening in time for Panama widening	2.00
Guadeloupe	Port of Jarry	Phase 1: 350m; 25 ha; dredge to 15m; 17m later	0.70
		Phase 2&3: +350m; increase capacity to 0.7m TEU	
Cuba	Marief - PSA	US\$682m loans approved by Brazilian Govt.	

Source: Authors' elaboration based on interviews held in 2010-2012.

(iii) Productivity

Productivity levels are calculated by dividing the total annual TEU volume handled at a particular port by the number of ship-to-shore gantry cranes (or equivalent) in operation during the year. This variable was computed using OSC proprietary data and then normalized to 1 to 10 index. Cartagena (8.5) and Caucedo (8) are the most productive while Jamaica (6) is the least.

(iv) Local Cargo Volumes

Local Cargo Volumes were computed with OSC proprietary data as a 1 to 10 index normalization of the total cargo handled by every port each year. Cartagena (6.62), Miami (5.8) and Port of Spain (5) have the most local cargo, while Jamaica (1) and Freeport (0.25) have the

least. This is consistent with what is known about transshipment volumes and size of local markets.

(v) **H&S Market Share**

This variable is only used for the RTS estimation and comes directly as a result of the full execution of the methodology described in this Annex for H&S services. This implies that the H&S estimation must be performed before the RTS one, as the first's output is an input for the second. This variable reflects the relative attractiveness of each port for its RTS services, since shipping lines prefer to combine stops to leverage volume synergies which can be done better if the port provides both types of transshipment services.

4. Simulations and Results⁴⁷

Table A3-2: Hub & Spoke Transshipment Simulation Results (2020)

	2011 Volume	2011 Share	2020 Estimated Share, Pr(p=a xi)	2020 Expected Volume
	TEU	%	%	TEU
Kingston	988	24%	34.62%	3,468
Freeport	495	12%	4.30%	431
Colon	1,348	33%	18.46%	1,849
Caucedo	485	12%	8.98%	899
Cartagena	602	15%	32.37%	3,242
Miami	41	1%	1.22%	123
Port of Spain	166	4%	0.04%	4
Total	4,125	100%	100%	10,016

Source: Authors' calculations.

Table A3-3: Relay Transshipment Simulation Results (2020)

	2011 Volume	2011 Share	2020 Estimated Share, Pr(p=a xi)	2020 Expected Volume
	TEU	%	%	TEU
Kingston	593	18%	26.99%	2,618
Freeport	605	18%	5.95%	577
Colon	1,103	33%	22.03%	2,137
Caucedo	298	9%	14.68%	1,424
Cartagena	602	15%	32.37%	3,242

⁴⁷ Detailed estimations' output is available upon request to IDOM

	2011 Volume	2011 Share	2020 Estimated Share, Pr(p=a xi)	2020 Expected Volume
	TEU	%	%	TEU
Total	3,341	100%	100%	9,698

Source: Authors' calculations.

Tables A3-2 and A3-3 present the simulation results for the H&S and the RTS models respectively. These results are also presented in Figures 3-7 and 3-8 in the main body of the report.

The H&S/RTS probabilities estimated for each port in the previous stage can be directly interpreted as the ports' market share of the total forecasted regional demand for H&S/RTS services. Then, by multiplying these shares by the total aggregated demand for H&S/RTS services computed in stage 2, we obtain the 2020 expected TS volumes by port (equation 4).

$$E(\text{Volume}_p^{2020}) = \text{Pr}(p = a | x_i^{2020}) * E(\text{Total Volume}^{2020}) \quad (4)$$

In the model, the variation of the ports' market shares - from the 2011 data to expectations for 2020 - comes from two sources: The forecasted change in the aggregated demand for transshipment services and the expected improvement of the ports' *Facilities Suitability* index that would come as a result of the successful implementation of projects listed in Table A3-1.

ANNEX IV LONG LIST OF ACTIONS PROPOSED BY CARIBBEAN STAKEHOLDERS

The long list of actions was based on the responses received in the first round of consultations. Actions in the long list were categorized in two ways: by topic area and type of activity. The topic areas are those contained in the title of the Action Plan (freight logistics, maritime transport, and trade facilitation). Nearly half of the actions addressed the issue of trade facilitation, an indication of where traders find most attention to be needed and where attempts at improvement have been least successful. The remaining actions are almost equally divided between the other two topics, freight logistics and maritime transport (see Table A4-1).

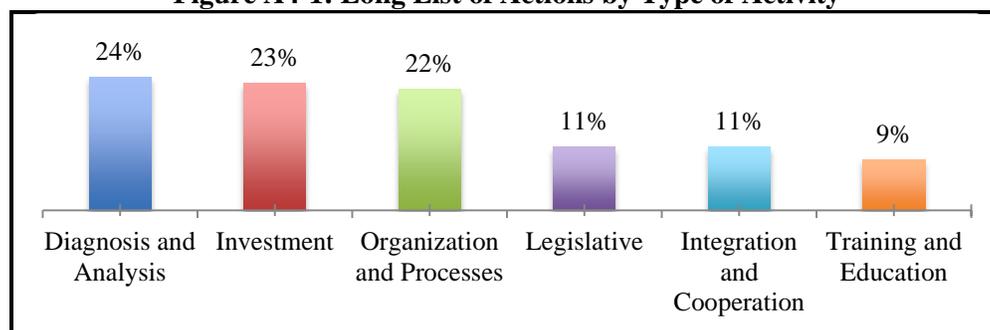
Table A4-1: Long List of Actions by Area of Activity

Freight Logistics (24 percent)	Maritime Transport: Services and Ports (28 percent)	Trade Facilitation (48 percent)
<ul style="list-style-type: none"> - Roads <ul style="list-style-type: none"> • Extension + network capillarity • Maintenance - Land transport <ul style="list-style-type: none"> • Transport fleet • Private sector development • Price and competition • Operations efficiency • Information technologies - Shipping & logistics services - Training & education 	<ul style="list-style-type: none"> - Maritime transport <ul style="list-style-type: none"> • Intra-island services - Ports <ul style="list-style-type: none"> • Superstructure • Handling equipment • Information Technologies • Port authorities and terminal operators - Logistics Platforms 	<ul style="list-style-type: none"> - Customs modernization <ul style="list-style-type: none"> • Information technologies • Physical customs infrastructure • Procedures • Transparency and consistency of processes - Import & export procedures <ul style="list-style-type: none"> • Coordination among agencies • Information technologies • Documents for goods release • Processes for goods release - License requirements - Training & education

Source: Authors' elaboration.

In terms of categorization by type of activity, the actions are almost equally divided between diagnosis and analysis, investment and organization, and processes (see Figure A4-1). The last category, education and training, while not accounting for a large number of actions, is an essential prerequisite for many of the others.

Figure A4-1: Long List of Actions by Type of Activity



Source: Authors' calculations.

The next pages contain the long list of actions (Table A4-2.) A three-way classification was used to facilitate the prioritization of these actions:

- The category of issue the action was aimed to address
- The action's geographic scope
- The type of action involved

Classification by category of issue made use of a four character code: two letters at the beginning denoting the category (e.g., IN for logistics infrastructure, SE for logistics services, and TF for trade facilitation); and a consecutive two digit number following the letters, changing to a new set of 10 when changing sub-categories (e.g., the last action for maritime infrastructure is IN-06 and the first action for road infrastructure is IN-11). Logistics infrastructure was addressed by 11 of the actions, trade facilitation by 35 actions, and logistics services by 27 actions.

The actions were also classified according to their geographical scope, which is necessary since the list includes actions specifically directed at the three islands (Barbados, Dominican Republic and Jamaica), that the Action Plan uses as examples. The full geographic classification indicated whether the action related to either the whole region, the larger islands, or the smaller islands. Some actions could be included in several geographic classifications (by size and by location). Twenty-six actions addressed regional issues; 22 addressed large countries/islands, and 27 were directed at small islands.

The final classification was by type of action. Most actions were in the intermediate categories of legislative, organization and process, integration and cooperation, and diagnosis and analysis. As with the geographic classification, some actions pertain to more than one type category. For example, some investments require prior legislative actions and/or organizational changes and depend on prior training of the personnel involved.

Twenty of the actions would involve investment, 10 would require legislative action, 19 would involve changes to organizational structure or operational processes, and 11 relate to improved cooperation and increased integration between the countries of the region. Only three would involve further diagnosis and analysis, but 21 would involve training.

Table A4-2: Long List of Actions

Issue	Title	Geographic Scope						Type				
		Regional	Large	Small	Dominican Republic	Jamaica	Barbados	Investment	Legislative	Organization & Processes Integration & Cooperation	Diagnostic & Analysis	Education
IN-01	Promote plans to expand draft to 16 m in primary hubs.				X	X		X				
IN-02	Promote plans to expand berth and storage capacity in Caucedo and Kingston.				X	X		X				
IN-03	Promote plans to expand draft to 12 m in secondary hubs and to 10 m in feeder ports.		X	X	X	X	X	X				
IN-04	Promote the use of PPP schemes as a financial mechanism to sustain port expansion plans.				X	X		X				
IN-05	Invest in handling equipment capacity and modernization in secondary hubs and feeder ports.		X	X	X	X	X	X				
IN-06	Guarantee adequate IT capacity to support the development of IT solutions.			X			X	X				
IN-11	Define and finance a plan to improve Barbados' secondary road network.						X	X				X
IN-12	Upgrade land infrastructure through road maintenance planning.		X	X	X	X	X					
IN-13	Define and enforce truck weight and dimension rules.		X	X	X	X	X		X		X	
IN-21	Promote the development of logistics platforms near ports.		X		X	X						
IN-22	Promote the development of reefer storage capacity near ports, airports, and in logistics platforms.		X	X	X	X	X	X				
SE-01	Promote the development of Ro-Pax services.	X										X
SE-02	Study and promote actions to professionalize services of very small vessels.	X										X
SE-03	Periodically gather and publish detailed connectivity statistics by port.	X										X
SE-04	Enable simplified access to shipping services information through a dedicated web portal.	X						X				

Issue	Title	Regional	Large	Small	Dominican Republic	Jamaica	Barbados	Investment	Legislative	Organization & Processes Integration & Cooperation	Diagnostic & Analysis	Education
SE-05	Promote actions in infrastructure and operating procedures to guarantee minimum service levels to feeder services in large ports.	X						X		X		X
SE-06	Create logistics and maritime competition regional observatory body.	X										X
SE-07	Develop private sector participation in terminal concessions toolkit.	X							X			X
SE-08	Set up training and education for private sector participation in ports.	X										X
SE-09	Promote projects for productivity improvement, including development of KPIs and incentives schemes in each terminal.		X	X	X	X	X			X		X
SE-10	Set up a collaborative project to develop common standards in small and medium-sized ports.	X						X		X		
SE-11	Deploy VMTS in the larger ports of the region (i.e. ,Caucedo and Kingston)				X	X		X		X		
SE-12	Identify and remove handling equipment constraints to ensure consistent turnaround times in secondary hubs and feeder ports.		X	X	X	X	X			X		X
SE-13	Create a CARICOM quality brand and develop port guarantees schemes.	X									X	
SE-14	Foster uniform provisions in port tariffs.	X									X	
SE-21	Support the development of private sector trucking companies.		X	X	X	X	X	X	X			
SE-22	Support an updated land transport law in the Dominican Republic.				X				X			
SE-23	Develop e-market solutions to match transport offer and demand in order to reduce empty backhauls.		X		X	X				X		
SE-24	Facilitate access to GPS-based fleet management software.		X	X	X	X	X	X		X		
SE-25	Foster use of intelligent transport systems to optimize use of road infrastructure and improve safety.		X	X	X	X	X	X		X		
SE-26	Set up a fleet renewal scheme.		X	X	X	X	X		X			
SE-27	Foster monitoring of competition and compliance with regulation in transport services.	X										X

Issue	Title	Regional	Large	Small	Dominican Republic	Jamaica	Barbados	Investment	Legislative	Organization & Processes Integration & Cooperation	Diagnostic & Analysis	Education
SE-28	Regulate market entry and minimum requirements in transport services.	X							X		X	
SE-29	Enforce free market competition in land transport services.				X				X		X	
SE-41	Set up and support incentives to develop LCL cargo services.		X	X	X	X	X			X		
SE-51	Improve academic offer and quality of logistics training and education.	X										
SE-52	Disseminate logistics career opportunities to attract capable people to the profession.	X										
SE-53	Develop actions to foster awareness in logistics-related issues among both importers and exporters.	X										
TF-01	Support the customs act reform in Jamaica to include the WCO's SAFE framework and the revised Kyoto Protocol.					X			X			
TF-02	Assess post-audit procedures and set up a test to evaluate the know-how of involved officials.				X	X	X					X
TF-03	Improve border facilities between the Dominican Republic and Haiti.				X			X				
TF-04	Perform a software and hardware evaluation for interoperability and scalability.			X			X					X
TF-05	Assess and promote the use of common IT infrastructure among the smaller countries.			X			X	X				
TF-06	Develop electronic certificate of origin and electronic phytosanitary certificate.	X										X
TF-07	Foster interoperability and technology improvement among national agencies.		X	X	X	X	X	X				X
TF-08	Foster interoperability between trade portals of CARICOM countries.	X						X				X
TF-09	Develop a single inspection solution (one-stop shop) supported by an IT platform.		X	X	X	X	X	X	X			

Issue	Title	Regional	Large	Small	Dominican Republic	Jamaica	Barbados	Investment	Legislative	Organization & Processes Integration & Cooperation	Diagnostic & Analysis	Education
TF-10	Support the deployment of an electronic payments scheme in Jamaica and Barbados.					X	X					X
TF-11	Publish customs procedures through web portal.		X	X	X	X	X					
TF-12	Adopt the CEDDET/IDB capacity building program.	X										
TF-13	Disseminate U.S. security standards and customs control procedures.	X										
TF-14	Assess the legal feasibility of automating the appeals mechanism (first level).				X	X				X		
TF-15	Elaborate a flow diagram of the customs portal of each country.	X										X
TF-16	Design capacity building on risks associated with customs clearance in the agriculture and health sectors.		X	X	X	X	X				X	
TF-17	Support the progressive implementation of AEO schemes.		X	X	X	X	X			X		X
TF-18	Set up a pilot program for an air and maritime concessional co-loading scheme.				X	X				X		
TF-19	Expand use of advance binding rulings.	X										
TF-20	Subscribe MoU with countries of destination of CARICOM transits.				X	X					X	
TF-21	Subscribe MoU with feeder countries of CARICOM transits.			X			X				X	
TF-22	Identify shared procedures across countries to detect opportunities for mutual recognition.	X									X	
TF-23	Establish the 5th amendment of the harmonized code as the standard in the region.			X			X				X	
TF-31	Assess the status of advanced rulings regarding customs valuation and origins issues.		X	X	X	X	X					X
TF-32	Facilitate the collection of trade regional indicators and statistics in the smaller islands.			X			X					X
TF-33	Adopt the WCO model as the standard for the simplified single administrative document.	X									X	

Issue	Title	Regional	Large	Small	Dominican Republic	Jamaica	Barbados	Investment	Legislative	Organization & Processes	Integration & Cooperation	Diagnostic & Analysis	Education
TF-34	Define a regional transit declaration to guarantee the free movement of goods within the region and avoid double taxation.	X									X		
TF-35	Support a single inspection scheme at ports based on the Jamaican model.		X	X	X		X		X	X			
TF-36	Set up a capacity-building pilot program including customs, ministry of agriculture, and ministry of health, to train multi-functional officials.				X	X			X	X			
TF-37	Subscribe cooperation MoUs with traditional trade partners for phytosanitary and customs data interchange.	X								X	X		
TF-38	Set up a first generation single window schemes in the smaller islands.			X			X			X			
TF-39	Provide support for the next step of the implementation of single window in the Dominican Republic.				X					X			
TF-40	Assess the single window scheme under discussion in Jamaica.					X				X			
TF-51	Evaluate the need to formalize authorizations granted to private operators.		X	X	X	X	X						
TF-61	Set up capacity building efforts for the deployment of the Kyoto Protocol in the Dominican Republic.				X					X			

Source: Authors' elaboration.

Table A4-3: Stakeholder Interviews, 2011-2013

Between 2011 and 2013, a total of 109 stakeholder interviews were held in Barbados, the Dominican Republic, Jamaica, and Trinidad and Tobago (the number of countries was limited due to budgetary constraints mentioned earlier in this paper). The consultants interviewed a wide range of actors involved in logistics, transport and trade in the region, from both the private and public sectors. In addition, interviews were held with the CARICOM Secretariat, Caribbean Development Bank, Caribbean Export Development Agency and the OECS Secretariat. These interviews, along with the national workshops held in Barbados, the Dominican Republic and Jamaica, aided in developing and prioritizing the recommendations in this Action Plan.

Summary Table

Type of Party	BA	DR	JA	TT	Regional	Total
Associations	1	1	3			5
Port operator and authorities	3	3	2			8
Private Sector	16	37	13			66
Public institutions	6	6	11	3	4	30
Total	26	47	29	3	4	109

Table A4-3 provides a list of all stakeholder interviews undertaken by the consultants.

Table A4-3: Stakeholder Interviews, 2011-2013

Country	Type of Service	Type of Party	Agencies, Firms, Service Providers	
BA	Associations	Associations	The Shippers Association of Barbados	
	Cold storage	Private Sector	Bico Ltd.	
	Government	Public institutions		Barbados Investment and Development Corporation
				Ministry of Finance
				Division of Foreign Trade
				Ministry of Foreign Affairs and foreign Trade
				Ministry of Business and International Transport
				Barbados Customs & Excise Department
				Ministry of Agriculture, Food, Fisheries and Water Resource Management (MAFFW)
				Ministry of Commerce and Trade
	Port Operator and Authorities	Port Operator and Authorities		Barbados Port Incorporated (BPI)
				Port of Bridgetown
				Barbados Shipping Association
	Shipping Agent / Freight forwarder	Private Sector		Norton Lilly
			Booth Steamship Co.	
			Eric Hassel & Son Ltd.	
			Windward Agencies	
			SBI Distribution	
			Dacosta Mannings	

Country	Type of Service	Type of Party	Agencies, Firms, Service Providers	
			Tropical Shipping	
			Goddards Shipping	
			TS Garraway	
	Supply Chain	Private Sector	WIBISCO (The West India Biscuit Company)	
BA	Supply Chain	Private Sector	Purity Bakeries	
			Roberts Manufacturing Co. Ltd	
			Mount Gay Distilleries	
			Sunpower (1999) Ltd.	
			Grace Foods	
DR	Shipping Agents	Private Sector	Agencia Navieras B&R (Baez & Rannick)	
			E.T. Heinsen C Por A	
			Maritima Dominicana S.A.	
			Antilla Dominica, CxA	
			Henriquez y Asociados	
			Eric Hassel & Son Ltd.	
			Perez & Cia	
			Frederic Schad (DHL Global Forwarding)	
	Associations	Associations	Shipowners Association of the Dominican Republic	
	Government	Public institutions		Ministry of Economy, Planning and Development
				General Direction of Foreign Trade (DICOEX)
				Customs Agency of Dominican Republic
				National Competitiveness Council (CNC)
				Chamber of Commerce and Production
				American Dominican Chamber of Commerce
		Port Operator and Authorities		
	DP Caucedo			
	Ports Commission			
	Shipping Line Operators	Private Sector		CSAV (represented by AGEPORT)
				Kent Lines International (represented by Maritima Dominicana)
Hapag-Lloyd (represented by ET Heinsen)				
Hamburg Sud (represented by Maritima Dominicana)				
NYK (represented by Agencias Navieras B&R)				
Maersk				
Tropical shipping				
Evergreen				
Mediterranean Shipping Co.				
Crowley (represented by Agencias Navieras B&R)				
Zim Container (represented by Agencias Navieras B&R)				
Supply Chain	Private Sector		Siemens	
			Induveca, S.A.	
			Cementos Andino Dominicanos	
			Clip Internacional	
			AMR Exporganico	
			Escar Accesorios Decorativos	

Country	Type of Service	Type of Party	Agencies, Firms, Service Providers	
			José Manuel Nuñez & Asociados	
			Bonanza Dominicana	
			Font Gamundi & Co	
DR	Supply Chain	Private Sector	DB Schenker	
			Falconbridge Dominicana	
			METALDOM	
			Grupo Rica	
			Cervecería Nacional Dominicana	
			Brugal	
			Cortes Hermanos & Co.	
			DIESCO	
JA	Associations	Associations	Customs Brokers and Freight Forwarders Association of Jamaica	
			Shipping Association of Jamaica	
			Jamaica Export Jamaica	
	Government	Public institutions	Planning Institute of Jamaica - MOFP	
			Port Authority of Jamaica	
			Fiscal Services Ltd.	
			Ministry of Foreign Trade and Foreign Affairs	
			Jamaica Customs	
			JAMPRO	
			Jamaica Chamber of Commerce	
			Ministry of Transport, Works and Housing	
			Ministry of Industry, Investment and Commerce	
			Ministry of Agriculture	
			Trade Board	
			Port operator and authorities	Kingston Wharves Ltd.
				Maritime Authority
			Shipping Agent / Freight Forwarder	Private Sector
	ZIM			
	Dajey Shipping			
	Supply Chain	Private Sector	BnRs Holdings	
Belle Tropics Limited				
Mercon Ltd.				
Walkers Wood				
Caribbean Cement				
Appleton State				
Edwards Tropical Foods				
Mavis Bank Coffee				
GlaxoSmithKline				
Berger Paints				
TT	Government	Public institutions	Ministry of Trade, Industry, Investment and Communications	
			Port Authority of Trinidad and Tobago	
			Council for Competitiveness and Innovation	

Source: Authors' elaboration.