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FROM PIRACY TO TRANSSHIPMENT: JAMAICA’S JOURNEY TO BECOMING A GLOBAL LOGISTICS HUB
Fritz H. Pinnock and Ibrahim A. Ajagunna
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<tr>
<td>ASYCUDA</td>
<td>Automated System for Customs Data</td>
</tr>
<tr>
<td>CACM</td>
<td>Central American Common Market</td>
</tr>
<tr>
<td>CARICOM</td>
<td>Caribbean Community</td>
</tr>
<tr>
<td>CARIFTA</td>
<td>Caribbean Free Trade Association</td>
</tr>
<tr>
<td>CCAA</td>
<td>Caribbean-Central American Action</td>
</tr>
<tr>
<td>CTO</td>
<td>Caribbean Tourism Organization</td>
</tr>
<tr>
<td>CVQ</td>
<td>Caribbean Vocational Qualification</td>
</tr>
<tr>
<td>ECLAC</td>
<td>Economic Commission for Latin America and the Caribbean</td>
</tr>
<tr>
<td>EDIFACT</td>
<td>United Nations Electronic Data Interchange for Administration, Commerce and Transport</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FCCA</td>
<td>Florida-Caribbean Cruise Lines</td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
</tr>
<tr>
<td>FOC</td>
<td>Flag of Convenience</td>
</tr>
<tr>
<td>IADB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>ICCL</td>
<td>International Council of Cruise Lines</td>
</tr>
<tr>
<td>IMDG Code</td>
<td>International Maritime Dangerous Goods Code</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organization</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standard Organization</td>
</tr>
<tr>
<td>ISPS Code</td>
<td>International Ship and Port Facility Security Code</td>
</tr>
<tr>
<td>KCT</td>
<td>Kingston Container Terminal</td>
</tr>
</tbody>
</table>
KWL      Kingston Wharves Limited
LAFTA    Latin American Free Trade Agreement
LPI      Logistics Performance Index
LSCI     Liner Shipping Connectivity Index
MIT      Manzanillo International Terminal
NCTVET   National Council on Technical and Vocational Education and Training
NPDES    National Pollutant Discharge Elimination System
NWCA     North-West Cruise Ship Association
OECS     Organization of Eastern Caribbean States
PAJ      Port Authority of Jamaica
SCM      Supply Chain Management
SIDS     Small Island Developing States
TQM      Total Quality Management
UNCTAD  United Nations Conference on Trade and Development
WCO      World Customs Organization
WTO      World Trade Organization
GraceKennedy Foundation

The establishment of the GraceKennedy Foundation in 1982, in celebration of the company’s 60th anniversary, has proven to be one of the most significant contributions that GraceKennedy has made to national development.

The GraceKennedy Foundation can be proud of the role it has played over the past three decades in transforming thousands of young Jamaicans from students with great potential into outstanding citizens, playing their part in helping to achieve Vision 2030 which is to make Jamaica “the place of choice to live, work, raise families and do business”.

The Foundation does this by focussing its assistance on two main areas: the environment and education. This is accomplished primarily through the provision of grants to charitable organizations; its scholarship and bursary programme; the funding of two Professorial Chairs at The University of the West Indies and the Annual Lecture Series.

The GraceKennedy Foundation remains committed to fulfilling its vision of having a positive impact on the quality of people’s lives.

Directors:

Professor Elsa Leo-Rhynie – Chairman
Mr. Philip Alexander
Mr. Noel Greenland
Ms. Cathrine Kennedy
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Mrs. Fay McIntosh
Mr. James Moss-Solomon
Mr. Radley Reid
Professor Elizabeth Thomas-Hope
Mrs. Hilary Wehby
Mrs. Caroline Mahfood – Secretary/Executive Director
The annual GraceKennedy Foundation lecture has, since 1989, developed a stellar reputation for selecting topics that highlight and explore issues of significance to the nation and, indeed, the region.

This particular topic is important to our country at this time. The establishment of a global logistics hub is seen by many as the key to the transformation of the Jamaican economy. This year's lecture is designed to provide some historical context for this major development and is guaranteed to provide a comprehensive overview of logistics for students at the CXC level and beyond as well as other interested members of the public. We are confident that this lecture will continue in the tradition of previous lectures and will become an invaluable resource for all who seek a deeper understanding of national issues.

The Foundation distributes copies of the lecture book to schools and public libraries across the island, and provides an e-book version online at www.gracekennedy.com in the hope that the lecture's reach will extend beyond those present at its delivery.

The Foundation, as always, welcomes and looks forward to your comments.

Caroline Mahfood
Secretary/ExecutiveDirector
GraceKennedy Foundation
The GraceKennedy Foundation Lecture Series

1989  G. Arthur Brown
Patterns of Development and Attendant Choices and Consequences for Jamaica and the Caribbean

1990  M. Alister McIntyre
Human Resources Development: Its Relevance to Jamaica and the Caribbean

1991  Don Mills
The New Europe, the New World Order, Jamaica and the Caribbean

1992  Burchell Taylor
Free for All? – A Question of Morality and Community

1993  Elsa Leo-Rhynie
The Jamaican Family – Continuity & Change

1994  Keith S. Panton
Leadership and Citizenship in Post-Independence Jamaica – Whither the Partnership?

1995  Lucien Jones
The Jamaican Society – Options for Renewal

1996  Elizabeth Thomas-Hope
The Environmental Dilemma in Caribbean Context

1997  Gladstone Mills
Westminster Style Democracy: The Jamaican Experience

1998  Don Robotham
Vision & Voluntarism – Reviving Voluntarism in Jamaica

1999  Barry Chevannes
What We Sow and What We Reap: The Cultivation of Male Identity in Jamaica

2000  Patrick Bryan
Inside Out & Outside In: Factors in the Creation of Contemporary Jamaica

2001  Errol Miller
Jamaica in the 21st Century: Contending Choices

2002  Lloyd Goodleigh, Anthony Irons, Neville Ying
Changing with Change: Workplace Dynamics Today and Tomorrow
2003  Pauline Milbourn Lynch
Wellness – A National Challenge

2004  Dennis Morrison
The Citizen and the Law: Perspectives Old and New

2005  Marjorie Whylie
Our Musical Heritage: The Power of the Beat

2006  Maureen Samms-Vaughan
Children Caught in the Crossfire

2007  Kenneth Sylvester
Information and Communication Technology: Shaping Our Lives

2008  Richard L. Bernal
Globalization: Everything but Alms - The EPA and Economic Development

2009  Anthony Harriott
Controlling Violent Crime: Models and Policy Options

2010  Delano Franklyn
Sport in Jamaica: A Local and International Perspective

2011  Frances Madden
“It’s Not About Me”: Working with Communities: Process and Challenges
The Grace & Staff Community Development Foundation's Experience

2012  James Moss-Solomon
Jamaica and GraceKennedy: Dreams Converging, Roads Diverging

2013  Anna Kasafi Perkins
Moral Dis-ease Making Jamaica Ill? Re-engaging the Conversation on Morality

Copies of the Lectures are available online at www.gracekennedy.com or from the GraceKennedy Foundation, 64 Harbour Street, Kingston.
The title of the GraceKennedy Foundation Lecture for 2014 piques our curiosity and interest. Caribbean pirates in the seventeenth century made Port Royal their home and that town was considered to be the “mercantile hub of the Caribbean and the most economically important English port in the Americas”. In 2014, Jamaica is engaged in activity geared towards preparing itself to be a global logistics hub, with concepts such as globalization, just-in-time (JIT) and outsourcing forcing intense deliberation and planning in order to establish the complex international distribution chains such a hub would entail.

The 2014 lecture reviews the history of logistics, the development of transshipment in the Caribbean, trade relations within Latin America and the Caribbean as well as the cruise shipping industry. It carries out a detailed analysis of the opportunities and challenges which establishing a global logistics hub in Jamaica presents. The island’s unique geographical location and its potential of once again becoming the crossroads of Latin America and the Caribbean, especially given the emerging South American markets, are supportive of this goal. Challenges such as building capacity for the sector in the face of a serious demand for productivity and efficiency, highlight the need for rapid development in this area in order to take advantage of the expansion of the Panama Canal, scheduled for 2014. The increased traffic along that route makes action to implement plans for the logistics hub urgent and imperative. Detailed data and analysis point to the need for strategic, transformational thinking and planning to negotiate and establish collaboration and partnerships within the Caribbean. Such cooperation will allow for achievement of the economies of scale required for the infrastructure and equipment necessary to service the expanding market; a market which includes not only the Europeans and the North Americans but also the countries comprising the BRIC group – Brazil, Russia, India and China.
The lecture for 2014 has two authors and The GraceKennedy Foundation is honoured that Dr. Fritz Pinnock and Dr. Ibrahim Ajagunna have provided us with a clear, informative and analytical discourse on the various issues involved in establishing Kingston as a logistics hub in the twenty-first century. Dr. Pinnock once worked at GraceKennedy Ltd. in a managerial capacity and he has been the Executive Director of the Caribbean Maritime Institute (CMI) since 2006. Dr. Ajagunna is the Director of Academic Studies at CMI. Both are highly qualified to reflect on and provide an expert analysis of Jamaica’s development into a global logistics hub.

Dr. Pinnock holds a BSc (Hons.) degree in Economics and Accounting from The University of the West Indies (UWI), Mona Campus, Jamaica, an MSc in International Shipping and Logistics from the University of Plymouth, United Kingdom and a Doctor of Philosophy in Sustainable Development from the UWI. He has been a member of the British Institute of Management (MBIM) since 1991 and of the Institute of Logistics and Distribution Management (MILDM). A Fellow of the Chartered Institute of Logistics Transport, United Kingdom (FCILT) (1993), Dr. Pinnock has authored three books, one of which was co-authored with Dr. Ajagunna and Dr. Yann Alix.

- *Global Maritime Transportation Corridors* (2012), SEFICIL Foundation, France (co-author with Dr. Yann Alix and Dr. Ibrahim Ajagunna; published in French, Spanish and English)

He has also published numerous articles in peer-reviewed as well as industry-related magazines and journals worldwide – in multiple languages, including French, German, and Spanish. He is a contributing writer and columnist (the Human Factor) to *Caribbean Maritime* magazine, the leading shipping magazine published by the Caribbean Shipping Association, and has developed numerous course manuals.
A Justice of the Peace for Kingston, Dr. Pinnock was selected as the Jamaica Association for Administrative Professionals (JAAP) All-Island Boss of the Year for 2013–2014. He is a special advisor to various agencies (governmental and non-governmental) and sits on several institutional, community and sports-related boards including being the chairman of the Jamaica Rowing Federation and of the Associates Committee, Port Management Association of the Caribbean (PMAC). He is an International Maritime and Logistics Consultant and has worked on numerous projects in collaboration with the government of Canada, the International Development Bank (IDB), CARICOM and many regional ports. He is a member on the HEART Trust/NTA Board of Directors and a member of the National Apprenticeship Board.

Dr. Ajagunna is a Chartered Fellow of the Chartered Institute of Logistics and Transport in the United Kingdom, and a member of that country’s Hotel and Catering International Management Association. He is President of the Council of Heads of Caribbean Hospitality Schools (CHOCHS) and a member of the Board of Studies for Tourism and Hospitality Studies, the University Council of Jamaica, as well as the task force on education and training for the logistics hub development in Jamaica. Dr. Ajagunna’s research interests are in strategic planning using the Blue Ocean Strategy, maritime transportation and sustainability, integration of logistics and supply chain, security and national development, health tourism using alternative medicine, and sustainable development.

These gentlemen have provided us with a wealth of valuable information in the manuscript they have prepared and the major points will be shared with the audience by Dr. Pinnock. The Foundation thanks them for the research and effort which have obviously guided them and their team in the preparation of the lecture and we anticipate that, as is the case with most of our lectures, the hard copy as well as electronic versions of the complete document, will stimulate much discussion and debate and also become valuable references for those wanting to increase their knowledge on this very topical and important development in Jamaica.

Elsa Leo-Rhynie CD, PhD

February 2014
Fritz H. Pinnock

Ibrahim A. Ajagunna

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THE LECTURE
Logistics: Three Eras in Jamaica

Early Developments in Logistics

Logistics has played a major role in military and economic development for over 5,000 years. Time and again, brilliant logistics solutions have formed the basis for the transition to a new historical and economic era. Since the construction of the pyramids in ancient Egypt, logistics has made remarkable strides. To build the great pyramid of Giza, which is 146 metres high and weighs 6,000,000 tons, the Egyptians needed sophisticated materials as well as equipment capable of moving the massive building blocks and putting them into place. Even today, we still cannot fully explain how this level of precision was achieved using the hoisting equipment and means of transport we believe were available during the time of the construction of the pyramids. At about 300 BC intercontinental trade was revolutionized by the invention of rowing vessels, which created the basis for travel across the high seas. This invention formed the foundation for the creation of enormous logistics supply systems required by mobile army camps. Alexander the Great undertook campaigns with his troops, their families and their weapons of war that extended all the way to India, as a result of the developments in sea transport.

Procurement logistics in the construction of the Mezquita Mosque (considered to be the largest mosque in Europe) in Cordoba, Spain, began in 756 under the Caliph of Cordoba in the Urmayyad dynasty. The pillars came to Spain from all parts of the Islamic empire. Extraordinary procurement logistics was required to transport the pillars of the mosque from all parts of the Islamic empire. Around 1200 AD the international commercial and defence network known as the Hanseatic League established cooperation for transport bundling and international sea transport. In 1188, the city of Hamburg, Germany, was founded as a base on the North Sea for the Hanseatic League, to make travel on the sea more secure and to represent business interests abroad. Up to 200,000 fur pelts were transported by a single Hanseatic
cog ship. Hanseatic trade extended from the Black Sea to Reval (today Tallinn, in Estonia). From a modern-day vantage point, the League’s cross-border trade bears strong similarities to the European Union.

Around 1500, the first time-definite mail shipping service was established in Europe. Under an agreement with Philipp of Burgundy, Franz von Taxis organized the first postal service with strictly defined transit times. Letters were delivered to places such as Paris, Ghent, Spain and the imperial court of Vienna. In view of the infrastructure of the times and the political fragmentation created by the array of small principalities, the mail reached its destination with very little delay.

Logistics, then, involves the management of the flow of resources such as materials, food, equipment and people, as we saw in the examples cited above, to meet the needs of organizations and institutions, whether military or otherwise. The word ‘logistics’ is believed to be derived from the Greek word logistikos meaning ‘skilled in calculating’. The first administrative use of the word was in Roman and Byzantine times when there was a military administrative official with the title of Logista under the leadership of Napoleon. At that time, the word apparently implied a skill that involved numerical computation. Until the Napoleonic Wars, military supplies were ensured by looting, requisition or by private companies. In 1807, Napoleon created the first train regiments, entirely dedicated to the supply and transport of equipment.

Port Royal as a Global Logistics Hub in the Seventeenth Century

In the Caribbean in the seventeenth century, Port Royal, Jamaica, was home to the real “pirates of the Caribbean”. It was a buccaneer’s paradise with one in every four buildings said to be a bar or a brothel. Due to its safe and protected location, its flat topography and deep water close to shore, large ships could easily glide in to be serviced, loaded and unloaded. Along with the ships, sailors and merchants alike established themselves to benefit from the many trading and outfitting opportunities there. Between 1655 and 1692 Port Royal grew faster than any town founded by the English in the New World.
In 1662 Port Royal recorded 740 inhabitants. At its height in 1692, population estimates vary from 6,500 to 10,000. With approximately 2000 buildings densely packed into 51 acres, a realistic estimate would be between 6,500 and 7,000 inhabitants of whom perhaps 2,500 were slaves.

Centred on the slave trade as well as the export of sugar and raw materials, Port Royal became the mercantile hub of the Caribbean and the most economically important English port in the Americas. The city boasted merchants, artisans, tradesmen, captains, slaves, and notorious pirates who all participated in an expansive business network. It had a governor’s house, king’s house (court of chancery), four churches and a cathedral. Many of the buildings were made of brick, indicating a certain amount of wealth not found at other contemporaneous settlements. Inventories of Port Royal’s citizens reveal much prosperity and the observation that, unlike the other English colonies, Jamaica used coins for currency instead of commodity exchange. During the early days of Port Royal’s development, officially sanctioned privateering was also a common practice. Privateers or buccaneers were awarded official contracts by the English to raid Spanish, Dutch and French ships in the Caribbean. Part of the booty was reserved for the Crown and the rest flowed into the coffers of Port Royal’s citizens. While the 1670 Treaty of Madrid officially ended this practice, privateering and/or piracy continued well into the later part of the eighteenth century.

This then, was Port Royal at its zenith, a vibrant town with expensive goods flowing through the harbour day in and day out. According to Buisseret (2008), John Taylor, writing in 1687, described Port Royal as “a formidable City: well built, strongly fortified, and Populated by a valiant Inhabitant.” He counted some 600 brick houses and an equal number built of timber. They were mainly four stories high with cellars, tiled roofs and sash windows and had large shops and storehouses attached.

**Kingston as a Service Port**

Since the 1692 earthquake when two-thirds of Port Royal was submerged, the town never regained its former glory, and this marked
the end of an era of global integration. Subsequently, the focus shifted to Kingston, which functioned as a service port, meeting the needs of colonial interests and the plantation economy. By 1750, Kingston had the only port of any significance – Kingston Harbour – and no less than 14 finger piers had been built along the shoreline. These finger piers allowed a large number of vessels to be berthed near the source of the best navigational water and the warehouses and stores where the ships’ agents and merchants were located. Kingston’s growth reflected an increase in mercantile activity as the city grew. As ships grew larger and Jamaica’s internal communications more extensive, the outports went into decline from which Kingston greatly benefitted. The decline of the outposts was related to the fortunes of agriculture. By 1910, the wharves and the shipping lines serving them had begun to take on a recognizable pattern and to ship commodities like bananas.

One of the great disadvantages of the old finger piers was that a large number of ships were concentrated on a relatively small area of shoreline. This might have been advantageous in a harbour short of deep berths and adequate access routes but it proved a crippling disadvantage to Kingston, whose roads leading to the harbour had not been designed to take this kind of traffic.

By the mid-1950s it was obvious that some solutions would have to be found for the problems of Kingston’s port, which was becoming increasingly inadequate for the increasing volume of goods flowing through it. The decision was taken to build a new port, to link in with the general plan for the development of East-West routes. The two companies which agreed to operate Newport West were Kingston Wharves and Western Terminals. The first of these had already been operating six of the finger piers and included several companies such as GraceKennedy, Jamaica Fruit and Shipping, and Royal Mail. The second, Western Terminals, brought together Lascelles de Mercado and the Henriques and Matalon groups.

Engineering work took place throughout 1965. The first ship docked at Newport West in 1966 and by 1971, the old piers had mostly been abandoned. To open Newport West, the S.S. United States, one of the largest ships to visit Jamaica up to that time, docked there on 14 February 1966. The old wharves in the city of Kingston thus gave
way to modern facilities at Newport West and with it came the ability to handle more diverse lines of cargo. The port, by then renamed Port Bustamante in honour of labour leader and National Hero, Sir Alexander Bustamante, can accommodate most of the larger vessels in ocean commerce today (Port Authority of Jamaica, 2006).

The Port Authority of Jamaica (PAJ) sought for the second time to capitalize on Jamaica’s geostrategic location to develop a world-class transshipment hub port in Latin America and the Caribbean. The first phase of Kingston Container Terminal’s (KCT) development started with the North Terminal (1973–1975). This created a capacity of 400,000 twenty-foot equivalent units (TEU). Phase 2 took place between 1995 and 1997 with the addition of the South Terminal at Gordon Cay. Phase 3 saw the further development of Gordon Cay, the dredging of ship’s channel, and land reclamation at Hunts Bay, Fort Augusta and Gordon Cay. This expansion created the capacity of 1,200,000 TEU, pushing KCT to the position of the third largest transshipment port in Latin America and the Caribbean and in 2002, the 63rd largest container port in the world (Containerisation International, 2003). Phase 4, which took place between 2004 and 2005, featured expansion including that of the berth at Gordon Cay by 91 metres and the addition of 7.7 hectares of container yard space; construction of 502 metres of new berth at the North Terminal and 5.2 hectares of new container yard space. This propelled KCT to become the leading container port in Latin America and the Caribbean.

**Containerization and Logistics Development**

The development of containerization in the late 1950s by Malcom McLean proved to be the most dominant influence on port infrastructure worldwide. Containerization precipitated globalization by reducing maritime transportation costs. It provides a simple, effective way of moving goods which protects them, increases handling speed, allows for intermodal exchange and economies of scale with ships, reduces inventory and costs, and shortens delivery time. All in all, it increases port productivity. Jamaica moved from Port Royal being the most developed hub port in the New World over three centuries ago, to become a leading transshipment hub port through
Kingston Container Terminal in the 1980s. This trend has continued into the present (see Tables 1 and 2 below).

Table 1
Container Traffic in the Caribbean by Port, 2008–2011 (TEU)

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<tr>
<td>1</td>
<td>Kingston</td>
<td>Jamaica</td>
<td>1,915,951</td>
<td>1,728,042</td>
<td>1,891,770</td>
<td>1,756,832</td>
<td>-7.10</td>
</tr>
<tr>
<td>2</td>
<td>Freeport</td>
<td>The Bahamas</td>
<td>1,702,000</td>
<td>1,297,000</td>
<td>1,125,000</td>
<td>1,116,272</td>
<td>-0.80</td>
</tr>
<tr>
<td>3</td>
<td>Port of Spain</td>
<td>Trinidad &amp; Tobago</td>
<td>385,000</td>
<td>401,206</td>
<td>388,960</td>
<td>-</td>
<td>-</td>
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<tr>
<td>4</td>
<td>Point Lisas</td>
<td>Trinidad &amp; Tobago</td>
<td>166,655</td>
<td>164,183</td>
<td>184,257</td>
<td>170,581</td>
<td>-7.40</td>
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<td>5</td>
<td>Jarry</td>
<td>Guadeloupe</td>
<td>170,729</td>
<td>142,692</td>
<td>150,534</td>
<td>165,096</td>
<td>9.70</td>
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<td>6</td>
<td>Willemstad</td>
<td>Curacao</td>
<td>102,082</td>
<td>97,913</td>
<td>93,603</td>
<td>-</td>
<td>-</td>
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<td>7</td>
<td>Bridgetown</td>
<td>Barbados</td>
<td>87,253</td>
<td>82,832</td>
<td>80,430</td>
<td>77,051</td>
<td>-4.20</td>
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<td>8</td>
<td>Philipsburg</td>
<td>St. Maarten</td>
<td>-</td>
<td>68,253</td>
<td>70,862</td>
<td>76,701</td>
<td>8.20</td>
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<td>9</td>
<td>Georgetown</td>
<td>Guyana</td>
<td>55,530</td>
<td>52,000</td>
<td>59,850</td>
<td>-</td>
<td>-</td>
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<td>10</td>
<td>Oranjestad</td>
<td>Aruba</td>
<td>49,300</td>
<td>51,164</td>
<td>49,558</td>
<td>53,952</td>
<td>8.90</td>
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<tr>
<td>11</td>
<td>Georgetown</td>
<td>Cayman Islands</td>
<td>54,584</td>
<td>51,198</td>
<td>45,649</td>
<td>44,766</td>
<td>-1.90</td>
</tr>
<tr>
<td>12</td>
<td>Vieux Fort</td>
<td>St. Lucia</td>
<td>34,255</td>
<td>21,756</td>
<td>21,831</td>
<td>33,047</td>
<td>51.40</td>
</tr>
<tr>
<td>13</td>
<td>Castries</td>
<td>St. Lucia</td>
<td>35,977</td>
<td>30,186</td>
<td>30,648</td>
<td>27,295</td>
<td>-10.90</td>
</tr>
<tr>
<td>14</td>
<td>St. John</td>
<td>Antigua &amp; Barbuda</td>
<td>35,350</td>
<td>31,332</td>
<td>26,366</td>
<td>21,824</td>
<td>-17.20</td>
</tr>
<tr>
<td>15</td>
<td>CPCP</td>
<td>St. Vincent &amp; the Grenadines</td>
<td>11,426</td>
<td>14,704</td>
<td>15,569</td>
<td>15,345</td>
<td>-1.40</td>
</tr>
<tr>
<td>16</td>
<td>Long Point Port</td>
<td>St. Kitts &amp; Nevis</td>
<td>2,353</td>
<td>3,002</td>
<td>2,424</td>
<td>3,046</td>
<td>25.70</td>
</tr>
<tr>
<td>17</td>
<td>Road Bay Port</td>
<td>Anguilla</td>
<td>-</td>
<td>-</td>
<td>2,863</td>
<td>2,543</td>
<td>-11.20</td>
</tr>
<tr>
<td>18</td>
<td>Kingstown</td>
<td>St. Vincent &amp; the Grenadines</td>
<td>5,084</td>
<td>1,534</td>
<td>1,398</td>
<td>1,070</td>
<td>-23.50</td>
</tr>
</tbody>
</table>

Source: ECLAC, 2012; Pinnock and Ajagunna, 2013

Kingston maintained its position as the Caribbean’s number one transshipment port for the years between 2008 and 2011. The figure reported includes the combined total for Kingston Container Terminal (KCT), which is the number one Caribbean transshipment port, and Kingston Wharves Limited (KWL), which is the number one subregional transshipment port in the Caribbean. The overall figure for Kingston declined by 7.1 percent, reflecting primarily activities at Kingston Container Terminal and not Kingston Wharves Limited.
Of the 20 ports in the Caribbean, Jamaica accounts for seven. In 2010, the 20 ports accounted for 34,968,654 metric tons of cargo. Of this, Jamaica accounted for 26,598,698 metric tons or 76.5 percent of the total volume moved. Transshipment cargo and bauxite accounted for over 80 percent of the volume of cargo moved through Jamaican ports. In 2011, the total volume moved increased to 36,992,548 with Jamaica accounting for 29,872,972 metric tons or 80.75 percent of the total cargo volume. Guadeloupe accounted for 10.3 percent of the total cargo volume for 2010, representing 3,582,054 metric tons.
This amount was reduced to 9.3 percent of the 2011 Caribbean total, representing 3,443,234 metric tons.

In the past 20 years, the conditions for global trade and business have improved tremendously. Many political, ideological and customs-related borders between countries and regions of the world have been dismantled. The ‘Iron Curtain’ fell and the socialist economic order collapsed while the integration of Europe continued to advance. Similar developments in trade integration have occurred in other regions. A driving force of these improvements has been the advances made in the 1990s in information and communications technology. This development is the result of both the World Wide Web and globally accepted, factual standards, including Windows-based PC systems, and the United Nations’ EDIFACT (Electronic Data Interchange for Administration, Commerce and Transport) standard. These strides have been complemented by progressive standardization in packaging and containers led by the International Standards Organization (ISO).

The Caribbean shipping industry’s infrastructure comprises three major segments:

1. A global shipping network, which is restricted to larger international ports in the western Caribbean such as Kingston Container Terminal; Caucedo in the Dominican Republic; and Freeport in The Bahamas. These ports are modern, world-class transshipment facilities, which are designed to support 90 percent of international transshipment cargo by volume. As a result, the businesses are highly competitive and volatile.

2. Interregional multi-purpose service ports, which cover a wide range of facilities from finger piers to modern international ports such as Point Lisas in Trinidad and Tobago, and Kingston Wharves Limited in Jamaica.

3. Small, intra-regional schooner shipping network facilities, which cover small vessels moving cargo between smaller ports of the Eastern Caribbean. Trade at this level is organized on a subsistence level and will require major infrastructure, regulatory and human resource development to better position the Caribbean to find a place in the fast-moving globally competitive landscape.
Most Caribbean states are microstates, with a heavy dependence on services such as tourism and offshore banking as the primary areas of economic activity. These states are also reliant on imports from North America and the Far East, supported by limited inter- and intra-regional trade (Pinnock, 2012). Given that import parcel sizes are small by global standards, they do not provide a large enough economic base to support the development of modern port facilities. Consequently, the concept of containerization has had a great impact on Caribbean small ports, which were designed to support colonial bulk import of basic items and export of bananas and sugar.

Caribbean countries have done their best to modernize old general cargo ports to accommodate newer container ships, further compounding the pressure these ports face. Further, the size of ships has constantly increased with improvements in technology. Increasingly, there are specialized container ships with no onboard container crane facilities, putting pressure on Caribbean ports to provide shore-based cranes and the supporting pier-side container-handling infrastructure. As a result, the configuration of general cargo ports must change: large transit sheds, used primarily for storing sugar and bananas, need to be removed to create large, open storage areas for container traffic.

The transshipment business helps ports and shipping lines generate economies of scale, which can expand a port’s market and lower its costs. The ports of Kingston (Jamaica) and Freeport (the Bahamas), are good examples of the way in which transshipment adds economies of scale beyond that which local business will permit. For countries astride major trade routes, transshipment of foreign cargo can be a major part of their operations. This is, in effect, the business of exporting services that generate income for such countries by exploiting and maximizing a natural resource (geographic location) that never becomes depleted. This form of transshipment involves consignments or containers with neither origination nor destination within the region.

New logistics concepts such as globalization, just-in-time (JIT) and outsourcing have created the need to establish complex international distribution chains. The ultimate goal is to allow shippers to place the right product on the manufacturing or retail floor anywhere in the world – at the right time and the right price. As a result, global logistics
service providers have emerged in the past three decades, with the main objective of satisfying customer-driven demand. To achieve this objective, they frequently rely on partnerships with industrial, distribution and transport entities.

Table 3 summarizes some significant events in the development of logistics since 2,700 BC.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2,700 BC</td>
<td>Material handling technology in building the pyramids</td>
</tr>
<tr>
<td>2 300 BC</td>
<td>Revolutionary Greek rowing vessels</td>
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<tr>
<td>3 700 AD</td>
<td>Procurement logistics in the construction of the Mezquita Mosque</td>
</tr>
<tr>
<td>4 1200 AD</td>
<td>The international network known as the Hanseatic League – cross-border trade</td>
</tr>
<tr>
<td>5 1500 AD</td>
<td>Progressive postal service in Europe</td>
</tr>
<tr>
<td>6 1700–Port Royal (Geo-political)</td>
<td>Transshipment hub and largest town in the Americas and the Caribbean</td>
</tr>
<tr>
<td>7 Early 1800s</td>
<td>The first administrative use of the term logistics (Napoleon era)</td>
</tr>
<tr>
<td>8 1800 AD</td>
<td>Emergence of new road conveyances and the railroad</td>
</tr>
<tr>
<td>9 1940 AD</td>
<td>Military logistics during the world wars – transfer of military logistics concepts to the business world</td>
</tr>
<tr>
<td>10 Post-World War II</td>
<td>Revolutionary philosophies of just-in-time (JIT) and total quality management (TQM)</td>
</tr>
<tr>
<td>11 1956</td>
<td>Invention of the sea container</td>
</tr>
<tr>
<td>12 1970–1980</td>
<td>Kanban and just-in-time – logistics concepts with a special emphasis on procurement</td>
</tr>
<tr>
<td>13 c. 1990</td>
<td>QR and ECR technologies – logistics concepts with a special emphasis on distribution</td>
</tr>
<tr>
<td>14 2000s</td>
<td>Advancing globalization – efficient logistics as a competitive edge in the era of globalization</td>
</tr>
</tbody>
</table>

The Argument for Jamaica's Logistics Hub

The forces of scale and technology drive the global shipping industry. The Caribbean region, which comprises a group of disconnected states sharing ocean space is, therefore, challenged to find relevance within this paradigm. Sustained globalization and global logistics would not be possible without a dense and efficient transport network. The question is: How does the Caribbean fit into this picture? Given the
poor performance of many ports in the Caribbean, it is not surprising that handling charges are two or three times higher than in similar ports in other regions of the world, and the overall cost of transport and insurance in the Caribbean basin is some 30 percent higher than the world average (Pinnock and Ajagunna, 2009).

Globalization is not just a world of new opportunities for companies. It also poses certain risks. In many sectors, more intense global commercial competition has arisen. Even in their home markets, companies are facing new competitors from around the world, and these competitors frequently enjoy significant cost advantages generated by such factors as lower production expenses. As a result of this development, the demand for transport, storage, transshipping, communication, planning and control services is growing. At the same time, pressure to optimize the quality and cost of services is growing for companies. Logistics has become one of the most important levers that companies can use to survive and succeed in global competition.

The impending Panama Canal expansion and the extended global economic recession which started in 2008, have created new opportunities for the development of multiple global logistics hub in the Central American and Caribbean region to serve North America, Central America, and the emerging markets of South America. This signals an end to the traditional transshipment hub port model as the need is for new port facilities, surrounded by 1000 acres of land offering economic value-added opportunities with flexible air/sea port connectivity. Since 2009, Kingston Container Terminal has lost its number one regional hub port status to MIT Panama, which transitioned from being a sole transshipment hub port to integrate economic zone value-added opportunities into its operations. Just as Jamaica created Kingston Container Terminal as a new transshipment hub port in the 1980s, so it will need to create new sea and air ports, integrated into value-added economic zones, as the current KCT facilities are virtually landlocked. As Jamaica considers the first economic zone, which could occupy 6,000 acres of land including a new port facility to be built on the controversial Goat Island, its economic future hangs in the balance. It will no longer be about the Americans and the Europeans but the Chinese, and to come, the Indians and the Brazilians.
Logistics Zones and Performance

Logistics Zones

A logistics zone has been defined as the grouping of activities that deal directly with freight transportation and related services within a defined geographic area. According to Rodrigue (2013), the range of functions of logistics zones is wide – from simple cargo consolidation to advanced logistics services. Many locations not only have assumed a significant number of traditional cargo-handling functions and services but also have attracted many related services, such as distribution centres, shipping agents, trucking companies, forwarders, container repair facilities and packing firms. The development of logistics zones has been an important component of globalization since the growth in international trade and the related material flow requires activities supporting their consolidation, deconsolidation, trans-loading and light transformation (Rodrigue, 2013).

The concept of logistics zones is well-advanced in Europe. In the late 1960s and 1970s, for example, logistics zones were developed in France, Italy and Germany. In the 1980s and 1990s, the number of such zones multiplied. Logistics zones are usually created within the framework of regional development policies as joint initiatives by firms, intermodal operators, regional and local authorities, the central government and or the chambers of commerce and industry (Rodrigue, 2013). In North America, on the other hand, the emergence of planned logistics zones came later as governments rarely placed much attention on such activities. The general availability of land and the private nature of rail operations involved a freight distribution industry that was self-regulated in its locational choices. Cluster formation was mainly a ‘natural’ process, strongly conditioned by national and regional market accessibility. A variety of private real estate promoters, often in partnership with local or state governments, built logistics or industrial parks on an ad hoc basis where land was available, inexpensive and in proximity to a major highway (Rodrigue, 2013). In developing countries, however, the concept of logistics
zones was initially associated with transnationalism, as the setting of foreign trade and export-oriented zones often had a locational criterion related to proximity to international terminal seaport and airport facilities. With the growing level of involvement of developing countries in international trade as well as ongoing growth of internal demand, the development of logistics zones is taking a form more in line with developed countries (Rodrigue, 2013).

**Typology of Logistics Zones**

According to Rodrigue (2013), logistics zones can be classified according to their modal orientation, geographical scope or function. This will include port-centric logistics zones, inland ports, intermodal logistics zones, logistics parks and freight villages.

**Port-centric logistics zones**: This is a logistics zone that has been planned in co-location or in proximity to a port terminal facility. It supports freight distribution activities directly related to maritime shipping and thus has a dominant international trade orientation. The common value proposition of port-centric logistics zones, according to Rodrigue (2013), is the availability of land next to a port terminal, which also has the convenience to tap into the labour pool that is generally available in a port city. From a freight distribution perspective, inventory management tends to be facilitated since the containers can be easily picked up or dropped off at the terminal facility. The added security that a port-centric logistics zone offers is also a positive factor, particularly in developing countries. The drawback, however, is that the zones involve higher land costs with potentially more restrictive labour regulations if they are within the jurisdiction of dockworkers. They also lock the shipping options of customers to the port, which may not be the most suitable. In addition, port authorities tend to be proactive in port-centric logistics since it supports and provides added value to port activities and gives them an opportunity to diversify their involvement in regional freight distribution. They can also be associated with satellite terminals supporting port activities such as off-dock rail facilities and empty container depots but these activities tend to be more transport than freight distribution intensive. Airport-centric logistics zones work on a similar principle where logistics activities are co-located and often directly accessible to runways.
Inland port logistics zones: These are intermodal terminals built with the development of adjacent logistics and service activities. The inland terminal is directly integrated to co-located distribution activities, which is one of the main advantages of such facilities as they both become their respective customers. The term ‘dry port’ is often used to label an inland port since it refers to a facility that performs a similar intermodal function to that of a port, and is not directly serviced by deep-sea maritime services. The inland port is conceivably the most advanced form of logistics zone since it links co-located freight distribution activities to a gateway through a rail corridor.

Logistics parks: These are planned zones composed of distribution centres and light manufacturing activities. They provide geographical advantages in terms of accessibility, land availability and infrastructure as well as operational advantages in terms of favourable regulations and economies of agglomeration. However, the degree of accessibility varies depending on the array of intermodal terminals available in the vicinity. Logistics parks in proximity to an intermodal rail terminal are often labelled as intermodal logistics parks. Logistics parks are often independently planned and it is common to see them emerge after the construction of an intermodal terminal as a promoter seizes an opportunity to provide land for logistics. This type of logistics park is only serviced by road and does not require significant planning; what it requires is simply a change in zoning and some basic amenities such as road access to a lot and utilities. Logistics parks also tend to appear ‘spontaneously’ at locations having good accessibility levels, and where promoters are able to secure land for development.

Freight villages: These are integrated clusters of support activities for freight distribution such as office space, hotels and restaurants. Freight villages mostly focus on the service and transactional dimensions of freight distribution and could exist in a context where limited freight distribution is taking place. They do not require adjacent intermodal terminals but such terminals are commonly located in the vicinity. Freight villages can also be linked with airport terminals since this type of high-value freight is intensive in transactions. The definition of a freight village is subject to different interpretations as in some cases logistics parks are labelled as freight villages, but the term
should be applied where a high intensity of freight-related services have clusters within a logistics zone.

In essence, a logistics zone is a value proposition for freight distribution that goes well beyond the function of warehousing with distinct economic benefits, such as job creation and capital investment, but also costs such as environmental externalities. An array of services is required as these services support the functions of logistics zones and provide employment. The goal is often to create a service market within a logistics zone since it strengthens local expertise and improves the performance of freight distribution.

**Logistics Performance**

Ships and ports are two elements in the movement of goods from one point to another or from one country to another. The sum total of unique transportation arrangements is referred to as the supply chain, the management of which is referred to as logistics. The goal of logistics is the movement of goods across borders rapidly, reliably and cheaply. This, in turn, facilitates trade and development.

The Caribbean’s maritime transport development goal should go well beyond the sea and encompass trade facilitation, customs modernization, the promotion of electronic processing of trade documents, improvement in access to trade and transport information for the purposes of tracking, tracing, processing and approval, and the cultivation of local logistics competence in forwarding, trucking and freight consolidation. The Caribbean-Central American Action (CCAA) drew attention to an important World Bank measure called the Logistics Performance Index (LPI) (World Bank, 2007). The LPI was constructed by surveying global freight forwarders and express carrier companies. It measured the impact of delays and costs associated with moving goods over the ports of 150 countries. This measure included customs clearance, quality of infrastructure (ports, rail, and information technology), ease and affordability of arranging shipments, ability to track and trace, cost of local transportation, port and terminal handling and warehousing, predictability of on-time arrival, criminal activities, solicitation of informal payments, and degree of improvement or deterioration. According to Pinnock and
Ajagunna (2012), while this survey included only three CARICOM members, the following is a picture of their performance relative to the rest of the world (max score, 5; highest ranked country, Singapore at 4.19):

<table>
<thead>
<tr>
<th>Country</th>
<th>Rank</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamaica</td>
<td>118</td>
<td>2.25</td>
</tr>
<tr>
<td>Haiti</td>
<td>123</td>
<td>2.21</td>
</tr>
<tr>
<td>Guyana</td>
<td>141</td>
<td>2.05</td>
</tr>
</tbody>
</table>

While the goal should be to make progress on each of the elements that contribute to logistics performance, as they are self-supporting, it is probably true that customs modernization is a necessary condition. In this connection the Caribbean region has made progress in implementing UNCTAD’s Automated System for Customs Data (ASYCUDA) (www.asycuda.org), developed in the 1980s. The objective of ASYCUDA was to harmonize customs codes, international standards and simplified procedures. The expected outputs are a uniform application of the customs laws and regulations, a better command of the collection of duties and taxes, the availability of timely and accurate statistics, and technical support for installation and training.

Whatever the system, there must be transparency of governing rules and regulations, efficiency of the document and clearance processes, and predictability in the application of the rules and regulations by the authorities (World Bank, n.d.).
Caribbean Transshipment: Situation Analysis

Positioning Caribbean Ports

The transshipment business helps ports and shipping lines generate economies of scale, which can expand a port’s market and lower its costs. The ports of Kingston (Jamaica) and Freeport (The Bahamas) are good examples of how transshipment adds economies of scale beyond that which is possible from local business. For those countries – including those in the Caribbean – that sit astride major trade routes, transshipment of foreign cargo can be a major part of their operations. As was noted before, this is, in effect, the business of exporting services that generate income for the country by exploiting and maximizing a natural resource (geographic location) that never becomes depleted. This form of transshipment involves consignments or containers with neither origination nor destination within the region.

Ports in the Caribbean sit at the intersection of the major ‘round the world’ East-West trade routes linking Asia, America, Europe and the Middle East, and the important North to South routes between North and South America, and South America and Europe. Shipping lines find it economical to line haul; that is, to move freight to one central location from which it is transshipped on vessels serving countries with limited port facilities. Other transshipment ports competing for global hub port status outside of Kingston Container Terminal in Jamaica include Caucedo (Dominican Republic) and Freeport (The Bahamas). Investment in major transshipment ports is risky in that 90 percent of the cargo volume moving in and out of the ports is transshipment. Risk, here, relates to the fact that the transshipment portion can move overnight to competing ports (such as those in Panama and Columbia), as they are not tied to domestic ports.
<table>
<thead>
<tr>
<th><strong>International Ports in the Caribbean</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Abaco, The Bahamas</td>
</tr>
<tr>
<td>Basseterre, St. Kitts</td>
</tr>
<tr>
<td>Bridgetown, Barbados</td>
</tr>
<tr>
<td>Caucedo, Dominican Republic</td>
</tr>
<tr>
<td>Christiansted, US Virgin Islands</td>
</tr>
<tr>
<td>Fort-de-France, Martinique</td>
</tr>
<tr>
<td>Georgetown, Cayman Islands</td>
</tr>
<tr>
<td>Havana, Cuba</td>
</tr>
<tr>
<td>Kingstown, Grenada</td>
</tr>
<tr>
<td>Marsh Harbour, The Bahamas</td>
</tr>
<tr>
<td>Montego Bay, Jamaica</td>
</tr>
<tr>
<td>Oranjestad, Aruba</td>
</tr>
<tr>
<td>Plymouth, Montserrat</td>
</tr>
<tr>
<td>Pointe-à-Pitre, Guadeloupe</td>
</tr>
<tr>
<td>Port of Spain, Trinidad</td>
</tr>
<tr>
<td>Providenciales, Turks and Caicos</td>
</tr>
<tr>
<td>Rio Haina, Dominican Republic</td>
</tr>
<tr>
<td>Roseau, Dominica</td>
</tr>
<tr>
<td>San Juan, Puerto Rico</td>
</tr>
<tr>
<td>Santo Domingo, Dominican Republic</td>
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<tr>
<td>St. Croix, US Virgin Islands</td>
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<tr>
<td>St. George’s, Grenada</td>
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<tr>
<td>Tortola, Tortola</td>
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<tr>
<td>Willemstad, Curacao</td>
</tr>
</tbody>
</table>
### Table 5

**Shipping Lines Serving the Caribbean**

<table>
<thead>
<tr>
<th>Shipping Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANL Container Line Pty Ltd.</td>
</tr>
<tr>
<td>APL Ltd.</td>
</tr>
<tr>
<td>BBC Chartering and Logistic GmbH &amp; Co. KG</td>
</tr>
<tr>
<td>Caja Logistics</td>
</tr>
<tr>
<td>China Shipping Container Lines Co. Ltd.</td>
</tr>
<tr>
<td>Compagnie Maritime Marfret</td>
</tr>
<tr>
<td>Compañía Chilena de Navegación Interoceánica SA</td>
</tr>
<tr>
<td>Crowley Liner Services</td>
</tr>
<tr>
<td>Europe Caribbean Line</td>
</tr>
<tr>
<td>Frontier Liner Services</td>
</tr>
<tr>
<td>Grand Alliance</td>
</tr>
<tr>
<td>Hugo Stinnes Linien GmbH</td>
</tr>
<tr>
<td>Kawasaki Kisen Kaisha Ltd.</td>
</tr>
<tr>
<td>Maersk Line</td>
</tr>
<tr>
<td>Mediterranean Shipping Co. SA</td>
</tr>
<tr>
<td>Mitsui OSK Lines Ltd</td>
</tr>
<tr>
<td>Horizon Lines, Inc.</td>
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<tr>
<td>Nordana</td>
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<tr>
<td>Orient Overseas Container Line Ltd.</td>
</tr>
<tr>
<td>SeaFreight Line Ltd.</td>
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<tr>
<td>Sea Star Line LLC</td>
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<tr>
<td>Thompson Line</td>
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<tr>
<td>Tropical Shipping Co. Ltd.</td>
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<td>No.</td>
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</table>

Source: Pinnock and Ajagunna, 2012
Ranking of Caribbean Port Productivity

Table 7 represents Caribbean ports’ productivity for the year 2008 per berth move per hour for the months of January to December. These are ports that predominantly use mobile cranes in their load and discharge operations. Kingston Wharves Limited appears to have been the most productive port with year-to-date average of 17.73 berth moves per hour. This is 63.4 percent ahead of Georgetown, Cayman Islands which is ranked number two in this port subgroup. In third position was Castries, St. Lucia followed by Nassau, The Bahamas. In eleventh position was Grand Turk, Turks and Caicos Islands, achieving an average of 4.78 berth moves per hour. From the statistics, Kingston Wharves Limited, Jamaica, achieved the highest berth moves per hour over the period with the exception of March and May 2008. In March 2008, Castries, St. Lucia got the number one spot with 15.05 berth moves per hour. This was followed by Georgetown, Cayman Islands, with 14.45 berth moves per hour ahead of Kingston Wharves Limited in the number 3 position, with 14.43 berth moves per hour. In May 2008, Vieux Fort, St. Lucia, achieved 19.36 berth moves per hour behind Kingston Wharves Limited, Jamaica, with 25.76 berth moves per hour.

Kingston Container Terminal recorded the highest average berth moves per hour (19.80) for the year 2008. This was 59.9 percent ahead of second place Point Lisas, Trinidad, whose average was 11.86 berth moves per hour. Kingston Container Terminal held the top position for every single month, with its highest productivity average recorded in January 2008, with 30.05 berth moves per hour, and its lowest in September 2008 (16.75 berth moves per hour). Barbados took the fourth spot with an average of 7.72 berth moves per hour.
Table 7
Caribbean Productivity by Berth Equipment Type
(Berth Moves per Hour) Mobile Cranes

<table>
<thead>
<tr>
<th>Port/</th>
<th>Average Moves Per Month</th>
<th>Year Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Kingston Wharves, Jamaica</td>
<td>22.66</td>
<td>16.79</td>
</tr>
<tr>
<td>Castries, St Lucia</td>
<td>10.98</td>
<td>14.38</td>
</tr>
<tr>
<td>Vieux Fort, St. Lucia</td>
<td>11.13</td>
<td>19.36</td>
</tr>
<tr>
<td>St. Johns, Antigua</td>
<td>11.34</td>
<td>13.82</td>
</tr>
<tr>
<td>Providenciales, Turks &amp; Caicos</td>
<td>13.34</td>
<td>13.04</td>
</tr>
<tr>
<td>Grand Turk, Turks &amp; Caicos Islands</td>
<td>5.13</td>
<td>4.36</td>
</tr>
<tr>
<td>Philipsburg, St. Maarten</td>
<td>9.67</td>
<td>8.43</td>
</tr>
</tbody>
</table>

Adapted from Florida Ship Owners’ Group 2008; Pinnock and Ajagunna, 2012

Table 8
Caribbean Productivity by Berth Equipment Type
(Berth Moves per Hour) Gantry

<table>
<thead>
<tr>
<th>Port/</th>
<th>Average Moves Per Month</th>
<th>Year Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Point Lisas, Trinidad</td>
<td>7.77</td>
<td>13.85</td>
</tr>
<tr>
<td>Port of Spain, Trinidad</td>
<td>14.14</td>
<td>17.76</td>
</tr>
</tbody>
</table>

Adapted from Florida Ship Owners’ Group 2008; Pinnock and Ajagunna, 2012
Table 9
Caribbean Productivity by Berth Equipment Type
(Berth Moves Per Hour) Ships’ Gear/RO/RO

<table>
<thead>
<tr>
<th>Port/ Country</th>
<th>Average Moves Per Month</th>
<th>Year Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Freeport, The Bahamas</td>
<td>8.09</td>
<td>7.75</td>
</tr>
<tr>
<td>St. Georges, Grenada</td>
<td>6.38</td>
<td>8.45</td>
</tr>
<tr>
<td>Kingstown, St. Vincent</td>
<td>2.55</td>
<td>7.58</td>
</tr>
<tr>
<td>Road Town, Tortola</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basseterre, St. Kitts</td>
<td>5.08</td>
<td>9.34</td>
</tr>
</tbody>
</table>

Adapted from Florida Ship Owners’ Group 2008; Pinnock and Ajagunna, 2012

Table 9 categorizes ports that depend on ships’ crane/RO/RO (roll-on/roll-off) in their daily operations. It is the traditional notion to categorize these ports as the least productive and least developed amongst the three categories (global shipping network, inter-regional multipurpose service ports and small intra-regional schooner shipping network facilities). However, Georgetown, Guyana achieved a respectable 12.43 average berth moves per hour for 2008 ahead of Paramaribo, Suriname which had a credible 11.98 berth moves per hour. Georgetown achieved the highest berth moves per hour with the exception of the months of August, October and December 2008. In August 2008, Paramaribo achieved the highest berth moves per hour – 13.09. This was followed by Georgetown with 12.97 berth moves per hour. Roseau, Dominica claimed the number three spot for the month with 12.07 berth moves per hour. Again, in October 2008 Paramaribo claimed the number one spot with a repeat performance of 13.09 berth moves per hour. Georgetown held on to the number two position with 11.5 berth moves per hour. In December 2008 Paramaribo once again claimed the number one spot with 11.69 berth moves, followed by
Roseau with 10.85 berth moves. In that month Georgetown recorded its lowest performance for the year of 6.78 berth moves per hour, which placed it second from the bottom.

Table 10 below refers to an overall ranking of all 22 ports regardless of stevedoring equipment (gantry crane, mobile cranes and ships’ crane/RO/RO). The table does not include The Bahamas transshipment terminal and Caucedo, Dominican Republic, as these ports are dedicated international transshipment facilities. Gantry cranes are suggested as the most productive followed by mobile cranes, and ships’ cranes/RO/RO as the least productive. Kingston Container Terminal was the only gantry operation that was placed in the top four overall ranking. Interestingly, Kingston Wharves Limited, which was ranked amongst the top mobile crane operations, held the number two spot overall. This was followed by Georgetown, Guyana and Paramaribo, Suriname which took the first and second positions of the ships’ gear/RO/RO category. Point Lisas, Trinidad took the number five overall spot in the gantry category. Port of Spain took the eighth spot and Bridgetown, Barbados the fifteenth position. Positions 21 and 22 were held by Philipsburg, St. Maarten and Grand Turk, Turk and Caicos Islands, in the mobile crane category.

Drawing from the data in the table, it is clear that factors besides equipment type, including human factors, the management of operations and the logistics of terminal and integrated information technology, have an impact on productivity levels at the various ports in the Caribbean. The top two ports in Table 10 have invested heavily not just in hardware stevedoring equipment, but also in the training and development of their workforce and in advancing their information technology infrastructure.
### Table 10
Ranking of all 22 Ports Regardless of Stevedoring Equipment

<table>
<thead>
<tr>
<th>Port/Country</th>
<th>Rank</th>
<th>Average Moves Per Berth Hour</th>
<th>Year Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td>Kingston Wharves, Jamaica</td>
<td>2</td>
<td>22.66</td>
<td>16.79</td>
</tr>
<tr>
<td>Point Lisas, Trinidad</td>
<td>5</td>
<td>7.77</td>
<td>13.85</td>
</tr>
<tr>
<td>Castries, St. Lucia</td>
<td>7</td>
<td>10.98</td>
<td>14.38</td>
</tr>
<tr>
<td>Port of Spain, Trinidad</td>
<td>8</td>
<td>14.14</td>
<td></td>
</tr>
<tr>
<td>Port au Prince, Haiti</td>
<td>9</td>
<td>11.24</td>
<td>9.24</td>
</tr>
<tr>
<td>Vieux Fort, St. Lucia</td>
<td>10</td>
<td>11.13</td>
<td></td>
</tr>
<tr>
<td>St. Johns, Antigua</td>
<td>11</td>
<td>11.34</td>
<td>13.82</td>
</tr>
<tr>
<td>Providencias, Turks &amp; Caicos Islands</td>
<td>14</td>
<td>13.34</td>
<td>13.04</td>
</tr>
<tr>
<td>Freeport, The Bahamas</td>
<td>16</td>
<td>8.09</td>
<td>7.75</td>
</tr>
<tr>
<td>St. Georges, Grenada</td>
<td>17</td>
<td>6.38</td>
<td>8.45</td>
</tr>
<tr>
<td>Kingstown, St. Vincent</td>
<td>18</td>
<td>2.55</td>
<td>7.58</td>
</tr>
<tr>
<td>Road Town, Tortola</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basseterre, St. Kitts</td>
<td>20</td>
<td>5.08</td>
<td>9.34</td>
</tr>
<tr>
<td>Philipsburg, St. Maarten</td>
<td>21</td>
<td>9.67</td>
<td>8.43</td>
</tr>
<tr>
<td>Grand Turk, Turks &amp; Caicos Islands</td>
<td>22</td>
<td>5.13</td>
<td>4.36</td>
</tr>
</tbody>
</table>

Adapted from Florida Ship Owners’ Group 2008; Pinnock and Ajagunna, 2012
Table 11
Average Time Await Berth for Caribbean Ports (January–December 2008)

<table>
<thead>
<tr>
<th>Port/ Country</th>
<th>Rank</th>
<th>Average Time Await Berth</th>
<th>Year Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Roseau, Dominica</td>
<td>1</td>
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<td>3:49</td>
</tr>
<tr>
<td>Freeport, The Bahamas</td>
<td>2</td>
<td>1:12</td>
<td>0:33</td>
</tr>
<tr>
<td>Vieux Fort, St. Lucia</td>
<td>3</td>
<td>0:48</td>
<td>0:51</td>
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<tr>
<td>Road Town, Tortola</td>
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<td></td>
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</tr>
<tr>
<td>Castrics, St. Lucia</td>
<td>5</td>
<td>0:28</td>
<td>1:57</td>
</tr>
<tr>
<td>Kingston Container</td>
<td>6</td>
<td>1:52</td>
<td>0:13</td>
</tr>
<tr>
<td>Montego Bay, Jamaica</td>
<td>7</td>
<td>5:04</td>
<td>2:04</td>
</tr>
<tr>
<td>Basseterre, St. Kitts</td>
<td>8</td>
<td>0:10</td>
<td>2:06</td>
</tr>
<tr>
<td>St. Johns, Antigua</td>
<td>9</td>
<td>1:54</td>
<td>1:48</td>
</tr>
<tr>
<td>Kingston, St. Vincent</td>
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<td>0:35</td>
</tr>
<tr>
<td>St. Georges, Grenada</td>
<td>12</td>
<td>0:48</td>
<td>0:33</td>
</tr>
<tr>
<td>Port of Spain, Trinidad</td>
<td>16</td>
<td>2:18</td>
<td>7:17</td>
</tr>
<tr>
<td>Maarten, Port au Prince</td>
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<td>1:47</td>
<td>1:16</td>
</tr>
<tr>
<td>Grand Turk, Turks &amp;</td>
<td>19</td>
<td>0:11</td>
<td>0:16</td>
</tr>
<tr>
<td>Caicos Islands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&amp; Caicos Islands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paramaribo, Suriname</td>
<td>22</td>
<td>0:52</td>
<td>27:00</td>
</tr>
</tbody>
</table>

Adapted from Florida Ship Owners’ Group 2008; Pinnock and Ajagunna, 2012
In a study done in 1980 on the Fortune 500 companies, 70 percent indicated that their greatest assets were their physical assets. In a recast of the study in 2007, over 60 percent of the companies which held that view were no longer a part of the Fortune 500 list. Seventy-six percent of the respondents in the recast study pointed to human capital as their greatest asset with physical assets accounting for 24 percent. This suggests that the Caribbean can no longer remain a quiet corner where each country can manipulate its local industry while ignoring global forces. Today, the market is controlled by the customer who is now demanding greater value which, in turn, calls for more informed and better-trained personnel. This, thus, places pressure on Caribbean ports to move beyond the basic role of receiving, storing and delivering cargo to becoming integrated members of the global supply chain. It is high time that the Caribbean plan to train and certify its human resources with the same degree of importance it gives to acquiring and deploying cutting-edge equipment. Countries such as Barbados are now coming to accept this reality, as seen in its plan to train and certify stevedoring labour in a partnership agreement with the Caribbean Maritime Institute. This makes Barbados the first port in the Caribbean to undertake such an initiative.

Table 11 highlights the average waiting time for vessels to access Caribbean ports. This forms a very important link in the overall picture of the total turnaround time of vessels. There is a popular saying that “a ship in dock is a wasted ship”. Ships are expensive assets and they make money while sailing – not while lying in port. The average time to berth forms a significant part of the overall time it takes to turn a vessel around. Unfortunately, in several instances this time can exceed the total load on discharge time. Table 11 shows Roseau, Dominica with a waiting time of 37 minutes, as the most accessible port followed by Freeport, The Bahamas, with 42 minutes and Vieux Fort, St. Lucia with 46 minutes. In the case of the Caribbean’s two top ports, Kingston Container Terminal is ranked sixth with 1 hour and 20 minutes waiting time and Kingston Wharves Limited is tenth with 1 hour and 40 minutes waiting time. The two bottom ranked ports are Point Lisas, Trinidad with 5 hours and 30 minutes, and Paramaribo, Suriname with 8 hours and 20 minutes. Georgetown, Guyana, the
number three ranked Caribbean port, was placed fourteenth with an average waiting time of 2 hours and 57 minutes. Interestingly, ports in Georgetown, Guyana and Paramaribo, Suriname are tidal ports and can only be accessed on high tide with large container vessels. This can add an additional 6–12 hours to the wait time to allow for low and high tide changes.

**Liner Shipping Connectivity Index (LSCI): A Global Perspective**

The question of who trades what and with whom depends not only on the demand and supply of goods but also on the ability to deliver the goods to the market. Relevant aspects include geographical factors such as distance, landlockedness and transport costs. Another important, yet often neglected, determinant of trade competitiveness is transport connectivity, defined as access to regular and frequent transport services. Except for bulk commodities, most intercontinental trade is transported by liner shipping services. Access to such services is a determinant of competitiveness and of the geography of trade. Possible indicators for the supply of liner shipping services include number of ships, twenty-foot equivalent units (TEU) capacity, number of shipping companies and services offered by them, as well as maximum ship size. Also, a distinction needs to be drawn between direct services and those requiring transshipment.

As regards connectivity per country, UNCTAD has since 2004 produced a Liner Shipping Connectivity Index (LSCI) which combines available information about fleet assignment, liner services, and vessel and fleet size per country in order to provide a measure of a country’s integration in the global shipping network, and thus its trade competitiveness. According to the LSCI, most of the least-connected countries are also developing countries and the majority of them are small island developing states (SIDS). Whereas 75 percent of the top 20 best-connected countries recorded an improved LSCI between 2004 and 2006, only 30 percent of the 20 least-connected countries recorded an improvement during the same period. Therefore, the ‘connectivity gap’ between the best- and the least-connected countries is increasing. This is worrying for the Caribbean region whose nations are important constituents of the SIDS grouping.
Analyzing recent trends, we find that the number of ships, the maximum ship size and the total TEU capacity deployed per country have increased since 2004, whilst the number of services and the number of companies as an indicator of competition have decreased. International seaborne trade in 2007, driven by emerging and transitioning economies, surpassed a record 8 billion tons. More than 80 percent of international trade in goods is carried by sea and an even higher percentage of developing-country trade is carried in ships. In 2007, world seaborne trade (goods loaded) increased by 4.8 percent to surpass 8 billion tons for the first time (UNCTAD, 2007). By the beginning of 2008, the total world merchant fleet had expanded by an impressive 7.2 percent to reach 1.12 billion deadweight tons (dwt). At the beginning of 2008, the average age of the world fleet dropped marginally to 11.8 years. Container ships made up the youngest fleet with an average of 9 years. By May 2008, the world container ship fleet had reached approximately 13.3 million TEU, of which 11.3 million TEU were on fully cellular container ships. This fleet included 54 container ships of 9,000 TEU and above, which were operated by five companies: CMA-CGM (France), COSCON and CSCL (both from China), Maersk (Denmark) and MSC (Switzerland).

**Liner Shipping Connectivity Index (LSCI): A Caribbean Perspective**

Access to world markets depends to a great extent on the availability of regular and efficient marine transport connections, especially liner shipping services. UNCTAD’s LSCI aims at capturing a country’s level of integration into the existing liner shipping network by measuring liner shipping connectivity.¹ Table 12 shows the LSCI for the Caribbean between 2004 and 2010. Between 2004 and 2008, the Dominican Republic improved its connectivity level by 60.3 percent, which increased its ranking from 58 in 2004 to 37 in 2008. This was the most significant improvement in the Caribbean and was due largely to the opening of the Caucedo port, which attracted global carriers such as MSC shipping line and Hapag-Lloyd, among others. However,

¹The LSCI was introduced in 2004 as an indicator of liner shipping connectivity for 162 countries. In 2008 Tuvalu was added to the countries, making it 163 countries.
between 2008 and 2010, the Dominican Republic slipped to the number three position in the Caribbean, moving from 37 in 2008 to 49 in 2010. On the other hand, Jamaica was able to regain the number one position in the Caribbean, moving from number 41 in 2008 to number 32 in 2010. Similarly, The Bahamas, which was ranked number 49 in 2008, improved by approximately 6.5 percent, moving to Caribbean number two at 46 in 2010. The global transshipment hub ports have the highest level of connectivity to the global supply chain, followed by the subregional hubs and then the service ports. This further supports the view put forward by the researchers that the investment in the new Mariel terminal in Cuba and its proposed management by Singapore’s global operator, PSA, will change the configuration from ‘transshipment triangle’ to ‘transshipment pentagon.’ The three least connected ports in 2010 were those in the Cayman Islands, Antigua and Barbuda, and Dominica, which were ranked at 152, 153 and 155 respectively.

### Table 12
Liner Shipping Connectivity Index in the Caribbean

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>32</td>
<td>Jamaica</td>
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<td>32</td>
<td>24.61</td>
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<td>The Bahamas</td>
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<td>2.19</td>
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<tr>
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<td>150</td>
<td>2.33</td>
<td>146</td>
<td>-0.44</td>
</tr>
</tbody>
</table>

Source: UNCTAD, 2011; Pinnock and Ajagunna, 2012
The LSCI is calculated based on five components:

1. Deployment of container ships
2. Deployment of container carrying capacity in TEU
3. Number of liner shipping companies
4. Number of services
5. Maximum ship size, which refers to the ships that are deployed to provide liner shipping services to a country's port

Of these, the first three components are the most important.

**Deployment of Container Ships:** Fleet deployment is the number of ships that national and international liner shipping companies assign to liner services from and to the country’s ports. A larger number of ships is an indicator that a country’s shippers have more opportunities to load their containerized exports; that is, that they are better connected to foreign markets.

**Deployment of Container Carrying Capacity (TEU):** This refers to the number of slots for TEU. Given the growing average size of container ships, TEU deployment tends to grow faster than vessel deployment.

**Number of Liner Shipping Companies:** The downward trend in the number of liner shipping companies continued in 2008 due to mergers and acquisitions and an overall trend towards consolidation. The average number of liner shipping companies providing services per country has further declined since 2008.

From a global perspective, there are two major trade lanes – the Far East to Europe and the Far East to the US West Coast. At the end of 2008, there were just under 700 vessels servicing these markets. While the actual number of vessels may have decreased over the past five years, the average size of vessels has been increasing sharply (see Table 13). Today, the average size of vessels on the Far East to Europe route is approximately 7,000 TEU, and the Far East to US West Coast stands at 5,000 TEU. At the end of the spectrum, intra-Caribbean vessels average 700 TEU. This is due in part to the fact that the number one industry in the Caribbean – tourism – has little or no physical product to export.
Hence, maritime transport is priced on a one-way movement (import of cargo and empty return of containers). This creates an imbalance in trade, which makes it uneconomical to operate vessels far in excess of the average minimum size of 700 TEU, as more than 50 percent of the time vessels are deployed with empty, non-freight paying container repositioning movement. Most of these smaller vessels are of older tonnage with high fuel consumption per TEU and high maintenance costs. Drawing from Containerisation International statistics, at the end of 2008, a total of 476 ships served the Caribbean of which over 90 percent were involved in transshipment cargo movement. This is limited to larger ports such as Kingston, Freeport, and Caucedo.

Table 13

<table>
<thead>
<tr>
<th>No.</th>
<th>Trade Routes</th>
<th>No. of Vessels</th>
<th>Total Capacity (TEU)</th>
<th>Average Size of Vessel (TEU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Far East to Europe</td>
<td>330</td>
<td>2,234,943</td>
<td>7,000</td>
</tr>
<tr>
<td>2</td>
<td>Far East to USA West Coast</td>
<td>358</td>
<td>1,828,366</td>
<td>5,000</td>
</tr>
<tr>
<td>3</td>
<td>Caribbean/Central America to South America</td>
<td>121</td>
<td>204,448</td>
<td>1,700</td>
</tr>
<tr>
<td>4</td>
<td>Caribbean /Central America to North America West Coast</td>
<td>64</td>
<td>240,217</td>
<td>3,800</td>
</tr>
<tr>
<td>5</td>
<td>Caribbean/Central America to North America Gulf</td>
<td>58</td>
<td>110,282</td>
<td>1,900</td>
</tr>
<tr>
<td>6</td>
<td>Caribbean/Central America to South America (West Coast)</td>
<td>58</td>
<td>129,764</td>
<td>1,000</td>
</tr>
<tr>
<td>7</td>
<td>Caribbean/Central America to South America (East Coast)</td>
<td>56</td>
<td>132,298</td>
<td>2,400</td>
</tr>
<tr>
<td>8</td>
<td>Caribbean to Europe</td>
<td>54</td>
<td>84,040</td>
<td>1,600</td>
</tr>
<tr>
<td>9</td>
<td>Intra-Caribbean to Central America</td>
<td>25</td>
<td>17,212</td>
<td>700</td>
</tr>
<tr>
<td>10</td>
<td>Caribbean to Mediterranean</td>
<td>21</td>
<td>30,090</td>
<td>1,500</td>
</tr>
<tr>
<td>11</td>
<td>South Africa to Caribbean/Central America</td>
<td>7</td>
<td>19,503</td>
<td>2,700</td>
</tr>
<tr>
<td>12</td>
<td>Australia to Caribbean/Central America</td>
<td>6</td>
<td>13,622</td>
<td>2,300</td>
</tr>
<tr>
<td>13</td>
<td>Caribbean/Central America to North/South Pacific</td>
<td>6</td>
<td>13,622</td>
<td>2,300</td>
</tr>
</tbody>
</table>

Source: Pinnock and Ajagunna, 2012
Over the last decade, there has been a shift in trade away from North America, Canada and North West Europe towards direct sourcing from the Far East and South America. Table 13 supports the fact that the larger vessels are engaged in these two trade routes, giving greater economies of scale per container transported. We believe that it is more cost-effective to move cargo between regional hub port and global hub port than between two service ports in different Caribbean regions. This view is supported by the fact that it is often less costly to import a container from China to Kingston than it is to move a container from Kingston to Aruba (both in the Caribbean).

Globally, there are 9,494 container ships with a total carrying capacity of 14,534,657 TEU. At the beginning of January 2009, 1,265 new ships were on order, representing a mere 13 percent increase in actual number of ships. However, total capacity on order is 5,855,430, representing a 40.3 percent increase in global carrying capacity. Over 95 percent of the new vessels on order are in excess of 4,000 TEU, making them too large to service the Caribbean. This, therefore, begs the question as to the sustainability of Caribbean maritime transportation as the smaller fleet capable of serving the region is getting older and more difficult to operate on economically viable terms, and in the face of technological advancement and escalating operating costs (fuel, maintenance and labour).
The Cruise Industry in the Caribbean

Myth or Reality?

There can be no denying the positive impact of cruise travel for both passengers and local people. Economically, the influx of ships and people generate millions in wages and purchases in the Caribbean. Money spent by cruise visitors while ashore adds income for local businesses and governments. As a result, cruise travel is now the largest sector of the tourism industry in the Caribbean (Pinnock and Ajagunna, 2012). The dependence of many Caribbean states on tourism has led to huge port developments to accommodate the mega-ships and the subsequent increase in visitor numbers; thus, Caribbean tourism relies to a great extent on efficient logistics performance.

Pinnock and Ajagunna (2012), in an analysis of the cruise industry in the Caribbean, observed that the cruise industry has grown from being a US/Caribbean local cottage industry to becoming a global industry spanning the seven seas. This growth continued in 2012 with innovative, feature-rich ships, international ports of call and convenient departures from proximal embarkation cities as fundamental tenets of the new industry. The current cruise ship order book extending through 2015 includes 26 new builds (17 ocean-going vessels and 9 European and American cruise riverboats) with 45,600 berths and a value of nearly US$12 billion. The decline of transoceanic travel in the 1950s, the introduction of non-stop air travel between the USA and Europe by Pan American Airlines in 1958, and the overcapacity of transatlantic ocean liners, gave birth to the modern cruise tourism industry. Since its introduction, the image of cruising and cruise ships has not changed. However, the industry has shifted to a mass-market, multi-billion dollar business with the Caribbean as the largest destination. There have also been significant shifts in the clientele, size of ships and the unbundling of services provided on-board. Cruise ships have grown significantly in size and they have the luxury of land-based resorts but with the option of several destinations.
The Caribbean cruise industry has been affected by three major factors:

1. **The introduction of private islands.** This has become a unique feature of the Caribbean and an increased itinerary option for cruise lines. The number of private islands in the Caribbean is shown below in Table 14.

<table>
<thead>
<tr>
<th>The Bahamas</th>
<th>Western Caribbean</th>
<th>Eastern Caribbean</th>
<th>Southern Caribbean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coco Cay</td>
<td>Catalina Island</td>
<td>Labadee</td>
<td>Princess Bay</td>
</tr>
<tr>
<td>Pleasure Island</td>
<td>Serena Cay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Princess Cay</td>
<td>Isle of Youth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal Isle</td>
<td>Cayo Levantado</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Castaway Cay</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pinnock and Ajagunna, 2012

It is not uncommon for private islands and days at sea to account for up to 60 percent of the stops on a Caribbean cruise itinerary. This has shifted the focus from the Caribbean destinations to the ship as the primary object of the cruise. This benefits the cruise lines as all the revenue derived from private island calls go directly to their bottom line. This calls into question the validity of the statistics presented by the cruise lines in that the number of persons reportedly visiting the Caribbean cannot be taken as an absolute number, as it is calculated from the ship's manifest at the port of call. If 4,000 passengers left the Miami home port and stopped at two private islands and two Caribbean destinations, it would be reported that 20,000 passengers visited the Caribbean. The real question is, should private island visits be classified as visits to the Caribbean? Or could the numbers be viewed as double counting?

Some observers have pointed out that, in the case of the Caribbean, private islands are a major driver in cruise ships becoming ‘detrerritorialized’ destinations. Apart from geographic location, private islands have no other connection with other Caribbean
islands in terms of employment or social and economic activities. Another major area of contention is that the absence of the Caribbean people in cruise ship promotional literature is a signal to passengers of their limited contact with local people on a cruise compared to their staying in a traditional hotel where they would have no control over the persons with whom they came into contact.

2. The impact of scale. The introduction of the Carnival Destiny in 1996 as the first Post-Panamax cruise vessel changed the face of the cruise industry. The focus shifted from the cruise vessel being a mode of transport taking people to destinations on an itinerary to the ship itself becoming a destination, supplemented by ports of call. This era signalled the shift of value and net earning from the Caribbean to the ship.

3. The removal of home port away from the Caribbean. This is the shift from the traditional flight-to home port to the drive-to home port in the USA, opening up new city populations and eliminating the need for airline travel. Since the 9/11 tragedy in the USA, home ports used by the major cruise lines have nearly doubled. The increase has opened the door to some intriguing travel options. New York City has risen to become successful after many years playing second fiddle to the major Florida ports.

Barbados: A Case of Home-porting Success

Pinnock and Ajagunna (2012), in an analysis of the benefits of home porting in Barbados, assert that the Caribbean nations have been relegated to becoming traditional ports of call with Puerto Rico having the largest home port in the Caribbean. It is the desire of all Caribbean countries to attract larger volumes of home port calls because of the potential for significant benefits to the country. Home porting accounts for increased airlift in and out of Caribbean destinations, which often includes passengers using the services of hotels with the added advantage of pre- and post-cruise extension visits. Additionally, it benefits from container loads of provisions shipped in to service vessels, and local services such as garbage disposal, bunker suppliers, fresh water provisioning and sludge removal.
Since 2000, more than one in every five cruise-ship calls to Barbados represents a home-porting vessel. The number of home-porting cruise ship calls to total cruise ship calls over the period 2000 to 2011 ranges from a low of 21.51 percent in 2004, to a high of 37.33 percent in 2006. These statistics are unrivalled by any other Caribbean port including those in Puerto Rico and The Bahamas. Unquestionably, home porting has been a significant success for the Barbados cruise industry, for which the country and the Barbados Port Inc. have never been properly recognized. Interestingly, major world events in the period under review such as the 9/11 tragedy in the USA and the global recession in 2008 showed no impact on the home-porting percentage share of the overall cruise ship calls as most of the cruise brands using Barbados’ home port facility were based in the UK and Europe.

Despite the high passenger arrival numbers reported by St. Maarten, the Cayman Islands and Jamaica, the home-porting percentages are less than two percent, confirming Barbados as the clear Caribbean winner on the home-porting front. The plans by the Barbados Port Inc. to construct a world-class cruise facility in conjunction with specialized home-porting infrastructure will only strengthen Barbados as one of the highest earners from cruise tourism in the region. This factor also accounts for the successes achieved by land-based tourism in Barbados because there is a high integration between cruise- and land-based tourism.

The lesson to Caribbean countries is that while it is fashionable to build bigger and more sophisticated ports, it has to be balanced with a strategy that ensures that scarce capital resources are not just being invested to subsidize cruise industry operations which are dominated by a few major companies.

**Cruise Line Dominance**

The dependency of many Caribbean islands on tourism has resulted in much discussion surrounding the power imbalance between transnational cruise companies and some of the developing small island states and other stakeholders. In the context of collaborative
tourism planning Reed (1997) and Pinnock (2012), drawing on the work of West (1994), define power as the “ability to impose one’s will or advance one’s own interest”. Reed stated that cruise tourism has not been excluded from the power relations debate. Johnson (2002) added to this debate, noting that a particular concern is the current disparity between developed and less developed countries in terms of the destinations’ control of and interface with the cruise line industry. Expressing concern and making reference specifically to cruise tourism in the Caribbean, Wood (2000) highlighted power issues for the region, stating that:

The (cruise) companies are entirely non-Caribbean. Their destinations are increasingly under their direct ownership and control; Caribbean cruises are taking on elements of ‘cruises to nowhere’. The ships’ labour force is overwhelmingly non-Caribbean. What these ships do in the Caribbean Sea (including dumping) is outside the jurisdiction of Caribbean states.

Liburd (2001) further argued that, due to a number of regulatory loopholes and gaps in environmental laws, cruise lines are largely immune to criminal prosecution under any form in the USA and in the Caribbean where the ships spend most of their time.

To some extent, it can be argued that the Caribbean’s inability to take a unified position against a powerful cruise industry is as much about the region’s political structure and fault-lines as it is about the intra-regional competition that enables the various cruise lines to pit one country against another. Burns and Holden (1995) state that although not all government bodies have tourism plans, most hold an official position about tourism. Although it would be ideal for the Eastern Caribbean states to demonstrate collaboration, the islands and their governing bodies will have different expectations, goals and objectives regarding cruise tourism development because of their diversity. This makes collaboration between the destination stakeholders and industry stakeholders highly complex (Burns and Holden, 1995).

Examples of the imbalance in these power relations and the complexity in the political make-up of the Caribbean region were
evident in the dispute in the early 1990s between CARICOM and the Florida-Caribbean Cruise Association (FCCA) over cruise passenger head taxes (Pinnock and Ajagunna, 2012). Head tax is the amount paid by the cruise lines to the governments of the islands visited and it varies between countries. CARICOM supported standardization in an attempt to enable a more equitable distribution of economic benefits from the cruise industry amongst all island states (Liburd, 2001). The FCCA opposed the idea and St. Lucia became a victim of the dispute with cruise lines boycotting the island as a port of call. Appeals by St. Lucia for solidarity among the Caribbean Tourism Organization (CTO) members were disregarded when Dominica accepted the ships formerly destined for St. Lucia (Pattullo, 1996).

Managing Carrying Capacity

The dependence of many Caribbean countries on tourism has given way to huge port developments to accommodate mega-ships and the consequent increase in visitor numbers. For example, St. Lucia has developed Castries to accommodate the docking of six ships (Cartwright and Baird, 1999). As a result of such developments, there is increasing concern regarding the carrying capacity of some of the smaller islands as problems of congestion have been noted, leading to irritation and some hostility from residents. Pinnock and Ajagunna (2012) refer to examples given by McElroy and Albuquerque (1998), which include Philipsburg in St. Maarten, Charlotte Amalie in St. Thomas, Cruz Bay in St. John and Road Town in Tortola.

Calls have been made in many ports for a more sustained and managed expansion of port infrastructure to cater for cruise ship tourists (Hobson, 1993). It is important that the Caribbean region assess the reality in terms of economic gain from the increasing number of passengers arriving in already congested ports. Johnson (2002) suggests varying itineraries and limiting passenger numbers as possible solutions but given the level of inter-island competition and the perceived economic benefits from cruise tourism it is always going to be a contentious issue and, if implemented, difficult to maintain. It is not only achieving consensus amongst stakeholders regarding adoption of carrying capacity initiatives that presents a challenge,
However. The concept, practicalities and application of carrying capacity measures, as planning tools, are fraught with debate within the tourism industry. This is an area that cannot be ignored and regulating the number of cruise ships that dock in certain destinations should encompass a thorough evaluation of the economic benefits against the number of cruise vessels docking at any one time and the subsequent volume of passengers that proceed ashore. Bermuda’s rationing of cruise ship access is one example of managing capacity effectively (Baum, 1997).

The extent to which ports are developed may have an impact on the overall desirability of the destination. Watson and Kopachevsky (1996) comment on the dangers of creating an ‘eyesore’ or ‘built environment’ to accommodate increases in capacity to the detriment of the natural environment. Visual pollution of the coastline occurs not only through infrastructure development of ports but also through the size of ships docking at small island ports (Cartwright and Baird, 1999).

If the protection of the Caribbean’s natural environment is key in managing the growth and development of cruise tourism and subsequently assuring that the industry has a sustainable future in the region, then one has to assume that the natural environment must be equally valued by all stakeholders. Wang (2000) highlights the importance of the physical attributes of the Caribbean, suggesting that the region is symbolically transformed into a tourist’s paradise with imagery of “tropical, palm-fringed islands surrounded by golden sand”, and alluding to those attributes that may serve as key pull factors in the choice of destination. However, cruise tourism also has been compared with all-inclusive resort experiences (Cooper et al., 1998, cited in Johnson, 2002) and cruise companies actively market their ships as the holiday experience rather than the destinations.

Some ports in Caribbean destinations have been developed to replicate the theme of the cruise ship environment and have sought to “become an extension of the fantasy environment of the ship” (Wood, 2000). This not only calls into question the authenticity of the tourist experience in visiting the Caribbean islands by cruise ship but also re-emphasizes the issue of the importance placed by cruise operators
on the natural environment as a key attraction and consequently, the relative importance placed on its long-term preservation. Pattullo (1996) further amplified this point, expressing the view that the Caribbean has lost its relevance except as a vague and shimmering backdrop. Pattullo (1996) quoted Bob Dickinson, Carnival’s Managing Director, who stated that, “The limited number of countries and ports offered is not a deterrent to Carnival customers; after all the ship is the attraction, not the port of call.” In addition to cruise companies marketing their ships as destinations in themselves, it can be seen that the dominance of the transnational cruise companies goes beyond the boundaries of the cruise vessels themselves in what Wood (2000) refers to as “the enclave-based encapsulation of cruise tourists (and their dollars) with the development of private clubs for passengers in Caribbean ports of call”.

The Weakness of Global Governance and the Privatization of Cruise Industry Regulations

In addition to the fact that the Flag of Convenience (FOC) system limits enforcement of safety, environmental and labour conventions, existing international law in these areas are very weak, especially for environmental and labour issues. Many laboriously negotiated agreements have never come into force because they have failed to get the required level of ratification. Those that have come into force are mostly very weak. For example, it remains legal for cruise ships to dump anything but plastics and oil in most of the world’s oceans. The restrictions that exist apply almost entirely to territorial waters, usually only for three miles (5 km) from shore but occasionally twelve miles (20 km). Even with such limited restrictions, the cruise industry has been embarrassed by a steady string of violations of international and national environmental laws within territorial waters in recent years. Violations have only declined when port states imposed severe penalties. Indeed, assertion of port control has been the major source of change in cruise ship environmental practices in the past decade. But even if there were no violations within territorial waters, massive dumping of sewage and toxic substances could remain the norm outside of those waters.
In this context the cruise industry has sought to privatize environmental governance by making it a voluntary activity of industrial organizations. This can be seen as conforming to neoliberalism's distrust of government, so that when market solutions are not available other private arrangements among market actors are preferred. Held and McGrew (2002) see such trends as reflecting:

... the privatisation of global regulation, that is, a redrawing of the boundaries between public authority and private power. From technical standards to the disbursement of humanitarian assistance, private agencies have become increasingly influential in the formulation and implementation of global public policy. Contemporary global governance involves a relocation of authority from public to quasi-public, and to private, agencies.

Two such arrangements have emerged with respect to cruise ship pollution in the past several years. These are voluntary codes of conduct and memoranda of understanding (MOU) between cruise industry organizations and local authorities. In June 2001, the International Council of Cruise Lines (ICCL), an organization of most of the major cruise lines, announced that its members had unanimously adopted mandatory environmental standards for all of their cruise ships. Compliance with these standards was to be a condition of membership in the ICCL. This was clearly a response to pollution scandals of the previous several years involving almost all of its members and also to the fear that US state and federal environmental legislation to deal with environmentally destructive cruise ship practices in Alaska would be extended to other areas.

While the ICCL policy went beyond international requirements in committing cruise ships to refraining from dumping toxic wastes anywhere, whether in territorial waters or not, in most respects the policy simply stated that its members would observe current international and national environmental regulations, which are extremely minimal, as noted above. The policy is weaker than the legislative controls in Alaska and than Canada's (non-binding) guidelines for cruise ships (Klein, 2003). The ICCL policy allows for
the discharge of both black water (sewage) and grey water (mainly sink and drain run-off) 4 miles (6 km) from shore, and is silent on such subjects as air emissions and ballast water. Perhaps, most important, the ICCL policy contains absolutely no mechanism either for monitoring or enforcing compliance. Since its promulgation, several of its members have been convicted of criminal acts that violate the policy but no ICCL action has been taken against them. Thus, in the eyes of most environmental organizations, the policy, while a step in the right direction, is no substitute for governmental or international regulation (Nowlan and Kwan, 2011; Ocean Conservancy, 2002; Oceans Blue Foundation, 2002; Klein, 2003).

The cruise industry has also sought to prevent regulatory legislation by negotiating MOU with local authorities. The Florida Department of Environmental Protection and the FCCA signed an MOU in March 2000, and the state of Hawaii signed one with the North-West Cruise Ship Association (NWCA) in October 2002. In March 2004, the NWCA signed an MOU with the Port of Seattle and the state’s Ecology Department. In each case, there was little or no public input and strong opposition from the local environmental community. Monitoring and compliance have been voluntary.

As a Blue Water Network and Ocean Advocates report made clear, the outcome of the voluntary MOU approach and legislative regulation first in Alaska and then in California, have been strikingly different (Klein, 2003). In Alaska and California, not only have violations of environmental regulations significantly declined after initial convictions and fines but cruise companies also have shifted their least polluting ships to those areas, leaving their more polluting ships to serve areas without MOU. As another report stated, “Cruise ship pollution incidents have continued to occur since the cruise industry heeded the ‘wake-up call’ of the Royal Caribbean cases. More than 50 incidents have occurred, many in violations of voluntary policies or MOUs” (Schmidt, 2004).

While calls continue to be made to establish mechanisms to force FOC states to meet their legal obligation of ensuring that the ships they register meet international safety, security, crewing and environmental standards, the assertion of port state control (PSC) has come to be seen by many as the most politically available means to redress the failings of the FOC regime. European countries reached
their own MOU – the Paris Memorandum of Understanding on PSC – to target cruise ships for regular inspection starting in 2003 (Klein, 2002). In the USA, federal and state courts have gradually extended port state controls, particularly in connection with passenger rights and safety and, as noted above, several states have put in place their own regulatory framework. The federal government has shown an increased willingness to file charges directly against cruise companies that violate anti-pollution regulations rather than referring them to registry states. In addition, grassroots campaigns have begun to produce some significant cruise company responses, most notably in Royal Caribbean’s promise in 2004, in response to Oceana’s boycott campaign against it, that it would install advanced wastewater purification technology on all its ships, both new and existing ones.

The Way Forward for the Caribbean

The Caribbean Sea is a homogenous area shared by all states. The Caribbean islands collectively need to legislate the cruise tourism industry if sustainability is to be achieved and if the ‘trust us’ mentality of the cruise lines is to be countered. Harmonization of the legal framework for regulation of cruise ships is necessary. There are numerous loopholes and gaps in environmental laws that should be controlling pollution by cruise ships; several types of cruise ship discharge are exempt from key regulations governing other wastewater dischargers. For example, the Clean Water Act makes it unlawful to discharge any pollutant from a point source into US waters unless a permit is obtained under the National Pollutant Discharge Elimination System (NPDES). However, discharge of sewage from vessels, effluent from properly functioning marine engines, laundry, shower, and galley sink waste (grey water), or any other discharge “incidental to the normal operation of a vessel”, are exempt from the requirement to obtain NPDES permits. Grey water can legally be dumped anywhere except in the Great Lakes, even though the EPA has found that grey water has the potential to cause adverse environmental effects.
Globalization and the Economic Impact of Logistics and Supply Chain

Business Challenges and Responses

Today's biggest business challenge involves knowing how to respond to a world in which the frame and basis of competition are always changing. Against that backdrop, any effort to set corporate strategy must consider more than just traditional performance measures. Today, few corporate strategies are more important to a company's cost structure and competitive rank than its supply chain strategy. Companies must now consider how well their supply chain strategy addresses the risks and opportunities created by the major global trends reshaping how our businesses and societies will work. The world is growing closer at a rapid pace. Political and ideological borders are disappearing. Trade barriers are being dismantled and customs duties are being eliminated. At the same time, innovative information and communications technologies are creating new, far-reaching possibilities. Logistics has become a critical factor in the success of modern companies because customer and supply networks can be extended around the world. At the same time, though, global competition is intensifying. The result: globalization is creating new challenges to go along with its sweeping opportunities.

In the past 20 years, the conditions for global trade and business have improved tremendously. Many political, ideological and customs-related borders between countries and regions of the world have been dismantled. Since the 1990s the role of information and communications technology in these advances has been integral, as evidenced in the affordances of the World Wide Web such as globally accepted, factual standards, including Windows-based PC systems, and EDIFACT. The standards help business partners to be located more quickly and cost effectively, and make the processes used in the everyday business world considerably more efficient than they were in the 1980s. These strides have been complemented by progressive standardization in packaging and containers led by the International Standards Organization (ISO).
### Table 15
Supply Chain Tipping Points

<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1960s</td>
</tr>
<tr>
<td>2</td>
<td>1970s</td>
</tr>
<tr>
<td>3</td>
<td>1980s</td>
</tr>
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<tr>
<td>19</td>
<td>2009</td>
</tr>
<tr>
<td>20</td>
<td>2012</td>
</tr>
</tbody>
</table>

Source: Supply Chain Insight LLC, 2013

For industrial and trade companies, the possibility of extending the networks of their suppliers and customers farther and farther internationally has become much more appealing. After all, they can search for materials, employees, know-how and the conditions for their activities in countries and regions that offer them the best cost-performance ratio. Customs regulations and document processing have been greatly simplified. Communications and transport options
have become significantly faster, more cost-effective and more reliable. The lower transport costs arising from these changes are the reason that more and more companies are deciding to extend their value-creation processes around the world.

**Trends in Global Supply Chain and Forces Reshaping the World**

The global economy is growing ever more connected. Complex flows of capital, goods, information and people are creating an interlinked network that spans geographies, social groups and economies in ways that permit large-scale interactions at any given moment. This expanding grid is seeding new business models and accelerating the pace of innovation. It also makes destabilizing cycles of volatility more likely and potentially more frequent.

According to McKinsey & Company (2010), the coming decade will be the first in 200 years that emerging market countries contribute more to growth than developed ones. This growth will not only create a wave of new middle-class consumers but also drive profound innovations in product design, market infrastructure, and value chains.

There will be one billion new middle-class consumers in the next seven years, moving up to three billion by 2030. One and a half million people per week are moving from rural areas to urban centres, making cities the new epicentres of growth. As such, 440 cities will account for more than 50 percent of the world’s GDP growth over the next decade.

**New Challenges of Globalization**

Globalization poses certain risks in addition to the new opportunities it presents for companies. Some of the challenges and risks are highlighted in the discussion that follows.

**From product to service:** Since the middle of the twentieth century, the key to success in more and more markets of the global economy has changed. The successful companies today are those that are capable of asserting themselves in a world of oversupply and abundance. As a result, services are becoming increasingly vital.
The evolution and its causes: The fundamental reasons that have fuelled this sweeping evolution are rich nations’ transformation from industrial to post-industrial societies, new demographics related to this change as well as new material and service technologies. Population levels are stagnating. In those places where they are not, growth is based on immigration and, as a result, the rise of multicultural and, thus, more heterogeneous societies. The average age of people is climbing. Households are becoming smaller and more mobile. More and more money is being spent on non-material needs like communications, entertainment and health care. At the same time, less money is being spent on needs like food and beverages, clothing, important household items and the construction of apartments. New materials and technologies open the way for efficient production around the world.

In the wake of these developments, companies are having more difficulty generating revenue with standardized, mass-produced products. Needs are becoming more individual, diverse, malleable and fleeting. Niche markets that can be successfully supplied over a long period of time are shrinking and more frequently require a combination with services. This applies not only to consumer goods but also to industrial sectors of the economy.

The path to the tailored solution: Today, many companies are trying to meet the new demands by employing ‘individualization’ or ‘mass individualization’ (‘mass customization’). As examples from a variety of business sectors show, the successful companies are those that are able to offer their customers tailor-made, service-focussed solutions without being smothered by an overwhelming assortment of inventories and production costs. Concepts from modern logistics are expected to provide answers to the new challenges arising from mass individualization, decreasing loyalty to companies and brands, reduced predictability and the growing service demands of customers.

Logistics, the trend-blazing pioneer: For a company to be successful, the ability to react promptly to customer requests is becoming increasingly important. As a result of today’s tremendous technical advances, products take less time to develop and spend less time in the marketplace. As the architect of modern value chains, logistics
provides tailored concepts that help optimize product development and order processing times as well as companies' reaction times.

**Reacting immediately to new demands:** More than 10 years ago, George Stalk, an American working at the Boston Consulting Group, announced the transition from cost- and price-based competition to 'time-based competition'. In doing so, he summed up a development that had been brewing for some time: that a company's success was becoming more dependent on its ability to react immediately to customer requests. Furthermore, new technologies are being developed faster and faster in many areas. The result: the time frame for technologies or individual products to be commercially successful is becoming shorter. The reason for this development is that they are being crowded out by innovations more quickly. Moore's Law is a much-quoted and a particularly extreme example of developments in the microelectronic industry. According to this law, processing speed will double in every product generation while the price of this speed will be cut in half. As a result, factories that produce a certain generation of microchips grow obsolete in an increasingly shorter period of time – and with them the PCs and numerous other products based on a chip generation.

**Speed as the best condition:** In the past, companies with the most reasonably priced products were particularly successful in the marketplace. Today, though, quick reaction time is the key factor. Companies are successful primarily when they can react especially rapidly to the needs of their customers and can be the first to bring a new technology or a new product to the market. This applies in particular to the computer, telecommunications and fashion businesses and, to a less extent, to many other economic sectors. The concepts and technologies used in modern logistics do their part to boost product development and order-processing times as well as reaction time by companies. Such companies are experts for the architecture of intelligent, modular supply and value chains (or 'supply chains').

**The environment, the most precious resource:** Since the beginning of the 1970s, a new environmental awareness has emerged among political leaders and the general public. People have come to realize
that sustainable business practices are indispensable over the long run and that special attention must be given to natural resources and the environment. This consciousness has taken hold in the logistics sector as well, resulting in new concepts such as combined transports or systems of circulatory flow management to address the challenges.

**Holistic management for success:** Numerous activities and processes must be managed within a company. To satisfy customers and to be commercially successful, these activities and processes must be optimally coordinated. The idea was taken up in the 1980s and became known in scholarly research as supply chain orientation. This form of management now plays a dominant role in related academic areas and in the daily world of business. Supply chain methods are widely applied in logistics as well.

**Thinking in processes and value chains:** Key factors that contribute to a company’s survival and success include the efficient use of material, financial and personnel resources; the optimization of functions, research and development; as well as product innovation. To ensure long-term success, optimization of subsections is far from the only critical element. Above all, thinking and acting within broad contexts plays a major role as well. One particularly crucial component of successful company management is the linking of commercial activities that facilitate customer satisfaction. These activities have a major impact on production costs, quality, a company’s reaction time and its adaptability to changing business and market conditions. This realization, promoted around the world in particular by the writings of Harvard Professor, Michael Porter, in the 1980s, is known as process orientation and ‘supply chain thinking’ (also ‘process thinking,’ ‘value chain thinking,’ ‘flow system thinking’). It is becoming a bigger part of companies’ vocabulary and actions. Logistics is the field where the knowledge and methods of holistic, systematically optimized process and supply chain design, management and mobilization are collected and applied.

**From government-run companies to private logistics service providers:** In a trend driven by Western countries, processes of deregulation and liberalization have been initiated since the 1980s
around the world in an effort to increase commercial efficiency. Within academia, the idea of far-reaching liberalization was prompted in particular by American economist, Milton Friedman. The elimination of government-controlled prices and access rights increased streamlining pressures in the liberalized sectors and, subsequently, triggered a revolution in the markets. The effects of deregulation were felt especially by the transport sector and by postal and telecommunications services. The past two decades in the logistics sector have been primarily shaped by the global trend to deregulate former public or government activities such as communications and transport services. Previously, modern thinking about business and the role of the state included the expectation that all citizens and companies in a country would be offered such services at the same quality level and at the same price – just like the provision of water, electricity, hospitals and security services like the police and armed forces. Here, the state was either an owner or a monopolist – for example, of postal services, railroads or air-traffic control systems – or, at a minimum, regulated rates, access rights and conveyance obligations through the issuance of concessions and licenses.

The revolution among service sectors: Even the Treaty of Rome, the agreement that set up the European Community in 1958, said that such regulations should not be retained in a modern economy. Since the 1980s, American and British governments under leaders such as Carter, Reagan and Thatcher have taken energetic steps to introduce processes of deregulation and liberalization. Many other countries - not least of all Germany – followed slowly. The subsequent elimination of government-set prices and access rights in the areas of transport, postal and telecommunications services unleashed a revolution in the service sectors. Significant rate cuts for parcel and goods shipping have produced intense streamlining pressures in these markets. Traditional providers have had to undergo restructuring, create new quality products and launch aggressive marketing campaigns in order to survive. Such activities resulted from the fact that more and more providers, armed with ideas, rushed into the marketplace. Today, new business models and provider structures like contract logistics and ‘3PL’ and ‘4PL’ services have taken hold. They are creating new
approaches to streamlining, quality improvement and flexibility in industrial and trade companies. In this process, modern logistics is not just reacting to the changing needs of the global economy. Rather, it is becoming a driving force of innovation.

**Concentrating on the essentials:** The global economy is becoming increasingly far-reaching and networked. As a result of these changes, companies must overcome many challenges, including massive individualization, time-based competition and new environmental requirements. Lean, flexible companies are the ones best equipped to respond to these demands. They can concentrate on their core skills and simply outsource unimportant jobs. By doing so, they ensure that every activity, every investment and every business unit contributes to added value and increases the benefits of shareholders. At the same time, the number of interrelationships and interfaces among smaller companies is expanding, raising the importance of logistics.

**Strengthening core skills through the use of outsourcing:** In the past few decades, both academics and managers in the field of business administration have come to an important realization. The increasing use of complicated management systems and complex organization units is not considered to be a promising way to approach the challenges posed by the global economy, massive individualization, time-based competition and new environmental demands. The reason is that such systems fuel rapid cost increases, and these costs frequently erode or even surpass the desired gains, for example, in the form of increased planning and management effort, increased system failures and follow-up costs of system disruptions. In response to this realization, a trend in which companies concentrate on their core skills has been spreading since the 1990s. The preferred approach is straightforward, lean organizational units that focus on one or a limited number of tasks and manage themselves to the greatest possible extent. Those activities that are considered to be outside the realm of core skills are outsourced. As a result of outsourcing, new organizations consisting of smaller, simple and similarly structured modules are created, and these modules can be flexibly linked to one another. In this process,
the organizations are converted into high-performance, manageable components of multi-linked value chains, company structures and national economies of the future.

**The Macroeconomic Significance of Logistics**

Numerous industrial sectors can no longer do without the services of logistics providers. As a result, these providers make a significant contribution to microeconomic value creation. Economic developments in recent years have led to the creation of complex company networks and systems of goods flow – in the process, the globalization of procurement, production and sales as well as the division of labour have increased. In addition, the complexity of international logistics systems in many sectors has grown as a result of increasing product variation and differentiation. Another factor is that many companies are concentrating on their core skills and are reducing their vertical integration. The efficient management of the resulting global flow of goods has boosted both the business and economic significance of logistics.

Germany, for example, is Europe’s largest sales market with 82 million consumers. Among business sectors, the logistics market in Germany ranks third, behind the automotive industry and health care. In 2006, revenue totalled €170 billion. A total of 2.5 million people were employed by logistics service providers as well as industrial and trade companies. The traditional logistics sectors of transport, storage and transshipment generated the largest share of overall logistics revenue. In addition to logistics service providers and the internal logistics operations of industrial and trade companies, the macroeconomic impact of logistics extends to the logistics supplier sector. Supply products include vehicle, conveyor and warehouse technology, IT systems, property, operating materials, fuel and related services. Together with these supplier products, the macroeconomic impact of logistics totals €240 billion and 3 million employees. If logistics-dependent employment in other business areas, for example, in transport infrastructure and construction, is considered, an additional 1.6 million employees is added to the total.
Mobility is a critical condition for gains to be achieved in productivity, growth and employment in a macroeconomic context. The connection between economic growth and demand for product-transporting services is the result of various effects. These effects can clearly show the growing significance of the economic sector of goods distribution.

The effect of goods volume: For a long time, it was assumed that in highly developed economies fewer and fewer quantities of goods were produced for the macrologistics system and that transport volume rose at a slower pace than the economy. Today, it can be assumed that the development actually goes in the opposite direction as a result of the increasing inter-company division of labour created by intensified outsourcing in some highly developed countries. Transport intensity – that is, transport performance per production quantity unit – increases for many types of goods. Individual parts or components of a product are transported numerous times during various stages of the value chain, for example, transport between plants.

The effect of goods structure: In highly developed economies, the number of high-quality consumer and production goods rises. The share of mass goods, on the other hand, stagnates or even falls. The distribution of goods then shifts to high-quality products that must be shipped quickly. Because of the relatively low costs, road transport generally benefits. Railroads and inland water transports generally suffer because of their low speed.

The effect of logistics: Logistics systems constantly undergo optimization. Supply chain management, production-synchronization deliveries that employ just-in-time concepts, the forgoing of storage and global outsourcing are just a few examples of this. But the application of modern logistics concepts affects the economic sector of goods distribution. This is because the new logistics focus of industrial and trade companies has altered the demand placed on the goods-distribution system. Road transport can react relatively flexibly and well to these demands. Railroads and inland water transport have a difficult time making this switch.
**The effect of integration:** The creation of large economic regions gives rise to international, cross-border logistics systems. For instance, the European Union and regulations from the World Trade Organization (WTO) have propelled globalization in the goods-distribution sector. As economic regions spread, cross-border trade expands and the distances that must be covered by logistics systems lengthen. The effect of integration describes the increasing demands placed on the economic sector of goods distribution that arises from the creation of larger economic regions and cross-border logistics systems.
Regional Integration

Since World War II trade relations among regions has been marked by two important phenomena – globalization and regional integration. Globalization has brought tremendous change to the global economy and to world geography. This change has led to increased agglomeration, larger concentrations in urban spaces and far better and more complex transportation networks, resulting in cost reductions and facilitation of just-in-time production methods. This transformation has resulted in world trade growing at an average annual rate of 6.5 percent with trade relative to output tripled.

Globalization of the supply chain and intra-industry trade – fuelled by increased trading in intermediate and final goods, which accounted for 27 percent of all trade in 2006 – reached unprecedented levels, with increasing opportunities for developing countries to take on ever more active roles in the global economy (Brühlhart, 2006). At the same time, economies of scale in transport, advances in infrastructure and transport services, containerization, further streamlined processes, and the production of manufactured goods have all led to economic agglomeration, which has changed the landscape of the world economy. Trade patterns have also shifted, with increasing flows between neighbouring countries and trading blocs with similar factor endowments.

Commentators have argued that one explanation for Latin America and the Caribbean’s slower integration into the world trading system is their inability to cope with a globalization process that is inherently transport-intensive and where supply chains are now being organized on a global scale. Technological innovations in the area of transport have changed the economic landscape of the world, allowing countries to exploit economies of scale in both the transport and the production of manufactured goods. However, the region continues to invest less than others in infrastructure and the logistics performance that would allow it to fully benefit from these developments.
Regional integration has brought with it significant development in the global trading system, driven by globalization as well as the democratization of political power and the search for stability in the global economy. It has also brought about changes in regional governance and technological innovation.

These two phenomena – globalization and regional integration – are in large part a result of successive efforts by governments to establish a global trading system. Many commentators have agreed on one point – that both Latin America and the Caribbean have been actively involved in the transformational processes that have deepened considerably since the 1990s with the unilateral opening of economies and increased regional trade agreements.

Latin America, on one hand, has had a long tradition of regional cooperation and integration through the rise of import-substituting industrialization (ISI) development strategies and the creation of the Latin American Free Trade Association (LAFTA) and the Central American Common Market (CACM). ISI strategies have been focussed on promoting indigenous small-scale businesses through high levels of external protection, state participation and investment regulation, with the intention of achieving export-led growth and decreased dependence on highly industrialized countries. This approach was premised on growth potential for the small businesses and the creation of production efficiencies which would allow them to compete in the global market.

However, due to a complicated political and economic climate, the first attempt at regional integration in Latin America (LAFTA) was unsuccessful. This was due to factors such as:

- National protectionism marked by tension between the state and the private sector.
- Trade negotiations which did not provide sufficient incentives to create a rule-based system that would allow the benefits from increased exchange to be evenly distributed among member countries.
- The development of national and regional infrastructure, low levels of investment and maintenance and poor transportation services hindered the potential gains from increased regional cooperation amongst the Latin American countries.
While this has been the case with Latin American nations the Caribbean, on the other hand, had a remarkably different history of economic integration, due to the late independence of many of the island nations from their colonial masters. The first attempt at regional integration was the Caribbean Free Trade Association (CARIFTA), which was established in 1968 with the intention to liberalize trade between member nations. In 1973, the Caribbean Community (CARICOM) replaced CARIFTA as a result of the imbalance in benefits accruing to member nations.

Following the debt crisis of the 1990s and the structural reforms promoting trade and financial liberalization, Latin America and the Caribbean entered into a period of revived regional cooperation in an attempt to reduce traditional barriers to trade while at the same time promoting open and competitive economies. This also encouraged a development strategy that brought about increased cooperation and trade by securing reform through institutional arrangements.

Commentators have pointed out that, while subregional initiatives did not limit agreements to trade, they have incorporated structural considerations to reform the institutional environment and to build longer-term strategic policies, which enable member countries to compete in the global trading arena. These strategic policies include agreements in standards, transport, customs cooperation, services, investment, dispute settlement, labour and competition. According to experts, through these measures, member countries have sought to enforce internal regulatory measures as well as capture the benefits of increased opportunities for export diversification, foreign direct investment (FDI), greater specialization, product differentiation, and intra-industry trade resulting from increased market access and a clear regulatory framework.

**Reduction in Barriers to Trade**

The last few decades have seen a remarkable reduction in barriers to trade and significant improvements in maritime transportation, containerization and ICT. These have brought about significant reductions in the length of time and the cost of global transactions and exchange. Importantly, regional integration has not only strengthened
the bargaining power of many Latin American and Caribbean countries; it has also created opportunities for intra-regional trade and economic growth. Nevertheless, Latin America and the Caribbean region continue to lag behind many of the industrialized countries in securing benefits from increased trade liberalization and regional integration. At the same time, they are unable to maintain their share of world merchandise exports.

The Tariff Structure

Many countries continue to rethink and re-evaluate the value of regional trading blocs while creating stronger incentives to deepen regional integration. The benefits derived by many countries from regional integration have been expanded to include freight logistics, specialized infrastructure and trade facilitation. A 2003 IDB study pointed out that a 10 percent decrease in freight costs and tariffs would boost bilateral imports of Latin America and the Caribbean by 46 percent, with intra-regional exports growing by an average of 60 percent.

According to the experts, tariffs in the Latin American region declined from over 40 percent in the mid-1980s to about 10 percent in 2008, while over 57 regional integration initiatives were signed. However, this figure is less in the Caribbean as the region’s average still hovers around 30 percent. The share of intra-regional trade within the region’s major trading blocs has declined as a result of limitations in the integration process. According to the experts, these have been caused by limited progress in trade facilitation measures; however, difficulties have also arisen from deficiencies in funding opportunities and political deadlock in advancing a more integrated trade and policy agenda.

This has led many commentators to argue that developing countries such as those of Latin America and the Caribbean are finding themselves hard-pressed to adjust their trade policy agenda to take into account trade costs not covered in past rounds of trade negotiations. Despite efforts to increase regional cooperation in trade, Latin America and the Caribbean continued to show weak performance when compared not just with industrialized countries of
the West but also with other developing countries such as Costa Rica. Logistics performance indicators consistently show Latin American and Caribbean countries underperforming relative to other emerging markets, not to mention the member countries of the Organization for Economic Co-operation and Development (OECD).

**Logistics Performance**

Increased efficiency in freight logistics and the advancement of the trade facilitation infrastructure will effectively enable new regional players to enter the global economy. Without a renewed focus on trade transaction costs, however, both Latin America and the Caribbean will continue to be left out of self-reinforcing production and trade networks while economies of scale in production and related transportation performance will continue to make it more difficult for them to compete at the global level. Because the Latin American and Caribbean regions lack the basic infrastructure in order to compete globally, both regions will need to focus specifically on the following in order to achieve the benefits of integration:

- Provision of basic infrastructure, particularly road networks and the development of trucking service industry in each country, and inland within Latin America.
- Improvements in services and regulations that facilitate public-private partnerships, as in port and railroad infrastructure.
- Improved services delivered by each region to facilitate customs management, border crossings, information and communications technologies and security.
- Support to logistics and value chain management development in small and medium-sized enterprises, operations, and intermediaries.
- Implementation of an institutional structure to facilitate high-quality logistics performance.
- Integration of regional infrastructure development criteria, giving priority to projects of greater regional impact.
- Development of financial mechanisms to increase investment in key areas.
• Commitment to an agenda for productive integration and freight logistic services, which supports national and subnational entities in the public and private sectors.

These initiatives will help the region better cope with a changing international environment and allow it to exploit the positive links between trade, integration, and economic growth.

An array of logistics performance indicators show the region lagging behind most industrialized countries and several developing regions. The 2009 Enabling Trade Index (ETI) shows Latin America and the Caribbean achieving an overall score of 3.76 out of 6, with the global average being 4.27. Similarly, the Logistics Performance Index overall ranking positions Latin American and Caribbean countries behind those of the Middle East and Northern Africa as well as the industrialized countries of Asia, with their lowest scores being in customs performance (2.37 out of 5) and infrastructure (2.38). According to Guasch and Kogan (2006), poor logistics performance has also led to higher transport costs for the Latin American and Caribbean regions relative to their counterparts. Currently, logistics costs in Latin America and the Caribbean range between 18 and 34 percent of product value, while the OECD benchmark is 9 percent.
Bigger Ships Are Coming

The global container shipping industry is the backbone of intercontinental supply chains, accounting for some 98 percent of intercontinental containerized trade volume and 60 percent of trade value. The most meaningful way to measure demand and capacity is by what is termed 40-foot equivalent units (FEU), which represent one FEU transported one kilometre in distance. In 2007, the global container-shipping network transported almost 600 billion FEU of goods. Interestingly, the largest trade based on this metric was Asia/Europe with 174 billion FEU, which represents 29 percent of global flows. The transpacific, with 140 billion FEU and 24 percent of global flows, was a close second. In terms of originated container shipments, intra-Asia still dominates with 19 million FEU but is only the third largest container trade due to a much shorter average length of haul.

The news has been especially bright for lines specializing in container shipping. At least one shipping line, Maersk, believes the future looks positive. The company has placed on order 10 of the world’s largest ships, the Triple-E, the first of which was expected to be delivered in 2013 (Martin, 2011). The Triple-E is the newest innovation in container vessels, with a U-shaped hull that allows for an added row of containers, giving it 23 rows across its width, compared to Emma Maersk’s 22 rows. This US$190 million, 400-metre behemoth vessel will carry 18,000 TEU containers (2,500 more than the current largest, Emma Maersk). According to industry reports, the expanded hull and extra row provide additional capacity for 1,500 containers. Triple-E ships can only accommodate 34 persons and will be operated with a standard crew of 19 seafarers (although it can be operated with as few as 13 people). In addition, Triple-E ships will be capable of travelling at 23 knots but they will be purpose-built to travel more slowly. For environmental purposes, the ships will be able to reduce their CO$_2$ emissions significantly by travelling 8 knots slower than their top speed.
The report further indicates that the additional container space has been created in the vessel by moving the navigation bridge and accommodation 5 bays forward and the engine room and chimney 6 bays back in what is called a ‘two-island’ design. With the more forward navigation bridge, containers can be stacked higher in front of the bridge (approximately 250 more) without losing visibility. And approximately 750 more containers fill the space behind the bridge above deck and below deck using the space created by the engine room’s position further to the back of the vessel.

With a length of over four football fields (400 meters), the Triple-E ships will be the longest vessels plying the seas. For purposes of comparison, Martin notes that the Emma Mærsk class vessels are 396 metres long, the supertanker Berge Emperor is 380 metres long, the cruise ship Allure of the Seas is 361 metres long, and the carrier USS Enterprise is 341 metres long. Martin further reports that, “the largest ship ever built was the supertanker Knock Nevis which was 458 metres long but is no longer in service and is being scrapped.”

In a move set to affect global shipping transport costs and efficiencies, Maersk has an additional 20 Triple-E ships on order. High-level economies of scale will enable the new vessel to surpass the industry record for both fuel efficiency and CO₂ emissions per container moved. Bigger ships mean improved efficiency only if the ships can be filled to capacity. Industry analysts believe that more and more companies will try to reduce their carbon footprint for reasons of both publicity and profitability. Martin (2011) points out that the Triple E’s enormous capacity will enable Maersk to move the greatest number of containers possible for its customers in the most energy-efficient way and with the smallest CO₂ footprint.

Maersk is not alone in its desire to have bigger ships. Industry updates indicate that other shipping lines are already making enquiries of Choe Yong Seok of Daewoo Shipbuilding and Marine Engineering in Seoul, South Korea, to explore the possibility of building ships that can carry 20,000 20-foot containers, a capacity which is more than double the capacity of most common vessels now in operation.
Freight Logistics

International trade is facilitated by freight logistics services, which provide efficient integrated management of point-to-point supply and distribution chains. Logistics suppliers manage the supply chain process by planning, implementing, and controlling the efficient and effective point-to-point flow and storage of goods, services and related information, throughout the production, distribution and delivery stages, from the initial suppliers of inputs to final consumers of products. Logistics services form a crucial and integral part of supply chain management and are a major determining factor of the competitiveness of an economy in global trade and investment.

Efficient freight logistics services are beneficial to world trade in goods and services and crucial to the economic development of different economies. The availability of competitive logistics services enhances overall efficiency and competitiveness in international trade. For this reason, the international trend is to focus on the integrated management of the supply chain, which enables manufacturers of goods as well as service providers to pay specialists for providing freight logistics management, and to focus better on their core competencies in a bid to enhance their competitiveness.

Caribbean countries have significant interests in high levels of imported goods to service their dominant tourism industry as well as local demand. Their few exports are primarily agricultural products with limited industrial goods that would benefit from timely, reliable and efficient supply chain. Competitive logistics services also benefit transport service suppliers through more efficient use of their capacity to reduce costs and improve profitability. Logistics costs, including transport, packaging, storage, inventory, administration and management, are a key consideration for all players in the international logistics chain.

The Aftermath of the Economic Recession

The early part of 2011 was characterized by declining freight rates and oversupply of capacity in the world's major trade lanes. Once again, the container shipping industry sat uncomfortably close to a self-
induced financial meltdown, which would return the main players and their customers to a period of instability and service change.

Despite efforts to restore freight rates to reasonable levels in 2011, in reality there was limited success. From a brief peak in mid-2010, freight rates have fallen almost continually and are now dangerously close to loss-making levels; this will potentially destabilize the market. Continued overcapacity underpins the ongoing roller-coaster ride for freight rates. Despite the carriers’ previously proven ability to lay-up capacity when financial disaster was close, so far there has been no significant move towards a repeat of this. Capacity continues to increase both in size and number of vessels and negligible economic growth in Europe and the USA, for example, could delay the prospect of higher demand.

Despite the current mismatch of capacity and demand, a clear long-term strategy has been demonstrated by at least one carrier who is ordering container vessels significantly larger than anything else afloat. Such a move could result in a significant reduction in operating costs per container which may prove good for the consumer, as and when these savings are achieved.

What the Future Holds for the Shipping Industry

Industry experts forecast that the US economy will recover further and thereafter, experience modest growth over the next ten years, averaging 2.7 percent per year. Europe’s economy, on the other hand, will grow slightly slower at 2.3 percent per year, while Asia will be the fastest growing with 4.4 percent real growth. Likewise, global container traffic, measured in FEU, was forecasted to grow at 6.9 percent over the same period. Growth in the first five years will average 7.5 percent per year, compared to 5.8 percent per year from 2012 to 2017, as the largest markets would become mature and as certain product categories would reach their maximum import substitution potential.

Europe is estimated to be about five years behind the United States in terms of large-scale shifting of production to Asia, and thus has more import growth potential relative to the transpacific trade.

In the same manner, industry experts forecasted that forwarders will be the fastest growing customer segment in the Asia/Europe
market and will continue to take direct shipper business away from container carriers. Eastbound transpacific market volumes will grow slower than Asia/Europe, at 6.9 percent per year, and revenue even slower at 3.8 percent per year from 2009 to 2012. But similarly to the Asia/Europe trade, forwarders will be the fastest growing customer segment within the transpacific.

The Caribbean at the Cross Roads

World merchandise trade, especially that which is containerized, has outpaced world Gross National Product changes over the last 20 years. According to the Journal of Commerce and Containerisation International Year Book, in 2010, Latin American and Caribbean ports handled approximately 47 million TEU, representing eight to nine percent of world container throughput. The total global throughput was estimated at 546 million TEU of which the Far East and South East Asia accounted for over 50 percent, Western Europe accounted for approximately 90 million TEU and North America just under 50 million TEU. It was further estimated that approximately 20 million containers or 4 percent of world throughput were handled in countries bordering the Caribbean Sea and the Gulf of Mexico.

The figure for Latin America and the Caribbean presents a distorted view of the real Caribbean numbers. The Caribbean microstates account for less than 10 percent of the total volume of cargo. Maximum container capacity for Kingston, Jamaica; Freeport, the Bahamas and Caucedo, Dominican Republic combined stands at 5,550,000, representing approximately 12 percent of the actual 47 million TEU moved by the Latin America and Caribbean grouping. In reality, these three ports accounted for just over 3.5 million TEU representing 7 percent of the actual 47 million TEU moved.

The economies of Latin America and those of the Caribbean are diametrically opposite in that the countries of Latin America are agro-based and light manufacturing economies. These economies are more attractive to the shipping lines as they provide a two-way trade, enabling competitive shipping rates provided by the looser match between imports and exports. With the virtual death of the sugar and banana industries in the Caribbean, the Caribbean countries are classified as
the most tourism-dependent nations in the world. Economies such as those of Antigua and Barbuda and the British Virgin Islands see in excess of 90 percent of revenue being derived from tourism. Despite the small parcel sizes of import cargo, there is little or no export generated from the Caribbean, creating a significant trade imbalance and placing pressure on import cargo freight rates to bear the cost of empty container returns.

Reviewing the container shipping order book between 2011 and 2015, 49 percent of the total vessel capacity on order is in excess of 10,000 TEU; 17 percent represents vessels between 8,000 to 9000 TEU and 11 percent represents vessels between 4,000 and 5000 TEU. Vessels of up to 1,000 TEU represent less than 5 percent of the global order book. This means that the relative freight rates for these smaller vessels will continue to remain significantly higher per TEU capacity than the larger vessels, and leave very little option for fleet renewal.

Most of the ports in the Caribbean and in particular the OECS countries are state monopolies with the primary objective of creating employment as opposed to productivity and efficiency. The concept of a social port serving commercial shipping lines is further complicated by the fact that during the winter tourist season, when cargo volumes are highest, they coincide with the peak period of cruise ship visits, which take priority for the berth, thereby leaving the cargo vessels to load and discharge at night at exorbitant overtime rates. The picture becomes even more complicated as many Caribbean ports invest in creating dedicated cruise ship facilities which are occupied for less than 40 percent of the year due to the seasonal nature and volatility of the cruise industry.

Interestingly, over 600,00 metric tons of cargo are transported annually between the OECS states by small, intra-regional schooner vessels. Countries such as Dominica, St. Vincent and Montserrat rely on these vessels, which are not officially recognized as the third layer of the Caribbean maritime infrastructure network. In essence, as globalization and technology continue to reshape global trade, it becomes more difficult for the smaller Caribbean economies to survive as for all intents and purposes they are classified as miscellaneous without due recognition to their uniqueness. The Caribbean cannot continue to pursue the mass market in general as the scale of the vessels in operation threatens the viability of these delicate economies.
Addressing the Productivity Challenges

The historical backdrop for sea transportation in the Caribbean is that of piracy, slavery and colonialism, in a setting of small market needs. The movement of world oil prices, the impact of globalization, and containerization have all changed the backbone of the global shipping industry and the Caribbean was slow in responding. Today, the Caribbean is categorized as being two to three times more expensive in trade facilitation than the rest of the world. With the container revolution currently in its sixth generation, with 15,000 TEU vessels on order, the Caribbean islands are constantly dredging and upgrading infrastructure in an attempt to remain relevant in a changing global environment.

The Value of Training

The pressure on the Caribbean has not just been on the physical infrastructure but on finding and retaining qualified human resources. In addition to the fact that the Caribbean has not kept pace with the advances in information technology, there is a wide disparity between countries and ports of the region in terms of productivity, as shown in Tables 7–11 in Chapter 3. Caribbean ports have now recognized the need to invest in the development of the human resources in the shipping industry. To date, Jamaica, Barbados and St. Kitts and Nevis have recognized this and have entered into partnership with the Caribbean Maritime Institute, the only IMO-accredited, maritime white-listed training institution in the Caribbean. It is also accredited by the NCTVET for training and certification of various workers. Stevedores, stevedore coordinators, crane operators, lines men, equipment operators (straddle carrier, gantry crane, vessel planners, yard planners, top lift drivers, fork lift drivers, tractor trailer drivers, stacker drivers and equipment dispatchers) are being trained and in the engineering department, maintenance technicians, mechanical engineers and electronic engineers. Both Barbados and St. Kitts
have invested hundreds of thousands of US dollars in training their workforce in these areas, with the highest demand in the maintenance departments.

Caribbean waterfronts have been the birthplace of major trade unions across the region. Today, the shipping associations across the region serve the dual role of providing a competent workforce on the ports as well as being active trade unions, thus protecting the rights of workers in a harmonious and productive environment.

**Gender Imbalance**

A major productivity challenge facing the Caribbean is the gender imbalance in the shipping industry. Most ports in the region are labour-intensive and operate on the basis of archaic and restrictive labour practices, and in some cases exclude women. In the past, women’s status in society and their participation in economic activities were strongly influenced by religion and the traditional roles ascribed to them. Likewise, lower enrollment of girls in technical subjects in secondary and tertiary educational institutions probably stems from these traditional expectations. In the past, the shipping industry offered a way out of poverty for many male workers as employment in the industry provided access to foreign currency and a regular salary, thus having a direct impact on the economic viability of maritime industry workers and their families. The shipping industry is now seen as a possible career path for the finest talent, regardless of gender.

In reality, there is no reason why women should not participate in and benefit from employment within the shipping industry. The irrelevance of sea experience to many shore-based jobs means that the skills of the sea experience cannot be transferred to shore-based jobs, which imposes long-term constraints on the representation of women in the sea-faring industry. Also, the perception that certain jobs are men’s jobs leads to lack of training and work-experience opportunities for women. This is a reality in contemporary society as many shipping lines are still slow to accept women into technical aspects of shipping employment.

Just as there are more women who have been led into the fashion industry or primary school teaching because of ‘custom and practice’
or tradition, it is gender stereotyping which decrees that “shipping is a man’s world,” and this must be addressed. The obstacles to this are several and notably so in an international context where there are cultural, traditional and even historical objections to be surmounted, if women are to play a full part in an essential maritime industry.

To break the cycle, adequate training must play a critical role in the integration of women into all spheres of professional life, including shipping, with special emphasis on improving accessibility at all levels of training to women applicants. At the Caribbean Maritime Institute, in 2009 a female cadet topped the class of 110 students of which women were only 10 percent. Despite the troubled economic waters of recent times, employment in the shipping industry is becoming wide open. Times have changed. Today, more women are getting on board. Now women are more likely to be found swabbing decks or servicing the mammoth steam turbines below, side to side with their male counterparts.

In 1988, the IMO published its first Strategy for the Integration of Women in the Maritime Sector. This policy identified access to training and employment for women as two priority objectives. Also, the IMO’s global programmes aimed to integrate women into mainstream activities and to promote the participation of women in maritime training, short-term consultancies, regional seminars, fellowship programmes and in-house gender training. Industry studies indicate that the technological revolution within the maritime sector is calling for a highly-trained workforce. Female seafarers are an under-utilized and underdeveloped resource that could provide part of the solution to the problem of crewing the world’s merchant fleet. However, it is clear that to achieve this there is a need for changes in attitude towards employing women as seafarers, recruitment of women in the shipping sector generally and increased training opportunities for women in logistics and supply chain.

The Caribbean Maritime Institute is currently working on developing a Caribbean Vocational Qualification (CVQ) to address the training needs of the Caribbean shipping and logistics industry. This development will facilitate training from basic entry-level skills to Masters degree levels, addressing both middle and top-level management needs in the industry.
Laws and Regulations Governing Logistics Services in Jamaica

A Legislative and Regulatory Framework

The need for a light-handed, flexible and clear legislative and regulatory framework has been cited as critical elements of a successful logistics services sector. Of note, countries which have ranked high on the World Bank’s Logistics Performance Index such as the Netherlands and Singapore have been reported to have regulatory frameworks which are transparent and tax-friendly, and that support trade facilitation and competition with resultant lower costs to service providers. The quality of the regulatory framework for the attraction and support of logistics services is critical to the development of the sector, and achieving the balance of enforcing internationally acceptable standards while increasing competitiveness is a challenge for most countries, not the least being Jamaica (Pinnock and Ajagunna, 2012).

While an appropriate level of regulation creates the environment for the reliability and predictability of transport and logistics services, heavy-handedness or over-regulation has the opposite effect. Increased restrictions increase the time and cost of compliance and negatively affect the price, reliability and quality of logistics services and are considered restrictions to trade. The regulation of relatively new sectors such as logistics in Jamaica may require specific or targeted legislation, which will not only facilitate the need for a clear regulatory framework but also allow for easy revision to meet the rapidly changing requirements of the sector. In developing such legislation it is important to review existing legislation to avoid any conflict of jurisdiction or interpretation (Pinnock and Ajagunna, 2012).

The World Bank-sponsored report “Freight Transport for Development: Integrated Logistics” (2010) stated that one of the main objectives for the regulation of logistics services would be “the development and maintenance of supportive service market institutions, which at the same time are open, adaptable and pro-
competitive”. The report highlighted areas where regulations will play an important role in ensuring that the logistics service sector operates effectively and efficiently:

- Open market entry
- Liberalized business investment and business-permitting policies
- Liberal emigration policies allowing expatriate logistics managers to bring specialized skills into a developing country
- Reduced taxes on foreign services supply, resulting in tax reduction on production, thus allowing for greater economic growth
- Light-handed regulation to allow for the attraction of the best global technologies and management practices
- Regulatory policies that encourage diversity since the integrated logistics services sector contains multiple segments
- Regulations to ensure that less sophisticated buyers get assurance that the advertised services of the logistics services providers are genuine; this can be done through professional certification

The general focus of the study was that legislation should liberalize the economy, allowing for foreign participation where necessary and certainty in the standards of the providers of logistics services in the jurisdiction. A number of areas of regulation that touch and concern the logistics services sector, including the matter of market access raised in the above-mentioned World Bank report, have been identified below:

- Maritime transport
- Customs facilitation
- Security
- Competition
- Market access
- Logistics competence
- Immigration
- Fiscal incentives
- Labour
- Dangerous goods
- Trade
Maritime Transport

Efficient maritime transport is a key element of the provision of logistics services. The regulation and control of ships operating in the ports of a country is required to be in accordance with the International Maritime Organization (IMO) standards governing safety, security and the protection of the marine environment and, in particular, the recommended mandatory legal instruments. The adoption of the applicable IMO treaties achieves some level of harmonization of global standards with the resultant facilitation of maritime traffic and reduced costs to the participants in the supply chain. The applicable legislation in Jamaica is outlined below:

**Shipping Act, 1998:** The Act establishes the Maritime Authority and sets out the legal framework for administration of ship registration, seafarers’ welfare, safety, wrecks, salvage, casualty investigation and related matters. The Act incorporates the primary international treaties governing the safety of life at sea and provides for the inspection of foreign ships calling at Jamaican ports for compliance with the Act in keeping with the international practice for the conduct of port state control. The Act contains certain restrictions related to the commercial operation of foreign flag ships in Jamaican waters; however, regulations in the form of the Shipping (Local Trade) Regulations, 2006 were passed to provide for conditions under which foreign registered ships can operate within Jamaican waters. Local trade, which involves activities such as dredging and towage, must be distinguished from the trading of foreign flag vessels within Jamaican ports for which there are no restrictions.

**Port Authority Act, 1972:** The Port Authority of Jamaica was established pursuant to this Act with a mandate for regulation and development of port facilities and the maintenance of ship channels and navigation aids. The Port Authority is charged with the regulation of the use of all facilities in a port. Port facilities are defined as facilities for, inter alia, dry-docking, berthing, loading and unloading of goods, carriage of passengers, and warehousing. The Port Authority may also operate port facilities vested in the Authority and may, under the direction of the Minister responsible for transport, operate port
facilities, which are not vested in the Port Authority. The Authority also has the power to regulate the berths and stations occupied by vessels in a port. The restriction of maritime service activities is not uncommon worldwide, which has resulted in delays in the treatment of maritime service in WTO-related instruments. Notwithstanding, the possible lessening of competition arising from the ability of the government through the Port Authority to operate and regulate warehouses in particular could be deemed as restrictive in the promotion of logistics services.

The Port Authority (Compulsory Towage) (Harbour of Kingston) Directions 1994: This subsidiary legislation developed by the Port Authority regulates the provision of towage services in the port of Kingston.

Harbours Act, 1874: The Harbours Act establishes the position of the Harbour Master and regulates the movement of ships within the declared harbours of Jamaica and the maintenance of aids to navigation.

Harbour Fees Act, 1927: This legislation provides for the payment of fees by ships to the Collector of Customs, on behalf of the Port Authority, for maintaining the harbour. Certain vessels are exempted from paying fees (for example, government ships, pleasure craft, vessels in distress).

Pilotage Act, 1975: The Act regulates the pilotage service, which adds to the safety of vessels calling at Jamaican ports and devolves the administration of the service to the Port Authority of Jamaica.

Quarantine Act, 1951: The Quarantine Act regulates the prevention of the spread of any infection by means of a ship. It requires certain documentation to be produced and signals to be displayed. A ship may not enter a port until it gets clearance known as ‘pratique’. Quarantine officers have powers to inspect ships to determine whether the cargo may be discharged, as well as powers to detain or send it to a port which the officer thinks can address the presence of a communicable disease on board.
**Public Health Act, 1985:** This Act also regulates the prevention of communicable diseases. The definition of ‘premises’ under the Act is all-embracing and includes warehouses, factories, port facilities and ships in so far as issues affecting public health are concerned.

**Wharfage Act, 1895:** The rights and duties of a wharfinger and the setting of wharfage rates for goods that pass through the port are governed by the Wharfage Act. The Act also sets out the duties of wharfingers in relation to the receipt, delivery and storage of goods. In carrying out statutory duties as a bailee to take due care of goods in his or her possession, a wharfinger is required to erect and maintain adequate sheds or other places of security for storing goods. Matters relating to free storage periods and penal rates for the storage of goods beyond the statutory free period are also addressed under the Act. Additionally, the Act provides for the Port Authority and wharfinger to set rates for loading, unloading, movement, receiving and delivery of containers or other service of whatever nature rendered in connection with that wharf in relation to containers. The Wharfage Act does not address the management of containerized cargo and dangerous goods, and the regulation of wharfage rates. In this regard, it needs to be revised.

**Security**

Since the events of September 11, 2001, supply chain security has become a significant factor in the provision of logistics services. In July 2004 the IMO adopted amendments to the International Convention on the Safety of Life at Sea, 1974, as amended to introduce the International Ship and Port Facility Security Code. The Code sets out the standards for assessing security risks and the implementation of measures to reduce the security threats to ships and port facilities. The failure to implement the Code will result in a country’s ports becoming uncompetitive, as ships will no longer call at ports that cannot demonstrate that they have adequate security measures.

**Port Authority (Port Bustamante Security) Regulations, 1989:** This regulation addresses the registration of exporters and truckers as part of the security arrangements for accessing wharf premises. This
is the only legislation that contains provisions governing truckers and freight forwarders, albeit minimal.

*The Port Authority (Port Management and Security) By-Laws, 2005:* These by-laws implement Chapter X-2 of the International Convention on the Safety of Life at Sea, 1974, as amended, which incorporates the International Ship and Port Facility Security Code in relation to port facilities. Of note, there is no legislation incorporating the provision of the ISPS Code in relation to the security measures applicable to ships and the companies that manage ships, and this deficiency should be cured as a matter of urgency.

**Labour**

Having regard to the relatively low level of logistics competence in Jamaica and Barbados and the need to attract international logistics firms and professional logistics managers to support logistics centres, it is important that the labour legislation is not unduly restrictive in relation to the employment of foreign workers.

*Immigration Restriction (Commonwealth Citizens) Act, 1945:* This Act is the primary legislation governing the control of the employment of foreign nationals, which as indicated above is key to the initial phases of the development of logistics centres and services in general. The grant of a work permit is in the absolute discretion of the Minister responsible for labour who may grant the permit either conditionally or without conditions, or may refuse to grant it. Although this provision is not unusual it may be appropriate to adopt some policy guidelines supporting the need for foreign service suppliers in the logistics services sector.

*Factories Act, 1943:* The Factories Act regulates the registration of factories and equipment therein, the approval of plans for the construction of new factories and the health and safety conditions required to be maintained. The definition of factories should be amended to include docks and warehouses where value-added logistics services are being carried on.
Labour Relations and Industrial Disputes Act, 1986: The Act and the Labour Relations and Industrial Disputes Regulations, 1975, are key pieces of legislation that provide for a stable industrial relations environment, which is key to the attraction of logistics providers and business investors to Jamaica.

Caribbean Maritime Institute Act, 1993: The lack of certification of persons working in the logistics sector has been highlighted as a major weakness of developing countries and is a factor that is taken into consideration by investors in logistics centres. The Caribbean Maritime Institute, established under the Act to deliver training for the shipping industry, is currently specifically training personnel for participation in the logistics services sector.

Customs Facilitation

Customs facilitation plays a critical role in the increased level of efficiencies and associated lower costs that logistics services seek to achieve. Whilst a number of the issues in relation to facilitation do not involve the amendment of the Customs Act, 1955, but the revision of procedures, it is important that mechanisms be put in place to adapt to the requirements for logistics services providers. The Customs Act addresses the matter of the licensing of customs brokers and their primary duties are set out in the legislation. This ensures that some standards are being applied in the provision of brokerage services.

It is noteworthy, however, that there are no provisions regulating the operations of freight forwarders. Freight forwarders play an important role in the provision of logistics services and legislation should be adopted to provide for licensing as soon as reasonably possible. The licensing of bonded warehouses is also covered by customs legislation and the statutory provisions should be examined to ensure that the requirements of logistics centres can be facilitated.

Dangerous Goods

Over 50 percent of all the goods carried by sea can be considered dangerous and logistics services will increasingly involve the handling of such goods. A clear licensing regime for persons whose services
involve dangerous goods is necessary. There is no dedicated legislation incorporating the International Maritime Dangerous Goods Code (IMDG Code) for the handling of dangerous goods. However, the Shipping Act, 1998 provides at Part IX for regulations to be put in place to incorporate the IMDG Code. Draft legislation is in place.

**Competition**

*The Fair Competition Act, 1993:* The Act prohibits anticompetitive conduct which harms consumers directly or indirectly, and established the Fair Trading Commission with powers to investigate the actions of enterprises that may lessen competition or result in abuse of an enterprise’s dominant position in the market.

*The Customs Duties (Dumping and Subsidies) Act, 1999:* The Customs Duties (Dumping and Subsidies) Act, establishes the Antidumping and Subsidies Commission, implements the provisions of the Agreement on the implementation of Article VI of the General Agreement on Tariffs and Trade, and connected matters. Rules relating to the determination of fair market price, and material and injury arising from the dumping of goods are established under the regulations made under the Act.

**Fiscal**

*Income Tax Act, 1955:* A detailed review of the Act was not undertaken; however, issues relating to the withholding tax and the enhancement of double taxation arrangements with trading partners will have to be explored in any policy governing the development of logistics services.

**Market Access**

Legislation that is discriminatory against foreign suppliers of services will reduce the attractiveness of the jurisdiction to logistics services suppliers. The legislation examined in relation to logistics did not have any restrictions to market access by foreign suppliers save and except for the licensing of pilots and the conduct of towage services. The Revised Treaty of Chaguaramas also requires that national treatment
be given to service suppliers of other member countries. In some cases, foreign suppliers are restricted from providing their own port-related services.

**Trade Facilitation**

*Export Industry Encouragement Act, 1956:* This Act provides fiscal incentives to companies involved in export activities. The activities which are considered approved export services are listed in the Second Schedule of the Act and although some of the activities could fall within the classification of logistics services it is recommended that the schedule be amended to specifically provide for logistics services.

*Jamaica Export Free Zone Act, 1982:* The Jamaica Export Free Zones Act, 1982, provides the legal framework for the encouragement of prescribed export activities through the grant of customs duty, General Consumption Tax and stamp duty relief for capital goods, raw materials components, or articles intended for use in connection with the approved activities. Additional incentives include a hundred percent tax holiday in perpetuity and exemption from import and export licensing. The First Schedule of the Act prescribes the activities that may be carried on in a free zone, which includes storing, warehousing, transshipment, exporting, loading and unloading. The Act also provides for the establishment of single-entity free zones where a company may have its own premises designated as a free zone and enjoy all the benefits granted under the Act to free zones. The Act can, without much revision save amendments to the First Schedule, support logistics service activities. The use of the free zone concept has been applied with much success in the top logistics services jurisdictions such as Singapore and the Netherlands.

*Carriage of Goods Act, 1889:* The application of the internationally accepted rules governing bills of lading is an important part of the legal framework for international trade involving ships. The Carriage of Goods Act incorporates the 1924 International Convention for the Unification of Certain Rules of Law Relating to Bills of Lading (Hague Rules). Issues related to containerization and multimodal operations are not addressed in the legislation, which is in need of revision. The
recently adopted Rotterdam Rules should be considered during any review of the legislation.

**Bill of Lading Act, 1855:** The Act enables consignees and other lawful holders of bills of lading to sue under the contract evidenced by the Bill of Lading. The Act is in need of revision to deal with the modern forms of bills of lading, including the use of electronic bills of lading.

**Cargo Preference Act, 1979:** The legislation provides for the reservation of certain cargoes transported to or from Jamaica to Jamaican government controlled ships. The Act is in breach of WTO rules regarding market access and, in particular, national treatment and the Most Favoured Nation principle. The Jamaican government no longer owns ships and as such, the Act is not being applied and should be repealed.

**Trade Agreements**

The European Partnership Agreement (EPA) signed in October 2008 between members of the European Union and CARIFORUM countries is an important pillar in the development of logistics services in Barbados, Jamaica and the Caribbean in general. The EPA will allow European logistics services suppliers unrestricted access to the markets in the Caribbean save where special reservations recognized under the Agreement have been made. The Agreement also requires countries to commit to ensuring that their trade and customs legislation and procedures take into consideration international instruments and standards applicable in the field of customs and trade, including the substantive elements of the revised Kyoto Convention on the simplification and harmonization of customs procedures, the World Customs Organization (WCO) Framework of Standards to Secure and Facilitate Global Trade, the WCO data set and the International Convention on the Harmonized Description and Coding System (HS) (Article 31).

Additionally, state parties commit to the simplification of requirements for the rapid release and clearance of goods, which are key to successful logistics operations. International maritime transport is defined under Article 109 of the Agreement as including “door to door and multi-modal transport operations, which is the carriage of
goods using more than one mode of transport, involving a sea-leg, under a single transport document, and to this effect includes the right to directly contract with providers of other modes of transport,” and European providers of these services are permitted under the Agreement to have a non-discriminatory commercial presence in the markets of the Caribbean, including national treatment. Logistics services suppliers could therefore establish businesses in the region subject to any preferential treatment granted under the Revised Treaty of Chaguaramas.
Implications and Opportunities of a Logistics Hub for Jamaica

Implications

The Caribbean remains isolated and disconnected from the global shipping and logistics supply chain. In order to achieve efficiency and productivity, the region needs to benefit from the synergies of integration. The challenge for the Caribbean is how to realign its fragmented air and maritime transportation networks. In the case of Jamaica, the country has experienced little economic growth over the last 40 years and has become a victim of globalization. Globalization describes a variety of complex economic, political, cultural, ideological and environmental forces that are altering our experience of the world. It depends on the following four primary forces – technology; global trade liberalization; specialization and economies of scale; and an integrated global supply chain (see Figure 1).

The disaggregation of the global production and distribution system has created an opportunity for Jamaica to become a part of the global value chain by virtue of the reconfiguration of the global trade corridors through the expansion of the Panama Canal. The logistics hub initiative is the vehicle through which Jamaica seeks to engage the global network. The logistics hub is a concept and not a physical space; it seeks to link up to 16 proposed economic zones through which value will be added serving the expanding populations, beyond the North-North trade to include South-South trade corridors. The implications of a logistics hub for Jamaica will include but not be limited to the following:

- Jamaica’s legislative systems need to be transformed in keeping with global standards. Part of this will have to be the phasing out of free zones by the year 2015 in keeping with the World Trade Organization (WTO) ruling. According to the WTO, all export subsidies are to be removed and therefore, Jamaica will need to reposition Special Economic Zones (SEZ) as new vehicles that will provide ‘legs’ to the logistics hub. In addition, all legislation
needs to be in alignment to support global trade. This will require a shift from collecting duties and excise taxes to enhancing trade facilitation.

- Relatively inflexible government bureaucracy will have to change. In the global world, the right response will require a shift in power from many government ministries to a simplified structure, which allows for an easier way of doing business.

- A shift from a personality-based to an objective-based processing system will be required. At the heart of Jamaica's low productivity lies the continuous struggle for power by all levels of leaders throughout the society. The world is calling for a consistent standard, which can only be met through alignment with global quality systems. The subjective approach to leadership and management will not maintain a platform that is adequate to meet the needs of a global supply chain.

**Figure 1**

**Challenges for Jamaica's Logistics Hub**

Source: Modified from Pinnock and Ajagunna, 2012; Ajagunna, 2012
Opportunities

The impending Panama Canal expansion and the extended global economic recession of 2008 have created new opportunities for the development of multiple global logistics hub in the Central American and Caribbean region to serve North America, Central America and the emerging markets of South America. This signals an end to the traditional transshipment hub port model as the need for new port facilities surrounded by 1000 acres of land and offering economic value-added opportunities with flexible air/sea port connectivity, becomes more pressing. Since 2009, Kingston Container Terminal has lost its number one regional hub port status to MIT Panama, which transitioned from being a sole transshipment hub port to integrate economic zone value-added opportunities into its operations. As it did in the 1980s when it created Kingston Container Terminal as a new transshipment hub port, so will Jamaica need to create new sea and air ports integrated into value-added economic zones as the current KCT facilities are virtually landlocked. As Jamaica considers the first economic zone, which could occupy 6000 acres of land including a new port facility being built on the controversial Goat Island, its economic future weighs in the balance. It will no longer be about the Americans and the Europeans but about the Chinese and, to come, the Indians and the Brazilians.

For the Caribbean shipping industry to remain relevant, ports have to reinvent themselves. The traditional roles of receiving, storing and delivering cargo are no longer sufficient to maintain a competitive advantage. Ports are more than natural sites for transshipment in order to transfer goods from one mode of transport to another. They have historically provided a link between maritime and inland transport and the interface between sea, road, rail and air. Increasingly, ports are playing a more important role in the management and coordination of materials and information flow as transport is an integral part of the entire supply chain. The role is changing more to creating synergies, as well as converging interests among the players in the port community in order to guarantee reliability, continuous service and good productivity levels. To achieve a great return and for sustainability, Jamaican ports need to focus on the following:
• **Expand, modernize and integrate Jamaica's infrastructure:** This initiative presents the opportunity to expand the existing airport and seaport infrastructure to provide for greater improvement in productivity and efficiency. It will also provide the opportunity to build new airport and seaport facilities linking large-scale SEZ in order to serve the complex global economic chain.

• **Capitalize on the global trend of nearshoring:** The nearshoring market is very large and growing particularly in manufacturing, information technology and business process outsourcing services whereby many major businesses in the United States of America and Europe are rethinking their hundred percent Far East production centres because the offshore advantage of labour arbitrage is evaporating. The factors leading to the shift in nearshoring to Central and South America are cost and time to ship goods to the USA and South America. The lack of cultural affinity, as well as time zone disparity also play a key role. In keeping with the trend, nearshoring gains ground as companies seek agility, cost savings and speed to market. In essence, nearshoring provides an opportunity for Jamaica to provide value-added service to global brands, which seek to reduce some of the supply chain vulnerability by moving final services close to demand.

• **Realign Jamaica’s education and training systems to meet global standards:** Over the past four decades, Jamaica’s education and training system have not kept pace with the changes in global demands and trends. Jamaica’s education system has been more focussed on the liberal arts, and skills training has been less desirable and considered secondary. Jamaica is now at the point where education and training systems are out of line with global standards, global certification, productivity and efficiency. The logistics hub will demand competent, globally certified and highly motivated individuals as opposed to available bodies for work. This potential shift in the economy will require a more responsive system that provides training in new and emerging skill areas. This will require large-scale training and re-training of Jamaica’s workforce.
• **Infrastructural improvements:** To service segments of the global supply chain will require facilities and amenities that meet first-world standards. In logistics, two key components are bridging the distance and the time gap. Distance is bridged through efficient air and sea transportation linking with road, rail and coastal transportation. On the other hand, time is bridged through efficient movement of information, goods and services while minimizing idle inventory, which is waste in a global supply chain context.

• **Repackaging of Jamaica’s rich culture:** This includes Jamaica’s cuisine, music and spirits as tradeable value-added commodities. In addition, the logistics hub initiative provides the platform for Jamaica to integrate its influential and resourceful Diaspora and the local population as strong human resource assets.
GLOSSARY OF SHIPPING TERMS

**Aisle space** - Space in cargo sheds or warehouses found necessary by operating experience; also usually required by fire regulation.

**Anchorage** - That portion of a harbour (or designated area outside of harbours) in which ships are permitted to lie at anchor.

**Apron** - That portion of a wharf or pier lying between the waterfront edge and the transit shed. Strictly speaking, from the viewpoint of construction, that portion of the wharf carried on piles beyond the solid fill. Also called apron wharf and wharf apron.

**Ballast** - Heavy material, either liquid or solid, placed low in a vessel to provide proper stability, trim, or draft.

**Beam** - The greatest width of a vessel.

**Berth** - The water area, at the waterfront edge of a wharf, reserved for a vessel. The term is sometimes used to refer to the dock or wharf structure.

**Bill of lading (ocean)** - Document signed by the captain, agents, or owners of a vessel, furnishing written evidence for the conveyance and delivery of merchandise sent by sea to a certain destination. It is both a receipt for merchandise and a contract to deliver it as freight.

**Bonded goods** - Dutiable goods upon which excise duty has not been paid, i.e., goods in transit or warehoused pending use. The bond is the agreement entered into by the owner of the dutiable goods with Customs and the excise authority, in which the owner promises to pay the duty when the goods are released for final distribution or use.

**Bonded warehouse** - A storage facility certified by US Customs as meeting standards of security for storage of goods in bond.

**Bow** - The front of a vessel.

**Bulk cargo** - Cargo stowed without benefit of package or container, i.e., shipped loose as in grain or liquid.

**Bulk container** - Containers of various types designed for carriage of liquid or dry commodities in bulk. See Containers (types).

**Bunker** - A hull compartment used for the storage of ship’s fuel.
**Bunkers** - Fuel oil.

**Cargo** - Freight loaded aboard a ship.

**Cargo manifest** - Commonly refers to a manifest which does not have charges, but rather only lists cargoes.

**Carried-on and carried-off (CO-CO)** - Break-bulk cargo which is carried on and carried off the ship by cargo handling equipment such as lift trucks, as opposed to LO-LO, RO-RO, or bulk loading techniques.

**Carrier** - an individual, company, or corporation engaged in the transportation of goods.

**Cartage** - Used in reference to the hauling (trucking or draying) of cargo between two points.

**Certificate of origin** - A certificate indicating the country of origin of the goods being shipped.

**Channel** - The buoyed, dredged, and policed fairway through which ships proceed from the sea to their berth or from one berth to another within a harbour.

**Chassis** - Special trailer or undercarriage on which containers are moved over-the-road.

**Clean bill of lading** - A bill of lading issued by the carrier on which no exceptions have been noted concerning the packaging or condition of the cargo in whole or in part.

**Commodity** - Type of article shipped.

**Consignee** - The individual or firm receiving shipped goods.

**Container** - A single, rigid, non-disposable dry cargo, ventilated, insulated, reefer, flatrack, vehicle rack, or open-top container; with or without wheels or bogies attached; not less than 20-feet in length; having a closure or permanently-hinged door that allows ready access to the cargo. All types of containers will have construction and fittings, able to withstand, without permanent distortion, all the stresses that may be applied in normal use during continuous transportation. An ISO container is constructed to the specifications of the International Standards Association. See also Containers (types).
**Container equivalent** - (FEU/TEU) The conversion of the various sizes (lengths) of containers in service into container equivalent (40-foot equivalents, 20-foot equivalents) to provide a common basis for comparison (20-foot equivalents are the internationally recognized standard comparison).

**Container freight station** - (CFS) The physical facility where goods are received by carrier for loading into containers or unloading from containers and where a carrier may assemble, hold, or store its containers or trailers.

**Container gantry crane** - Commonly used to refer to rail-mounted gantry located on the wharf for the purpose of loading and unloading containers.

**Container load (CL)** - A shipment sufficient in size to ‘fill’ a container, either by cubic measurement or weight, depending upon government tariff.

**Container service** - Service performed at loading port in receiving and loading cargo into containers at the container freight station and transporting such containers from the CFS to the container yard (CY).

**Container terminal (CT)** - Area where large-scale container handling and storage facilities are available, generally giving access to two or more modes of transportation.

**Containerized cargo** - Cargo which can physical, conveniently, and economically fit into container.

**Containers (types) - (1) Dry cargo containers:** *End loading, fully enclosed:* basic container, equipped with end doors; suitable for general cargo not requiring environmental control when end route. *Side loading fully enclosed:* equipped with doors for used in stowing and discharge of cargo where it is not practical to use end doors. *Open top:* used for carriage of heavy, bulky, or awkward items where loading or discharging of the cargo through end or side doors is not practical. *Ventilated:* equipped with ventilated ports on ends or sides and used for used for heat generating cargoes or cargoes requiring protection from condensation damage. *Insulated:* for cargo, which should be exposed to rapid or sudden temperature changes.
(2) Special purpose containers: Refrigerated: insulated and equipped with a built in refrigeration system. Dry bulk: designs for carriage of dry bulk cargo, such as dry chemical and grains. Flat rack: used for lumber, milk products, large or bulky items, machinery, or vehicles. Automotive: for carriage of vehicles. Live stocks: configured for the nature of livestock carried. Collapsible: configured for stowage when not in use.

Crane - A machine for hoisting weights or cargo, moving them horizontally for limited distances, and lowering them to new locations.

Crane, cargo - A crane especially adapted to the transferring of cargo between a vessel's hold and a wharf or lighter.

Crane, fitting-out - A crane located and especially arranged for shipyard use to place equipment in a ship after it is in the water.

Crane, fixed - A crane whose principal structure is mounted on permanent or semi-permanent foundations.

Crane, floating - A crane mounted on a barge or pontoon which can be towed or self-propelled from place to place.

Crane, gantry - A crane or hoisting machine mounted on a frame or structure spanning an intervening space and designed to handle containers into and out of a ship. It can be mounted on the ship as a semi-permanent part of the vessel.

Customs duty - Tax assessed against all merchandise imported into the USA, unless specifically exempted. Rates of duties are classified as ad valorem, specific, or compound, and vary according to commodity.

Customs house broker - A party licensed by the Bureau of Customs to handle all details of documentation for import shipments.

Customs broker - An individual or firm bonded and licensed to enter and clear vessels and cargo with the Bureau of Customs.

Customs Convention on the International Transport of Goods by Road, 1959/TIR - Regulations to enable goods to travel in customs-sealed road vehicles or in customs-sealed containers carried on road vehicles across one or more national frontiers with a minimum of customs interference.

Dangerous goods - The term used by IMCO for hazardous materials.
**Deadweight** - The weight, in tons, of all cargo, fuel, water, ballast, stores, etc., on board a vessel. Gross deadweight is the total lifting capacity of the vessel.

**Deadweight cargo** - Cargo of such a nature that one long ton is stowed in less than 70 cu. ft.

**Deck** - The working surface of pier or wharf.

**Deck load** - Permissible weight to which a structure may be subjected per unit of area.

**Delivery** - Transfer of care and custody of containers (full or empty) and cargo from carrier to shipper/consignee or their legal representative.

**Depot (container)** - Container freight station or designated area where empty containers can be picked up or dropped off.

**Destination (or origin)** - Service charge (DSC/OSC).

**Dredge** - A machine for excavating material from the bottom of a body of water; classified by type of excavating equipment used thereon, as bucket dipper, hopper, hydraulic.

**EDI** - Electronic data interchange, a system of EDP standards.

**FEU (Forty-foot equivalent unit)** - A term used in indicating container vessel or terminal capacity. Two 20-foot containers equal one FEU.

**Freight** - May refer to either cargo carried or charges assessed for carriage of the cargo.

**Freight forwarder** - An individual or firm engaged by a shipper to handle all or most aspects of export shipments. This may involve the hauling of cargo from plant to pier, preparing export declarations, banking, or bills of lading. In the USA, a freight forwarder engaged in international commerce must be licensed by the Federal Maritime Commission.

**Freight handling area** - Square feet or surface floor space between the waterfront edge of the wharf and the line where freight is customarily piled, plus the area of lanes or roadways reserved for the trucking or handling of cargo to and from shipside.

**Gantry** - The movement of a rail- or tire-mounted crane along the trackway. Sometimes referred to as ‘travelling’ the crane.
Harbour - An area of water affording a natural or artificial haven for ships. In a proper and more limited sense, an area separated by natural or artificial indentations of shoreline from the main body of water, as the area within two headlands or points between which run the main ship channels leading to an open sea.

IMCO - International Maritime Consultative Organization. The organization through which the handling of dangerous goods and other regulations can become internationally acceptable.

In bond - Term applied to the status of merchandise admitted provisionally to a country without payment of duties, either for storage in a bonded warehouse or for transshipment to another point where duties will eventually be imposed and paid.

Inland points intermodal (IPI) - See micro-bridge.

Insulated container - Container possessing protective insulation to minimize effect to external temperatures on the cargo.

Intermodal - Used to denote ability of containers to change mode of transport from rail to truck to ship, in any order.

International Standards Organization (ISO) - Worldwide organization formed to promote development of standards to facilitate the international carriage and exchange of goods and services and to develop mutual cooperation in the sphere of intellectual, scientific, technological, and economic activities.

Invoice - Document enumerating goods transported from point A to point B. when the goods are exported by A to be sold on his or her own account, the document becomes a specification and is not, strictly speaking, an invoice, although it still retains the name.

ISO - International Standards Organization.

Letter of indemnity - See bond of indemnity.

Line haul - To move freight to one central location from which it is transshipped on vessels serving countries with limited port facilities.

Material handling equipment - Forklift trucks, platform tracks, warehousing industrial cranes, straddle carriers, pallet trucks, platform trucks, warehouse trailers, conveyer systems, and other equipment used in storage and handling operations.
**Maximum gross weight** - Maximum total weight of a container, including its payload and any internal fittings. This is also called the rating.

**Maximum payload** - Maximum allowable weight of a payload, i.e., maximum gross weight less tare weight.

**Marker/clearance lights** - Lights located on the front, side, and rear of chassis in accordance with over-the-road regulations.

**Meter/metre** - (1 m) 39.37 inches.

**Metric ton (MT)** - 1,000 kilos or 2,204.6 pounds.

**Micro-bridge (micro-landbridge)** - A through movement in which cargo moves between an inland US point and a port via rail or truck, connecting with a steamship line for movement from or to a foreign port. The ocean carrier accepts full responsibility for the entire movement on a single through bill of lading.

**MT** - Metric ton; also measurement ton.

**MTC** - Metric ton or cubic metre. Most often used in reference to shipping charges, i.e., metric tons or cubic metres, whichever produces the greater revenue.

**Place of Destination** - Location at which goods or cargoes are delivered into the custody of the consignee or agent.

**Place of Origin** - Location at which goods are received by a carrier or agent from the consignor or agent.

**Port-to-port** - Can also be CY/CY, CY/CFS, CS/CY, CFS/CFS. Shipper or consignee, not having the facilities to load or unload the cargo at premises, can utilize the services of forwarders, consolidators, or the carrier to stow goods in container at the port of departure.

**Quay** - Type of wharf, parallel to the shoreline. Accommodates ships on only one side.

**Queuing Line** - Lane set aside at the entrance to a terminal for vehicles delivering or picking up cargo.

**Ramp** - (1) An artificial, inclined path, road, or track along which people, animals, and wheeled vehicles may pass, primarily for the purpose of
ascending or changing their elevation. (2) Railroad term used to describe an intermodal terminal.

**Roll-on/roll off (RO-RO)** - Direct drive-on and drive-off of highway trailers, railcars, and other wheeled cargo or vehicles, from and to specially adapted ships.

**RO-RO (RO/RO)** - Term which, when applied to a ship, refers to a vessel which is constructed in such a way as to permit cargo to be driven on and off the vessel. Also refers to cargo which is motorized and has wheels and may be driven or towed onto such a vessel. *See also* Roll-on/Roll off.

**Shipping** - A quantity of goods physically tendered by a shipper at one point of origin at one time on one shipping document, for a consignee at one point of destination.

**Stern** - The back end of a vessel.

**Stern ramp** - RO-RO vessel ramp entering into a protruding from stern aperture along center line of vessel.

**Stevedore** - Individual or firm employing longshoremen for the purpose of loading and unloading a vessel.

**Stowage plan** - Diagrammatic sketch of vessel showing location of cargo as stowed in the vessel's hold(s).

**Tariff** - A list of rates, charges, regulations, and requirements of a carrier, port, or conference. Also the duties themselves. Ocean tariffs are filed with and approved by the Federal Maritime Commission. Inland tariffs (rail and motor) are filed with the Interstate Commerce Commission.

**Terminal** - (1) A berth side area where cargo is loaded to and discharged from vessels. (2) A depot – usually inland – where containers are brought for devanning.

**Terminal charges** - A charge assessed against the cargo to offset carrier's expenses for handling at the carrier's terminal.

**TEU (Twenty-foot equivalent unit)** - The common unit used in indicating the capacity of a container vessel or terminal. A 40-foot container is equal to two TEUs.
Tier - A row of cargo units or containers arranged one above or behind another.

Tolls - See wharfage.

Ton - Unit of measure. May be short ton (ST, 2,000 pounds); long ton (LT, 2,240 pounds); cubic metre (m³; 35,314.6 ft³); metric ton (Met. ton, 2,204.6 pounds); measurement ton (MT, 40 cubic feet of space); or revenue ton (RT, any combination of above, as manifested or producing the greatest revenue).

Trade routes (TR) - Trade route members assigned by US Maritime Administration to encompass all US worldwide trading areas.

Transit time - A time period for cargo to move between two points (i.e., from a consignor to a consignee). Total transit time is usually calculated by adding the sea time between two given ports, the port handling time, the inland movement time, and half of the service frequency.

Transportation and exportation entry - A document authorizing transportation in bond of cargo arriving in the USA and destined for a foreign country.

Truck-trailer - A combination of a tractive unit and a drawbar trailer.

Turnaround time - The period during which a transport vehicle is confined to port, terminal, or warehouse for loading or unloading of cargo.

Waybill - A document prepared by a transportation line at the point of origin of a shipment, showing the point of origin, destination, route, consignor, consignee, description of shipment, and amount charged for the transportation service. Forwarded with the shipment or by mail to the agent at the transfer point or waybill destination.

Wharfs - A berthing place for vessels to facilitate direct loading and discharge. See also Quay.
REFERENCES


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Because of the size and scope of the project, China Harbour Engineering Company (CHEC) examined various locations and determined that the Goat Islands was the best and most cost effective location to achieve the objectives they contemplated.

Gordon Shirley
Originally CHEC was looking at the Fort Augusta site as the location of the port facilities as part of the Logistics Hub Project. They came back and said that the project they had in mind needed more space. They wanted to look at somewhere in the Portland Bight area.

Several locations were explored with them through our engineering group. We looked at areas close to Port Esquivel, and Rocky Point, and Jackson Bay. The challenges in these locations involve exposure to the wind conditions and the cost associated with managing those ports. In these locations, it is possible to have bulk cargo vessels that have less rigid timelines than container vessels which have to operate on very small time margins. Minutes matter. They have to get into the ports at a particular time, processed and get out at a specific time. The heavy wind conditions in these locations mean that alumina vessels often have to wait two days out at sea before they can come into the harbour. Also, the land available in those areas was not suitable and not sufficient.

Accordingly, we entered into a Memorandum of Understanding (MOU) which was really an amendment to their original MOU which spoke about Fort Augusta. Under the amended MOU, CHEC would develop their ideas and bring them forward for consideration by the government.

Given that the other areas in Portland Bight identified had been considered unsuitable we entered an agreement with a consulting entity to do an Environmental Management Scoping Study to help to identify the preliminary information that would be necessary for consideration of the proposal when they come with it. The aim was to identify the geographic boundaries, the regulatory framework, biologically sensitive features and the socio economic conditions in the area.

The legal, regulatory and management status of the Portland Bight Protected Area state that is not exclusively an environmental conservatory. It is a mixture of major natural heritage resources as well as industrial, agricultural, commercial and residential developments. There are a large number of international and national policies involved in the management of the area.

The study also looked at what was happening in the marine area of the bight and did some underwater filming and found that a lot of the coral in the area had been damaged due to unsustainable fishing practices including use of dynamite for fishing.

The study focused on the Goat Island since that would be the base. These are two small islands off the coast of the Old Harbour Bay. The Little Goat Island was used previously by the US as a naval base during the Second World War.

So the study concludes that is a protected area; it is a multiuse national park, which holds a number of national heritage resources, along with industrial, commercial and residential resources and activities. It identifies some of the plant and marine life forms that might be impacted by the proposed development. And it suggests some strategies that might be used to enhance the environmental conditions should any development go on there.

The next steps are that we will continue liaising with the investor. Should they decide to go ahead with the investment and submit the technical details, it would be submitted to Cabinet. At which point, it would be submitted to NEPA as is required for them to do the necessary environmental impact assessment to evaluate the likely environmental impacts and the interrelated socio-economic, cultural and human impacts and it would ensure that all feasible alternatives are considered.

We looked at areas close to Port Esquivel, and Rocky Point, and Jackson Bay. The challenges in these locations involve exposure to the wind conditions and the cost associated with managing those ports.

What we have is a major investor in an environment where the government cannot borrow anymore money to enter into investments. A major investor is saying they have a project and we are working with them to define that project with a view to seeing whether or not it is feasible to be done here. If it is, then we will try to get that done as quickly as possible, in the context of a competitive environment.

Gordon Shirley is Chairman and CEO of the Port Authority of Jamaica
China’s Expanding and Evolving Engagement with the Caribbean

Caitlin Campbell
Research Director and Policy Analyst, Security and Foreign Affairs

with

Zoe Valette
Research Intern
China-Caribbean ties have strengthened since the mid-2000s and likely will continue to expand under President Xi Jinping, who has emphasized relations with the region more than his predecessors. China’s engagement with the Caribbean is primarily economic in nature and appears to be tied to Beijing’s broader efforts to gain access to key markets, expand Beijing’s political links to Caribbean countries, and build goodwill throughout the region. Political and diplomatic concerns – namely competition with Taiwan for diplomatic recognition – also drive Beijing’s involvement in the region. China’s security cooperation in the Caribbean is expanding but remains modest, likely because Beijing judges that the region does not have the potential to directly affect China’s primary security interests in Asia. Nevertheless, Beijing likely views the Caribbean as strategically important by virtue of its proximity to the United States and major maritime trade routes and infrastructure, such as the Panama Canal and the region’s many ports.

**Economic Relations**

Chinese firms since 2008 have been expanding investment, contracted projects, and bilateral trade in the Caribbean. This has been encouraged and enabled in large part by China’s central government, which since the early 2000s has increased its support for Chinese firms to invest overseas. Beijing and Chinese businesses also likely are seeking to take advantage of what they see as declining U.S. and European commercial engagement in the region in the wake of the global economic crisis in 2008. In addition, China’s increased economic attention to the Caribbean conforms to China’s overall interest in growing its ties with Latin America and the developing world more broadly.

As with its relations elsewhere in the world, Chinese economic activities in the Caribbean both reflect and augment China’s diplomatic and political objectives. China’s use of state-owned companies and state-sponsored financing allows Beijing to incorporate many normal economic activities abroad into its diplomatic strategy in a way that most other countries cannot. Furthermore, China’s economic engagement is visible and concrete, because it focuses on construction of physical infrastructure. Such projects by nature garner widespread attention from local populations as well as leaders and foreign observers, which provides China opportunities to leverage its economic engagement for outsized diplomatic benefits.

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* For the purpose of this report, the Caribbean region includes these countries and overseas territories: Anguilla (United Kingdom), Antigua and Barbuda, Aruba, the Bahamas, Barbados, British Virgin Islands (United Kingdom), Cayman Islands (United Kingdom), Cuba, Curaçao (Netherlands), Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Montserrat (United Kingdom), Navassa Island (United States), Puerto Rico (United States), Saint Barthelemy (France), Saint Kitts and Nevis, Saint Lucia, Saint Martin (France), Saint Vincent and the Grenadines, Sint Maarten (Netherlands), Trinidad and Tobago, Turks and Caicos Islands (United Kingdom), and Virgin Islands (United States).


Trade

Trade is China’s top economic priority in the region, according to Beijing’s November 2008 policy paper on Latin America and the Caribbean.3 China’s trade with the Caribbean thrived even during the global financial crisis, when the region’s trade ties with the rest of the world suffered.4 The region’s exports to China increased by 5 percent in 2009, while exports to the United States and Europe each decreased by more than 25 percent.5

China runs a trade surplus with the Caribbean. In 2013, China’s exports to the Caribbean totaled $4.21 billion, more than double its imports from the region that year ($1.88 billion).6* China’s major exports to the region are vessels and other floating structures, electronic equipment, machinery, and iron and steel products. China’s major imports are inorganic compounds, iron, steel, and other metals, mineral fuels, and wood products.7

The Caribbean’s robust tourism market likely will benefit from an increase in Chinese visitors to the region. China is the world’s fastest-growing tourism source market and in 2012 became the world’s largest spender on international tourism.8 As Caribbean countries with large tourism industries seek to recover from slow or negative growth after the global financial crisis, they increasingly are looking to China as a source of growth for their tourism industries.9 Enhanced cooperation in the tourism industry appears to be a shared goal of the Xi Administration and various Caribbean governments. During his June 2013 trip to the region, President Xi emphasized tourism as an area of cooperation with Antigua and Barbuda, the Bahamas, Barbados, Cuba, and Jamaica.10 As prospects grow for Chinese tourists in the Caribbean, Chinese commercial airlines, like Air China, reportedly are considering expanding service to cover destinations in the region.11

These developments notwithstanding, the Caribbean still accounts for less than 1 percent of China’s trade with the world. The Caribbean does not offer the kinds of goods China covets (like raw materials or high-technology products) in significant volume; nor does it provide large markets for Chinese exports.12

Outward Foreign Direct Investment

Most Caribbean governments appear to welcome Chinese investment, particularly in the wake of the global economic crisis. China has signed bilateral investment treaties with the Bahamas, Barbados, Cuba, Jamaica, and Trinidad and Tobago.13

Chinese outward foreign direct investment (ODI) stock in the Caribbean totaled $62.1 billion in 2012, the latest year for which data are available. All but $282 million of this ODI was destined for the tax havens of the British Virgin Islands and Cayman Islands, which likely were not the final destinations for the vast majority of those investments. Chinese ODI flows to the Caribbean (excluding the British Virgin Islands and Cayman Islands) in 2012 totaled $31 million. Both ODI stock and flows to the region (again, excluding the British Virgin Islands and Cayman Islands) constituted about one-twentieh of one percent (0.05 percent) of China’s global ODI flows and stock for the year.14

Figure 1: Chinese ODI in the Caribbean

<table>
<thead>
<tr>
<th>Country</th>
<th>2012 ODI flow (millions)</th>
<th>2012 ODI stock (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Virgin Islands</td>
<td>2,239</td>
<td>30,850</td>
</tr>
<tr>
<td>Cayman Islands</td>
<td>827</td>
<td>30,072</td>
</tr>
<tr>
<td>Cuba</td>
<td>-5.57</td>
<td>136</td>
</tr>
<tr>
<td>Jamaica</td>
<td>36</td>
<td>75</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td>Grenada</td>
<td>0</td>
<td>14.5</td>
</tr>
<tr>
<td>Dominica</td>
<td>0</td>
<td>8.2</td>
</tr>
<tr>
<td>Antigua and Barbuda</td>
<td>0</td>
<td>5.4</td>
</tr>
<tr>
<td>Barbados</td>
<td>.81</td>
<td>4</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>.19</td>
<td>1.1</td>
</tr>
<tr>
<td>Dominican Republic</td>
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<td>1</td>
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<tr>
<td>Bahamas</td>
<td>0</td>
<td>.6</td>
</tr>
</tbody>
</table>


Chinese-Financed Projects in the Caribbean

Development finance, particularly for infrastructure projects, is an important component of China’s engagement with the region. Evan Ellis, associate professor at the National Defense University’s William J. Perry Center for Hemispheric Defense Studies, wrote in 2013:

>[T]he explosion of Chinese bank-financed infrastructure and resort projects in the Caribbean and the Andes is fuelling a wave of work by Chinese construction companies and workers in the region. An estimated $75 billion in such loans have been made in the past two years, with the use of Chinese companies typically a key condition for the funding.15

Development finance manifests most frequently in the form of market-rate loans from Chinese banks for large infrastructure projects.16 In recent years, two Chinese state-owned banks, China Export-Import Bank (China Exim) and China Development Bank, have pledged, disbursed, or partially disbursed the majority of China’s loans to Caribbean countries.*

- From 2005 to 2012, China Exim and China Development Bank loaned about $4 billion to the Bahamas and Jamaica.17 $2.5 billion of this amount (from China Exim) financed much of the construction of the Bahamas’ $3.5 billion Baha Mar resort and casino, which is slated to open in late 2014. The resort’s development company, Baha Mar Ltd., expects the resort to boost the country’s gross national product by ten percent.18 The loans to Jamaica mostly financed projects like roads and shoreline reconstruction.19


At the 2011 China-Caribbean Economic and Trade Cooperation Forum meeting, then Chinese Vice Premier Wang Qishan promised $1 billion in preferential loans on behalf of China Development Bank to Caribbean countries. It is unclear whether these loans have been disbursed or how they will be used.

China in March 2013 announced a $2 billion contribution to the Inter-American Development Bank’s “China Co-financing Fund for Latin America and the Caribbean.” Over the next six years, the People’s Bank of China will contribute to this fund “to support public and private sector projects that promote sustainable economic growth in the region.”

During his June 2013 visit to Trinidad and Tobago, President Xi reportedly promised ten Caribbean nations a total of $3 billion in loans, although specific details about the timing, financing, and purpose of the loans have not been disclosed.

Caribbean populations have become increasingly critical of the local economic impact of Chinese-invested projects, particularly China’s insistence on using large numbers of Chinese subcontractors and laborers on construction projects. For example, the Baha Mar resort was expected to utilize around 7,000 Chinese workers, though this number later was revised downward by almost half. Discontent over imported Chinese labor appears to be a major driver of change in Chinese labor practices in the region. Between this local backlash and the increasing cost of paying Chinese laborers, the Inter-American Dialogue predicts Chinese projects in the Caribbean likely will rely less on Chinese labor in the coming years. Outcries over the use of Chinese laborers do not appear to have significantly impacted generally positive attitudes toward Chinese projects in the region.

Grants and Gifts

Although China’s gifts to Caribbean countries have declined since 2008, when China and Taiwan’s competition for diplomatic recognition in the region was informally suspended, China continues to make gifts. During the 2011 China-Caribbean Trade and Economic Cooperation Forum, China pledged the following: a $1 million donation to the CARICOM (Caribbean Community) Development Fund; over 2,500 opportunities for Caribbean professionals to train in China; support in the building of seismic and tsunami early-warning and monitoring networks and training on disaster mitigation and prevention; and technical assistance for Caribbean fishing and agricultural sectors. Furthermore, in 2012, China completed construction on a $35 million sports stadium in the Bahamas. According to Bahamian officials interviewed by the New York Times, the stadium was a “reward” for switching diplomatic recognition from Taiwan to China in 1997. China also has provided scholarships for Caribbean students.


Chinese Port Projects in the Caribbean

Chinese companies are involved in port infrastructure projects in the Caribbean, likely in an effort to capitalize on the commercial boost Caribbean ports expect from the Panama Canal expansion in 2015. The expansion is projected to double the canal’s tonnage capacity by 2025 and make transit more cost-effective.  

Chinese companies have made, or plan to make, significant investments in ports in the Bahamas and Jamaica. In 1995, Hong Kong-based conglomerate Hutchison Whampoa Limited entered into a partnership with the Grand Bahama Development Company to develop a deepwater container port in Freeport in the Bahamas. The conglomerate, which initially invested $2.6 billion in the port, operates the port and related logistical infrastructure, including an airport. The conglomerate later expanded the port and developed a cruise ship harbor and passenger terminal. State-owned China Harbour Engineering Company reportedly plans to invest between $1.2 and $1.5 billion in a transshipment port in Jamaica. The location of the facility and the development timelines are unclear.

Chinese involvement in port infrastructure in the Caribbean probably is part of a larger effort to improve Chinese access to transportation routes and markets in the Western Hemisphere. Hutchison Whampoa operates container terminals on both sides of the Panama Canal, and Chinese companies are invested in ports in Brazil, Chile, Mexico, Suriname, and Venezuela. In June 2013, Hong Kong-based HKND Group won a 50-year concession to design, build, and operate a canal through Nicaragua. The estimated $50 billion project is intended to provide an alternative route to the Panama Canal for goods traversing the Atlantic and Pacific oceans.

According to Adriana Erthal Abdennur, general coordinator for the BRICS Policy Center in Rio de Janeiro, Brazil, Chinese investments in port infrastructure in the Caribbean and Latin America are a positive development in light of diminishing U.S. and European investment after the global economic downturn. However, she warns heavy reliance on China for infrastructure investments in Latin America and the Caribbean has resulted in an environment in which construction and technology standards and institutional ties in the region overwhelmingly favor Chinese companies. This could limit opportunities to attract non-Chinese investors in the medium-term.

Diplomatic Relations

President Xi’s June 2013 visit to the Caribbean, less than one year into his administration, suggests the Chinese government recently elevated the Caribbean on China’s foreign policy agenda (Xi’s predecessor, Hu Jintao, did not travel to the Caribbean until much later in his presidency). Beijing likely intends to continue to expand and deepen its engagement with the region in the near term.

Chinese diplomacy in the Caribbean (and in many other countries in Latin America) until 2008 was aimed almost exclusively at securing diplomatic recognition of the People’s Republic of China (PRC), which for decades had been competing for diplomatic recognition with the Republic of China (Taiwan). In 2008, Beijing and Taipei agreed to a truce on “checkbook diplomacy” to win diplomatic recognition by third countries. The truce notwithstanding, China still seeks to strengthen its position in the region vis-à-vis Taiwan.

Beijing maintains some economic and political relations with the five Caribbean states that still recognize Taiwan (Haiti, the Dominican Republic, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines). In fact, the Dominican Republic, which recognizes Taiwan and
has no formal diplomatic ties with China, was China’s third-largest trading partner in the region in 2013. While China excludes these states from formal modes of diplomatic cooperation, the Chinese Communist Party (CCP), and particularly the CCP’s International Department, cultivates informal political ties with these countries. Beijing presumably could leverage these ties should its diplomatic truce with Taipei falter.

China’s diplomatic efforts in the Caribbean are not limited to the contest for influence with Taiwan. They also seek to achieve other political objectives:

- Beijing, largely through the CCP’s International Department, cultivates ties with opposition groups and rising leaders throughout the region, as it does globally. According to one U.S. expert on Chinese foreign policy, the International Department is “very deeply embedded in the Western Hemisphere” in this way.

- Beijing seeks to bolster political and diplomatic links to the region to build goodwill and increase China’s influence. While most Caribbean countries are small and poor with little global influence, each has a vote in important international bodies like the United Nations, and Beijing likely sees its diplomatic and economic investments in these countries as a low-cost way to generate support for Chinese positions and policies in the international community.

- Chinese embassies in the Caribbean play an important role liaising with Chinese working overseas and overseas Chinese communities in the region.

**Military and Security Relations**

China’s military and security relations in the Caribbean are secondary to economic and diplomatic engagement and remain confined to relatively small-scale, low-level assistance, training, and personnel exchanges and visits. Chinese military and defense assistance, while limited, is intended primarily to augment China’s broader efforts to promote friendly relations with Caribbean countries. As China’s overall interests in the Caribbean deepen, efforts to ensure the security of its human and commercial presence there likely will grow as well.

China’s security presence in the Caribbean began in 2004, when it deployed 200 military observers and support troops – including engineering, transport, and medical units – to the United Nations Stabilization Mission in Haiti (MINUSTAH). China maintained between 16 and 743 troops in MINUSTAH between 2004 and November 2012, when China’s peacekeeping presence in Haiti ended. Deploying peacekeepers to Haiti was one of the first in a series of steps the People’s Liberation Army (PLA) took to fulfill then President Hu Jintao’s 2004 directive that the PLA expand its mission beyond its traditional focus on Taiwan to include safeguarding China’s interests abroad, humanitarian assistance and disaster relief, and promoting world peace. In Beijing’s view, these noncombat missions are important for China’s national development because they help ensure a peaceful and stable international security environment. The PLA’s involvement in peacekeeping missions provides it with valuable real-world experience operating in a foreign environment and cooperating with foreign militaries (including the United States).

- China’s most high-profile military engagement in the region occurred in December 2011, when the PLA Navy’s first purpose-built hospital ship deployed to the Caribbean. The cruise included port calls in Cuba, Jamaica, and Trinidad and Tobago. This marked the PLA Navy’s first operational deployment to the Caribbean.
The PLA pursues high level visits and exchanges with Caribbean countries in order to enhance its understanding of Caribbean militaries and to cultivate institutional and personal ties between Chinese military leaders and current and future Caribbean military leaders. According to successive Chinese defense white papers, China participated in eight “major international military exchanges” with Caribbean countries (seven with Cuba and one with Jamaica) between 2007 and 2012.

China’s military cooperation with Cuba likely represents China’s closest defense ties in the region. The PLA and Cuba’s Revolutionary Armed Forces (FAR) hold high-level meetings, personnel exchanges, and conduct training. In recent years, some of the PLA’s highest-ranking officials have visited Cuba. Unconfirmed reports suggest China may have access to Cold War-era signals intelligence facilities in Cuba.

China in 2012 donated $7.5 million in non-lethal military gear to the Jamaican Defense Force, including tents, uniforms, helmets, binoculars, backpacks, and bulletproof vests.

China likely will continue its modest engagement with militaries and security forces of Caribbean countries. However, China’s primary security interests are in Asia, so cooperation likely will remain minimal and be aimed at supplementing China’s economic and diplomatic engagement there. Moreover, Beijing has been careful to avoid deeper defense cooperation in the region for fear of raising alarm in the United States – a pattern that is likely to persist in the near future.

China’s Soft Power in the Caribbean

In general, Caribbean countries – at the official and grassroots levels – tend to view China favorably. Exceptions to this include displeasure at the local level with imported Chinese laborers and other problems associated with the influx of Chinese into local communities and markets.

Beijing includes the Caribbean in its global campaign to enhance its soft power through cultural outreach. In 2010, the Chinese Ministry of Foreign Affairs signed cooperation agreements on culture, education, tourism, and media exchanges with the Caribbean nations that recognize China. To date, China has opened Confucius Institutes for the study of Chinese language and culture in Jamaica and Cuba. The University of the West Indies in Trinidad and Tobago in 2013 announced plans to open a Confucius Institute as well, and the official Confucius Institute website also lists the Dominican Republic – which recognizes Taiwan, not the PRC – as hosting a Confucius Institute.

Educational exchanges also facilitate informal ties and goodwill. As part of its economic assistance packages, China provides scholarships to Caribbean students and professionals to study or train in China. A number of Chinese students pursue academic programs in the Caribbean as well. More than anywhere else in Latin America and the Caribbean, Chinese students go to Cuba. According to Dr. Ellis, from 2006 to 2011, 5,000 Chinese students studied in Cuba, although numbers since have decreased.

Outlook and Implications for the United States

China’s engagement with the Caribbean remains modest but appears poised to increase in the coming years and decades, especially if China’s trade and investment ties with the wider Latin American region continue to grow. China’s political engagement continues to be limited, but it could increase substantially if Beijing and Taipei resume their global competition for diplomatic recognition.

China emphasizes its growing foreign engagement does not seek to challenge U.S. interests. Indeed, there are many opportunities for the United States to benefit from China’s economic engagement in the region, particularly its investments in and financing of port infrastructure and shipping and its involvement in humanitarian aid and disaster relief efforts.

These opportunities notwithstanding, U.S. policymakers should closely monitor China’s growing involvement in the Caribbean. Beijing likely judges it has an opportunity to fill a vacuum caused by a decrease in U.S. and European trade, investment, and other business ties following the global economic crisis. In Caribbean countries, the narrative that the United States has neglected the region while China has embraced it is pervasive. Although this message is misleading (current U.S. trade and diplomatic ties with the region are more robust than those of China), its persistence could limit the effectiveness of U.S. policy in the Caribbean.


Open Source Center, “OSC Analysis: Xi’s Latin America Trip Emphasizes Economic Over Political Ties,” OSC ID: CPF20130606025001.


An end to controversy

The proposal from the Government of Jamaica and China Harbour Engineering Company to develop a new transshipment port and logistics hub at the Goat Islands in the Portland Bight Protected Area has proved massively controversial locally, nationally and internationally. The controversy is not about the need for the development or its projected benefits to the economy, but about the location in the core of one of Jamaica’s protected areas. This controversy benefits no one, and potentially threatens the timely implementation of the project as well as Jamaica’s international reputation as a place of outstanding natural beauty and high commitment to biodiversity conservation. These negative perceptions threaten the tourism product as well as the credibility of Jamaica as a worthy recipient of environmental funding from international donors. It is therefore of the utmost importance to Jamaica’s development that a mutually satisfactory resolution should be found as soon as possible.

A new cost effectiveness assessment

In response to this controversy, the Caribbean Coastal Area Management Foundation (C-CAM) has engaged Conservation Strategy Fund (CSF) to carry out a cost effectiveness assessment of the Goat Islands and three alternative sites. The Conservation Strategy Fund is an internationally recognized firm, with global experience of assisting governments to resolve issues related to large infrastructure projects. They worked with partners in Panama to bring about reconsideration of the original design and focus investment on a lower-impact design for the expanded Panama Canal. Their team began work in Jamaica in June 2014 and will complete it in September 2014. CSF’s task is to work with local and international partners to assess and compare the economic implications and environmental costs of locating the port at Goat Islands with 3 other potential sites. The assessment is being funded by the Critical Ecosystems Partnership Fund – a coalition of international funders including the World Bank, Global Environment Facility and Conservation International.
A win-win solution – preliminary findings

The on-going CSF study already indicates that there are alternative sites for the port at which the costs of land acquisition, construction and operation of the port would be comparable to Goat Islands – but the environmental costs would be much less, which could preserve future economic opportunities, such as ecotourism. The enhanced partnership between economic and environmental interests would greatly benefit Jamaica’s international image with the donor community and potential visitors. The government’s image of continuing to bring economic development and as a responder to environmental concerns would be enhanced.

What next?

The CSF study will be presented to the nation at a series of workshops in September 2014. Recognizing that this matter is of the utmost urgency for the nation, C-CAM is calling on parliamentarians not to support any further actions that would increase our national commitment to the Goat Islands option until the CSF findings have been published. In the interim, C-CAM would welcome questions from parliamentarians about the assessment and suggestions about making it maximally relevant to the needs of the nation.

It is in everyone’s interest that this major project should provide maximum benefit to Jamaica, with minimum cost to the environment and our international reputation.

For more information, contact Ms. Ingrid Parchment, Executive Director, Caribbean Coastal Area Management Foundation, Lionel Town, Clarendon
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All photos taken in the Hellshire Hills and Portland Bight Protected Area of Jamaica. Photo credit images 1, 2, and 4 - Robin Moore. Photo credit image 3 - Ann Sutton.
Economic comparison of alternatives to building a port on Goat Islands: Does Jamaica need to sacrifice a world class conservation site in order to build a world class port?
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Does Jamaica need to sacrifice a world class conservation site in order to build a world class port?

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charles magnan [ Niras Fraenkel Ltd. ]
richard rice [ Conservation Agreement Fund ]
john reid [ Conservation Strategy Fund ]
Acknowledgements
We are grateful to the multiple organizations and individuals who contributed to this report. Funding was provided by the Critical Ecosystem Partnership Fund as part of the project Implementing the Hellshire Hills and Portland Ridge Sub-areas Management Plans in Jamaica. The Critical Ecosystem Partnership Fund is a joint initiative of l’Agence Francaise de Developpement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation. Ingrid Parchment, Executive Director of the Caribbean Coastal Area Management Foundation, and Ann Sutton, lead consultant on the Critical Ecosystem Partnership Fund project provided vital orientation, on-going technical input, strategic thinking and guidance. Ryan Wallace carried out spatial analyses related to environmental impact and prepared the associated maps. Gregg Verutes provided support with spatial analysis and preliminary run of InVEST, a suite of software models used to map and value the goods and services from nature that sustain and fulfil human life. We also thank Rhona Barr for a thoughtful review, Courtney Lewis Cheng for layout, and Howard Chin and many others who graciously provided important perspectives on the analysis.

A major portion of the analytical work was carried out by Niras Fraenkel Ltd. (NFL), a leading name in port and marine engineering consultancy worldwide. NFL’s analyses included site selection (Section 4.1), designing port layouts (4.3), estimating differential costs of construction (4.4), and all underlying analyses such as those related to the wave environment, dredging, breakwaters, excavation and reclamation (4.2). Text from NFL’s technical report (Niras Fraenkel 2014) is included throughout the relevant sections of this report both verbatim and paraphrased. The fundamental contribution of NFL to the findings presented here is acknowledged.

Disclaimer

All opinions and errors are solely those of the authors. All estimates were made are in broad terms due to time and budgetary limitations. No attempt was made to generate detailed design of port facilities and no intrusive ground investigation was carried out; additionally, several categories of cost could not be included, notably the cost of land acquisition and cost of maintenance dredging. If one of the alternative sites described in this report is selected for potential development as a port, it would need to be the subject of more detailed investigations before a specific design or detailed costing could be carried out.
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Executive Summary
In 2013, Jamaica’s Ministry of Transport, Works and Housing announced that the China Harbour Engineering Company (CHEC) had selected the area on and around the Goat Islands to build a major transhipment port and accompanying industrial complex. Due to the location of the proposed site in the core of the Portland Bight Protected Area, reactions have been heated.

Building a port on Goat Islands requires that Jamaica accept a trade-off – sacrifice an area of outstanding environmental importance in exchange for development. This report assesses whether there are suitable alternative sites that could promote both objectives without imposing undue financial costs on the developer. Our findings show that there appears to be at least one such option: an equivalent facility at Macarry Bay, to the west of Goat Islands, would cost an estimated $200 million less to build. Considering a planned total investment of $1.5 billion, this represents a potential cost savings of more than 10%. Building at Macarry Bay would also impose a far smaller environmental cost.

While advocating that the new port be built at Macarry Bay specifically is beyond the scope of our study, findings strongly recommend that the selection of Goat Islands be reconsidered in light of appropriately detailed analysis of alternative sites.

Methodology

The report uses a Cost-Effectiveness Analysis (CEA) framework to address the question of whether alternative locations offer the potential to build an equivalent facility at lower cost. The CEA is driven by high-level port layouts for potential alternative sites, designed considering wave environment, geology, topography, and bathymetry. We use this information to design necessary breakwaters, as well as identify the composition and calculate the volume of material to be dredged, excavated, and used for reclamation. Cost estimates for these construction activities, based on multiplying volumes by different unit costs depending on the material involved, are used to calculate the total costs of the major construction requirements that differentiate the sites. We do not consider the cost of planned facilities such as the gantry crane assembly plant, whose costs will be roughly the same across all locations. Results are therefore given as differential, rather than total costs.

For developments at the scale considered here, it is not possible to design facilities that are exact equivalents in everything but financial cost. We therefore extend the analysis to include quantifiable environmental damage, for instance related to lost fisheries production or opportunities for tourism development. We also describe and compare several major additional differences between the sites, including factors potentially relevant to both operations and to indirect benefits and costs to Jamaica.
Alternative sites considered include Macarry Bay, which offers potential to build a facility that meets the same size and other requirements specified for Goat Islands. We also consider an option that divides the required facility between two locations, with a transhipment port at Kingston Harbour and an industrial port and shore-side industrial complex on the eastern side of Bowden Harbour. The latter option was included based on the finding that neither site was suitable for the entire facility, but both offer advantages for the functions considered.

Results - Macarry Bay

We consider a layout that is optimal for efficiency of transhipment operations and in terms of minimising environmental impact. The entire port facility is built on reclamation formed by sand dredged in the course of the construction of the port and its approach channel. It is connected across a narrow strip of swamp behind the beach by means of one or more short causeways to proposed industrial estates in the scrub area behind.

The design requires a large volume of dredging (70 million m³), both inside the port and to create the long approach channel. However the material to be dredged is confirmed sand, which is relatively inexpensive to dredge. The total dredging cost is estimated at $500 million. Significant reclamation is also necessary but costs per m³ are minimal due to possibility of using sand dredged from nearby as part of marine works. Two large breakwaters are also required, each over 20 m in height and having a volume greater than 2 million m³. These cost $250 million together. The total differential cost of this option is $931 million.

Results - Kingston/Bowden

The total volume of dredging at Kingston and Bowden combined is approximately half that at Macarry Bay. However, the small amount of dredging required in Bowden Harbour (8 million m³) is likely to require removing soft rock at a far greater unit cost than dredging sand. The total estimated dredging cost in Bowden is $400 million. Most importantly, there is a key unknown cost in this layout related to the material underlying the proposed site in Kingston Harbour. Two scenarios are considered:

Scenario 1: The site is primarily founded on mud, in which case the dredged fill from the adjacent berths and channel deepening is unsuitable for use as hydraulic fill. The combination of imported fill and ground improvement is estimated to cost $850 mil-
lion. Total differential cost of this scenario is $1.7 billion.

Scenario 2: The site is primarily founded on sand, in which case the dredged fill from the adjacent berths and channel deepening is suitable for use as hydraulic fill, with no additional soil treatment necessary. In this case, reclamation costs drop by nearly $700 million, putting total differential cost at $1 billion.

**Results – Goat Islands**

The proposed development on and around Goat Islands is the benchmark against which the two alternative designs are compared. The significant majority of cost comes from the need to excavate over 80 million m$^3$ to level the Goat Islands to an estimated 7 m height, and to reclaim an area requiring a similar volume of material between and around the Islands to accommodate the proposed transhipment and portside industrial areas. The key unknowns in this case are the costs at which CHEC can expect to do the necessary quarrying, and the suitability of material dredged in the vicinity of the port for use as fill. Three scenarios are considered:

Scenario 1: Fill and armourstone is obtained from the islands at similar rates to those for purchasing equivalent materials from a local quarry. In this case, excavation and reclamation alone would cost ~$1.8 billion. Total differential cost is $2.1 billion.

Scenario 2: Fill is primarily dredged material pumped into position, but there is a cost for excavating necessary material from the islands even if not used as fill. There appears to be no scope for savings under this scenario given the need to level the Goat Islands regardless.

Scenario 3: Fill and armourstone is obtained from the islands at reduced rates. At 50% of the estimated commercial rates, reclamation and excavation cost an estimated $900 million, with total differential costs of $1.15 billion. Costs at this level would appear closer to those expected by CHEC given public statements that total investment will be $1.5. We cannot know the extent of possible cost reductions, but we note that calculating costs at this level may be optimistic.

**Conclusion**

Building at Macarry Bay appears to compare favourably to Goat Islands from a construction cost standpoint. An optimum layout at Macarry Bay costs $200 million less to construct than a low-cost scenario at Goat Islands. These differences are driven in large part by the need to excavate and fill areas requiring more than 80 million m$^3$ of material including rock in the Goat Islands case, versus a Macarry Bay design that relies on less expensive dredging of sand and using it to reclaim land nearby.
Furthermore, due to storm surge, locally generated waves, and an orientation that permits Trade Wind waves to enter Portland Bight, Goat Islands faces a more challenging wave environment than might be assumed based on location, while Macarry Bay is less challenging than would initially be assumed due to the prevailing direction of Trade Wind waves and a long, shallow foreshore that significantly reduces deep sea wave heights before they reach the port.

Furthermore, quantified environmental damage from building on Goat Islands is more than three times higher than that from building in Macarry Bay, $6.8 million compared to $1.5 million in present value terms. These estimates are only a partial accounting of ecosystem values; other values are excluded due to data and related limitations. Considering other relevant characteristics, Maccary Bay is superior to Goat Islands except with respect to its access to the road network and Kingston, and likely in terms of the need for maintenance dredging of the approach channel, especially after hurricanes. Macarry Bay appears better in terms of all other characteristics considered, including efficiency of transhipment port layout, ability to expand activities on land and deepen the access channel, environmental impact and local economic impact.

Building at Kingston/Bowden presents the obvious challenge of developing a split facility. However, the combination of sites may offer an opportunity to maximize benefit for Jamaicans from the port development, helping to further Kingston Harbour’s competitive advantage in transhipment and at the same time significantly improving connectivity between Kingston and centres of population to the east and Port Antonio to the north. If these gains are deemed potentially worth some complication in design, it would be a relatively simple matter to further investigate whether dividing the proposed facility between Kingston and Bowden is cost-competitive.

While this rapid assessment cannot arrive at absolute conclusions on the best choice for Jamaica’s expanded port infrastructure, our findings provide evidence to justify serious consideration of other sites, including Macarry Bay, as alternatives to Goat Islands. If more detailed investigations confirm these findings, Jamaica will be presented with the opportunity to build a new world-class port without losing a world-class conservation site.
School children express their support for the Portland Bight Protected Area following a field trip. © Ann Sutton
Introduction & Context
n 2013, the Ministry of Transport, Works and Housing announced that the China Har- 
bour Engineering Company (CHEC) had selected the area on and around the Goat Is-
lands to build a major transhipment port and accompanying industrial economic zone. 
The news touched off a vigorous debate that continues today, even as initial surveying 
has begun.

On one hand, success would bring much-needed jobs and economic activity. The third 
set of Panama Canal locks is set to be completed in 2015, with operations beginning 
in 2016 (Tronche 2014). Increased capacity will permit transit by much larger Post-
Panamax vessels, and in turn significantly increase cargo traffic through the Carib-
bean. With Kingston Harbour already second only to the Bahamas’ Freeport in volume 
handled by Caribbean ports (Caribbean Journal 2013), Jamaica is well-placed to attract 
a significant share of this new traffic and associated demand for services.

The new port is seen as important to Jamaica establishing itself as a key player in 
this context. Minister of Industry, Investment and Commerce Anthony Hylton has 
articulated the ambitious goal of making Jamaica the fourth key node in the global 
logistics chain, along with Rotterdam, Singapore and Dubai (MarineLink 2013). The 
International Monetary Fund (IMF) also notes the relevance of a planned transhipment 
port and associated industrial area to Jamaica’s goal of increasing its role in global 
logistics (IMF 2014). In terms of benefits to Jamaicans, Minister of Transport, Works 
and Housing Omar Davies estimates that the project would create 2,000 jobs during 
construction, and 10,000 once the port and accompanying facilities are fully opera-
tional (Davies 2014).

On the other hand, the proposed location for the port is in the core of Jamaica’s largest pro-
tected area – the Portland Bight Protected Area (PBPA; Figure 1) which has been legally des-
ignated for conservation purposes under four separate Jamaican Laws (summary in Annex 
1). PBPA is home to numerous globally threat-
ened species and at least seven animal species 
found nowhere else on earth, including the Ja-
maican Iguana, one of the 100 most threatened 
animals in the world (C-CAM and JET 2013; 
Bailie and Butcher 2012). PBPA also contains what is probably the country’s largest 
nursery for fishable species of all types (Linton 2003, Haynes-Sutton 2010), the largest 
swath of intact dry limestone forest in Central America and the Caribbean (SSC 2014), 
and the largest remaining contiguous mangrove system in Jamaica (Linton 2003). Four 
thousand fishermen and women make use of these resources as the source of their livli-
hoods (MOAF 2013).
Figure 1: The Portland Bight Protected Area
In recognition of these values, the Ramsar Convention has designated the Portland Bight Wetlands and Cays Ramsar Site as a Wetland of International Importance, and the United Nations has granted conditional approval for designation of a Biosphere Reserve, a classification reserved for just over 600 places of global importance to jointly promoting sustainable development and conservation of biological diversity. The complex of wetlands, reefs, seagrass beds and dry forests on and surrounding the Goat Islands themselves is particularly important. This area includes the Galleon Harbour, which has been designated as a Special Fishery Conservation Area under the Fishing Industries Act, making it one of just 12 areas in Jamaica that are managed as a nursery to support productive fisheries.

Despite the controversial nature of the trade-offs involved, the process of deciding to build on the Goat Islands has not been transparent. At the time of writing, basic official documents describing the port proposal have not been made public, on the grounds that the information is exempt for commercial and confidentiality reasons (JET 2013). As a result, the ability of the nation to engage in informed debate has been limited. Fortunately, recent claims under Jamaica’s Access to Information Act have resulted in the release of a set of supporting documents, which, combined with information from official government presentations, now make it possible to infer the general characteristics of project, as outlined below:

- Timing: The project has two development phases. Core sampling to set the stage for Phase 1 is underway at the time of writing. Minister Davies estimates that it will take approximately four years until the project is completed and transhipment activities begin (Davies 2014).

- Location: Development in Phase 1 is planned for the area on and around the Goat Islands, connected by a causeway to an area immediately inland that extends from the coast to Highway 2000. Planned development in Phase 2 is focused in the Hellshire Hills area (Shirley 2014; Figure 2). Dredging may occur up to 20 kilometres (km) out to sea (authors’ measurements from CHEC/CCCC Water Transportation Consultants 2014; Figure 3).

- Size: The size of the lots planned for development in Phase 1 is approximately 3,400 acres (~14 km²). A slightly smaller additional area is considered for Phase 2, such that total lot area is approximately 6,400 acres (~26 km²) (Shirley 2014; Figure 2). The port itself will occupy approximately 2,200 acres (~9 km²) (authors’ estimate based on CHEC/CCCC Water Transportation Consultants 2014; Figure 3).

1 These documents include the Memorandum of Understanding (MOU) between CHEC and the Port Authority of Jamaica, the Addendum to the MOU, and CHEC’s proposal for the port.

2 Documents released include the Amendment to the Beach License (NEPA 2014), and the Statement for Changing of Engineering Survey & Geotechnical Investigation (CHEC/CCCC Water Transportation Consultants 2014).
Transportation Consultants 2014; Figure 4), including the Goat Islands and reclamation between and around them. The remaining area is to be occupied by large industrial estates on the mainland.

Figure 2: Proposed location and lots to be used on and around Goat Islands

Source: Shirley 2004

Figure 3 (right): Full scope of the planned facility (Phase 1)

Source: CHEC/CCCC Water
Transportation Consultants 2014
Facilities: In Phase 1, the following will be built: an industrial park, support infrastructure, a container terminal, berths, a portside logistics zone, and a coal-fired power plant (Davies 2014). Industrial activities are eventually likely to include an assembly plant for gantry cranes, a steel fabrication plant (JIS 2013), a cement plant, and manufacturing facilities (van den Akker et al. 2013). Following recommendations from an in-depth study by Delft Technical University (van den Akker et al. 2013) that included interviews with CHEC, we estimate that approximately 2.6 km² of the port is for transhipment (served by 4.5 km of quay length) and 6.3 km² is for industry within or immediately adjacent to the port (served by 2 km of quay length).

Dredge depth: Drawings of the proposed facility indicate a dredge depth of 18 metres (m) for transhipment areas (CHEC/CCCC Water Transportation Consultants 2014), which is sufficient to accommodate Post-Panamax vessels. It is reasonable to assume that this is the near-term objective. Minister Davies has also stated that berths are to be of sufficient width, length, and depth to accommodate Super Post Panamax Vessels (Davies 2014). We take this to indicate a longer-term interest.

While it is encouraging that some details about the planned development have recently been made public, we believe that if decisions are to reflect what is in the best interest of Jamaicans, information about a far broader range of issues should be generated and shared. In the absence of such information, debate will necessarily be along the lines
of whether Jamaica’s development needs or environmental legacy should be sacrificed. At the present, it is not at all clear that that is the appropriate question, or, if it is, how stark the trade-offs are.

This report focuses on one of several fundamental questions that need to be assessed in order for Jamaicans to make an informed decision: are there suitable alternative sites that would reduce environmental and social risk to Jamaica without imposing undue financial costs on the developer? If such sites exist, Jamaica could avoid significant social and environmental costs and risks to the nation, without diminishing the business case for the new port. The core of our analysis is therefore an assessment of the costs of construction at Goat Island as compared to alternative sites.

We add to the cost comparison by considering the following additional important questions:

1. What is the value of the environmental services and associated livelihoods that may be put at risk through development around Goat Island, and how does this value compare to values at alternative sites? Estimating this contribution in economic terms and comparing it to values put at risk at alternative sites provides a means to ensure that the environment is part of Jamaica’s cost-benefit calculations in deciding what is in the nation’s best interest.

2. Of the jobs and economic activity potentially created, what fraction will go to Jamaicans? Beyond jobs created, can any additional benefits be expected, for instance related to cheaper energy, better roads, or better coastal protection? How do potential benefits to Jamaica vary across sites? To the extent that there is uncertainty around economic benefits to Jamaica, greater caution is merited in putting other values at risk.

3. Beyond immediate environmental and social impact, what negative consequences can Jamaica expect from building on Goat Islands as compared to alternative sites? Of particular importance is Jamaica’s international reputation and the relevance of that reputation to the country’s tourist industry, the source of over 50 percent of the country’s foreign exchange earnings and about one-fourth of all jobs (GTTP, accessed 2014). Any negative impact on relationships with development banks, the United Nations, and other international agencies (many of whom have provided millions of dollars in financial and other support for the PBPA and similar areas) would also be important.

It is important to note that various third parties have already suggested alternative sites for consideration. The most frequently mentioned is Macarry Bay, on the basis that
sea currents, dredging requirements, flat ground for building, and other characteristics may be more favourable than those at Goat Islands, while environmental impact would be far less (Chin 2013). The most comprehensive scoping of alternatives to date found three potentially viable alternatives to Goat Islands (Macarry Bay, Jackson Bay, Little Bay) according to a balanced set of criteria related to financial cost, economic benefit to Jamaicans, and environment (van den Akker et al. 2013).

To date, however, the Port Authority of Jamaica and CHEC have not publicly considered these or other alternatives. We assume that this is due, at least in part, to the fact that none of the suggestions so far have included specific cost comparisons of multiple sites. We therefore build on the suggestions mentioned above, but seek to make our work as amenable as possible to transparent consideration in the decision-making process by providing a clear comparison of the major financial costs and related factors that will distinguish each site.

Our cost assessment is necessarily done at a high level. We cannot know how CHEC and the Port Authority would choose to develop alternative sites, nor is it appropriate to make specific suggestions in this regard from a rapid scoping. Furthermore, our analysis is not intended to replace due public process of detailed comparison of alternatives where investments of this magnitude are considered. Instead, results are intended simply to provide clear evidence of whether more detailed assessment of alternative sites is merited. Our results are also intended to add to the transparency of informed public debate.

The methodology used is described in Section 3. Analysis carried are presented in Section 4, with results given in Section 5. Section 6 concludes.

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3 TUDelft (Van den Akker et al. 2013) did in fact estimate costs in their full report; however, this information was not included in the publically released summary (Smith Warner International 2013). To the best of our knowledge, the full report is not in wide circulation.
Methodology
The overall framework for the analysis carried out in this report is Cost-Effectiveness Analysis (CEA). CEA refers to a comparison of the costs two or more alternative means to achieving a common outcome. The outcome itself is frequently non-monetary, and can range from saving lives to protecting species to building a particular length of road. This approach is common to examining policy options where the intended outcome is already selected, does not depend per se on return on investment, or where it is inappropriate, difficult, or unnecessary to value the outcome in monetary terms. In other words, CEA seeks to support selection of the best approach to achieving a predetermined goal, as compared to Cost-Benefit Analysis (CBA), which can additionally offer information on whether a particular investment is worth making at all.

Given that the Government of Jamaica has committed to developing a logistics hub and transhipment port facility with CHEC as part of its push to prominence in global logistics, a CEA of multiple options for developing such a facility is appropriate. This approach addresses the question of which option is most cost-effective, rather than whether any of the options are likely to generate a net benefit to Jamaica or how to maximize that benefit for the greatest number of Jamaicans. Given the high stakes, we do not believe the latter question should be taken as given, but assessing it is beyond the scope of this report. However, we note that important doubts have been raised.4

CEA requires a common outcome that can be used to ensure that the costs of each option can be fairly compared. In this case, the common outcome is a logistics hub/transhipment port/industrial area meeting the specifications given publically by Minister Davies and Port Authority Chairman Shirley, as well as those that can be discerned from relevant documents as outlined in the previous section. The options compared are different potential locations, rather than, for instance, different industrial production technologies that might affect the area required.

The basic product of the CEA is a comparison of the financial costs of building at each location included in the analysis. This category of costs is also referred to as “internal” costs, in that they are typically paid directly by developers and/or government, and are therefore of obvious importance. Internal costs are generally the core of any CEA. We assess internal costs here by designing a reasonable port layout for potential sites based on wave environment and relevant geophysical characteristics (geology, topography, and bathymetry). Layouts and local cost data are then used to calculate the major construction requirements that differentiate the sites.

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4 As this report was being finalized, CaPRI (2014) published a study concluding that there are fundamental hurdles to overcome if Jamaicans are to benefit substantially from the logistics hub. The Economist (2014) suggests that Jamaica is already significantly behind potential competitors seeking to capture Post-Panamax vessel transhipment traffic. Witter (2013) also provides a useful discussion of the shortcomings in terms of benefits to Jamaicans of the bauxite, banana, and tourism industries.
As noted, we extend the analysis to consider several related issues. We include quantifiable environmental damage by considering external costs (or “externalities”), for instance related to lost fisheries production or opportunities for tourism development. This category of costs is typically not paid by developers, and is therefore frequently not included in CEA, although in theory it should be because external costs nonetheless represent real losses to society. To provide a monetary estimate of these losses, we use a benefit transfer function (as explained below) to value the expected habitat directly destroyed at each site based on port layouts. Finally, we describe and compare several major additional differences between the sites, including factors potentially relevant to both operations and to indirect benefits and costs to Jamaica. These factors are not quantified, but are relevant given that for developments at the scale considered here, it is not possible to design facilities that are exact equivalents in everything but cost.

Within the CEA framework, we focus on major differences between sites. Relevant financial costs in this context include the cost of dredging, excavation, reclamation and breakwaters, rather than the cost of planned facilities such as the gantry crane assembly plant or steel plant whose costs will be roughly the same across all locations.

Analysis was carried out in the following steps: 1) Selection of the two most promising alternatives to Goat Islands for inclusion in the CEA; 2) Analysis of key determinants of layout and cost at the selected alternative sites and at Goat Islands (i.e., wave environment and relevant geographical, geological, and topographical characteristics); 3) High-level design of port layouts at alternative sites; 4) Calculation of key costs at all sites; 5) Valuation of ecosystem services that would be lost or put at risk at each site; and 6) Qualitative comparison of other major differences between sites.
Economic comparison of alternatives to building a port on Goat islands: Does Jamaica need to sacrifice a world class conservation site in order to build a world class port?
Analysis
4.1 Selection of alternative sites for inclusion in analysis

This step considered only potential port sites relatively close to Kingston, on the understanding that proximity to the capital city is an explicit priority for CHEC (van den Akker et al. 2013). The set of sites that appeared potentially viable considering this requirement and the specifics of the planned facility were Macarry Bay, Kingston Harbour, Cow Bay and Bowden Bay (Figure 5).

Figure 5: Location of the four alternative sites scoped prior to the CEA; Goat Islands shown for reference

Source: Wallace 2014

To select the most promising of these alternatives for analysis in the CEA, we considered existing maps and a similar scoping exercise carried out by Delft Technical University (van den Akker 2013). We also carried out a site visit to see potential sites and talk to local experts first hand. Criteria for evaluation included:

- Wave environments as indication of the extent and configuration of any breakwaters which might be required to provide sheltered berths;
- Land area available;
- Water depths;
- Lengths and orientation of entrance channel;

Sections 4.1-4.4 are based on analyses performed by Niras Fraenkel Ltd. (NFL). Full detail is available in Niras Fraenkel (2014).
- Navigation, turning area and berthing;
- Allowance for future expansion and increasing vessel depth;
- Access and communications; and
- Littoral drift (transportation of sediment along the coast).

Qualitative description of the advantages and disadvantages of each site are as follows:

**Macarry Bay**

**Advantages**
- A large flat area of land available inshore of the port allows space for the full proposed development including ports and industrial estates in one site.
- The location puts the population centres of Mandeville, May Pen, Kingston, Spanish Town and Old Harbour potentially within commuting distance; by comparison to Goat Islands, the first two are closer, while the latter three are somewhat farther.
- Shallow water in the vicinity of site reduces wave heights particularly for hurricane conditions, reducing the volume and size of armour units of breakwaters that would otherwise be needed
- Some shelter from trade wind waves is offered by the location and wide shallow foreshore, although no natural breakwaters exist.

**Disadvantages**
- Shallow water in vicinity of site requires a long approach channel to be dredged and maintained.
- The site is exposed to hurricane waves (although these are reduced in height by the wide foreshore as mentioned above.
- It is likely to require long breakwater(s) for protection.

**Kingston Harbour**

The Fort Augusta area in Kingston Harbour is not considered due to CHEC’s previous rejection of the site on the grounds that it allowed insufficient area for industrial activities. We consider here the possibility of building a new port area on land reclaimed on a large shoal in the shallow southern portion of Kingston Harbour to the north of the existing airport runway and Port Royal mangrove swamps, and connected to the Palisadoes Peninsula.

**Advantages**
- The location on the Palisadoes Peninsula puts the population centres of Kingston, Spanish Town and Harbour View within easy commuting distance. Due to the presence of the existing container terminal, it may be
assumed that this site is the most accessible to Jamaica’s skilled port labour.
- The location within a natural harbour provides protection from waves without the need for breakwaters.
- Most of Kingston Harbour’s existing East Channel is deep enough for Chinamax vessels (requiring dredging to 27m) to be accommodated in addition to post-Panamax vessels that require dredging to only 18m.

Disadvantages
- The existing approach channel to Kingston Harbour is a single channel that is congested under the current traffic volumes. To accommodate the proposed traffic it would need to be widened to two lanes. This would require a significant amount of dredging, particularly in the vicinity of Port Royal.
- The project would involve a major reclamation effort involving a large volume of fill. If the material obtained in the course of dredging for the berths and approach channel can be used for this purpose, costs would potentially be manageable. The composition of the strata forming the shoal (and hence most of the dredge material) is therefore very important but is unknown at the time of writing.  
- While it is possible to reclaim sufficient land for the port complex, there is no suitably large area of land for the associated industrial estates available in the vicinity. Kingston can therefore only be included if transhipment and industrial activities can be separated, with the transhipment port built in Kingston Harbour, and the industrial port and associated industrial estates built elsewhere.

Cow Bay

Advantages
- Deep water close inshore means little or no approach channel needs to be dredged.
- Some shelter from trade wind waves due to location.
- Relatively close to Kingston.

Disadvantages
- The site is exposed to hurricane waves
- Deep water close to shore will require expensive breakwaters.
- High ground inland of the site severely limits availability of dry area near to port.

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6 Nearby locations include both sand (most of the Palisadoes peninsula) and mud (the north eastern part of the harbour)
Bowden Harbour

Advantages
- Bowden Bay is a natural harbour with natural reefs on either side of the entrance, so that breakwaters would be in shallow water and fairly short or not required at all.
- Large flat area of land available to the east of the port allows space for the proposed industrial estates on land contiguous with port facilities built on the eastern side of the harbour.
- Deep water just outside of the harbour results in a very short approach channel which limits the volume of dredging required. Because the entrance is short, a two-way channel would not be required, further reducing the scope of dredging.

Disadvantages
- The site is only large enough to accommodate the transhipment port quay length if it is located at the eastern side of the harbour and if the eastern side of the harbour is extended inland by dredging. The full length of the eastern side of the harbour would need to be utilised and this would require breakwater protection of the southern (seaward) end of the quay. Using the eastern side of the harbour for the transhipment port requires the industrial port to be located on the western side where there is sufficient space for it, but this would separate it from the only available large land area for the industrial estates.
- While the volume of dredging is less than for most of the other options, the geology of the area suggests that a significant quantity of soft rock (mainly sandstone and coral) may be encountered, making suction dredging much less likely and therefore significantly increasing the unit cost of dredging.
- A localised area of high ground adjacent to the eastern side of the harbour severely limits size of the available dry land immediately adjacent to the port. This area appears to consist of a mixture of soil and fairly soft sandstone such that levelling it and using the material as fill for reclaimed areas is a practical possibility.
- The location near the eastern end of the island is not ideal in terms of proximity to major population centres. The road link to Kingston is by winding coastal road with improvements only on the last few kilometres between Bull Bay and Kingston.

In light of the considerations above, Cow Bay was eliminated easily because of size constraints, hurricane exposure, and a foreshore width of only around 500 m such that waves reaching the site may well be higher than those offshore. Siting the entire
The CEA therefore considered Goat Islands, Macarry Bay, and an option that divides the required facility between Kingston and Bowden, including a transhipment port at Kingston Harbour and an industrial port and shore side industrial complex on the eastern side of Bowden Harbour. Potential differences in the efficiency of this design are discussed in the later sections.

4.2 Assessment of wave environment

Once the most potentially viable sites were selected, we carried out a more detailed assessment of factors influencing design and costs. Topography, bathymetry and geology affect costs by determining the extent of excavation, reclamation and dredging, what material needs to be moved, and need for any soil treatment, among other issues. Of particular relevance here, dredging or excavating sand or other soft material is far less expensive than carrying out the same operation for an equivalent amount of rock; similarly, using sand removed from nearby for reclamation offers significant savings over either importing fill or quarrying it from nearby. This is particularly significant in a case where the sand has already been dredged as part of the process of dredging channels or berths and would need to be disposed of whether or not it was utilised as fill, so only the difference between the cost of utilising the dredged material as fill and that of disposal, had it not been utilised, need be considered. Available map data and in person conversations were sufficient to understand these issues at all three sites.

Wave environment determines three factors of relevance to costs:

1. Are berths adequately sheltered to avoid excessive wave induced downtime? Are breakwaters required to provide shelter?
2. Are the approaches to the port adequately sheltered for attachment of tugs, or does the pick-up point need to be in the shelter of breakwater?
3. What are the extreme waves which the works will have to withstand?

The influence of waves on these factors requires understanding both offshore waves in deep water and wave transformations in shallowing water. The wave environment could not be adequately understood from existing maps or related information, and was assessed by Niras Fraenkel (2014) as described below.

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3 Another option for constructing the industrial estates would be on land north-east of Hunts Bay, adjacent to the north-east part of Kingston Harbour. This would require a transport link to the port area, probably by means of barges. As Hunts Bay is very shallow an additional approach channel would need to be dredged but since barges have shallow draft, this channel would not need to be particularly deep. There would need to be significant ongoing maintenance dredging as there is heavy siltation in Hunts Bay. We do not consider this option further at this stage.
4.2.1 Offshore Waves

Van den Akker et al. (2013) provided wave roses based on United States National Oceanic and Atmospheric Administration (NOAA) data for nine locations around Jamaica (Figure 6). Location 10 is typical of waves approaching the south coast, with offshore waves predominantly from two 22.5° sectors, E–ESE and ESE to SE. Niras Fraenkel (2014) checked this wave analysis against other long-term data (Hogben et al. 1986) and found them to be consistent, estimating a three hour trade wind storm in deep water to have wave heights of 3.3 m and 3.2 m from E-ESE and ESE-SE, respectively, with a wave period of 10 seconds.

Figure 6: Wave Roses around Jamaica

With regard to hurricane waves offshore, NFL’s analysis of wave height data showed a split at around a wave height of 3–3.5 m, with the family of high waves above 3.5 m likely to be from hurricanes. Van den Akker et al. (2013) undertook an analysis of all hurricanes occurring within 300km of Jamaica since 1855. This produced estimates of the once in 200 year extreme waves from each of five directions. Extreme wind speeds and deep water wave lengths were also derived. Based on review by NFL that found these wave height values to be compatible with other relevant sources of data, we use van den Akker et al.’s reported figures, as presented in Table 1.
Table 1: Waves resulting from once in 200 year hurricane extreme in deep water

<table>
<thead>
<tr>
<th>Angle of waves</th>
<th>90°</th>
<th>135°</th>
<th>157°</th>
<th>180°</th>
<th>225°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave Height (m)</td>
<td>16.21</td>
<td>12.38</td>
<td>11.32</td>
<td>11.28</td>
<td>14.09</td>
</tr>
<tr>
<td>Wave Period (s)</td>
<td>19.08</td>
<td>16.1</td>
<td>15.22</td>
<td>15.19</td>
<td>17.47</td>
</tr>
<tr>
<td>Wind Speed (m/s)</td>
<td>65.25</td>
<td>37.62</td>
<td>36.39</td>
<td>36.56</td>
<td>29.6</td>
</tr>
</tbody>
</table>

Source: van den Akker et al. (2013)

4.2.2 Wave transformation in shallowing water

Waves in deep water are largely unchanged through interaction with the seabed until the water depth reduces to around half the wave length. Based on estimated wave lengths of 156 m and 505 m respectively, depth limits for deep water Trade Wind and Hurricane waves are estimated at 75 m for trade wind waves and 250m for Hurricane waves.

Figure 7 shows the water depth contour lines to seaward of Macarry Bay, Goat Island, Kingston Harbour, and Bowden Bay. Because the seabed generally slopes gradually down from the shore out to the 30 m contour and then drops rapidly down to depths of 500 m or more, the two limiting depths for deep water waves are on the steep slope and are almost coincident at the scale of the maps.
Figure 7: Water depths at alternative port sites considered. The red lines mark where the 250 m limiting depth for hurricane waves is located. The 75 m limit for Trade Wind waves has not been plotted but is almost the same.

Source: Niras Fraenkel (2014)

As is notable, the foreshore widths reduce on moving from west to east along the coast, being widest Macarry Bay (12-14 km), narrowing at the approaches to the Goat Islands (6-8 km), then much narrower at Kingston Harbour (2-4 km) and Bowden (1.5 km). Specific effects of this and other conditions on the processes of wave transformation at each site are taken into account in design and discussed in detail in Niras Fraenkel (2014), but one general result is that friction plays an important role in reducing wave heights in both Macarry Bay and Goat Islands.8 An overview of wave transformation processes is provided in Annex 2.

4.2.3 Description of wave exposure at the sites considered

Macarry Bay: Macarry Bay is sheltered from the direct approach of the Trade Wind waves from E to ESE and from ESE to SE. Some activity from ESE to SE could reach the site after refraction around Portland Point, which separates Macarry Bay from Portland

8 Detailed modelling by TUDelft confirms this effect, showing that friction plays an important role in reducing hurricane waves of 12-16 m in deep water to 6 m to seaward of the reefs which shelter the Bight.
Bight. The site is open to the hurricane waves from 157°, 180° and 225°, with the latter two seen as more likely. Waves from west can also reach the site, but the foreshore width is 40km or more from that side, which would greatly lower the height of hurricane waves reaching the port.

Goat Islands: The Goat Islands site is partially sheltered from open sea by a string of cays which act as breakwaters. There is a 300 m wide channel through the cays, with depths down to 20 m. There are also several minor channels. The Bight is open to waves from deep sea from E through S to SSW. Wave modelling by TUDelft established that both Trade Wind storm waves and Hurricane waves can reach the port site. Waves reaching the cays can be expected to be higher than those reaching a port in Macarry Bay as the foreshore width is less, but the cays will provide some protection against them progressing towards the Goat Islands themselves. Also of note, the Bight has a diameter of 5 km or more, wide enough for noticeable waves to be generated locally by high winds.

Kingston Harbour: The site considered is virtually separated from the sea by the string of connected cays forming the Palisadoes. Some wave activity from seaward could reach the site around the western end of the Palisadoes, but the waves are likely to be very low. The predominant waves will be locally generated by winds from the east blowing along the length of Kingston Harbour.

Bowden Bay: Port Morant, the inlet in which the Bowden site is situated, has a relatively narrow foreshore width, at around 1.5 km, so waves nearing the entrance are be expected to be higher than at the other sites. The entrance to Port Morant is restricted by cays extending out from the headlands on either side, with a 200 m wide channel between the lines of cays. This channel is significantly less wide than the 500 m wide channel leading to the Goat Islands. Thus although higher waves reach the entrance to Port Morant than at Portland Bight, the narrower channel may offset to some extent wave heights at the port site itself. The area of Port Morant available for the generation of local waves is negligible.

4.2.4 Quantitative comparison of wave exposure

Each of the relevant conditions and transformations was investigated. Computer wave modelling by van den Akker et al. (2013) for Goat Islands provides more sophisticated analyses for that site than were possible for the other sites in this study. We therefore used their modelled outputs for Goat Island, with two adjustments. First, an important issue related to van den Akker et al.’s estimates of wave period was identified and corrected. In particular, Niras Fraenkel (2014) found that longer period waves were likely
to reach the site than those modelled. Second, van den Akker et al.’s modelling was conducted prior to release of information on the actual design planned by CHEC. The updated layout shown in CHEC/CCCC Water Transportation Consultants (2014) extends further seaward, covering several cays and extending out to the 10 m depth contour. The seaward face of the works therefore now extends out into deeper waves than originally considered.

For the other three sites, wave transformation from deep to shelter water was performed using graphical aids from the US Army Corps of Engineers’ Shore Protection Manual (1984) and the US Army Corps of Engineers’ Coastal Engineering Manual (2006). The results are not as rigorous as those from the computer modelling and the resulting wave height should be considered valid only to the nearest metre. However, at the scale of analysis carried out here, this approximation is seen as acceptable.

Storm surge in hurricane conditions, which has the effect of raising the equivalent still water level about which the waves oscillate, was also considered. Storm surge is caused by the very low atmospheric pressure associated with a hurricane, raising the sea level locally and causing water to be piled up by wind and wave action against the shore. The latter effect is significantly influenced by the geography of the shoreline with long narrow inlets tending to trap water and locally increase the height of the surge. Considering 50-year storm surges, the Caribbean Disaster Mitigation Project (CDMP) finds higher surges in the inner (northern) areas of Portland Bight and Kingston Harbour than in either the more open coastline at Macarry Bay or the smaller harbour at Bowden (Niras Fraenkel 2014).

Table 2 presents results for a 1 in 200 year return period event (columns 1 and 2). These are used to calculate the required seawall height above still water (Rc, column 3) for each location, based on methods given in the US Army Corps of Engineers’ Coastal Engineering Manual (2006). An allowance for storm surge is shown in column 4, and an allowance for tide and sea level rise due to global warming (GW) is included in column 5. The final column shows the sum of the components (Rc + GW & Tide + Surge), which is the final height of the structure that would have to be built above still water level.

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9 The output data from TUDelft modelling combines waves from seaward and locally generated waves. NFL calculated that the output is a mixture of the long periods offshore and the shorter period locally generated waves. In fact, these are waves of two dominant periods known as a twin peaked spectrum. One peak at the offshore wave period and one at the short inshore period. The longer period wave is of significance to the final design of the works since longer period waves have higher energies than shorter.
### Table 2: Impact of wave environment on necessary structure height at each site

<table>
<thead>
<tr>
<th>Port Site</th>
<th>Wave travel Direction (Degrees)</th>
<th>Wave Height (m)</th>
<th>Rc Height (m)</th>
<th>Surge Height (m)</th>
<th>Global Warming and Tide allowance (m)</th>
<th>Final height above still water level * (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowden Bay</td>
<td>180</td>
<td>3</td>
<td>5</td>
<td>0.5</td>
<td>0.25+0.45</td>
<td>6</td>
</tr>
<tr>
<td>Kingston</td>
<td>90</td>
<td>2.7</td>
<td>2.1</td>
<td>1.3</td>
<td>0.25+0.45</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>225</td>
<td>1.75</td>
<td>1.5</td>
<td>1.3</td>
<td>0.25+0.45</td>
<td>4</td>
</tr>
<tr>
<td>Macarry Bay</td>
<td>180</td>
<td>4.4</td>
<td>6.6</td>
<td>1.5</td>
<td>0.25+0.45</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Inside Breakwater</td>
<td>0.5</td>
<td>0.7</td>
<td>1.5</td>
<td>0.25+0.45</td>
<td>3</td>
</tr>
<tr>
<td>Goat Islands</td>
<td>225</td>
<td>4.8</td>
<td>6.6</td>
<td>2.3</td>
<td>0.25+0.45</td>
<td>10</td>
</tr>
</tbody>
</table>

* Rounded to the nearest metre to reflect data resolution. Sources: Storm surges: Niras Fraenkel using CDMP data, except for Goat Islands from TUDelft; Design significant wave height (Hs): Niras Fraenkel, except for Goat Islands from TUDelft; Global Warming and Tide: Niras Fraenkel

### 4.3 Port layouts

Niras Fraenkel (2014) combined the results of their analysis of wave environments with data on topography, geology, bathymetry, and environmentally important features to design high-level layouts of port facilities at each alternative site. The Goat Islands layout was taken as given in CHEC/CCCC Water Transportation Consultants (2014).

#### 4.3.1 Macarry Bay

Two layouts were considered. The first is an optimum layout that is best for both efficiency of transhipment operations and in terms of minimising environmental impact (Figure 8). The transhipment port consists of a single rectangular reclaimed peninsula with straight berthing faces on both sides, enclosed within a breakwater to give protection to the quay area including any stacked containers awaiting transhipment in the event of a hurricane. The entire port facility is built on reclamation formed by sand dredged in the course of the construction of the port and its approach channel and is connected across the narrow strip of swamp (crocodile habitat) behind the beach by means of one or more short causeways to proposed industrial estates in the scrub area behind.
The second is a lower cost layout that reduces the seaward extension of the port and hence breakwater length and fill volume by utilising some of the beach and swamp area as part of the industrial port (Figure 9). It also reduces the length of the transhipment port peninsula, resulting in the need for additional quay length to be built on reclamation inside the breakwater. This matches the overall quay area and berth length of the proposed Goat Islands development, but does not provide a layout as efficient as the single peninsular layout above. Crocodile habitat would also be destroyed.
4.3.2 Combined development at Kingston Harbour and Bowden

As described, this is a combined development in which the transhipment port is located in Kingston Harbour and the industrial port and associated industrial estates are located at and adjacent to the eastern side of Bowden Harbour. The height of the reclamation fill in Kingston Harbour has been taken as 3 m, which is similar to the height of the existing Kingston Container Terminal reclamation. This is lower than the 4 m height stated in Table 2, but the highest waves in the harbour approach in a line almost parallel to the berthing face and thus have less tendency to overtop it. There is also less distance over water for the wind to generate waves from the eastern end of the harbour, so waves should be lower than is the case with the existing container terminal. The layouts are shown in Figures 10 and 11.
Figure 10: Transhipment port layout in Kingston Harbour

Figure 11: Industrial port layout in Bowden Bay
4.3.3 Goat Islands

The proposed development at Goat Islands is the benchmark against which the two alternative designs are compared. Design is taken as given in CHEC/CCCC Water Transportation Consultants (2014; figure 12). A 7m Chart Datum (CD) fill level is assumed as the highest practical quay height, although wave calculations made here suggest the quay would need to be significantly higher or have breakwaters if hurricane damage to stored containers and equipment was to be avoided. Consideration of breakwaters versus quay height versus acceptable downtime or hurricane damage would therefore seem to be important, but we are not aware of such analyses having been carried out. Breakwaters were not included in cost estimates as they were not shown CHEC’s design.

Figure 12: Goat Island design according to CHEC/CCCC Water Transportation Consultants (2014)
Results
5.1 Costs

Costs for excavation, reclamation, dredging, and breakwaters were calculated for each design, based on the volume of material involved, its composition, and unit costs. Volumes for excavation, reclamation and dredging were estimated as the difference between average depth or height and the proposed layout, including appropriate design specifications. The volume of each type of material needed for breakwaters was based on the relevant wave environment and, again, an appropriate design specification. Causeways were necessary only in in Goat Islands and Macarry Bay, and were assigned an indicative cost only, as they were not seen to represent a major determinant of feasibility in any case.

The composition of material at each site could be assumed with some confidence, except in the case of Kingston Harbour. To accommodate this uncertainty, NFL conducted sensitivity analysis around material composition for Kingston/Bowden. Per unit costs were largely based on locally quoted prices in 2014 (values used are given in Annex 3). Given that it is particularly hard to estimate the degree to which costs for levelling and using the material for the Goat Islands would approximate local prices, a sensitivity analysis around costs was conducted for Goat Islands. Sensitivity analysis was not seen to be necessary for Macarry Bay.

The main issues that account for differences in costs between sites are reviewed below (summary in Table 3):

**Macarry Bay (optimal)**
A large volume of dredging is required (~70 million m3), both inside the port and to create the long approach channel. However the material to be dredged is confirmed sand, so unit cost is reasonable (estimated at $7/m3), with total dredging cost estimated at $500 million. Significant reclamation is also necessary but costs per m3 are minimal due to possibility of using sand dredged from nearby as part of marine works such as the approach channel and berth excavation. Two large breakwaters are also required, each over 20 m in height and having a volume greater than 2 million m3. These cost $250 million together. The total differential cost of this option is $931 million.

**Macarry Bay (cost minimizing)**
Utilising some of the beach and swamp area inland as part of the industrial port and reducing its seaward extend reduces the need for dredging and reclamation. The largest cost savings in this layout is from the elimination of a breakwater at a savings of $100 million. Total differential cost is $731 million.

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11 Breakwaters includes revetments, i.e., structures backed by the port on one side rather than sea on both sides
12 For instance related to dimensions of approach channels or necessary armour on breakwaters
Kingston/Bowden
Total volume of dredging at Kingston and Bowden combined is approximately half that at Macarry Bay. However, the small amount of dredging required in Bowden Harbour (8 million m³) is likely to require removing soft rock at a far greater unit cost than dredging sand ($50/m³). Total estimated dredging cost in Bowden is therefore $400 million. Excavation at Bowden will be more costly for the same reason, totalling approximately $250 million despite a comparatively small volume.

The total area needed for reclamation in Kingston and Bowden combined is also relatively small in comparison to some of the alternatives, similar to that for the low cost Macarry Bay layout. However, there is a key unknown cost in this layout related to the material underlying the proposed site in Kingston Harbour. Two scenarios are considered:

Scenario 1: The site is primarily founded on mud, in which case the dredged fill from the adjacent berths and channel deepening has been assumed to be unsuitable for use as hydraulic fill. Fill would need to be imported, and additional soil treatment would be necessary in order to provide a stable platform for port operations and this has been allowed for in the cost estimate. In this case, the combination of fill and ground improvement is estimated to cost $850 million, accounting for imported fill at $31/m³ (purchased, delivered, spread, compacted, levelled) and $80/m² for ground improvement on 2.3 km². Total differential cost of this scenario is $1.7 billion.

Scenario 2: The site is primarily founded on sand, in which case the dredged fill from the adjacent berths and channel deepening has been assumed to be suitable for use as hydraulic fill. No additional soil treatment would be necessary. In this case, reclamation costs drop by nearly $700 million, putting total differential cost at $1 billion.

Goat Islands
The volume of dredging required is approximately equivalent to that at Kingston/Bowden. Assuming the material is sand or alluvium, total dredging costs are $215 million, calculated at the same rate as for Macarry Bay. The significant majority of costs comes from the need to excavate over 80 million m³ to level Goat Islands to 7 m, and to reclaim an area requiring a similar volume of material between and around the Goat Islands to accommodate the proposed transhipment and portside industrial areas. These activities are complementary in that the excavated material can likely be used as fill, but they are still costly.

The main unknowns are the rates at which CHEC can expect to do the necessary quarrying, and the suitability of material dredged in the vicinity of the port for use as fill. Three scenarios have been considered to allow for sensitivity to these costs:
Scenario 1: Fill and armourstone is obtained from the islands at similar rates to those for purchasing equivalent materials from a local quarry with only a nominal transportation cost to reflect moving materials within the site area. If the combined cost of excavation and reclamation is estimated as the costs of obtaining fill from a local quarry plus mark up and placed/compacted in situ (estimated at $22/m³), reclamation and excavation alone would cost ~$1.8 billion. Total differential cost is $2.1 billion.

Scenario 2: Fill is primarily dredged material pumped into position, with excess excavated material from the process of levelling the islands being disposed of. We assume that excess material whether dredged or quarried/excavated can be economically disposed of, but that there is a cost for excavating material from the islands whether it is ultimately used as fill or just cut to level the terrain. There appears to be no scope for savings under this scenario given the need to level the Goat Islands regardless to accommodate the proposed design. Total differential cost is $2.3 billion.

Scenario 3: Fill and armourstone is obtained from the islands at reduced rates. Given that the implied total costs under both scenarios above are far higher than the publicly stated $1.5 billion, it is also useful to consider the possibility that our cost estimates are higher than those expected by the developer. For convenience, we consider a cost scenario in which costs faced by CHEC are 50% of the estimated commercial rates (i.e., combined excavation/reclamation costs $11/m³). This brings estimated reclamation and excavation to an estimated $900 million, with total differential costs of $1.15 billion. Some support for the idea that costs in this range are indeed expected is found in van den Akker et al. (2013), who estimate that differential costs make up approximately two thirds of total costs, implying total overall costs in the range of $1.5 billion.

We cannot know the exact costs that CHEC expects. However, we note carrying out excavation and reclamation at $11/m³ may be optimistic. Prices ex-quarry for granular fill and armourstone are $3.60 and $5.80 per tonne, respectively, at a local quarry. Assuming this is a reasonable estimate of the marginal cost of excavation, extraction and short haul moving of fill and small armourstone will cost approximately $10 and $17.70 per m³ at reasonable estimates of density and including $1/tonne for short haul transportation by normal truckload. Excavation cost alone would therefore likely be greater than $11/m³.
Table 3: Summary of the main characteristics driving costs at each site/scenario

<table>
<thead>
<tr>
<th>Areas (km²)</th>
<th>Macarry Bay (optimal)</th>
<th>Macarry Bay (low-cost)</th>
<th>Goat Islands Quarry fill rates</th>
<th>Goat Islands 50% Quarry rates</th>
<th>Goat Islands dredged fill</th>
<th>Bowden/ Kingston import fill</th>
<th>Bowden/ Kingston dredged fill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry area for transhipment</td>
<td>2.85</td>
<td>2.05</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.25</td>
<td>2.25</td>
</tr>
<tr>
<td>Wet area for transhipment</td>
<td>1.75</td>
<td>2</td>
<td>1.74</td>
<td>1.74</td>
<td>1.74</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dry area for industrial*</td>
<td>6.3</td>
<td>5.8</td>
<td>6.3</td>
<td>6.3</td>
<td>6.3</td>
<td>0.7**</td>
<td>0.7**</td>
</tr>
<tr>
<td>Wet area for industrial</td>
<td>1.75</td>
<td>0.75</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Total Area excluding channel</td>
<td>12.65</td>
<td>10.6</td>
<td>11.42</td>
<td>11.42</td>
<td>11.42</td>
<td>5.75**</td>
<td>5.75**</td>
</tr>
</tbody>
</table>

| Lengths (m, thousands)            |                       |                        |                                |                               |                          |                             |                               |
| Quay length for transhipment      | 5.35                  | 4.5                    | 4.35                           | 4.35                          | 4.35                     | 4.5                         | 4.5                           |
| Quay length for industrial        | 2                     | 2                      | 2.2                            | 2.2                           | 2.2                      | 2                           | 2                             |
| Approach channels                 | 15                    | 15                     | 5                              | 5                             | 5                        | 7                           | 7                             |
| All breakwaters and revetments    | 10.1                  | 7.7                    | 7.4***                         | 7.4***                        | 7.4***                   | 5.55                        | 5.55                          |

| Volumes (m³, millions)            |                       |                        |                                |                               |                          |                             |                               |
| Total volume of dredging          | 72                    | 65                     | 31                             | 31                            | 31                       | 33                          | 33                            |
| Total volume of reclamation       | 42                    | 25                     | 79                             | 79                            | 79                       | 23                          | 23                            |
| Total volume of excavation        | 0                     | 0                      | 2                              | 2                             | 35                       | 20                          | 21                            |

| Costs (USD, millions)             |                       |                        |                                |                               |                          |                             |                               |
| Total Costs                       | 931                   | 731                    | 2,103                          | 1,159                         | 2,295                    | 1,683                       | 1,015                         |

Source: Niras Fraenkel 2014

* Sum of designed area plus extended land area to give matched Goat Islands total industrial area.
** Does not include areas to the south-east and north-east of the industrial port to be used as industrial area, see Figure 11.
*** Net of any material subsequently used in reclamation or breakwaters.
5.2 Value of damage to ecosystems

To complement the financial analysis presented so far, this section considers the quantifiable economic value of ecosystems that would be destroyed or put at risk at each site. The environmental importance of the natural resources of the Goat Islands, Hellshire Hills, Galleon Harbour, and the Portland Bight Protected Area (PBPA) more broadly have been well-documented (e.g. C-CAM 2014). In addition to their intrinsic importance, these natural resources provide a range of valuable ecosystem services (ES) that contribute to the livelihoods of the people living in and around the PBPA. Services include the following (Cesar et al. 2000):

- Food, including a range of fish and shellfish;
- Materials, including fuel wood, charcoal, and poles for use in construction;
- Non-timber forest products, including honey, orchids, and medicinal plants;
- Protection from storm surges and coastal erosion;
- Treatment of waste;
- Maintenance of fisheries productivity through serving as a nursery for juveniles of numerous fishable species;
- Controlling climate change through absorbing carbon;
- Tourism;
- Safeguarding globally important biodiversity; and
- Importance for local culture, including pride and a way of life

Two previous studies have estimated the ES values provided by the entire PBPA. Cesar et al. (2000) estimated that effective park management would generate between $55 and $70 million for Jamaica (Net Present Value – NPV – over 25 years at 10% discount rate; inflated to 2013). This value is mostly provided by improved fisheries productivity, a growing tourism industry, and continued international investment in the protection of Jamaica’s endangered species. Of note, all of these values accrue to Jamaicans.

Guingand (2008) complements analyses in Cesar et al. (2000), most notably by carrying out a primary study of PBPA’s fisheries and the net returns to local fishers from higher levels of sustainable catch as fisheries recover under good management. Using the same NPV parameters, Guingand (2008) estimates that effective management of PBPA would generate benefits between $75 and $95 million, with fisheries, tourism, carbon sequestration and waste treatment generating the majority of value. Again, almost all values accrue locally or to Jamaicans more broadly, with the exception of carbon sequestration.

These valuations provide an important indication of value of protecting PBPA, and by
extension the value that Jamaica would put at risk in choosing to develop the Goat Islands site. However, because neither study disaggregates sources of value within PBPA, and because there is no similar existing research for the other port locations considered in this study, additional analysis is needed.

We take a first step towards this by carrying out a benefit transfer analysis. This approach relies on data and findings from existing studies to estimate the monetary cost or benefit of a new policy. With appropriate caution, benefit transfer is an acceptable and frequently used approach in cases where time and budget are limited (Smith et al. 2002) and is in fact the basis of the analysis by Cesar et al. (2000) reviewed above.13

Best results from benefit transfer are obtained using function transfers, that is, using an algorithm to adjust estimated values from existing studies to the particular characteristics of the policy site (Kaul et al. 2013).

We found only one suitable benefit transfer function. It estimates total value of ecosystem services produced by wetlands (Ghermaldi et al. 2010), based on a function derived from analysis of 170 rigorous valuation studies from around the world. Key model parameters determining the per acre value of wetlands include the following:

- Overall size of the wetland;
- Level of pressure;
- Human population;
- Relative abundance of other nearby wetlands; and
- Which goods and services are provided to people.

The values from wetlands alone do not represent the full value of services provided at each site. However, due to lack of suitable data and/or benefit transfer functions for other ecosystem (notably dry forests, coral reefs, and sea grasses), we chose not to estimate their economic value. Instead, we include qualitative consideration of differences in impact to other important terrestrial and marine systems in the following section (5.3).

Applying the wetland valuation model given by Ghermaldi et al. (2010), we find the following per acre values of expected losses: The lowest per unit area value is found at Goat Islands and Macarry Bay, in the range of $7,000 - $8,000 per acre (NPV over 25 years, 10% discount rate). These values are driven mostly by relatively lower levels of pressure and larger total wetland extent than at the other sites. Per acre value at Bowden Harbour is slightly higher, estimated at $10,000 NPV per acre. Per acre values are highest in Kingston Harbour at NPV $67,000, due to high intensity of human activity nearby, small area of remaining intact wetland in the area, and the absence of several

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13 Benefit transfer is also the most common valuation method used to compute benefits and costs of environmental regulations by the United States Environmental Protection Agency (EPA, 2010).
uses like recreational hunting that tend to be associated with lower value wetlands. Values used along with the relevant parameters of the wetland valuation function are presented in Annex 4.

On the other hand, in terms of area impacted at each site, we find that building on the Goat Islands would directly destroy an area of wetlands more than five times larger than at Macarry Bay, and approximately 20 times larger than at the combined Kingston/Bowden site. Overall, development at Goat Islands would generate the greatest economic losses due to wetland destruction at an NPV of $6.8 million, followed by Kingston/Bowden, and then Macarry Bay. Results are summarized in Table 4.

Table 4: Net Present Value (25 yrs., 10% discount rate) of wetland ecosystem services at each site

<table>
<thead>
<tr>
<th>Area directly destroyed (acres)*</th>
<th>Macarry Bay **</th>
<th>Goat Islands</th>
<th>Kingston/Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem benefits per acre</td>
<td>$8,000</td>
<td>$7,000</td>
<td>$67,000/$10,000</td>
</tr>
<tr>
<td>Total value lost (NPV, millions)</td>
<td>$1.5</td>
<td>$6.8</td>
<td>$1.9</td>
</tr>
</tbody>
</table>

Source: authors’ calculations based on Ghermaldi et al. 2010

*In the direct footprint of port construction only

**The two Macarry Bay designs are presented together here as the difference in area of wetland impacted is very similar. The major distinction in environmental impact is not quantified but relates to preservation of a strip of important crocodile habitat along the coast.

***Approximately seven hectares of land classified “a section of wetland” in Kingston Harbour has been included in this category

Our value estimates for Goat Island and Macarry Bay are not directly comparable to results from Cesar et al. (2000) and Guingand (2008), because they consider neither the full area of the PBPA nor the full suite of ecosystems. Considering how results relate is nonetheless useful. To provide an indicative comparison, we run the benefit transfer function again for the entire PBPA. The necessary modelling adjustments suggest lower per acre values, putting the total wetland NPV of PBPA at $58 million. This value is on the lower end of total value estimates by Cesar et al. (2000) and Guingand (2008), which is reasonable given their inclusion of a larger set of ecosystems.

It must be noted that the calculations above are also conservative in that they include only the area of wetland directly destroyed by the footprint of port construction. In reality, indirect and spill-over effects related to pollution, increased vehicular traffic, migration of people working at the port, and others are likely to significantly increase the area of natural habitat destroyed. For instance, a recent study of the impact of dredging on coral reefs in Australia showed that reefs closest to the sediment plume...
from dredging (i.e., near but not in the dredged channel itself), had two-fold higher incidence of disease and six-fold increase in signs of compromised health as compared to corals with little plume exposure (Pollock et al. 2014). With regard to pollution, in a single instance in 2009, 300 tons of sulphuric acid were accidentally spilt into the Kingston Harbour from a leaky container (JIS 2009). It is impossible to accurately predict these effects. However, it seems reasonable to assume that if indirect effects and the value of additional ecosystems are considered, the true value of damage at each site will be significantly higher than estimated above.

5.3 Other major differences between sites

Analyses presented to this point aim to ensure that the major costs that distinguish the sites are calculated and included. However, in CEAs of investments at the scale considered here, important differences in the outcome as well as unquantified costs and benefits often remain. Their existence does not undermine the validity of the analysis, but it is important to ensure they are clearly described and their relative importance is at least qualified.

We present major differences in two areas:

5.3.1 Differences related to operations

Accessibility to Jamaican Labour: CHEC has stated its interest in locating the port close to Kingston for the purpose of being accessible to qualified labour and providing a source of socio-economic benefit to Jamaica (van de Akker et al. 2013). Among the relevant factors to consider in assessing accessibility to each site are population centres nearby, distance to Kingston via existing roads, and length of road that would need to be constructed or improved to reach major roads from the port site.

Kingston Harbour itself excels in all of these criteria. Second best is Goat Islands, which is relatively close to Highway 2000, putting the population centres of Kingston, Spanish Town, May Pen, and Old Harbour within easy commuting distance. Macarry Bay is also within commuting distance of those population centres in addition to Mandeville, although it is not as close as the Goat Islands and requires greater effort in road improvement to access the highway. On the other hand, two accessibility-related factors add value to building at Macarry Bay. First, Mandeville has supplied much of the workforce of two alumina plants that have closed in recent years, such that unemployment of skilled industrial workers is high. Second, to the extent that air transportation links are needed, Vernam Field is close by and could in principle be developed for that purpose (Chin 2013). Bowden is a clear last according to these issues: the location near the eastern end of the island is not ideal in terms of proximity to major population centres, and it is linked to Kingston by a winding coastal road that has not had any major
improvements in recent years, with the exception of the last few kilometres between Bull Bay and Kingston.

Efficiency of design: The potential port layouts generated for this analysis are not sufficiently detailed to examine this issue in depth. However, it is reasonable to note that the optimum Macarry Bay option in which the port is built entirely on reclamation seems to offer an excellent option, with the transhipment port consisting of a single rectangular reclaimed peninsula with straight berthing faces on both sides providing an orthogonal layout for container movement. Because the causeways are short and over a sand stratum, they can be made wide enough to provide good continuity between the port and industrial estates. On the other hand, sand is especially susceptible to being moved by wave action: this would have to be considered in conjunction with the potential negative effects of maintenance dredging of the approach channel, particularly just after a hurricane. The Goat Islands port would likely be somewhat less efficient due to the need for a comparatively long causeway between the port and shore and possibly due to the quay alignment as well. The Kingston/Bowden option has a clear downside in that it requires dividing transhipment and industrial activity, although the extent to which this is a problem would need to be determined directly by CHEC and the Port Authority.

Adaptability: CHEC has highlighted the importance of both potential for future expansion and potential to accommodate larger vessels such as Chinamax. In terms of expansion, there is more relatively flat land at both Macarry Bay and the Goat Islands site. Farming is the principal use of this land in both cases, although further expansion around Goat Islands would likely also include dry forest areas and therefore have additional impacts on globally important wildlife habitat. By contrast, expanding in Kingston Harbour would be significantly more complex.

In terms of accommodating Chinamax vessels, the required 27 m draft would mean significant additional work at all sites. Kingston Harbour and Bowden would likely require the least. In Kingston, much of the existing East Channel is already deep enough for Chinamax vessels, while deep water just outside of Bowden Harbour results in a very short approach channel. In Macarry Bay, a very substantial additional amount of dredging would be required, although it is likely to be in sand. Deepening the channel into Portland Bight will also require a very substantial amount of additional dredging as neither the naturally available channel into Portland Bight nor existing shipping channels for the alumina industry are deep enough. The presence of hard limestone on and in the vicinity of Goat Islands means that there is a higher risk of encountering rock than in Macarry Bay.
5.3.2 Differences related to broader impact

Environmental impact and international reaction: Beyond the ecosystem service value potentially lost at each site, building on Goat Islands will clearly be the worst of the options in terms of possible negative domestic and international reaction. In addition to the wetlands damage valued above, a Goat Island port would damage a far greater area of coral reef and dry forest area than at any other site, putting at risk decades of work and one of the world’s great conservation success stories. Additionally, the site is the only one of the alternatives entirely within a national protected area (annex 1). Building in Macarry Bay is likely to be seen as acceptable given that it is environmentally far better than the current alternative, in particular if the optimized layout or a similar design consciously avoids an area of vital crocodile habitat is used. Building in either Kingston or Bowden would presumably be seen in a particularly positive light given the small area of natural habitat that would be destroyed and the clear development objectives being served.

Jamaicans have already shown a significant negative reaction to the Goat Island site. Predicting the likelihood of meaningful international response to building on Goat Island is harder. Considering tourists, while Jamaica’s reputation and draw includes its natural beauty, further work would need to be done to assess the likelihood that tourists would change their choice of destination based on environmental concerns. It is clearer that building on Goat Islands would entail a significant foregone opportunity in terms of tourism potential: the South Coast Sustainable Development Study identifies the Goat Islands and Hellshire as priorities for sustainable tourism based on potential for day trips from Kingston, the location of Taino sites, and the potential for yachting and low key adventure hiking (Halcrow 1998).

We consider it possible that international aid agencies and development banks might also react negatively, for instance if their own previous investments in Jamaica are undermined, unwise major financial choices are made, or poor public procurement process is followed. The degree to which a negative reaction would translate into economic losses for Jamaica is hard to predict, with the exception of a likely reduction in international biodiversity conservation investment. A more in depth comparison of potential environmental impacts at all sites considered is provided in Annex 5.

Impact on the local economy. It is difficult to predict the extent to which jobs created by the port will go to local residents at the port site, although serious doubts have recently been raised (Tufton et al. 2014; also see Witter 2013). To the extent that numerous local people do not find employment at the port, the area where the greatest economic losses would be caused is Goat Island, due to the large number of fishing families based in Old Harbour. On the flip side, the Kingston/Bowden site offers several potential ben-
efits. Necessary widening and possible deepening of the existing channel in Kingston Harbour could add significant benefit to other activities in the Harbour. In the case of Bowden, if the port project (or even as an additional, complementary contract) included improvement of the road to Kingston, significant additional benefit would be provided in the form of improved connectivity between Kingston and centres of population to the east and Port Antonio to the north.
Conclusions
This document assessed the possibility that there are cost-effective alternatives to building the proposed port associated industrial area on and around Goat Islands. We find strong evidence to justify serious consideration of at least one or possibly both sites.

Building at Macarry Bay appears to compare favourably to Goat Islands from a construction cost standpoint. Our high-cost scenario at Macarry Bay costs over $200 million less to construct than an optimistic, low-cost scenario at Goat Islands. These differences are driven in large part by the necessity to excavate and fill areas requiring more than 80 million m$^3$ of material including rock in the Goat Islands case, versus a Macarry Bay design that relies on less expensive dredging of sand and using it to reclaim land nearby. Furthermore, due to storm surge, locally generated waves, and an orientation that permits Trade Wind waves to enter the Bight, Goat Islands faces a more challenging wave environment than might be assumed based on location, while Macarry Bay is less challenging than would initially be assumed due to the prevailing direction of Trade Wind waves and a long, shallow foreshore that significantly reduces deep sea wave heights before they reach the port.

Quantified environmental damage to wetlands from building on Goat Islands is more than three times higher than that from building in Macarry Bay. Considering non-quantified characteristics, Maccary Bay is superior to Goat Islands except with respect to its access to the road network and Kingston, and likely in terms of the need for maintenance dredging of the approach channel, especially after hurricanes. Macarry Bay appears better in all other characteristics considered, including environmental impact to important species and habitats, efficiency of transhipment port layout, ability to expand activities on land and deepen the access channel, likely international reaction, and local economic impact.

Building at Kingston/Bowden presents an obvious challenge. However, the combination of sites may offer an opportunity to maximize benefit for Jamaicans from the port development, helping to further Kingston Harbour’s competitive advantage in transhipment and at the same time significantly improving road access for thousands of people. If these gains are deemed potentially worth some complication in design, it would be a relatively simple matter to further investigate whether dividing the proposed facility between Kingston and Bowden is cost-competitive.

In conclusion, we find significant likelihood that there is at least one option for building a transhipment port and logistics hub at lower cost and with less environmental damage than building at the currently proposed Goat Island site. Investigating alternative sites including Macarry Bay transparently and in due detail is clearly in the best interest of Jamaicans. If findings are confirmed, there will be no need to sacrifice a world class conservation site to build a world class port.
References


C-CAM and JET (JAMAICA ENVIRONMENT TRUST) (2013). “The Goat Islands/Portland Bight Protected Area: The Proposed Site for a Transshipment Port in Jamaica”.


Economic comparison of alternatives to building a port on Goat islands:

Does Jamaica need to sacrifice a world class conservation site in order to build a world class port?


JET (2013). Port Authority Refuses to Disclose the MOU Regarding the Logistics Hub and Port Development. 29/10/2013. Available at http://savegoatislands.org/press/


THE ECONOMIST (2014). “Caribbean ports and the Panama canal; Ripple effects”. 28/2/2014


Economic comparison of alternatives to building a port on Goat islands:

| Does Jamaica need to sacrifice a world class conservation site in order to build a world class port? | 61 | 887 |
Annex 1: Legal protection and international designations of PBPA. Source: C-CAM and Jet (2013)

<table>
<thead>
<tr>
<th>Year Declared</th>
<th>Type of Protected Area</th>
<th>Legal Instrument</th>
<th>Names of Areas</th>
<th>Reasons for Protected Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Protected Area</td>
<td>Natural Resources Conservation Authority Act (1991) (Section 5)</td>
<td>Portland Bight Protected Area</td>
<td>Protection of ecosystem services and biological diversity.</td>
</tr>
<tr>
<td>1996</td>
<td>(2) Forest Reserves</td>
<td>Forest Act</td>
<td>Peake Bay and Hellshire</td>
<td>Conservation of forests, soil, and water resources, provision of parks and other recreational amenities, protection and conservation of endemic flora and fauna.</td>
</tr>
<tr>
<td>Various years (1994-2004)</td>
<td>(6) Game Sanctuaries</td>
<td>Wildlife Protection Act</td>
<td>Little Goat Island, Great Goat Island, Amity Hall, West Harbour-Peake Bay, Cabanta Point, Long Island</td>
<td>Protection of wildlife from hunting, the taking of eggs and the introduction of predators such as dogs.</td>
</tr>
<tr>
<td>2009</td>
<td>(3) Fish Sanctuaries</td>
<td>Fishing Industry Act</td>
<td>Three Bay, Gallion Harbour, Salt Harbour</td>
<td>Protection of fish spawning and nursery areas from fishing, in order to allow fish populations to recover.</td>
</tr>
</tbody>
</table>

Sources: (NEPA 2011) (GOI 1991) (Forestry Department 2013)

Annex 2: Wave Properties

Waves reaching locations at the shore can be of two types, both generated by winds. Waves produced by high winds over deep water can approach from seaward, and winds can generate waves locally around a site. For example at the Goat Islands site in Portland Bight, waves can come from seaward through the gaps between the reefs (locally known as cays) and waves can be generated by local winds blowing across the Bight.

Waves are quantified with reference to their height and period. The wave height is the vertical distance between the crest of the wave and its proceeding trough. The wave period is the time taken for successive crests to pass a fixed point. Another wave parameter is wave length which is the horizontal distance between successive crests and depends on the wave period and the depth of water. Longer period waves in deeper water have longer wave lengths.
In very deep water where the depth is more than half wave length of the waves, the waves are unaffected by the seabed over which they travel. On moving into shallower water the waves are transformed in several ways which can affect both the wave height and the wave direction. As waves travel over shallowing water inshore the deep water depth limit are affected by five processes which are: Refraction, Shoaling, Friction Loss, Breaking, and Diffraction.

Refraction
The speed at which waves travel towards the shore varies with the depth of water. They are slower in shallower water and faster in deep water. When a wave crest is at an angle to the depth contours its deeper end moves more quickly than its shallower end, so it turns to become more parallel with the contours. As it turns the wave heights tend to fall. The figure at the end of this annex shows the effects of refraction of Hurricane waves travelling towards Bowden. The red lines show the directions in which the waves are travelling. The wave crests are locally at right angles to the lines which are called wave rays or wave tracks.

Shoaling
As water depths decrease the wave motions below the water surface are squashed and energy is transferred to the wave height, which typically increase (the process is much more complex than this and the wave height actually falls at some offshore depths). Often in coastal studies shoaling is a dominant factor increasing wave heights well above their height in deep water. For water which is deeper than 0.06 of the wave length of the waves in deep water there is hardly any effect. For depths less than this, the wave height increases markedly with decreasing depth until limited by wave breaking. The period does not change. For the extreme hurricane waves shoaling has little effect until the depth decreases to 30m.

Sea Bed Friction
Wave height reduction due to friction at the seabed is often ignored. It is only important where there are extensive areas to seaward where water depths are shallow compared with the deep water wave. The width of the foreshore between the deep water wave limit and the coast line provides an indication of the influence that friction at the seabed plays on the heights of waves. The wider the width to seaward of the coast the greater the effect of friction and the lower the wave height reaching the coast or cays.

Breaking
As depths decrease the wave height may increase and the wave length decreases. Consequentially the wave profile becomes steeper and more pointed and due to instability the waves break. As a guide waves break when the wave height is 0.78 of the water depth. Waves with heights more than the threshold break and lose much of their energy in turbulence. Waves with heights less than the threshold do not break and continue towards the shore. Again their periods remain largely unchanged. The highest waves after breaking are those which are just lower than 0.78 of the depth. These are known as depth limited waves.
Diffraction
When waves squeeze through a narrow entrance they spread throughout the area beyond the entrance. The heights of the waves tend to fall as they radiate from the entrance. The figure at the end of this annex shows the effects of diffraction in the Port Morant inlet at Bowden. The numbers show how wave heights are reduced from the 5 m wave height nearing the entrance through the process of diffraction.

Locally Generated Waves
Winds produce local waves over the areas of water in which the sites are situated. The heights of the waves increase with the speed of the wind and the length of water over which the wind blows. For example, higher waves are developed over the broader expanse of Portland Bight where the Goat Islands site is situated than in Port Morant where the Bowden site is.

Figure: Refraction and diffraction of hurricane Waves at Bowden Harbour.
Annex 3: Per unit costs considered

<table>
<thead>
<tr>
<th>Cost Estimations - NFL</th>
<th>USD $^*</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Dredging/m$^2$ Sand or alluvium</td>
<td>70</td>
<td>For the dredging and disposal of material</td>
</tr>
<tr>
<td>2 Dredging/m$^2$ Soft rock</td>
<td>80</td>
<td>e.g. Sandstone (no blasting assumed)</td>
</tr>
<tr>
<td>3 Dredging/m$^2$ Hard rock</td>
<td>150</td>
<td>e.g. Limestone (blasting required)</td>
</tr>
<tr>
<td>4 Reclamation/m$^2$ - hydraulic fill</td>
<td>7</td>
<td>For the dredging and use of soft (e.g. sand) material from an alternative site</td>
</tr>
<tr>
<td>5 Reclamation/m$^2$- hyd fill already dredged</td>
<td>2</td>
<td>Extra over cost for the use of already dredged material (e.g. sand/mud) for reclamation</td>
</tr>
<tr>
<td>6 Reclamation/m$^2$ - imported fill</td>
<td>31</td>
<td>e.g. Mud being dredged (fill to be imported by trucking)</td>
</tr>
<tr>
<td>7 Reclamation/m$^2$ - Goat Island fill</td>
<td>32</td>
<td>Quarryed from island itself, not imported</td>
</tr>
<tr>
<td>8 Reclamation/m$^2$ - ground improvement</td>
<td>80</td>
<td>e.g. Mud substrate/fill (Consolidation to be allowed for/mitigated by ground improvement)</td>
</tr>
<tr>
<td>9 Breakwater/m$^2$ - Large stones Kingston</td>
<td>83</td>
<td>Limestone from local quarries</td>
</tr>
<tr>
<td>10 Breakwater/m$^2$ - Large stones Maccary</td>
<td>563</td>
<td>Limestone from local quarries</td>
</tr>
<tr>
<td>11 Breakwater/m$^2$ - Large stones Goat Is</td>
<td>73</td>
<td>Limestone quarried on Goat Island</td>
</tr>
<tr>
<td>12 Breakwater/m$^2$ - Small stones Kingston</td>
<td>70</td>
<td>Limestone from local quarries</td>
</tr>
<tr>
<td>13 Breakwater/m$^2$ - Small stones Maccary</td>
<td>55</td>
<td>Limestone from local quarries</td>
</tr>
<tr>
<td>14 Breakwater/m$^2$ - Small stones Goat Is</td>
<td>71</td>
<td>Limestone quarried on Goat Island</td>
</tr>
<tr>
<td>15 Breakwater/m$^2$ - Core Kingston</td>
<td>60</td>
<td>Limestone from local quarries</td>
</tr>
<tr>
<td>16 Breakwater/m$^2$ - Core Maccary</td>
<td>49</td>
<td>Limestone from local quarries</td>
</tr>
<tr>
<td>17 Breakwater/m$^2$ - Core Goat Is</td>
<td>48</td>
<td>Limestone quarried on Goat Island</td>
</tr>
<tr>
<td>18 Excavation/m$^2$ Soil</td>
<td>6</td>
<td>Soft material e.g. soil/sand/mud</td>
</tr>
<tr>
<td>19 Excavation/m$^2$ Soft rock (Gl or Bovden)</td>
<td>12</td>
<td>e.g. Sandstone (assumed rippled, no blasting required)</td>
</tr>
<tr>
<td>20 Excavation/m$^2$ Hard rock (Goat Is)</td>
<td>18</td>
<td>Taken as ex-quarry rate for boulders</td>
</tr>
</tbody>
</table>

* Per m$^2$ (volume) or m$^2$ (area)
Annex 4: Parameters and values used at each site to apply the function transfer model for wetland values specified by Ghermaldi et al. (2010)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>PBPA</th>
<th>Macarry</th>
<th>Goat Islands</th>
<th>Kingston</th>
<th>Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of publication</td>
<td>-0.041</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Marginal</td>
<td>0.713</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HABITAT TYPES</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Estuarine</td>
<td>0.27</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Marine</td>
<td>0.754</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Riverine</td>
<td>0.38</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Palustrine</td>
<td>-0.48</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lacustrine</td>
<td>0.332</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Human-made</td>
<td>1.023</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| Wetland size (ha) *              | -0.234      | 8200   | 824     | 4,643        | 399      | 1,832  |

<table>
<thead>
<tr>
<th>WHICH ES ARE PRESENT</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm control/flood buffering</td>
<td>0.432</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Surface and groundwater supply</td>
<td>-0.099</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Water quality improvement</td>
<td>0.727</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Commercial fishing and hunting</td>
<td>0.266</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Recreational hunting</td>
<td>-1.007</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Recreational fishing</td>
<td>-0.082</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Harvesting of natural materials</td>
<td>-0.202</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fuel wood</td>
<td>-0.968</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nonconsumptive recreation</td>
<td>0.67</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Amenity and aesthetics</td>
<td>0.529</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Natural habitat, biodiversity</td>
<td>1.143</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRESSURE</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium-low human pressure</td>
<td>0.572</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medium-high human pressure</td>
<td>1.243</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>High human pressure</td>
<td>1.992</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTEXT</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita *</td>
<td>0.358</td>
<td>8,890</td>
<td>8,890</td>
<td>8,890</td>
<td>8,890</td>
<td>8,890</td>
</tr>
<tr>
<td>Population in 50 km radius, 1000s *</td>
<td>0.399</td>
<td>1,541</td>
<td>879</td>
<td>1,541</td>
<td>1,493</td>
<td>343</td>
</tr>
<tr>
<td>Wetland area in 50 km radius, ha *</td>
<td>-0.058</td>
<td>8,200</td>
<td>7,865</td>
<td>8,087</td>
<td>6,449</td>
<td>1,954</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.681</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* Ln transformed
Annex 5: Summary comparison of some potential environmental impacts of port and logistics hub at the four sites  *(Contributed by Ann Sutton)*

The following is a brief, qualitative, preliminary comparison of some of the potential short-term and long-term environmental impacts of the construction and operation of the proposed transshipment port and logistics hub at the four sites that were assessed in the main report. As in the main report, only the relative impacts are considered here. Impacts that are likely to be similar across all the sites are not included in this discussion. The comparison is based on the designs provided by Niras-Fraenkel (shown overlaid on maps of benthic habitats and important locations for endemic species in Figures 1-4 at the end of this annex).

The comparison shows that the environmental impacts of developing the port and logistics hub on Goat Islands are likely to be much more extensive, severe and harder to mitigate than at the other sites.

**Ecosystems/habitats**

a. Port development

All the sites include vulnerable and ecologically important habitats. However the Goat Islands are located in a relatively undisturbed area, of outstanding ecological importance because of its contribution to the local economy and Jamaica’s global obligations to protect its biodiversity. Loss, infilling and disturbance to mangroves and dry forest are of particular importance at Goat Islands (Table 1). In this area, impacts on marine productivity, wildlife habitat, scenic areas, coastal protection and impacts of storm surge could be compounded by changes in drainage and water circulation patterns.

Table 1: Qualitative comparison of relative extents of major ecosystems likely to be destroyed by port development at the 4 sites

<table>
<thead>
<tr>
<th>Ecosystems/habitats</th>
<th>Goat Islands</th>
<th>Macarry Bay</th>
<th>Kingston Harbour</th>
<th>Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Old growth dry forests</td>
<td>Medium</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Inshore lagoons</td>
<td>Medium</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Rivers and streams</td>
<td>Medium</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Coral reefs</td>
<td>Medium</td>
<td>None</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Mud, rubble and sandy bottoms</td>
<td>Medium to high depending on design</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Seagrass (including patchy seagrass and corals)</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Sandy beach</td>
<td>Medium</td>
<td>Medium</td>
<td>None</td>
<td>Medium</td>
</tr>
<tr>
<td>Agricultural land</td>
<td>High</td>
<td>High</td>
<td>None</td>
<td>Medium</td>
</tr>
</tbody>
</table>
The impacts of dredging and operation of the expanded shipping channel include sedimentation (and disposal of spoil), groundings, spills and introduction of invasive alien species. The Goat Islands site has the highest potential for damage to surrounding areas down-current because the shipping channel runs through or close to several other vulnerable habitats. The risk of grounding (with consequent damage to benthic habitats and risks of spills) is highest in Kingston Harbour and Goat Islands.

b. Logistics hub

The logistics hub will be constructed on adjacent lands, which for expediency are likely to be lands that are already owned by the government. Table 2 compares the areas of natural habitats that are likely to be damaged or destroyed. Kingston Harbour and Bowden are excluded from this table.

Table 2: Qualitative comparison of major ecosystems likely to be destroyed by associated logistics hub development at Goat Islands and Macarry Bay

<table>
<thead>
<tr>
<th>Ecosystem</th>
<th>Goat Islands</th>
<th>Macarry Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>High</td>
<td>None</td>
</tr>
<tr>
<td>Old growth dry forests</td>
<td>High</td>
<td>None</td>
</tr>
<tr>
<td>Inshore lagoons</td>
<td>Low-High (depending on hub location)</td>
<td>None</td>
</tr>
<tr>
<td>Rivers and streams</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Coral reefs</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Mud, rubble and sandy bottoms</td>
<td>Medium</td>
<td>None</td>
</tr>
<tr>
<td>Seagrass</td>
<td>Low</td>
<td>None</td>
</tr>
<tr>
<td>Sandy beach</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Agricultural land</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

Threatened and endangered species

Hellshire Hills are of outstanding global importance for threatened and endangered species. Destruction of Great Goat Island and development of the logistics hub on or near the Hellshire Hills will have major impacts on these species. The proposed development of the Goat Island port appears likely to include removal of all or part of the Great Goat Island, which is currently a dry limestone forest; functionally part of the Hellshire Hills. It has long been identified as the only possible location for a predator-free site for the re-establishment of wild populations of Jamaican Iguanas and other endemic species. The locations suggested by the Government of Jamaica for the logistics hub lie on the northwest of the Hellshire Hills. These include the scenic and ecologically important Salt Island Lagoon as well as the Devil’s Race area.

Any increase in disturbance and access to western Hellshire potentially threatens the
Jamaican Iguana with extinction in the wild (B. Wilson, pers. comm.). It would also threaten important populations of the endemic Jamaican Hutia (Geocapromys brownii) and several lizards, snakes and a frog that are also endemic only to the PBPA i.e. they are not found anywhere else in the world.

These and other threatened species that will be more affected by development of the port at Goat Islands than at other sites are summarized in Table 3. Manatees will be particularly badly affected by disturbances in Galleon Harbour, which is one of the few locations where they are regularly seen. The impact on sea turtles will also be severe, partly because of changes to feeding habitats, and partly because of the impacts of increased light pollution over an extended area, which could reduce survival of hatchlings at many sites. Portland Bight is currently one of the most important sites in Jamaica for nesting Hawksbill Turtles.

It is important to note that ecosystems and wildlife habitats in the Goat Islands area are highly irreplaceable, as no equivalent areas exist anywhere in the island, and options for habitat restoration are very limited.

Impacts at the other sites are far less severe (Table 3).

Table 3: Relative importance of sites for globally threatened and endemic animal species

<table>
<thead>
<tr>
<th>Ecosystem services</th>
<th>Goat Islands and Hellshire Hills</th>
<th>Macarry Bay</th>
<th>Kingston Harbour</th>
<th>Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamaican Iguana</td>
<td>High</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>American Crocodile</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
<td>?</td>
</tr>
<tr>
<td>Other threatened species (frogs, lizards, plants)</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Jamaican Hutia</td>
<td>High</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Indian Manatee</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Sea turtles</td>
<td>Moderate</td>
<td>Moderate</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>West Indian Whistling Duck</td>
<td>Moderate</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
</tbody>
</table>

Ecosystem services

The impact on ecosystem services of port development at Goat Islands will also be higher than for other sites (Table 4). This is due, among other factors, to the much greater loss and disturbance of natural ecosystems (see Table 1). The loss of mangroves at Goat Islands is of particular importance. Already, suggestions are being made that the Galleon Harbour Special Fisheries Management Area should be undeclared. However, it seems unlikely that there will be any major changes there (Figure 1). Other economically important wild species that will be disproportionately affected by port development...
development in the Goat Islands area include game birds (columbids) and crabs. Two gun clubs currently have shooting rights in western Hellshire. More than 1,000 people reportedly harvest land crabs in western Hellshire, during the season. However, port construction at Macarry Bay potentially disrupts long-shore sediment transport and natural replenishment of beaches.

Table 4: Comparison of risk to selected ecosystem services

<table>
<thead>
<tr>
<th></th>
<th>Goat Islands</th>
<th>Macarry Bay</th>
<th>Kingston Harbour</th>
<th>Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish nurseries</td>
<td>High</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Coastal protection</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Carbon sequestration</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Food supply</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Local climate (likely reduction of rainfall in upper watershed)</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Materials and medicines</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Game bird habitat</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Migratory bird habitat</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Long-shore sediment transport</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

Potential damage from pollution

Pollution risks arise in all phases of port development and operation. They include temporary and permanent point sources of air, water and ground pollution as well as pollution events. Table 5 compares the vulnerability of adjacent ecosystems and human settlement to pollution that might arise.

Table 5: Comparison of impacts from pollution

<table>
<thead>
<tr>
<th></th>
<th>Goat Islands</th>
<th>Macarry Bay</th>
<th>Kingston Harbour</th>
<th>Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pollution (risks to adjacent human populations)</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Damage to adjacent ecosystems down current</td>
<td>High</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Invasive species</td>
<td>High</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Landscape, viewsheds and heritage

Landscape is part of our heritage and an essential component of our tourism product. Development at any of the sites will impact landscape and viewsheds, but the impact of Goat Islands development will be much greater because it will significantly alter a landscape of great natural beauty and be visible across the bight and from the surrounding hills as far as Newcastle. Development in Kingston Harbour would be visible but less impactful because the surroundings are already developed. Development at Goat Islands would involve destruction of major Taino, English and WW2 heritage sites.

Table 6: Comparison of impacts on landscape and heritage

<table>
<thead>
<tr>
<th></th>
<th>Goat Islands</th>
<th>Macarry Bay</th>
<th>Kingston Harbour</th>
<th>Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact on landscape of outstanding natural beauty</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Impact on viewshed</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Severity of visual impact</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Risk of destruction of heritage sites</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Loss of Options

Development of Goat Islands has the highest impact in loss of options, particularly due to impacts on artisanal fisheries, and of sites that have potential for tourism (Table 7). The industrialization of Goat Islands will negatively impact the potential for growth of nature-based and heritage tourism in the whole of the PBPA, because of the loss of one of the PBPA’s most important sites, the increased risk of pollution, changes in accessibility, and adverse perceptions of the area.

Table 7: Comparison of some losses in options

<table>
<thead>
<tr>
<th></th>
<th>Goat Islands</th>
<th>Macarry Bay</th>
<th>Kingston Harbour</th>
<th>Bowden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature-based Tourism</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Heritage tourism</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Fishing and related livelihoods</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Agriculture</td>
<td>High</td>
<td>High</td>
<td>None</td>
<td>High</td>
</tr>
<tr>
<td>Hunting</td>
<td>High</td>
<td>Low</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Blue carbon</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>
Economic comparison of alternatives to building a port on Goat Islands:
Does Jamaica need to sacrifice a world class conservation site in order to build a world class port?
Figure 3: Bowden: Port development, habitats and threatened species

Source: Wallace (2014)

Figure 4: Kingston Harbour: Port development, habitats and threatened species

Source: Wallace (2014)
Economic comparison of alternatives to building a port on Goat Islands:
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Front cover photo: Paulette Coley, a resident of Old Harbour Bay, holds up the day’s catch. © Robin Moore

Back cover photo: Wetlands and sea complex of Hellshire Hills. © Robin Moore
Jamaica: A Case Study in Debt Sustainability and Sustainable Development

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Abstract. Jamaica’s debt burden has pitched economic development against environmental protection in the country’s quest for sustainable development. Anemic economic growth has prompted the government to institute revenue and expenditure reforms and implement two debt exchanges that have stabilized the economy. However, the debt burden has limited government’s fiscal space to engineer a much needed capital formation with the most promising prospect for any major foreign direct investment coming from a proposed US$1.5 billion investment to build a World Class Logistics Hub in a protected area. Thus, the debt situation has led the government to prioritize “what is to be developed” at the expense of “what is to be sustained” as Jamaica channels its sustainable development course.

Keywords: debt sustainability, sustainable development, Jamaica, environmental protection, public debt.
Introduction
The General Assembly of the United Nations (UN) designated the year 2014 as the International Year of Small Island Developing States (SIDS) to recognize the contributions of SIDS in world affairs. This commemoration provides an opportunity to highlight the challenges faced by SIDS and harness resource to tackle them. In the light of this, the Third International Conference on Small Island Developing States (SIDS Conference) is scheduled to take place in Samoa in September 2014. The theme of the SIDS Conference, “The sustainable development of small island developing States through genuine and durable partnerships,” sets a clear tone for the desire to engage stakeholders in the sustainable development process of SIDS. In fact, since the Barbados Programme of Action (BPoA) (United Nations, 1994), the international community has made special provision to accommodate the distinctive characteristics of and provide support for SIDS in their sustainable development efforts. However, one area of challenge that continues to threaten sustainable development in SIDS is debt sustainability (UNDP, 2010a; UNDESA, 2014). Although the international community has instituted programs to help alleviate debt burden for the poorest countries through the Heavily Indebted Poor Countries (HIPC) Initiative, the enhanced HIPC and the Multilateral Debt Relief Initiative (MDRI), most SIDS identified as having or at the risk of falling into a public debt burden are not poor enough or indebted enough to benefit from these initiatives despite their economic vulnerability (UNDP, 2010a). The quest to attain sustainable development within an economic environment characterized by unsustainable debt levels has thus become a commonplace in many SIDS.

Debt sustainability is described as a situation in which the borrower is able to continue servicing their debt without a large future correction in the balance of income and expenditure (IMF, 2004). However, several definitions have been proffered for sustainable development over the years. Kates, Parris and Leiserowitz (2005) presented a comprehensive review of the concept of sustainable development. Among the popular definitions cited in the literature are those given by the United States (U.S.) National Research Council and the 2002 World Summit on
Sustainable Development. The U.S. National Research Council identified two components of sustainable development: “What is to be sustained” and “What is to be developed.” In this framework, the sustainability arm includes nature (earth, biodiversity and ecosystems), life support (ecosystem services, resources, and the environment), and community (cultures, groups and places). The development arm encompasses people (child survival, life expectancy, education, equity, and equal opportunities), economy (wealth, productive sectors and consumption), and society (institutions, social capital, states and regions). In between these arms are the linkages that ensure that what is to be sustained aligns with what is to be developed and vice versa within an identified timeframe. This framework is not at variance with the Johannesburg Declaration of the 2002 World Summit on Sustainable Development that introduced the concept of three pillars of sustainable development — economic development, social development and environmental protection (United Nations, 2002). Elements of both the sustainability and development arms fit under one or more of the three pillars of sustainable development. The U.S. National Research Council’s definition, however, offers a good analytical framework for examining the debt sustainability-sustainable development nexus in SIDS.

Bakari (2014) noted the inherent conflict between economic growth and environmental protection in the sustainable development concept. For any nation under a debt burden, this conflict could be more contentious. This is even more so for SIDS because of their small sizes and dependence on foreign markets. Faced with huge and growing public debts, highly indebted SIDS have focused on strategies to grow their economy by prioritizing the development arm over the sustainability arm. At the extreme, the sustainability arm is even sacrificed in an attempt to capitalize on emerging opportunities that could lead to economic development. This conflict in the drive for sustainable development is better elucidated using a case study and Jamaica provides a perfect case for such analysis. With a debt to GDP ratio of 146%, Jamaica is currently under a heavy public debt burden. During the 2000s, annual debt servicing as a percentage of government
revenues exceeded 112% on average. In 2009, interest payment alone accounted for 65% of central government tax revenues (UNDP, 2010b). Given such a situation in which the government was spending more on debt obligations that it was earning yearly, Jamaica’s public debt situation was unsustainable. Meanwhile, the Government of Jamaica (GOJ) embarked on a number of initiatives to rescue the dire fiscal situation the nation was facing in an attempt to stabilize and grow the economy. However, while these initiatives could result in economic growth and development, they have repercussions on social development and environmental protection. In essence, they potentially could pitch the development arm of sustainable development against the sustainability arm.

This article explores the debt sustainability-sustainable development nexus using Jamaica as a case study. Our aim is to expound on how Jamaica, a SIDS country with public debt burden, is constantly being pressured to prioritize growth over sustainability as a result of the public debt burden. With modest successes already recorded by the GOJ in stabilizing the economy, other SIDS in similar situation may opt to follow the Jamaica example, although the implications for sustainable development are not particularly promising. These implications need to be highlighted more in public discussions and policy debates than they currently are. This paper, it is hoped, will make a meaningful contribution to inform such discussions.

Following this introduction, a brief background information on Jamaica is presented. This is followed by a discussion of the country’s economic growth and public debt experience. Next, the challenges of sustainable development presented by the debt situation are highlighted. The paper ends with the main conclusion from this study and offers some cautionary notes.

**Country Profile**

Jamaica is an upper-middle income SIDS country with a land area of approximately 11,000 square kilometers (sq km) and a population of 2.7 million. The average life expectancy is 73 years (2011 estimate) and poverty headcount was 17.6% of the
population in 2010\textsuperscript{1}. More than two-thirds of the poor live in rural areas and children account for more than 40\% of the poor (PIOJ 2009). The GDP per capita amounted to US$5358 in 2012 while unemployment was 15.4\% in July 2013 (IMF, 2013). Jamaica is a typical SIDS with heavy reliance on tourism and primary products, mainly from mining and agriculture. Remittances have also grown to be an important source of household income and foreign exchange in the last two decades reaching US$2.123 billion in 2011 (UN-OHRLLS, 2013).

The Jamaica economy has been on a decline or at best experiencing weak growth. During the two decades preceding 2010, the International Monetary Fund (IMF) reported that the economy grew at an annual average of less than 2\% percent (IMF, 2010). In recent times, real GDP recorded negative growth between 2008 and 2010 and again between 2012 and 2013. Inflation, for most parts, is high reaching 16.8\% at the height of the food, fuel and financial crises in 2008 but dropped to a low of 6\% in 2011. There has been a persistent and sometimes rapid depreciation of the domestic currency. The daily exchange rate of the Jamaican dollar to the US dollar progressively rose from J$51.15\textsuperscript{=}\textdollar{}1 on January 1, 2003 to J$106.38\textsuperscript{=}\textdollar{}1 on December 31, 2013, representing a 108\% depreciation over an eleven-year period\textsuperscript{2}. Since the beginning of 2014, the local currency has further depreciated by another 5.5\% to J$112.20 as of June 30, 2014.

The situation has not always been like that for Jamaica. Following its independence from Great Britain in 1962, Jamaica enjoyed a robust and growing economy until it experienced its first external shock due to the 1973 oil crisis. This was followed by major political events in 1976 and 1980 that constituted internal shocks to the economy. Throughout the 1980s and the early years of the 1990s, Jamaica again experienced economic growth at the same time it adopted a more market-based economy that encouraged liberalization. With no adequate regulatory supervision, deregulation in the banking sector led to a domestic financial crisis

\textsuperscript{1}World Bank’s World Development Indicators country data.
\textsuperscript{2}From Bank of Jamaica Economic Data: http://www.boj.org.jm/statistics/econdata/stats_list.php?type=9#
during the mid- to late-1990s in which a number of financial institutions failed or were failing. The government assumed management of these failing banks and in the process guaranteed depositors’ monies (CaPRI, 2008). This would come to be the turning point in Jamaica’s public debt story. Meanwhile, as the government struggled to manage the enormous debt assumed from the failed banks, an external shock hit with the September 2001 attack in the United States that adversely impacted on tourist arrivals. This was followed by the global food, fuel and financial crises of 2007/2008. In between these internal and external shocks experienced by Jamaica, the country was hit by a number of natural disasters, arising mainly from hurricanes. Among the major storms that affected Jamaica since 1980, Hurricane Gilbert which made land fall in September 1988 caused the greatest damage, valued at 26% of the GDP. As shown in Figure 1, the country did not experience significant storm activities in the 1990s but was hit by major storms during the 2000s at a higher frequency than ever experienced, including Hurricanes Charley and Ivan in 2004, Hurricane Dean in 2007, and Tropical Storm Nicole in 2010. Although the value of damages caused by these later storms was less than that caused by Hurricane Gilbert, the persistence and reoccurrence of these events make recovery more challenging and the costs prohibitive with no enough time allowed for reconstruction and recovery before another storm hits. These shocks put together have long-term implications for economic development. One of those implications is public debt accumulation as limited government revenues are devoted to urgent reconstruction efforts thus leaving the government with no option than to borrow to finance its budget.
Figure 1: Damage from Major Storm Events in Jamaica (1980-2010)

Source: Based on data from EM-DAT: The OFDA/CRED International Disaster Database and country data from World Bank’s World Development Indicators.

Economic Growth and the Public Debt Burden

Although Jamaica’s debt to GDP ratio of 146% is regarded high by any standard, this is not a historic high for the country. In fact, during the 1990/91 fiscal year, the debt to GDP ratio was as high as 194% (see Figure 2). However, with a growing economy, the ratio was reduced to below 100% within three years and had reached its lowest value of 71% in 1996/97 fiscal year. Ironically, it was at the time of best public debt performance that the government had to assume significant amount of new debts by guaranteeing depositors, pensioners and policyholders’ interests in failing financial institutions through the establishment of the Financial Sector Adjustment Company (FINSAC) in 1997 with a mandate to “restore stability to Jamaica's financial institutions.” As Figure 2 indicates, in 1995/96 prior to the financial crisis, domestic debt constituted only 30% of public debts. By 1996/97, it had risen to 43% and reached a peak of 61% in 2002/03. The domestic debt portion of the national debt has remained at above 50% since then.
71%, the nation’s public debt to GDP ratio reached a local peak of 124% during 2002/2003. The steady rise could be attributed to the adjustment process following FINSAC which was aggravated by the shock to the tourism sector post-2001. The debt to GDP ratio declined slowly between 2002/03 and 2006/07 before it returned to a path of increasing trend during 2007/2008, the same period when the food, fuel and financial crises began.

![Figure 2: Trends in Public Debt in Jamaica (1990/91-2012/13)](image)

**Source:** Debt Management Unit, Ministry of Finance and Planning, Government of Jamaica.

In the context of this debt burden, the expenditure pattern of the government is noteworthy. Figure 3 shows trends in major public expenditures and household final consumption expenditure. Immediately following independence, gross fixed capital formation as a proportion of GDP was high while government general consumption expenditure was low but rising. By 1969, gross fixed capital formation reached a peak of 32% of GDP and declined very rapidly to a historic low of 12% of GDP in 1977. Meanwhile, government general consumption expenditure kept
growing until it reached a peak of 22% of GDP in 1982. Understandably, due to the challenges faced by the country during the 1970s, the government had to reduce capital investment and increase expenditure on social services. With the turn in economic fortunes in the 1980s and early 1990s, government investment in capital stock rose again while consumption expenditure declined before the sequence of domestic and global shocks in the latter half of the 1990s and in the 2000s caused gross fixed capital formation to steeply decline again while consumption expenditure increased but at a slower pace than it did before. While household final consumption expenditure fluctuated between 60% and 70% of GDP from 1960 to 2000, it has been on an upward trend reaching 80% or more of GDP since 2005. This reflects the additional financial burden that households have had to bear as the government introduced new tax packages to generate revenues.

Figure 3: Trends in Economic Growth and National Expenditures in Jamaica (1960-2012)
Source: World Bank’s World Development Indicators.
As evident in the data, government’s investment in capital stock is pro-cyclical with economic growth while consumption expenditure in counter-cyclical. The counter-cyclical increase in government consumption expenditure tends to correlate with increase in public debt which suggests that public debts are used for consumptive rather than investment purposes. This presents an interesting background for analyzing the concept of increased public expenditure in times of recession to stimulate the economy. In Jamaica, there is tremendous pressure on the government to increase expenditure on social services in periods of economic downturn rather than reduce its expenditures. For example, the government introduced a no user-fee policy for children at public hospitals in May 2007 and expanded this to cover adults in April 2008. This has resulted in increases in public health expenditure as a percentage of GDP but with no credible evidence of improvement in the quality of health care delivery. Without the stream of revenues required to meet expenditures, the government was confronted with the hard choice of choosing between default on sovereign debt or borrowing, the latter of which adds to the debt burden. Although programmes and services such as the Programme of Advancement through Health and Education (PATH) – a safety net programme that has been implemented with great success – are geared to reduce poverty and help bridge the income inequality gap, they are financed with external debts that add to the current debt stock while the benefits accruing to them are in the medium to long-term. Prevalence of crime and violence in the country also meant that significant amount of public expenditure is devoted to policing and crime prevention activities which, although enhance social harmony and foster conducive business environment, by themselves are not growth promoting, compete for scare government revenue, and by their very nature cannot be delayed.

Faced with these conflicting demands and the undesirability of an austerity measure or the lack of willingness on the part of the government to institute an unpopular policy, the government was forced to engage in a unilateral debt restructuring of its domestic debt with the implementation of the Jamaica Debt Exchange (JDX) programme in February 2010. JDX allowed the government to
renegotiate the terms of its domestic debt stock to reduce interest payments and extend maturity (UNDP, 2010b; King and Kiddoe, 2010). In February 2013, encouraged by the success of JDX, pressed by the dire public debt situation or both, the government was once again back at the negotiating table for a second domestic debt restructuring in three years. The National Debt Exchange (NDX) had similar purpose as JDX and had been made a precondition for an IMF’s Extended Fund Facility (EFF) which the government badly needed to support its short fall in revenues. Jamaica subsequently secured a four-year Extended Arrangement under the EFF worth 615 million Special Drawing Rights (equivalent to US$948.1 million) from the IMF in May 2013.

The Sustainable Development Challenge

Jamaica’s economic growth has been constrained by both domestic and external shocks that have limited growth and put pressure on the country’s social fabric. In order not to jeopardize social development in an environment of lackluster economic growth, the government resorted to borrowing at an unsustainable level. This further limits growth potential due to the crowding out of private investment as a result of high government borrowing from the domestic market. Irrespective of the interim success achieved through the JDX and NDX, the IMF (2013)\(^3\) noted that Jamaica’s debt burden continues to exceed the benchmark for emerging market. The implication is that while the gross financing needs of the government have improved, the country is not out of peril yet in terms of debt sustainability.

Before the JDX, NDX and the EFF, the government implemented a number of monetary and fiscal policies and initiatives aimed at raising revenue and reducing expenditure. Notable among these are several tax packages and the Memorandum

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\(^3\) IMF’s stress testing at the baseline indicates that Jamaica’s debt burden continues to exceed the benchmark for emerging market. In particular, debt level was shown to exceed the benchmark for the baseline while gross financing needs exceeded the benchmark for real GDP growth, exchange rate, and contingent liability shocks but remained under the benchmark for the baseline and for primary balance and real interest rate shocks.
of Understanding\(^4\) (MOU) between GOJ and public sector workers. The tax packages saw increases in the general consumption tax (GCT) rate and the inclusion of several goods and services previously excluded in the GCT bracket. These and other revenue measures were aimed at improving the government’s fiscal balance. On the expenditure side, containment of the government’s wage bill was deemed paramount and the first MOU was reached between the GOJ and the Jamaica Confederation of Trade Unions in February 2004. The parties agreed to “a general policy” of public sector wage restraint between April 1, 2004 and March 31, 2006. The MOU also covered a commitment from the government to control inflation and balance the budget. While wages were frozen in accordance with the MOU, the targets for inflation were never attained nor the budget balanced at the end of the MOU. Notwithstanding, the MOU has been extended several times and the public sector still operates under one form of wage restrain or another.

The GOJ has been able to stabilize public sector wages and salaries at about 11% of GDP during 2008/09 and 2012/13, largely due to the MOUs. In contrast, despite the many tax packages, revenue steadily declined during the same period, except in 2012/13. As the government continues to pursue revenue generating measures that include tax and public sector reforms, public sector workers find themselves on the receiving end. With wage freeze in place, inflation and exchange rate depreciation averaging 11% and 4%, respectively, between 2002 and 2010 (IMF, 2013), public sector employees earn less today in real terms than they earned prior to the first MOU, even with ten years of experience on the job. This erosion of purchasing power has implications for the standard of living and quality of life of many households, especially the middle/working class. This has meant that many persons who previously had no need for state assistance had to seek for such through available social programmes such as PATH.

Rising poverty level, high unemployment rate and high crime rate have posed challenges for social development but the government, within it tight fiscal space, is addressing these challenges and has recorded some progress in crime fighting and

poverty reduction. The GOJ is also at the forefront of environmental protection and disaster management and risk reduction in the Caribbean region. In fact, Jamaica was the first country to upgrade Climate Change to a ministerial portfolio in January 2012. Not surprising, Jamaica was rated as being on track to ensuring environmental sustainability in the latest review of the country’s progress towards the Millennium Development Goals (MDGs). However, faced with the challenge of growing the economy under a heavy debt burden, the government has always considered its options in relation to the country’s natural resources and the tipping point may have been reached.

Over the last decade, there has been an increasing tussle between natural resources exploitation and preservation in Jamaica. Jamaica is home to the Cockpit Country, an area with rich cultural history and home to many endemic species of plants and animals. It has been touted as a candidate to become a World Heritage Site. The Cockpit Country is also rich in bauxite deposit and since 2006 there has been ongoing debate on whether to allow bauxite mining in the Cockpit County in expectation that it will generate the much needed foreign exchange for Jamaica, provide employment opportunities and boost government revenues from taxes. So far, the government has resisted granting such licenses. More recently though, the government announced the plan to build a World Class Logistics Hub that will lead to economic growth by making Jamaica a major transshipment port. However, Goat Islands, the site identified to be the best suited for the logistics hub, is located in the Portland Bight Protected Area (PBPA). The PBPA was created in 1999 with the purpose of protecting 1876 sq km of marine and terrestrial area that support endemic species of birds, iguanas, crocodiles, manatees, marine turtles, and fish. The mere fact that the government is seriously considering a major construction project in a protected area regardless of whether or not it materializes epitomizes the constant conflict between environmental protection and preservation. While the GOJ has been mostly progressive in matters relating to the environment, the unsustainable debt level appears to be a tipping point where the much needed

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5 See http://www.ccam.org.jm/pbpa/the-portland-bight-protected-area
economic growth may be pursued at the expense of environmental protection. In as much as it is widely expected that the logistics hub will be a major injection of Foreign Direct Investment in the local economy that will spur growth and generate 10,000 new jobs, there is the concern that the employment opportunities that will be created will mostly go to foreign experts because of the limited skills available locally and only low-paying jobs will be available to locals. In the logic of that argument, proponents do not see any long-term benefit in the logistics hub that will warrant sacrificing a protected area.

All in all, the situation in Jamaica shows that debt accumulation was either caused or heightened by shocks to the economy. With the economy performing below par, economic development has been hard to achieve and the government continues to borrow to sustain social development. As the debt situation became dire and unsustainable, environmental protection is gradually being relegated in the scheme of things, as priority is given to “what is to be developed” at the expense of “what is to be sustained.” Debt restructuring embarked upon by the government has produced some relief, but it has also allowed the government to borrow more, thus adding to the debt stock. With new debts being channeled to provide budgetary support or pay maturing debts rather than for targeted investment in capital stock, the prospect for any major thrust to the economy hinges on a proposed US$1.5 billion investment by the China Harbour Engineering Company (CHEC) to build a World Class Logistics Hub in Jamaica. The proposed mega investment, however, pitches the economic development pillar of sustainable development against the environmental protection pillar.

As Schmid (2014) indicated, government revenue at levels below the expected level contributes to budgetary underperformance which when considering the rigidity of expenditure leads to lower capital expenditure. Hence, “the consistent underexecution of capital expenditure can lead to a deterioration of public goods and infrastructure with adverse consequences for future growth” (Schmid, 2014, p.7). Given this scenario, injection of foreign investment funds is badly needed and the logistics hub idea provides a rare opportunity to stimulate the economy, not only
because of the foreign direct investment that it will bring but also the multiplier effect that it will have on several economic sectors. However, while the choice of the site for the proposed logistics hub was still being decided with opposing views from stakeholders on the desirability of the preferred location, CHEC revealed that, due to the high cost of electricity in Jamaica, it plans to generate its own electricity for the hub using coal, a cheaper but higher CO2-emitting source of energy. So not only is GOJ’s reputation for environmental protection threatened by signaling its willingness to open up a protected area for a major construction project, its efforts in abating CO2 emissions, enshrined in the National Development Plan—Vision 2030 Jamaica, will be seriously undermined with CHEC’s plan to use coal for electricity generation. As it stands, it does not appear though that the government has a choice in that decision if it really wants to attract the logistics hub investment.

Conclusion
This Jamaica case study is illustrative of what many SIDS face. Governments are constantly confronted with an “either/or” scenario and constrained to choose between economic growth and sustainable development when they are under a debt burden. Unable to engineer their own capital formation, these countries are rarely afforded the luxury to attain sustainable development because of the pressure of debt repayment and mounting recurrent expenditures. Given the overwhelming evidence of the vulnerability of SIDS and the impact of unsustainable debt level on their economies, they deserve a special programme of debt relief that is not conditioned by the country’s income level but rather defined by its economic and natural disaster risk vulnerabilities. Proposed innovative ideas for debt relief for SIDS that include debt conversion for climate change adaptation (UNDP, 2010) should be given a serious consideration by the international community. Had this been on the table, Jamaica would have a choice to keep the Portland Bight Protected Area in exchange for debt forgiveness. Such arrangements for debt conversion will not only relief Jamaica of its debt burden, it will free up government
revenue for investment in capital formation whilst ensuring that environmental protection does not suffer. This would allow Jamaica to develop “what is to be developed” while sustaining “what is to be sustained.”

Acknowledgment
The author is grateful to Sidonia McKenzie for her excellent research assistance in the preparation of this article. The author is solely responsible for any errors.

References


Annex 4: Terms of Reference—LHI Industry Analysis and Master Plan

The following Terms of Reference was drafted for the Jamaica Logistics Hub Initiative (LHI) Market Assessment and Master Plan. It was presented for comment to the Ministry of Industry, Investment, and Commerce in December 2014. The LHI Market Analysis and Master Plan will be funded by the World Bank’s Foundations for Competitiveness and Growth Project in Jamaica.

Terms of Reference
Jamaica Logistics Hub Initiative Industry Analysis and Master Plan

I. Background

Strategic Location. Jamaica is strategically positioned to benefit from the expansion of the Panama Canal, which is set to double its capacity by 2016. Jamaica is situated along the main shipping lane from the Panama Canal to the Caribbean and North American markets. This allows Jamaica to potentially function as a global logistics hub serving important ports and airports in South America, along the Gulf of Mexico, and East Coast of North America.

Jamaica’s unique location presents the following opportunities:

- Location of group logistics headquarters and major distribution centers for major transnational corporations (TNCs);
- Location of assembly (manufacturing) points for TNCs and their suppliers transporting goods along the major trade corridors within the western hemisphere;
- Provision of logistics services to facilitate efficient processing of increased volumes;
- Development of center(s) of excellence in logistics expertise.

Whether or not Jamaica can be a beneficiary of the Panama Canal expansion hinges on numerous factors, including increased trend of shipping lines to use the Suez Canal for shipments bound from Asia to the US East Coast, ageing port infrastructure in the Kingston Container Terminal, depth of the harbor to accommodate larger vessels, and competition from other regional ports vying for post-Panama transshipment business, including Cartagena (Colombia), Colón (Panama), Limón Moín (Costa Rica), Port of Spain (Trinidad and Tobago), Mariel (Cuba), Caucedo (Dominican Republic), Freeport (Bahamas), and others.

Logistics Hub Initiative. In order to enhance economic growth, the government of Jamaica (GoJ) is developing a “Logistics Hub Initiative” (LHI), a strategy for private sector-led growth, under which Jamaica will capitalize on its potential to become a transshipment and logistics hub. This initiative is spearheaded by the Ministry of Industry, Investment, and Commerce (MIIC), and involves development or expansion of several key infrastructure assets, including the port, airport, and ground transportation sectors. It also includes development of several special economic zones (SEZs), as a focus for private investment in the logistics industry and other economic sectors in Jamaica.
The scale and scope of the LHI will include—but not be limited to—rehabilitation of existing infrastructure, development of new large-scale infrastructure, industrial estates and SEZs, connecting road, rail, air transportation networks, upgrades of utilities such as power, water, and wastewater treatment, and enhancement of digital communications infrastructure along with associated commercial and residential facilities in Kingston and elsewhere in Jamaica.

**PPP Policy.** Many of Logistics Hub Initiative developments will be implemented under Jamaica’s new Public-Private Partnership (PPP) policy. The PPP and Privatization Unit of the Development Bank of Jamaica (DBJ) coordinates the PPP program.

**Strategic Approach.** The GOJ is adopting a multi-pronged approach to implementing the Logistics Hub Initiative. The first strategy involves several billion dollars of private investment in logistics infrastructure and other developments to capitalize on Jamaica’s geostrategic location along the main sea and air trade corridors of the Americas, and Kingston’s deep natural harbor. Leading global firms have already bid on some of the planned projects and other projects are in the pipeline. Secondly, the GOJ is establishing a new special economic zone (SEZ) regime to attract large globally integrated enterprises to benefit from Jamaica’s competitive position in the global logistics chain. Thirdly, the GOJ is facilitating the participation of small and medium-sized firms in export value chains through collaborations with globally integrated enterprises in various industry value chains. Finally, Jamaica also intends to transform itself into an International Financial Services Center to complement the LHI.

The GOJ intends to provide the necessary catalysts to facilitate the growth of value chains necessary to the functioning of a globally competitive logistics hub. This includes enhancements of soft infrastructure such as universities, research institutions, and knowledge-intensive business services. This approach will result in a concentration of interconnected firms that are linked by various complementarities and externalities. These mechanisms will enable firms to operate in an environment that allows them to achieve higher levels of efficiency and global competitiveness.

**Market Analysis.** For Jamaica to best benefit from a potential global logistics hub, it is necessary to rapidly and comprehensively understand how Jamaica is currently positioned as a location for different industry sectors key to a global logistics hub. A rigorous analysis is required to identify strengths, weaknesses, opportunities, and threats, and ascertain which improvements are required to transform Jamaica into a world-class logistics hub, and maximize a compelling value proposition to global and local investors. Such findings will help to guide and enrich the development of the Logistics Hub Initiative, and prioritize and optimize supporting programs and improvements.

**Master Plan.** In order to successfully build a global logistics hub, Jamaica requires a national logistics system development plan. This master plan will incorporate high-level land use planning to identify functional areas and land uses permitted within the designated Logistics Hub and surrounding areas. The configuration, sizing, and development phasing will be based on projected demand. Attention should be placed on locating logistics nodes to facilitate economic synergies and ensure compatibility with surrounding areas and available resources. A national-level spatial plan is required, which addresses issues such as housing and infrastructure provision, and the interface with urban development.
The GoJ intends to apply a portion of resources obtained from the World Bank to conduct a Market Analysis and develop a Master Plan for the establishment of the Logistics Hub.

II. Objectives

Jamaica’s Ministry of Industry, Investment and Commerce wishes to engage a world-class consulting firm to prepare a Market Analysis and Master Plan for the establishment of Jamaica as a global logistics hub. The Master Plan must emphasize the development of special economic zones, industrial parks, logistics facilities, sea port, and airport infrastructure development.

The primary objectives of the LHI Industry Analysis and Master Plan are to:

- Analyze recent trends in international trade and foreign direct investment in Jamaica and globally—particularly in countries that could potentially compete with Jamaica in attracting transshipment trade and investment;
- Identify sectors and activities with most potential for the Jamaica Logistics Hub;
- Develop Jamaica Logistics Hub value proposition and marketing messages;
- Act as a developmental roadmap for GOJ ministries, departments, and agencies, so that all are aligned with a single vision and direction that allows a comprehensive strategy for, orderly and coordinated development of the LHI;
- Balance conflicting land use needs, such as industry, commerce, housing, parks, wetlands, forest reserves, recreation, culture, entertainment, transport, security, and community facilities given the constraints of Jamaica’s limited land area;
- Consolidate the disparate development plans for key infrastructure such as ports, airports, SEZs, road, rail, power, water, waste water treatment, and telecommunications;
- Inform the integrated resource plan for the provision of utilities such as water, electricity, waste water treatment, and telecommunications;
- Encourage a diverse array of subsequent investment proposals for public and private projects in land, air, and marine infrastructure development, and power, water, waste water treatment, and telecommunications infrastructure;
- Facilitate the development of SEZs catering to enterprises that can warehouse, exhibit, pack, unpack, design, assemble, manufacture, repair, package, label, and transship all kinds of products, raw materials, components, packaging materials, containers and other commercial items for local consumption, exportation or re-exportation.
- Facilitate the development of hard and soft infrastructure to support the LHI, including upgrades to utilities, road networks, commercial facilities, residential development, and institutions such as schools, hospitals, recreational facilities, and the like.

These elements should be seen as components of an overall phased development strategy that requires coordinated planning and implementation.

III. Statement of Work

It is anticipated that a consulting firm will be hired to undertake this project, hereafter referred to as “Consultant”. The Consultant shall prepare a Market Analysis and Master Plan for the Jamaica Logistics Hub that addresses each of the eight tasks described in this Statement of Work. The Consultant shall make clear which personnel it is assigning to each task, as well as the specific methodologies, activities, and expected duration of each task.
When undertaking the Market Analysis and Master Plan, the Consultant shall remain cognizant of the following important factors, and their associated potential impacts on the Jamaica Logistics Hub. Previous studies and existing development plans should be referenced and reflected in the work of the Consultant:

- Disparate development plans for key infrastructure upgrades, including ports, airports, SEZs, road, rail, power, water, wastewater treatment, and telecommunications. Particularly, sea port and airport expansions and upgrades at the Kingston Cargo Terminal, Kingston Wharves, and Norman Manley International Airport, including any industrial zones planned adjacent to port facilities;
- Individual development plans for metropolitan areas and parishes surrounding the Logistics Hub;
- Plans by China Harbour Engineering Company (CHEC) to develop a port and associated industrial zones in the Portland Bight area;
- The SEZ Policy, and SEZ legal framework currently being drafted;
- The PPP Policy;
- The Feasibility Study for the Caymanas Special Economic Zone, conducted concurrently with the Logistics Hub Market Analysis and Master Plan;
- Plans by other countries in the Caribbean basin to position themselves as transshipment hubs.
- Precursor studies and industry analysis of industry clusters targeted for special economic zones.

The Consultant shall also review and reference previous studies that examined Jamaica’s competitiveness and potential to attract transshipment and logistics investments. A precursor benchmarking framework analysis was commissioned with the support of the Inter-American Development Bank (IDB) to evaluate Jamaica’s competitive positioning within the region. It includes an industry analysis to identify target sectors as likely candidates for investment. The Consultant will also review and access international studies and sources of information that are relevant to the assignment. The GOJ will set up a Data Room to provide access to bidding firms to existing and current studies on the Logistics Hub Initiative and its various components.

The Consultant shall undertake the Jamaica Logistics Hub Market Analysis and Master Plan in two phases. Upon completion of Phase I, the Consultant shall submit a written report and oral presentation to the Ministry of Industry, Investment, and Trade (MIIC), and other important stakeholders determined by MIIC. Phase I (Tasks 1 through 5) of the study should be implemented within a period of four months, and Phase II (Tasks 6 through 8) should be implemented within a period of eight months. Upon completion of Phase II, the Consultant shall submit a final written report and final oral presentation to MIIC and other designated stakeholders.

**PHASE I**

Phase I of the project will provide the necessary situational and economic analyses to inform the Logistics Hub Master Plan in Phase II. The Consultant shall consider the geographical scope of the project to include the entire country of Jamaica, with a particular focus on areas key to creating a Logistics Hub. Phase I shall consist of a Market Analysis of Jamaica as a Logistics Hub. Deliverables shall include: a) a written report submitted to MIIC containing the findings of Phase I, including the following; and b) an oral presentation given to MIIC and other relevant stakeholders.
stakeholders on the key findings of the Jamaica Logistics Hub Market Analysis. Individual task deliverables, as described below, shall each constitute a separate chapter of the written report.

The following tasks are expected to be completed as part of the Market Analysis:

**TASK 1: Vision for the Jamaica Logistics Hub**

The Consultant shall conduct meetings with the Ministry of Industry, Investment, and Commerce (MIIC) and other relevant stakeholders to agree upon a common vision for the Jamaica Logistics Hub. This will serve as a starting point for the Consultant, who will be tasked with recommending how to best make that vision feasible.

Task 1 Deliverable: A statement on the vision for the Jamaica Logistics Hub, as agreed upon with MIIC, and an agreed upon schedule of interim briefings to MIIC throughout the course of the study.

**TASK 2: Analyze Cargo Flows**

The Consultant shall review surface and air cargo flows and market dynamics of Caribbean and international maritime and aviation cargo transportation. The Consultant shall evaluate the factors necessary for turning Jamaica into a regional transshipment and logistics hub. The analysis should draw upon market studies already completed by the government of Jamaica, as well as the Consultant’s knowledge and original research conducted for this study. The transportation assessment shall include the following:

1. Analysis of sea and air cargo flows through the Caribbean, and from Europe and Asia to the Western Hemisphere;
2. Potential ways in which the expansion of the Panama Canal might trigger a shift in cargo shipment patterns in the Western Hemisphere, and Caribbean in particular;
3. Analysis of potential regional competition from Dominican Republic, Cuba, Panama, Costa Rica, Colombia, Trinidad and Tobago, Bahamas, and others;
4. State of air, road, rail, and sea cargo transportation networks that serve the primary areas considered for the Logistics Hub, namely the Kingston Container Terminal, Kingston Wharves, Norman Manley International Airport, Goat Island/Portland Bight areas, and Vernamfield;
5. Assessment Customs performance as it relates to cargo shipments and potential logistics and product distribution activities in Jamaica;
6. Analyze bottlenecks to multi-modal transport in Jamaica;
7. Detailed traffic forecast for Jamaica that includes international cargo transport and supply chain management activities based on the expansion of the Panama Canal, addition of a Chinese-funded canal across Nicaragua, and other cargo transportation developments and trends. The forecast should include liquid and dry bulk freight, containerized cargo, air freight, cruise traffic, and associated and complementary logistics operations.
8. Recommendations for Jamaica to leverage itself as a transshipment hub.

Task 2 Deliverable: A transportation assessment that includes: a) cargo flows and shipment patterns—current and potential new; b) state of Jamaican cargo transportation networks and systems that serve proposed Logistics Hub areas; and c) detailed cargo traffic forecast for
Jamaica; and d) recommendations for improving transportation networks for the benefit of the Logistics Hub and to best poise Jamaica as a regional logistics hub.

Task 3: Review and Assess Existing and Pipeline Projects

The Consultant shall aggregate and analyze the strategic development plans of the range of government ministries, departments and agencies and private sector entities that impact the Jamaica Logistics Hub. The Consultant shall evaluate existing projects to identify unnecessary components, key missing components, and critical success factors.

1. The Consultant shall review existing infrastructure projects already underway or in the pipeline, which contribute to the development of a Logistics Hub. These include, but are not limited to:
   a. Dredging of the shipping channel in Kingston Harbour and other harbors;
   b. Private concession of the Kingston Container Terminal (KCT);
   c. Development of the Total Logistics Facility at Kingston Wharves terminal;
   d. Feasibility study for the development of the Caymanas Special Economic Zone (CSEZ), and other proposed SEZs throughout Jamaica;
   e. Development of ship repair and ship recycling facilities;
   f. The development of a liquid bulk port in Cow Bay and other sites;
   g. The expansion of Port Esquivel and other out ports;
   h. Re-development of Vernamfield Aerodrome as a long-haul passenger and cargo facility, sea-air cargo hub, aviation training school, and maintenance repair and overhaul facility;
   i. Expansion of Jamaica’s existing international airports;
   j. The North-South Highway, Highway 2000, and planned upgrades to main roads and parish council roads in and around the vicinity of the primary Logistic Hub locations;
   k. Development of a port and industrial zones by China Harbour at Goat Island and Portland Bight Protected Area;
   l. Planned upgrades to electricity, water and wastewater treatment, and telecommunications networks;

2. The Consultant shall assess Jamaica’s existing logistics infrastructure relevant to the Logistics Hub, including but not limited to: existing maritime, air, free zones, road, rail, utilities, and digital infrastructure.

Task 3 Deliverable: Review of projects, and analysis of what additional projects are required by the Logistics Hub to meet demand. Assess adequacy of supporting infrastructure and utilities.

Task 4: Benchmark Transshipment and Logistics Competitiveness

The Consultant shall analyze the competitive position of Jamaica as a cargo transshipment and logistics hub. The benchmarked criteria should mirror the requirements corporate investors in the logistics, manufacturing, and service sectors use to select new corporate locations. This includes, but is not limited to:

1. Costs of air and surface cargo transportation, and shipment times;
2. Port fees and efficiency of port operations;
3. Size and quality of port facilities—number of berths, cranes, size of container yard, etc.
4. Shipping lines that call at the port, and frequency of calls;
5. Capacity of port berths;
6. Airlines (passenger and cargo) with regularly scheduled flights to airport;
7. Capacity of airport facilities—gates, runway lengths, etc.
8. Customs fees, and efficiency of customs;
9. Availability and cost (ie. lease price) of serviced land in logistics zones adjacent to port;
10. Availability and cost (ie. lease price) serviced industrial land outside the primary port area;
11. Costs of utilities—water, power, waste water treatment, telecommunications, and reliability of utilities;
12. Price of labor in various employment categories—unskilled, skilled, technical, managerial;
13. Cost and quality of living, including safety and access to social infrastructure—international schools, hospitals, recreational areas, etc;

The Consultant shall benchmark the greater Kinston area against the following locations (and others recommended by MIIC or the Consultant), which are competing with Jamaica to attract transshipment and logistics investments:
1. Cartagena (Colombia);
2. Colón (Panama);
3. Limón Moín (Costa Rica);
4. Port of Spain (Trinidad and Tobago);
5. Mariel (Cuba);
6. Caucedo (Dominican Republic);
7. Freeport (Bahamas).

**Task 4 Deliverable:** An analysis that compares Jamaica to other countries that are competing for Caribbean and global transshipment and logistics business. Based on this analysis define the Jamaica Logistics Hub’s competitive position in the future global transshipment and logistics, and the types of policies, infrastructure, and facilities that the country requires to be competitive in attracting transshipment and logistics activities.

**Task 5: Analyze Industries**

The Consultant shall conduct an industry analysis of industry sectors that could benefit from the advantages of locating in Jamaica’s Logistics Hub. This analysis should take into account the Competitiveness Benchmarking exercise (Task 4), considering the trade and investment flows to other locations that are also competing for global transshipment and logistics investments, namely Panama, Colombia, Dominican Republic, Cuba, Bahamas, Costa Rica, and Trinidad and Tobago. The Consultant shall also conduct a survey of companies in various industries in order to understand investment needs, and understand the typical profile of firms in each industry—employment, land and facility requirements, utility usage. The goal is to identify the most promising sectors, sub-sectors and business functions as potential targets for Jamaica’s Global Logistics Hub. This should entail the following:
1. Conduct investment trend analysis, highlighting overall volume of investment in a range of industry sectors—manufacturing, logistics, ICT, etc.—in Jamaica and competing locations over a span of five or more years;
2. Conduct trade flow analysis, highlighting import and export volumes in a range of industry sectors in Jamaica and competing locations over a span of five or more;
3. Consult with local and international investors in Jamaica on current sector strengths, weaknesses, opportunities, threats, and need for improvements, particularly with regard to logistics and transshipment-related activities;

4. Analyze the existing policy, legislative, and regulatory frameworks, including labor market policies and human resources;

5. Identify industry sectors and sub-sectors with the most potential for targeting to the Jamaica Logistics Hub. Include sectors that Jamaica currently lacks, but must promote in order to have a successful Logistics Hub;

6. Create a demand forecast for the number of companies related to logistics and transshipment likely to locate in the Logistics Hub areas over a period of 15 years. The forecast shall include number and types of firms, and associated land, facilities, utilities, and employment requirements. Develop at least two different demand forecast scenarios, given the level of uncertainty on how the market will develop.

7. Make recommendations for improving the competitiveness of Jamaica Logistics Hub in target sectors, including how best to ensure industry cluster and value chain development, achieving benefits through economies of scale, business-to-business linkages, and technology transfer;

8. Specify the value proposition of the Jamaica Logistics Hub to potential investors and develop marketing recommendations.

Task 5 Deliverables: Identify the industry sectors with most potential, which should be targeted for locating within the Logistics Hub areas. Profiles of typical firms in each target sector to show number of employees, land and built space requirements, utility requirements, etc. Demand forecast for logistics and transshipment-related activities in the Logistics Hub. Recommendations for improving the competitiveness of the Logistics Hub.

PHASE II

Phase II shall constitute the second half of the study, and consist of a Master Plan and 15-year development plan for the Jamaica Logistics Hub. It will draw heavily upon the analysis in Phase I of the study. The geographical scope of the analysis in Phase II shall include the primary Logistics Hub areas throughout Jamaica identified in Phase I of the study.

Deliverables shall include: a) a written draft report submitted to the Logistics Task Force of MIIC containing Phases I and II of the study; and b) an oral presentation given to MIIC and other relevant stakeholders on the Master Plan for the Jamaica Logistics Hub; c) a final report encompassing Phases I and II, based on comments received from MIIC and other stakeholders; and d) an Executive Summary of the entire study.

Task 6: Create Master Plan for the Jamaica Logistics Hub

The Master Plan will focus development in the areas of greatest importance to the Logistics Hub throughout Jamaica. It should take into account the planned expansions of ports and airports, and planned development of SEZs to help spur logistics, manufacturing, and service industry clusters and value chains. The Master Plan should proceed from a vision of future possibilities for the Logistics Hub, establish the overall character, extent, and location of various land uses, and encourage construction of various types throughout the identified Logistics Hub areas.
The Master Plan should include sustainable and “green” solutions wherever possible and feasible, and the Consultant shall make specific note of these. This includes, but is not limited to energy efficiency, green building guidelines, efficient uses of water and secondary uses of wastewater, etc.

The Master Plan should include the following elements:
1. A value proposition for the Logistics Hub Initiative, based on the analysis conducted in Phase I of the study, and in line with relevant issues and stated goals and visions of MIIC and other primary stakeholders;
2. Land use plan(s) that cover the primary areas that constitute the Jamaica Logistics Hub. The consultant should dedicate specific areas to port and airport operations, logistics, industrial, services, institutional, residential (including relocation), and primary and secondary roadways. The Land Use Plan should integrate the objectives of city and parish development policies and plan to maximize harmony between the Logistics Hub developments and fenceline communities.
3. Guidelines on rehabilitating brownfield spaces—existing industrial areas, airports, ports, residential areas—to develop or incorporate new logistics zones, new industrial zones, new or expanded ports and airports, and other uses deemed relevant by the Consultant. The study should also provide recommended measure to ensure the best utilization of existing facilities.
4. Recommendations for integrating existing and planned infrastructure projects into the proposed Land Use Plan, and recommended alterations to those existing plans;
5. A Development Phasing Plan detailing how the Logistics Hub should be developed over time.

**Task 6 Deliverables:** The master plan shall include a value proposition, land use plan(s), development phasing plan, and guidelines for brownfield spaces and for integrating existing projects and plans into the Logistics Hub Master Plan. A set of infrastructure drawings and land use and phasing maps shall also be included. Concept drawings should be produced at a size that can be easily reduced and included in the final report.

**TASK 7: Gap Analysis**

The Consultant shall conduct a gap analysis to describe the infrastructure and planning that will be required by the Logistics Hub as laid out in the Land Use Plan in Task 6, and identify any planning and infrastructure gaps. This shall include:
1. Existing zoning ordinances and planning controls that could impede Logistics Hub developments;
2. Ways in which the policy and legislative framework varies from that which would be required to support the Logistics Hub;
3. Maritime infrastructure;
4. Aviation infrastructure;
5. Industrial infrastructure, including that appropriate for logistics, manufacturing, services, and other industries identified in Phase I of the study;
6. Utility infrastructure serving the primary Logistics Hub areas—power, water, wastewater treatment, telecommunications—appropriate for industries identified in Phase I of the study;
7. Road and rail infrastructure—including widening and rerouting of roadways—necessary for developing the Logistics Hub as per the Land Use Plan in Task 6;
8. Commercial and social infrastructure—housing, educational institutions, recreational facilities, etc.—required to support the enhanced economic activity of the Logistics Hub;
9. Any other areas the Consultant determines to be relevant.

**Task 7 Deliverables:** A gap analysis that examines the above points, and identifies: a) infrastructure and planning requirements of the Logistics Hub as envisioned in the Land Use Plan in Task 6; b) government infrastructure enhancements currently underway or in the pipeline that help meet the Logistics Hub requirements; and c) infrastructure enhancements that are currently not planned by the GOJ, but which are necessary for the Logistics Hub.

**TASK 8: Prepare Logistics Hub Development Strategy**

The Consultant shall prepare a Development Strategy that includes a phased roll-out of the Jamaica Logistics Hub. The Development Strategy should include:
1. Recommendations and criteria to make the Logistics Hub viable from business, legal, institutional, organizational, environmental, and financial perspectives;
2. Specification of various nodal projects based on the Master Plan, which can be separately tendered for development by the private sector, or through a PPP.
3. Project-specific action plans, including strategies for packaging the individual Logistics Hub projects for private investment and/or PPP, and full-scale implementation;
4. Recommendations for short, medium, and long-term strategies to aid in structuring the deals and creating bankable projects within the Logistics Hub;
5. Recommended infrastructure upgrades required for each identified Logistics Hub project, and estimated costs to the GOJ for such upgrades.
6. Identify environmental and social assessment needs, and recommend any necessary future assessments;
7. Detailed implementation timelines and critical path the GOJ must take to ensure development of the necessary projects to make the Logistics Hub a success;
8. Create a market outreach program to identify best-in-class investors for the various projects identified for the Logistics Hub. Recommend means of engagement for private sector partners to develop the various components of the Logistics Hub.

**Task 8 Deliverables:** A Logistics Hub Development Strategy that contains the above elements.

**IV. Stakeholder Engagement**

The Consultant shall engage in monthly briefings with the Logistics Task Force of MIIC throughout Phases I and II of the project. The Consultant shall also adhere to the following:

<table>
<thead>
<tr>
<th>Stakeholder Engagement</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree on Common Vision for Logistics Hub</td>
<td>Task 1, beginning of project</td>
</tr>
<tr>
<td>Brief oral updates between Consultant and Logistics Task for of MIIC</td>
<td>Monthly</td>
</tr>
<tr>
<td>Oral presentation of Phase I results</td>
<td>4 months after project start-up</td>
</tr>
<tr>
<td>Oral presentation of key findings and feedback from stakeholders</td>
<td>After 12 months</td>
</tr>
</tbody>
</table>
V. Schedule of Deliverables

The Consultant shall prepare deliverables according to the following suggested schedule. The Logistics Task Force of MIIC shall provide timely feedback to the Consultant within two weeks of submission of each deliverable.

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inception Report</td>
<td>One month after start-up</td>
</tr>
<tr>
<td>Oral presentation of Part I results</td>
<td>4 months after start-up</td>
</tr>
<tr>
<td>Draft Phase I report</td>
<td>4 months after start-up</td>
</tr>
<tr>
<td>Oral presentation of key findings and recommendations from feasibility study</td>
<td>12 months after start-up</td>
</tr>
<tr>
<td>Draft report of Parts I and II</td>
<td>12 months after start-up</td>
</tr>
<tr>
<td>Executive Summary of Parts I and II</td>
<td>12 months after start-up</td>
</tr>
<tr>
<td>Master plan drawings, infrastructure upgrade cost estimates</td>
<td>12 months after start-up</td>
</tr>
<tr>
<td>Final Master Plan and Final Report, based on feedback from stakeholders, including all maps and drawings</td>
<td>14 months after start-up</td>
</tr>
</tbody>
</table>

VI. Consultant Requirements

The Consultant is expected to meet the following requirements:

1. Significant global experience working on logistics, industrial infrastructure, and transportation infrastructure;
2. Experience in urban and industrial planning and civil engineering;
3. Global experience advising companies on location strategies and decisions, and proven ability of leveraging insight gained from this experience for advising governments on economic development and inward investment strategies.
4. Significant global experience working with governments and economic development agencies on competitiveness and economic development strategies, and ability to draw upon international best practices;
5. Ability to start work quickly based on uniquely robust and customizable methodology and toolset.
6. Local Jamaican team members with working knowledge of the Jamaica Logistics Hub Initiative.

VII. Team Composition

The Consultant shall form a team of experts that includes, at minimum, the following. The Consultant can add other positions as necessary to undertake the terms of reference of the feasibility study. The Consultant shall designate one team member as the Team Leader, who will manage the team and act as the primary liaison between the consulting team and GoJ. The Consultant is encouraged to partner with Jamaican individual consultant(s) and/or firm(s).

i) Economist (Masters Degree in economics, business, or similar) with at least 10 years relevant experience;
ii) Urban Planner (Masters Degree in Urban Planning or related discipline) with at least 10 years relevant experience;

v) Civil/Structural Engineer(s) (Degree in civil engineering) with at least 5 years relevant experience;

vi) Engineering support staff member(s) such as CAD drafter(s), surveyor(s), etc.

VIII. Project Coordination

The Consultant will report directly to the Logistics Task Force of the Ministry of Industry, Investment, and Commerce (MIIC). The Consultant shall also work closely with the following core stakeholders:

- Planning Institute of Jamaica (PIOJ), an agency of the Ministry of Finance and Planning responsible for long-term infrastructure planning in Jamaica;
- The Port Authority of Jamaica (PAOJ), which is overseeing the public divestment of the Kingston Container Terminal to a private concessionaire;
- The Jamaica Civil Aviation Authority (JCAA), which cooperates with other agencies in the facilitation, provision, and regulation of a reliable and safe Air Transport System.
- Development Bank of Jamaica (DBJ), which is in charge of public-private partnerships and divestments, and which manages the PPF (Project Preparation Facility) Management Board under which World Bank funding has been approved for this study (under the Foundations for Competitiveness and Growth Project);
- Jamaica Promotions Corporation (JAMPRO), an agency of MIIC, which promotes business opportunities in export and investment to the local and international private sector.

Finally, the Consultant will also work closely with all other public and private sector stakeholders, as appropriate, in undertaking the work of this project.
2014

Assessment of the maritime legislative regulatory framework relating to the Jamaica logistics hub with special reference to selected contemporary maritime issues

Deniece Melissa Aiken

World Maritime University

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ASSESSMENT OF THE MARITIME LEGISLATIVE AND REGULATORY FRAMEWORK RELATING TO THE JAMAICA LOGISTICS HUB WITH SPECIAL REFERENCE TO SELECTED CONTEMPORARY MARITIME ISSUES

By

DENIECE MELISSA AIKEN
Jamaica

A dissertation submitted to the World Maritime University in partial Fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE
In
MARITIME AFFAIRS

MARITIME LAW & POLICY

2014
DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

Signature: ………………………………………

Date: ……………………………………………

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Assessor: Patrick Donner
World Maritime University

Co-assessor: Dr. Proshanto K. Mukherjee
Dalian Maritime University
ACKNOWLEDGEMENTS

I would like to express the deepest appreciation to my donor, BP Shipping, for affording me this rare opportunity to further my studies in Maritime Law, and to experience the wonders of Malmo, Sweden.

I would also like to thank my parents, Vonett and Dervin Aiken, for their unwavering support, love, encouragement and patience. You both have been my source of strength throughout the course of my life.

My gratitude goes to my supervisor, Associate Professor Dr. Aref Fakhry, who has assisted in guiding me though this paper. I would also like to thank Christopher Hoebeke and Anna Volkova of the World Maritime University Library for their invaluable assistance with research and referencing and for their encouraging words throughout. Mr. Hoebeke and Ms. Volkova have demonstrated nothing short of dedication and attention to each student and never failed to convey a spirit of excitement in regard to research and scholarship.

In addition, a special thank you to my host parents in Sweden, Ed and Maria Epstein, who opened their homes to me. Their love and care over the past months have been appreciated. Similarly, I wish to thank my colleagues at the World Maritime University who treated me like a family member and my friends in Jamaica who provided me with reassurance daily. To you I’m forever grateful.

Special thanks to the Board of Directors of the Caribbean Maritime Institute for their support and succour during my time of study. I take this opportunity to mention Dr. Joan Spencer-Ernandez, Dr. Fritz Pinnock and Dr. Ibrahim Ajagunna for their tremendous assistance with my research.

Lastly, but certainly not least, I would like to thank the Heavenly Father for blessing me and seeing me through this MSc course. Without whom, all this would not be possible.

“Laboris sui praemium receipt” – The worker receives the reward of his labour
ABSTRACT

Title of Dissertation: Assessment of the maritime legislative and regulatory framework relating to the Jamaica Logistics Hub with special reference to selected contemporary maritime issues

Degree: MSc

The Jamaica Logistics Hub is the largest project to be undertaken by the Government of Jamaica for decades. Being strategically linked to the current expansion of the Panama Canal which is scheduled to be completed in 2015, this project emerged as a national project and is considered the centrepiece of Jamaica’s maritime strategy. The goal of this initiative is to position Jamaica as a fourth node in the global logistics network to complement Singapore, Dubai and Rotterdam and has tremendous implications for Jamaica’s ports and terminals. The project includes activities such as; expansion of the Port of Kingston to receive post-panamax ships, construction of a dry dock at Jackson Bay in Clarendon, installation of bunkering facilities at Cow Bay, near Yallahs, St. Thomas, construction of a cargo and maintenance, repair and operations facility at Vernamfield in Clarendon and development of an economic zone at Caymanas with a direct road link to the Port of Kingston.

Like all other projects of this magnitude, a legal framework is necessary to ensure a seamless transition and continued compliance both at the international level and local level and a detailed legal framework for the Jamaica Logistics Hub remains a mystery. It is necessary that Jamaica lays the proper legal foundations to ensure the success of the project, including but not limited to, international and bilateral trade and investment agreements as well as, an extensive review of all domestic laws relevant to and touching the logistics hub; this may include amendments, repeals and/or introduction of new legislation.

This research analyses the entire blueprint for the Jamaica Logistics Hub and discusses the possible legal implications on an international level and at the municipal level. The research will also include a review of the national legislative frameworks and maritime governance models of Singapore and Hong Kong, and of the existing legislation in Jamaica relevant to the establishment and operation of the Jamaica Logistics Hub. Finally, recommendations are
submitted for the legal framework for this extensive project.

Keywords: Jamaica Logistic Hub, regulations, Panama Canal, domestic, legal implications, project, policy, framework, construction, Port of Kingston.
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LIST OF ABBREVIATIONS

ACP       African, Caribbean and Pacific Group of States

ASEAN     Association of Southeast Asian Nations

BASEL     The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal

B2B       Business to Business

B2G       Business to Government

BP        British Petroleum

BUNKER    International Convention on Civil Liability for Bunker Oil Pollution Damage


CARIBCAN  Caribbean-Canada Trade Agreement

CARICOM   Caribbean Community

CARIFORUM Caribbean subgroup of the African, Caribbean and Pacific Group of States

CBI       Caribbean Basin Initiative

CCJ       Caribbean Court of Justice

CEPA      Closer Economic Partnership Agreement

CFZ       Cazoumar Free Zone

CLC       International Convention on Civil Liability for Oil Pollution Damage

CMI       Caribbean Maritime Institute

COLREG    International Regulations for Preventing Collisions at Sea
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CPR</td>
<td>Civil Procedure Rules</td>
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<tr>
<td>CROSQ</td>
<td>CARICOM Regional Organization for Standards and Quality</td>
</tr>
<tr>
<td>CSEZ</td>
<td>Caymanas Economic Zone</td>
</tr>
<tr>
<td>CSME</td>
<td>Caribbean Single Market and Economy</td>
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<td>EC</td>
<td>European Commission</td>
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<tr>
<td>ECLAC</td>
<td>Economic Commission for Latin America and the Caribbean</td>
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<td>EDLB</td>
<td>Economic Development and Labour Bureau</td>
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<tr>
<td>EEZ</td>
<td>Exclusive Economic Zone</td>
</tr>
<tr>
<td>EPA</td>
<td>European Partnership Agreement</td>
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<tr>
<td>FTAA</td>
<td>Free Trade Area of the Americas</td>
</tr>
<tr>
<td>FUND</td>
<td>International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage</td>
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<tr>
<td>G2B</td>
<td>Government to Business</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GFZ</td>
<td>Garmex Free Zone</td>
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<td>GOJ</td>
<td>Government of Jamaica</td>
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<tr>
<td>HKIAC</td>
<td>Hong Kong International Arbitration Centre</td>
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<td>HKMAG</td>
<td>Hong Kong Maritime Arbitration Group</td>
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<tr>
<td>ICJ</td>
<td>International Court of Justice</td>
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<td>ILO</td>
<td>International Labour Organization</td>
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<td>IMC</td>
<td>International Maritime Centre</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>IMO</td>
<td>International Maritime Organization</td>
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<tr>
<td>INTERVENTION</td>
<td>International Convention Relating to the Intervention on the High Seas in Cases of Oil Pollution Casualties</td>
</tr>
<tr>
<td>ISPS</td>
<td>International Ship and Port Facility Security Code</td>
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<tr>
<td>ITLOS</td>
<td>International Tribunal on the Law of the Sea</td>
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<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
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<tr>
<td>JDF</td>
<td>Jamaica Defence Force</td>
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<td>JET</td>
<td>Jamaica Environmental Trust</td>
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<td>JLH</td>
<td>Jamaica Logistics Hub</td>
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<td>JLHPC</td>
<td>Jamaica Logistics Hub Policy Committee</td>
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<td>JP</td>
<td>Justice of the Peace</td>
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<td>KCT</td>
<td>Kingston Container Terminal</td>
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<td>KFZ</td>
<td>Kingston Free Zone</td>
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<tr>
<td>KPI</td>
<td>Key performance indicators</td>
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<tr>
<td>LC</td>
<td>Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London Convention)</td>
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<td>LL</td>
<td>International Convention on Load Lines</td>
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<tr>
<td>LLMC</td>
<td>Convention on Limitation of Liability for Maritime Claims</td>
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<tr>
<td>LOGSCOM</td>
<td>Steering Committee on Logistics Development</td>
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<td>LOGSCOUNCIL</td>
<td>Logistics Development Council</td>
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<td>LPI</td>
<td>Logistics Performance Index</td>
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<td>MAJ</td>
<td>Maritime Authority of Jamaica</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships</td>
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<td>MBFZ</td>
<td>Montego Bay Free Zone</td>
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<td>MIC</td>
<td>Hong Kong Maritime Industry Council</td>
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<td>MLC</td>
<td>Maritime Labour Convention</td>
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<td>MOU</td>
<td>Memorandum of Understanding</td>
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<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
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<tr>
<td>MPP</td>
<td>Maritime Performing Party</td>
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<tr>
<td>MTI</td>
<td>Ministry of Transport and Industry</td>
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<td>MTW</td>
<td>Ministry of Transport and Works</td>
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<tr>
<td>NPC</td>
<td>National Ports Council</td>
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<tr>
<td>OPRC</td>
<td>International Convention on Oil Pollution Preparedness, Response and Cooperation</td>
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<td>PAJ</td>
<td>Port Authority of Jamaica</td>
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<tr>
<td>PBPA</td>
<td>Portland Bight Protected Area</td>
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<td>PCS</td>
<td>Port Community System</td>
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<td>PDC</td>
<td>Hong Kong Port Development Council</td>
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<td>PMB</td>
<td>Hong Kong Port and Maritime Board</td>
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<td>PSA</td>
<td>Port of Singapore Authority</td>
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<td>RCCL</td>
<td>Royal Caribbean Cruise Lines</td>
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<td>RM</td>
<td>Resident Magistrate</td>
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<td>RR</td>
<td>Rotterdam Rules</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>SALVAGE</td>
<td>International Convention on Salvage</td>
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<td>SAR</td>
<td>International Convention on Maritime Search and Rescue</td>
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<td>SEZ</td>
<td>Special Economic Zone</td>
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<td>SOLAS</td>
<td>International Convention for the Safety of Life at Sea</td>
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<tr>
<td>SRS</td>
<td>Singapore Registry of Ships</td>
</tr>
<tr>
<td>STCW</td>
<td>International Convention on Standards of Training, Certification and Watchkeeping for Seafarers</td>
</tr>
<tr>
<td>SUA</td>
<td>Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation</td>
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<tr>
<td>TEU</td>
<td>Twenty-foot equivalent unit</td>
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<td>TO</td>
<td>Terminal Operator</td>
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<tr>
<td>TONNAGE</td>
<td>International Convention on Tonnage Measurement of Ships</td>
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<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Educational Scientific and Cultural Organization</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<tr>
<td>WB</td>
<td>World Bank</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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CHAPTER ONE

1.0 INTRODUCTION

"From its central situation as regards the other West Indian islands and the fact of it being in the direct track between Europe, the United States and the Isthmus of Panama, Jamaica furnishes special advantages and conveniences for trade and commerce between these points. When the ship canal uniting the Atlantic and Pacific is completed, Jamaica will undoubtedly be of great strategic importance upon the new trade route."

1.1 Background

The preceding quotation was relevant in the initial construction of the Panama Canal, which opened in 1914 and bears the same importance to date, one hundred years later, with the current expansion of the said Panama Canal, expected to be completed in 2015.

Shipping has been an important factor in the history of Jamaica and an inconspicuous driver of economic growth in the country. Shipping activities in Jamaica date back to the seventeenth century, prior to the great Port Royal earthquake of 1692, when the “real pirates of the Caribbean” were resident in Port Royal, the then capital. Between the years 1655 and 1692, Port Royal grew in popularity and became a major trading area; it grew faster than any English town in the New World. In 1662, there were approximately 740 inhabitants in Port Royal which increased to about 10,000 inhabitants (Hamilton, 2000). The seventeenth century was also an era in which the slave trade was very active and in addition to the slave trade, there were the exports of sugar and raw materials, which soon enabled Port Royal to emerge as the mercantile hub of the Caribbean and the most profitable English port in the Americas.

Due to its flat topography, deep water close to the shore, and safe and protected location, large ships could be accommodated easily and would dock for servicing, loading and unloading, and merchants and sailors established themselves to benefit from the trading opportunities that

---

1 The Handbook of Jamaica: comprising historical, statistical and general information concerning the island compiled from official and other reliable records. (1911) London: Govt. Print. Establishment
existed. There were artisans, tradesmen, captains, slaves and notorious pirates whose businesses all came together in an expansive business and trade network.

1.1.1 The Port Royal Earthquake

June 7, 1692 changed the entire nature of shipping in Jamaica. It was reported that sometime after 11:00am on that day, the ground opened up swallowing bodies and buildings and wrecking naval, merchant and fishing fleets. Bones and bodies from uprooted graves were scattered in the harbour and approximately two-thirds of the town immediately sank into the sea, after the main shock. (Gragg, 2000) Figure 1.1 indicates the shoreline before and after the Port Royal Earthquake.

Figure 1.1 Port Royal before and after the earthquake
Source: Nautical Archaeology Program, Texas A&M University
Since the 1692 earthquake the town never regained its former glory, and this marked the end of an era of global integration. Subsequently, the focus shifted to Kingston which functioned as a service port. By 1750, Kingston had the only port of any significance, Kingston Harbour, and no less than 14 finger piers had been built along the shoreline, which allowed a large number of vessels to be berthed near the source of the best navigational water, warehouses and stores where the ships’ agents and merchants were located. Kingston’s growth reflected an increase in mercantile activity as the city grew. One of the great disadvantages of the old finger piers was that a large number of ships were concentrated on a relatively small area of shoreline. This might have been advantageous in a harbour short of deep berths and adequate access routes but it proved a crippling disadvantage to Kingston, whose roads leading to the harbour had not been designed to take this kind of traffic.

On 14th February 1966, the first ship, the S.S. United States, docked at Newport West. The Port Authority of Jamaica (PAJ) then sought for the second time to capitalize on Jamaica’s geostrategic location to develop a world-class transhipment hub port in Latin America and the Caribbean. The expansion created the capacity of 1,200,000 TEU, propelling the port of Kingston to become the third largest transhipment port in Latin America and the Caribbean, and subsequently the 63rd largest container port in the world in 2002. In 2008, the port of Kingston then became the busiest port in the Caribbean, which maintained to 2011 (see Table 1.1) (Pinnock & Ajagunna, 2014). According to ECLAC (2014) the downtrend of container movement in the Latin America and Caribbean region led to the port of Kingston moving to the 6th busiest port in the region in 2012 and the 8th busiest in 2013. It was this decline, coupled with the stagnant economic growth for Jamaica that led the Government of Jamaica to actively pursue the Jamaica Logistics Hub (JLH) Initiative.

Since becoming independent in 1962, Jamaica has maintained a sturdy and largely relevant legislative framework overall, however, very little has been done to update the national maritime laws. This paper will seek to establish whether Jamaica’s current maritime legislative and policy framework is sufficient to address the current and possible matters associated with the JLH Initiative.
Table 1.1: Container Traffic in the Caribbean by Port, 2008-2011 (TEU)

Source: ECLAC (2012); Pinnock & Ajagunna (2014)

1.2 Research Objectives

The research will seek to fulfill the following key objectives:

1. Outline the key elements of the Jamaica Logistics Hub Initiative, and the expected advantages for Jamaica.
2. Provide a review of the legislative and judicial structure of Jamaica with specific focus on the maritime legislations and administration of maritime affairs within the country. Comparisons will be made with other locations of major logistics hubs; such as Singapore and Hong Kong. A general overview of the maritime legislation and regulations, in the context of the administration of maritime affairs in these territories will be provided, followed by an analysis and comparisons of how they are administering maritime matters in their territories as it relates to the logistics hub activities.

3. Identify comparative features observed in the case study locations and analyze the fettle of Jamaica’s current legislative and maritime framework to address the selected maritime contemporary issues with the establishment of the JLH; outlining the possible problems and shortcomings of the said framework.

1.3 Research Questions

In achieving the above objectives, this research paper shall strive to answer the following questions-:

- Is the current maritime legislative and administrative framework of Jamaica sufficient to address the likely issues associated with the establishment of the Jamaica Logistics Hub?

- What lessons, if any, can Jamaica learn from the maritime legislative and administrative frameworks of the States which have successfully established global logistics hubs?

- What are the possible shortcomings of Jamaica’s current maritime legislation in relation to the selected contemporary maritime issues?

- What are the possible changes, if any, that can be made to Jamaica’s legal and regulatory framework to sufficiently address the impending JLH initiative?
1.4 Jamaica’s Geography, Ports and Strategic Location

1.4.1 Jamaica’s Geography

Jamaica is the third largest of the Caribbean islands with a size of 4,411 square miles. It lies 600 miles south of Florida, 100 miles southwest of Haiti, and 90 miles south of Cuba. (Boske & Leigh, 2001) The island is located in the Caribbean Sea and contains fourteen (14) parishes, as illustrated in Figure 1.2 below.

![Map of Jamaica](http://www.caribbeanislands.us/jamaica-map.htm)

**Figure 1.2: Map of Jamaica**

Source: http://www.caribbeanislands.us/jamaica-map.htm

1.4.2 Jamaica’s Ports

Jamaica has five (5) main operational ports: the Port of Kingston, Port of Montego Bay, Port of Ocho Rios, Port of Falmouth and Port of Port Antonio. The Port of Kingston is the busiest of the ports, primarily due to its location on the island. The port of Kingston, officially known as the Kingston Container Terminal (KCT) consists of three terminals;
1. **North Terminal** – consisting of 535 metres of berth, 47 hectares of yard space for stacking containers and 4 super Post-Panamax ship-to-shore gantry cranes

2. **South Terminal** – consisting of 1,300 metres of berth, 5 post-Panamax gantry cranes, 6 super post-Panamax ship-to-shore gantry cranes and 82 hectares of container storage space

3. **West Terminal** – consisting of 475 metres of berth, and extension of 65 hectares of container yard and 4 super post-Panamax ship-to-shore gantry cranes

The port of Montego Bay is located in the second city of Jamaica and its facilities include a 2694 square metre cruise ship terminal, 427 metres of berth, 1.2 hectare of yard space for container storage and 1858 squared metres of warehouse. The port of Ocho Rios consists of a bauxite pier and a cruise ship pier. The bauxite pier is 274.3 metres long with a draft of 12.2 metres and can accommodate passenger and cargo vessels and the cruise ship pier has two berths, 222 metres and 274.3 metres in length respectively. The port of Falmouth is fairly new, having had its first ship call in February 2011. The port was constructed to accommodate cruise ships and has gained considerable popularity over the past few years.

1.4.3 Jamaica’s Strategic Location

Jamaica is strategically located in the centre of the Caribbean Sea, in close proximity to the Panama Canal and the major ports of North America, South America and the Caribbean. The port of Kingston in Jamaica boasts the world’s seventh largest natural harbour and is located at the intersection of two major intermodal trade routes. These attributes contributed to the success of Jamaica in the transhipment of cargo and cruise shipping.

Pinnock & Ajagunna (2014) stated that in 2010, the 20 ports of the Caribbean accounted for 34,968,654 metric tons of cargo. Of this, Jamaica accounted for 26,598,698 metric tons or 76.5 percent of the total volume moved. Transhipment cargo and bauxite accounted for over 80 percent of the volume of cargo moved through Jamaican ports. In 2011, Jamaica was accountable for 80.75 percent of the total cargo volume, while Guadeloupe accounted for 9.3 percent of the 2011 Caribbean total, representing 3,443,234 metric tons.
Elson (2013) found that Jamaica was strategically located along major shipping routes from Asia to the Middle East as illustrated in Figure 1.3 above.

1.5 Scope of Research

This paper will focus on the existing and possible future legal effects of the establishment of the Jamaica Logistics Hub in Jamaica. Like all other projects of this magnitude, a solid legal, regulatory and administrative framework is necessary to ensure a seamless transition and continued compliance both at the international level and local level. The research will attempt to analyze the entire blueprint for the Jamaica Logistics Hub and discuss the possible legal implications both at the international level and at the municipal level. A review of the existing legislation and regulations of existing global logistics hubs is also conducted; these being, Singapore and Hong Kong, and a comparative analysis between Jamaica and these States.
discussed. The paper will also suggest recommendations as to how the current maritime legislative and regulatory framework of Jamaica can be improved to meet the needs of the maritime industry, the financial sector and other associated industries.

The dissertation is structured into ten main Chapters; Chapter One being the introduction, in which the research objective, research questions, a brief background to Jamaica’s shipping activities and the methodology are outlined. Chapter Two gives a literature review of the discourse and academic writings on logistics hubs, maritime governance, as well as differing maritime and legislative frameworks surrounding the establishment and operation of a global logistics hub. Chapter Three capsulizes the Jamaica Logistics Hub Initiative, outlining the proposed activities involved in the establishment of the hub and planned changes put forward by the Government of Jamaica. An analysis of the maritime legislative and administrative frameworks of Jamaica, both at the international and domestic level are discussed in Chapters Four and Five respectively, and Chapter Six examines the maritime and legislative frameworks of Singapore, and Hong Kong, which constitute the case studies. Chapter Seven considers the possible challenges of Jamaica’s current framework and Chapter Eight submits recommendations to overcome the possible challenges identified in the previous chapter. Chapter Nine outlines the summary and conclusion, emphasizing whether the research objectives have been met. The contributions of this research to future study are also illustrated in this chapter. Following the final chapter are the references.

1.6 Delimitation

Jamaica has several ports along its coast; however this study will focus on the Port of Kingston, which handles approximately two-thirds of the vessels visiting Jamaica’s ports and 87 percent of the container traffic through the island (PAJ, 2000). The focus is also due to its strategic location and the fact that a majority of the planned operations will be happening in and around that area.

The establishment of a logistics hub will affect the entire transportation sector of Jamaica; that is inland, land, air and sea. However, this paper will not analyze the effects on the air, railway or
road transportation. The core discussion is centred on the maritime sector and marine legislation and regulations.

The analysis of international instruments and treaties are limited to IMO Conventions and those centred around and touching the maritime industry. Likewise, the national legislations reviewed were selected based on the measure of their applicability to marine operations and shipping. The analysis of said legislation will also be probed as it relates to selected contemporary maritime issues.

1.7 Methodology

To achieve the aforementioned objectives, an explorative research was conducted from a number of primary and secondary sources in the form of books, journal articles, peer reviews, and reports. This further involved a dogmatic approach of analysis, looking at various legal instruments including, international and domestic conventions regulations, policies and case law. Further, an analytical approach was applied concurrently throughout, in that applicable case law and legislation were examined in terms of their scope of applicability and consequently recommendations are made based on the analysis of said regulations in response to the selected maritime contemporary issues. A case study approach was also employed, which involved a scrutiny of the legal and regulatory frameworks of the Singapore and Hong Kong logistics hubs respectively and a further comparison made with that of Jamaica’s existing framework.

Data was obtained through the World Maritime University library using a range of physical and electronic sources such as the Beacon, Cambridge Journal, Ebrary, I-Law and Springer eBooks to name a few, as well as internet search engines.
CHAPTER TWO

2.0 LITERATURE REVIEW

Logistics has been an emerging area in the global transport sector. According to Tongzon (2004) logistics is expected to grow by 3 to 10 percent per annum promising tremendous economic opportunities for the countries in the ASEAN region. In the midst of these opportunities, several other countries have undertaken concerted efforts to upgrade their infrastructure and technology to get a bigger slice of the market. One of these “several countries” is Jamaica. The country has taken a chance at seizing an opportunity with the expansion of the Panama Canal and hopes to gain a place in the chain of global logistics hubs. To effectuate this master plan, there needs to be an efficient legal system and policies in place. Jamaica will need to put a proper fool-proof system of governance and policies in place which will address most, if not all, of the possible issues and/or incidents that may occur as a result of this grand venture, especially in the maritime industry.

2.1 Defining Logistics Hubs

While there has been increased talk about “logistics clusters” and “logistics hubs”, many still fail to comprehend what the term really means. Nam & Song (2011) indicate that the hub concept has been often introduced in various terms in accordance with mainly its functionality of storage and transportation, such as logistics centre, logistics zone, freight terminal, distribution centre, warehouse, intermodal terminal, international transport terminal, intermodal transport and so on. They further asserted that there has been no clean cut definition of what a logistics hub is, however, we can be guided by the definition of a logistics centre as the hub of a specific area where all the activities relating to transport, logistics and goods distribution, both for national and international transit, are carried out on a commercial basis, by various operations. (Europlatforms, 2004). Moreover, a logistics centre should be served by a variety of transport methods; roads, rails, sea, inland waterways and air. Munoz and River (2010) defined a hub as a regional cross-docking point, where products from multiple supply sources arrive and are sorted
in accordance to the needs of the destination points. The structure of an ideal logistics hub was put forward by Skowron-Grabowska (2008) and is illustrated in Figure 2.1 below. Specifically, in the context of maritime transport, Song & Panayides (2012) defined a logistics hub as a seaport and hinterland in terms of the spatial boundary where logistics activities are conducted.

![Figure 2.1: Structure of an ideal logistics hub](image)

Source: Skowron-Grabowska (2008)

An integral component of a logistics hub is the port, and as such, the transformation from a simple cargo-handling facility to a logistics centre, usually begins at the port. According to Rodrigue and Notteboom (2005) ports are identified as playing a core role in the whole maritime world and are taking up more active roles in supply chains. Tongzon (2007) provided nine key determinants of a successful port and logistics hub; port operation efficiency level, cargo handling charges, reliability, port selection preferences of carriers and shippers, the depth of the navigation channel, adaptability of the changing market environment, landside accessibility, product differentiation and government role, including government support and law and
regulations. The ninth determinant, government role and regulations, is of paramount importance. The fact that it was listed last is certainly not an indication of its validity and avoirdupois. In fact, it is suggested that legal and institutional issues be identified before establishing a logistics centre in port areas, and the new logistics-related laws and national strategies should be launched to transform and upgrade ports to the next level of logistics development. Further the Economic and Social Commission for Asia and the Pacific (2002) stated that as to the legal aspects regarding logistics centres, institutional schemes should be made to improve the conditions and simplify the administrative procedures affecting logistics centres, as the existence of an effective institution plays a crucial role in building logistics centres in ports.

2.2 Maritime Governance

It has been observed in the maritime industry that effective governance and policy making has been presenting numerous issues and consists of several lacunae that have not adequately addressed all the issues. Roe (2013) stated that the maritime sector is also far from immune to governance failures and it is the contention that this in turn has undermined any attempts at coherent and meaningful maritime policy-making. Mukherjee and Brownrigg (2013) outlined the various aspects of shipping from a legal and economic perspective. They stated,

“…Shipping does not comprise one industry but a number of them... It is a peculiarity of shipping that each sector has its own clear character and style; and that those who work, even for a lifetime in one sector, often have little perception or understanding of others. Equally the sectors may well have different ‘political’ perceptions even in the same country…”

Likewise, it was asserted that maritime governance derives from an institutional framework with jurisdiction at the international, national, regional and local levels, and that its global reach calls for an international perspective but at the same time, policies need to be effectively applied at the municipal level (McLaughlin, 2010). Similarly Roe (2013) sententiously noted that maritime governance encompasses all aspects of the industry. He expounded that this included all sectors, whether liner, bulk or ferry; all activities inclusive of safety, security, the environment and
efficiency; all locations, from Europe to the United States and from Asia to Africa; and in particular, every part of the jurisdiction and functioning of policy-making and its underlying governance from the international and global to the local and regional, through to the supra-national and national.

The Bureau of Political-Military Affairs (2010) outlined that maritime governance and marine law enforcement can be a cooperative endeavour between national regional, sub-national and private agencies and actors, as depicted Figure 2.2.

![Figure 2.2: The interrelation between the various sectors](source)

Correspondingly, the Jamaica logistics hub project will not only affect the ports, but other areas of the maritime industry, both from a public and private sector outlook. As such, the authorities spearheading the project will have to examine all areas and sectors touching and related to the establishment of the logistics hub. Singapore has been a positive example of a state that has successfully established a global logistics hub. Tongzon (2004) states that Singapore is considered very successful in terms of infrastructure development, domestic economic/political environment, incentives for foreign investors and supply chain management strategy. He further states that Singapore has one of the most liberal laws and regulations for foreign investment;
being an open economy with more reliance on foreign capital than any other country in
Southeast Asia. Coe (1999) adds that,

“…At the level of the general electronic commerce environment, largely associated with
government policy, Singapore has made significant progress in developing legal
frameworks, technical standards and incentive schemes for electronic commerce. In
terms of legal frameworks, a major step was the enactment of the Electronic Transactions
Act, an Electronic Commerce Policy Committee recommendation, which came into force
in July 1998.”

It is clear that an efficient and strong legal framework is necessary to enable the proper
functioning of the upcoming logistics hub. The Hong Kong Logistics Council in its 2008 report
illustrated that Hong Kong is often the preferred logistics hub for many international traders
because of its clear and transparent legal framework founded on the rule of law and an
independent judiciary. A judicial system that operates independently from the executive and
legislative branch of Government and makes its own judgments without fear or favour is a key
element in the success and continuing attraction of Hong Kong as an ideal base for the
administration of business development, investment and trade in the mainland.

According to Hayes (2006), the most important catalyst for the success of a hub is government
support, as it guarantees economic incentives for companies, not only those located in the hub
but others as well. Pinnock (2014) asserted that one of the main roles of the government in the
development of the Logistics Hub is to provide an investment-friendly business climate and to
lay the groundwork for Public-Private partnerships (PPPs). It also follows that the way in which
the PPP policy employs the various teams through the stages of the process will impact investor
activity and government support (Samuda, 2013). As it regards Jamaica, and the suitability of
this massive project, Tracey (2014) purported that Jamaica is a prime location for this trade
support system because of its geospatial relations. He further outlined particular elements that
contributed to this statement; these being Jamaica’s geographical location, its good institutions
and established regulatory authorities, the State’s various ancillary services inclusive of present
logistics services and considerable amount of employees currently working within the logistics
sector.
Jamaica’s logistics hub is a significant and compelling investment opportunity that will be frame worked by modern legislation and executive policy (Samuda, 2013). Samuda added that an intensive review of the laws must take place at the local level, in that every piece of legislation relevant to the speedy establishment of the hub must be placed under the microscope of value-added change and thereafter revised or repealed as necessary. An extensive review such as that suggested by Samuda (2013) is practical and will aid in securing a smooth transition to economic development and growth. The logistics hub project is expected to also affect the economies of the neighbouring Caribbean states; hence it is vital that a proper policy framework is established from its initial development. In relation to the logistics hub initiative, Samuda (2013) strongly suggest that it is certain that several ports and terminals in the region will be affected, and Caribbean shipping will never be the same.
CHAPTER THREE

3.0 THE JAMAICA LOGISTICS HUB INITIATIVE

3.1 Panama Canal Expansion Project

2014 marks the centennial year of the existence of the Panama Canal and Panama has embarked on a new canal expansion project in order to facilitate passage of post-Panamax vessels which are too large to fit in the original design of the Panama Canal. These post-Panamax vessels account for approximately 16% of the world container fleet and account for nearly one half of the total fleet’s cargo capacity. (Hricko, 2012). Since the opening of the Panama Canal in 1914, over 9 billion long tons have transited the waterways in the form of over 1 million vessels. Sabonge (2013) outlines that in 2012, 84 million long tons of the approximate total of 218 million long tons that had transited through the Panama Canal correspond to the United States East Coast – East Asia route.

The expansion is hoped to create greater economies of scale in sea transport and accommodate vessels of 49 metres in beam, 15.2 metres in draft and 12,600 20-foot equivalent units (TEU). At present the canal can only accommodate vessels up to 4,400 TEU. Sabonge (2013) further stated, “…the canal is a crossroads for economic activities based on maritime traffic. It enhances the region’s export potential by spurring export-dependent economic sectors…” The canal expansion also complements and indirectly encourages logistics development in the rest of Latin America. By increasing their export potential, these countries will be investing more resources in public infrastructure and port terminals. The canal, the international logistics hub and the related services provided by Panama are not only the bedrock of the economy, but also provide a support base for the entire region. As each country increases its logistical capabilities, the region as a whole will improve its competitiveness (Sabonge, 2013).

The Panama Canal functions as not only a gateway for global trade networks, but is vital trade access point for the Americas. Pinnock & Ajagunna (2012) asserted that the prospect for
Caribbean transshipment involvement is integrally tied to the efficiency and competitiveness of the expanded Panama Canal. Figure 3.1 depicts the trade routes channeling through the Panama Canal.

![Figure 3.1 Panama Canal routes](image)

**Figure 3.1 Panama Canal routes**
Source: Georgia Tech Logistics Innovation & Research Centre (2014)

Since the initiation of the expansion project in 2006, many neighbouring States in and around the region, have implemented improvements in their trade facilitation capacities to benefit from the expected increase in traffic. In the United States alone, up to six ports have embarked on structural improvements and administrative upgrades in expectation of the Panama Canal expansion: Port of New Jersey, Port of Baltimore, Port of South Carolina, Port of Savannah, Port of Miami and Port Manatee. Additionally, Caribbean countries have been preparing themselves for the impending increase, such as, Cuba, Trinidad & Tobago, the Bahamas and Jamaica, to name a few. It is anticipated that the expanded capability of the Panama Canal will positively impact the Caribbean shipping industry as the region is positioned to take advantage of this development. (Pinnock & Ajagunna, 2012).
3.2 Jamaica’s Proposed Transformation

On May 14, 2013, Anthony Hylton, Minister of Industry, Investment and Commerce of Jamaica announced that the Government of Jamaica will embark on a colossal project in the form of the Jamaica Logistics Hub, which is expected to transform the economy of Jamaica over a ten (10) year period. According to Deans (2014), the Jamaica Logistics Hub Initiative is a growth and development strategy with the main goal of positioning Jamaica as a fourth node in the global logistics network to complement Singapore, Dubai and Rotterdam, which has tremendous implications for Jamaica’s ports and terminals. The JLH Initiative includes a number of key elements, which are; expansion of the Port of Kingston to receive post-panamax ships, construction of a dry dock at Jackson Bay in Clarendon, installation of bunkering facilities at Cow Bay, near Yallahs, St. Thomas, construction of a cargo and maintenance, repair and operations facility at Vernamfield in Clarendon and development of an economic zone at Caymanas with a direct road link to the Port of Kingston.

Jamaica sits at the intersection of several maritime and aviation routes to the Americas, Europe and Western Africa and businesses located in Jamaica can readily access large commercial markets in North, Central and South America totaling approximately 800 million people. The JLH Initiative is expected to provide businesses with prime opportunities for global partnerships and expansion. (Jamaica Logistics, 2014)

Opportunities offered by the JLH initiative include maritime and air cargo logistics hubs, strategic storage, handling and processing points for bulk commodities, expansive special economic zones facilitating assembly, warehousing, sorting, distribution and other value-added services, particularly for industries catering to time sensitive and high-value cargo. Also aviation-related maintenance, repair and overhaul and ship repair and dry docking, and a robust digital network to support efficient global value chain tracking and tracing, as well as e-commerce operations are all sub-projects in the JLH Initiative. The proposed structure of the JLH is illustrated in Figure 3.2 below.
The transformation process to be undertaken by Jamaica contains a number of elements, which will be briefly discussed.

**Kingston Harbour Channel Upgrade**

Kingston boasts the seventh largest natural harbour in the world and consists of an almost landlocked area of water, roughly ten miles long and two miles wide. Much of this water, even close to shore, is deep enough to accommodate large ships. ("Port Authority of Jamaica," 2006) The Harbour serves as a valuable resource for Jamaicans providing port and airport facilities, a
fishing site for thousands of industrial and commercial enterprises, as well as home for many people. Figure 3.2.1 illustrates a map of Jamaica depicting the Kingston Harbour.

![Figure 3.2.1: Kingston Harbour](http://jamaicajamaica.yolasite.com/kingston.php)

Despite its vast size, in order to accommodate the expected vessel traffic, the Kingston Harbour will require some remodelling and restructuring. The Government of Jamaica is presently making arrangements to deepen Port Bustamante, the shipping channel and the east channel to accommodate the larger ships traversing the expanded Panama Canal, by way of a dredging exercise. Currently, the Kingston Harbour stands at 14 meters or 46 feet deep and the planned dredging activities are expected to deepen the said harbour to approximately 17 meters or 56 feet in depth.

**Privatization of Kingston Container Terminal**

Another aspect of the JLH project is the privatization of the Kingston Container Terminal, one of the region’s leading container terminals and transhipment ports, which began operations in 1975 at the Port Bustamante. The KCT is owned by the Port Authority of Jamaica (PAJ), but managed
by the KCT Services Limited, and is situated 32 nautical miles off the main trade lanes, which affords vessels minimal route deviations to and from the Panama Canal. ("General Overview," n.d.)

**Figure 3.2.2: Port of Kingston**

Source: KCT Services Limited (2014)

The KCT spans 195 acres and will play an integral part in the development of the Jamaican economy. It is expected to continue as a Port Regulator and the PAJ will continue to own the Port. The PAJ will also be responsible for providing the necessary infrastructure, developing, maintaining and modernizing the infrastructure, but will receive a concession fee from the Terminal Operator (TO). One of the current TOs is the Kingston Wharves Limited (KWL) which operates a terminal just adjoining the Kingston Container Terminal. Three global TOs are expected to bid; Port of Singapore (PSA) Terminal Link Consortium, Dubai Ports World and the China Harbour Engineering Company and China Merchant Holding International Consortium.
The TO will be responsible for capital expenditure for the superstructure and equipment, working capital and spare parts investment, and managing the port operations in a competitive and profitable manner. Figure 3.2.2 is an aerial photograph of the Port of Kingston.

Adjustment of Business Shortcomings

The Government of Jamaica is desirous of establishing a port community system (PCS), which is believed to significantly improve the port operations of the State. PCS is defined as a neutral and open electronic platform enabling intelligent and secure exchange of information between public and private stakeholders in order to improve the competitive position of the sea and air port's communities (Pinnock, 2014).

The PCS will optimise, manage, and automate port and logistics efficiency processes through a single submission of data and connecting transport and logistics chains and will provide to all logistics stakeholders a collaborative platform to manage all their Business to Business (B2B), Business to Government (B2G), and Government to Business (G2B) logistics operations for imports, exports, and trans-shipment.

There are a number of features attributable to a PCS, such as end-to-end transport and logistics chain management, real-time tracking and tracing of all cargo operations, discrepancies management of all cargo data, key performance indicators (KPIs) for all stakeholders, and a secured e-business platform. Pinnock (2014) purported that a PCS is critical for Jamaica’s development as a global logistics hub. Figure 3.2.3 outlines the proposed port community system for Jamaica.
**Other Planned Developments**

There are other projects involved in the JLH initiative. These include the establishment of a dry dock facility at Jackson Bay in Clarendon, the establishment of a bunkering facility at Cow Bay, the construction of a cargo and maintenance, repair and operations facility at Vernamfiled, and the development of the Caymanas Zone. Also planned is the creation of a single electronic window to enable efficient cross-border flows of goods, services and people, and the development of special economic zones (SEZs).

**Special Economic Zones**

“The successful implementation of the global logistics hub initiative weighs heavily on the development of a Special Economic Zone (SEZ) regime that will replace the existing Free Zone regime with more modern operating rules that are best suited for a competitive, logistics-centric environment.”
economy.” ("Jamaica Logistics," 2014) Hence, the Government of Jamaica aims to successfully implement a SEZ regime that will serve the global logistics industry and function as an example to the region and other logistics-aspiring States.

Jamaica currently has four (4) free zones: Kingston Free Zone (KFZ), Montego Bay Free Zone (MBFZ), Garmex Free Zone (GFZ) and Cazoumar Free Zone (CFZ). The World Bank (1992) defined a free zone as a fenced-in industrial estate specializing in manufacturing for exports that offer firms free trade conditions and a liberal regulatory environment. In 2007, the General Council of the World Trade Organization adopted a decision for the extension of the transition period for the elimination of export subsidy programmes, otherwise known as free zones, in developing countries by the 31st December 2015, the latest. Such States were also urged to enact legislation to phase out these said subsidy programmes. There are a number of differences between a free zone and a SEZ, one of which is that a free zone consists of an area where goods are landed, handled and re-exported without the intervention of national customs authorities, expect for when the goods are moved directly to customers within the country, while a special economic zone accommodates the same activities but consist of other laws which are more tailored to a free-market than the national laws (MENA-OECD Investment Programme, 2010). So far, Singapore, Dubai, Rotterdam and Panama have all established SEZs, but Jamaica is still to establish SEZs.

Within the plans for the JLH is the establishment of large scale SEZs, designed to promote value-added industries capable of generating employment, export growth, food and energy security and indigenous linkage development. ("Jamaica Logistics," 2014) It is anticipated that the SEZs will form a part of Jamaica’s economic growth strategy and enhance Jamaica’s role in participating in global value chains, bringing significant investments to the island. Specific plans include the establishment of the Caymanas Economic Zone (CSEZ), which consists of the development of 10,000 acres of land for commercial, residential and recreational purposes and will include activities such as, light manufacturing and assembly, distribution and creative industries, among other things. Figure 3.2.4 depicts the plans for the CEZ development.
Additionally, situated just a few kilometres in distance from the location of the planned CSEZ is the proposed location for the Naggo Head Informatics Park, which will be 100,000 square feet of factory space for information and communication technology businesses. It is also expected that elements within the country’s policy, regulatory and legislative framework will be revised or replaced; one such being the enactment of the Special Economic Zone Act and Regulations that will govern the SEZs, as well as the establishment of a Special Economic Zone Authority. The Government of Jamaica plans to introduce a total of sixteen (16) SEZs with the adjacent development of the surrounding areas for recreational activities, and residential and commercial purposes, to capitalize on fiscal growth.

In an effort to ensure the implementation of an efficient and coherent SEZ regime, the government established two (2) committees to oversee the project; the Policy Steering
Committee, with the responsibility of overseeing and guiding the formation of a proper policy framework for the SEZ, and the Enterprise Team, comprised of a number of experts from various fields, to specifically manage the development of the CSEZ and to ensure that its progression is concurrent to the other aspects of the JLH. The Enterprise Team is particularly important as the CSEZ is a critical component of the government’s programme to become a value-added and logistic-centred economy. (“Jamaica Logistics”, 2014)

The entire JLH project is steered and supervised by a group of experts, referred to as the Jamaica Logistics Task Force (JLTF). The JLTF has been receiving assistance from the Netherlands, Singapore and China with the JLH Initiative. Technical assistance is also promised by the World Bank, which is expected to extend beyond the scope of transhipment to include the development of information and communication technology and manufacturing.
4.0 JAMAICA’S INTERNATIONAL LEGISLATIVE AND REGULATORY FRAMEWORK

4.1 Sources of International Law

Article 38(1) of the Statute of the ICJ outlines the main sources of international law. There are:

1. *International conventions, whether general or particular, establishing rules expressly recognized by the contesting states;*
2. *International custom, as evidence of a general practice accepted as law;*
3. *The general principles of law recognized by civilized nations; judicial decisions and teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law* (Churchill and Lowe, 2008)

The law of the sea is considered to be an arm or branch of international law. In fact, Churchill & Lowe (2008) found that the development of the law of the sea is inseparable from the development of international law in general. Despite its small size, Jamaica has made efforts to maintain its position in the international community and has ratified a considerable number of international instruments. One of the most exigent international legal instruments relating to the law of the sea is the UNCLOS and it is noteworthy that Jamaica was the fourth State to ratify this instrument on the 21st March 1983 (UNODC, 2013).

The sources outlined in Art. 38 of the ICJ *supra* are comprehensive, but far from imperforate. Mukherjee and Brownrigg (2013) indubitably outlined the aspects of international law that will affect shipping and shipping activities of any State, these being:

1. National (unilateral) regulations or requirements
2. Subsidies (overt or covert)
4. Regional arrangements
5. International agreements and conventions
The aforementioned all affect the shipping and maritime operations of any nation State, and require special attention to be paid to the aforementioned aspects of international law in the pursuance of any changes and/or developments in the State’s maritime operations. Within the maritime industry, the IMO conventions stand at the pinnacle of all international instruments. It is, therefore, necessary to review Jamaica’s status as it regards IMO conventions.

### 4.2 IMO Conventions

In the maritime context, Jamaica is party to thirty (30) IMO Conventions, the most recent accession being in November 2013, when Jamaica deposited instruments of accession for the Convention on Maritime Salvage 1989, the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation 2005 and the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf 2005. Table 5.1 outlines the IMO Conventions to which Jamaica has indicated acceptance, approval and/or accession.

From a mere examination of the IMO instruments outlined in Table 4.1, there is an indication that up to October 2013, Jamaica had only been party to selected conventions relating to the marine environment and marine safety, including but not limited to MARPOL 73/78, COLREGS, STCW and SOLAS. Most maritime issues fall under the umbrella sectors of safety, security and the environment, and this is portrayed in the organization’s mission statement as outlined in Resolution A.1060(28). Since November of 2013, Jamaica has broadened the scope of its international framework by signing on to particular conventions relating to maritime security. This is certainly a step in the right direction in light of the current logistics hub project. The scope of application of the ratified conventions to selected maritime issues will be discussed in Chapter Eight.

Jamaica is party to 26 International Labour Organization conventions (‘Ratifications of ILO Conventions: Ratifications for Jamaica’, 2014), which notably does not include the most recent, the Maritime Labour Convention 2006 (MLC). These form part and parcel of the country’s international legal framework, but as it relates the maritime industry, the MLC is the major
instrument addressing, among other things, the rights of seafarers and the responsibilities of shipping companies and shipowners.

<table>
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<td>7/12/2008</td>
<td>Acceptance</td>
</tr>
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<td>7/11/2002</td>
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<td>LLMC 1976</td>
<td>17/8/2005</td>
<td>1/12/2005</td>
<td>Accession</td>
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<td>14/10/1983</td>
<td>14/1/1984</td>
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</tr>
<tr>
<td>SUA 2005</td>
<td>28/11/2013</td>
<td>26/2/2014</td>
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</tr>
</tbody>
</table>

**Table 4.1: Status of IMO Conventions – Jamaica**

Source: International Maritime Organization (2014)
4.3 Maritime Commercial Conventions

Central to maritime commercial law are the rules governing the bills of lading and the activities involved in trading by sea and the carriage of goods. This is a vital area in the operations of a global logistics hub as the main activity is trade and in particular, global trade. Despite Jamaica’s notable ratification of IMO conventions, the State’s action to become party to the various maritime commercial conventions has been unimpressive. Currently, Jamaica is party to the International Convention for the Unification of certain rules of law relating to Bills of Lading (Hague Rules) 1924. Other international commercial instruments addressing carriage of goods by sea, to which Jamaica is not a party, are the International Convention on Arrest of Ships 1999, the International Convention on Maritime Liens and Mortgages 1993, the Protocol to Amend the International Convention for the Unification of Certain Rules of Law Relating to Bills of Lading 1968 and the most recent and impending legislation, the United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (Rotterdam Rules) 2008.

The Rotterdam Rules (RR), in particular, may require special attention in a project such as the establishment of a logistics hub. These rules were created with an aim to address the shortcomings of the Hamburg Rules, Hague Rules and the Hague-Visby Rules and also to establish uniform rules to modernize and harmonize the rules that govern international carriage of goods by sea. (Adamsson, 2011)

The major changes introduced by the Rotterdam Rules are in the following areas;

- **Scope of application**, to include door-to-door transport. This provision was drafted to govern all modes of transport, once there is an international sea leg involved, as well as an overall international carriage;
- **Electronic commerce**, which introduced provisions regulating electronic commerce and electronic bills of lading. This aspect was not addressed in the previous Hague, Hague-Visby or Hamburg Rules;
- **Containerization**, addressing the different aspects such as the door-to-door application, the amended carrier’s liability *inter alia*;
• *Carrier’s liability*, which discusses the carrier’s obligation of seaworthiness and extended same for the entire duration of the voyage by sea, as opposed to before and at the beginning of the voyage as in the preceding rules.

The Rotterdam Rules also addressed other maritime issues such as the liability of Maritime Performing Parties (MPP) which extends liability directly to other parties and provides automatic protection to the Carriers’ agents provided that they are subject to suit; Controlling Party and right of control, which is the person entitled to exercise control and the Rotterdam Rules specifically acknowledges the identity of the said Party and their right of control; Shipper’s obligations, illustrating that the shipper continues to be strictly liable for loss or damage caused by dangerous goods, but bears a fault-based liability for loss or damage caused by its failure to provide necessary information, instructions and documents to the carrier.

Under the Rotterdam Rules the claimant has two years in which to file its action against the carrier before such an action being time-barred. Prior to the Hamburg Rules, the prescribed time for action was one year. The Hamburg Rules extended this period to two years and the RR maintained this extension. Jurisdiction and arbitration were first addressed in the Hamburg Rules and the Rotterdam Rules went further to establish an “opt-in” reservation outlining that only the States that make a declaration to be bound by these chapters will be bound by them. The concept of volume contract was also addressed in the Rotterdam Rules. The rules speak to the freedom of contract which holds that in certain cases, contracting parties should be allowed certain contractual freedoms. It allows shippers of a certain commercial size and those shipping a large quantity of goods in a series of shipments, to negotiate with the carrier for contractual provisions different from the mandatory provisions in the Convention, having regard to the provisions from which no derogation is granted.

The Rotterdam Rules have not yet entered into force and it is not yet certain when they will, however, it does address and introduce a number of elements within the international maritime commercial industry that would be beneficial to Jamaica’s proposed initiative. Therefore, monitoring development of the status of ratification, and in particular actions of the major trading States is advisable for Jamaica to develop the JLH in line with the current global trade environment.
4.4 Multilateral and Bilateral Agreements

Jamaica has also engaged in a number of regional and international agreements, which resulted in the State’s attachment to particular institutions and initiatives. The agreements are outlined below.

CARICOM or the Caribbean Community is an organization of 15 Caribbean states with the purpose of promoting economic integration and cooperation among members, ensuring that benefits of integration are equitably distributed and coordinating foreign policy. Through CARICOM came the CARICOM Single Market and Economy (CSME) which was aimed at facilitating the free movement of goods, services, capital and people across the region. Also through CARICOM came the Caribbean Court of Justice (CCJ), an institution charged with the settlement of disputes by way of hearings, mediation and arbitration. The CARICOM Regional Organization for Standards and Quality (CROSQ) was also instituted to facilitate development and harmonization of regional standards in the production of goods and services amongst member states.

Additionally, the Cotonou Economic Partnership Agreement was signed in June 2000, and the agreement provides a timetable for the negotiation of new WTO-compatible Economic Partnership Agreements (EPAs). It was signed between the African, Caribbean and Pacific States (ACP) and the European Union.

The Free Trade Area of the Americas (FTAA) was established to ensure that small economies benefit equally as other parties in CARICOM from trade agreements; while CARIBCAN is a programme introduced by the Government of Canada to facilitate trade and investment with CARICOM member states.

In addition, the Caribbean Basin Initiative (CBI), initially launched through the Caribbean Basin Economic Recovery Act, provides preferential access and trade between the United States and the Caribbean.

Jamaica also signed the Jamaica-U.S. Agreement Concerning Cooperation in Suppressing Illicit Maritime Drug Trafficking (Shiprider Agreement), in an effort to unify efforts to combat drug trafficking, and the Maritime Delimitation treaty between Jamaica and Colombia 1993,
approximating an equidistance line between the countries to be measured from mainland Jamaica and not the small cays nor the archipelagic baselines. Similarly, the 1994 Agreement between Jamaica and Cuba on the delimitation of the Maritime Boundary was established with both States agreeing that the equidistance method be the equitable solution for establishing a delimitation line between the States’ EEZs and continental shelves.

Whether to a great extent or to some minute extent, most, if not all, of the regional, multilateral and bilateral agreements to which Jamaica is a party will, somehow be affected by the JLH initiative hence, the State should ensure that the new developments involved in the process do not contravene the provisions, purposes and/or objectives of these agreements to which the state has acquiesced.

In addition to the regional, multilateral and bilateral agreements, Jamaica has a myriad of national legislation and regulations governing its maritime activities, which will be discussed in Chapter Five.
5.0 JAMAICA’S DOMESTIC LEGISLATIVE AND REGULATORY FRAMEWORK

5.1 Brief History of Jamaica’s Legal System

Jamaica has a common law legal system and is a member of the Commonwealth Caribbean. This system originated in England from customs and norms, which then became recognized and enforced by decrees and court judgments. As opposed to the other Commonwealth countries which merged their pre-colonial laws with the English law, Jamaica’s system is unique due to the fact that it came under the control of the British through battle and use of force. The British victory over the Spanish, resulted in a total eradication of the previously existing system of government and law, and in essence the common law came to Jamaica via the exercise of the Crown’s Prerogative in the proclamation of 14 December 1661. (Antoine, 2008)

Being, one of the first conquered colonies, the British battled with uncertainty as to how far its Prerogative or Royal power extended. Nonetheless in 1774, in the case of Campbell v Hall [1774] All ER rep 252, Lord Mansfield CJ outlined, “...a country conquered by British arms becomes a dominion of the sovereign in the right of his crown, and therefore, subject to the Parliament of Great Britain...” After Jamaica’s independence on August 6, 1962, existing laws were preserved by virtue of s 4(1) of the Constitution of Jamaica and thus the existing regime was saved.

The common law system relies heavily on judicial interpretation and the doctrine of stare decisis, where cases are determined based on precedents or previously decided cases in which the facts and issues are substantially the same, subject to the hierarchy of courts (Mercuro, 2007).
5.2 Jamaica’s Judicial System

![Diagram of the Jamaican Court System]

**Figure 5.1: Structure of Jamaica’s Court System**

Source: Supreme Court of Jamaica (2014)

Jamaica’s Judicial System contains five (5) tiers as illustrated in Figure 5.1, the lowest tier being the Petty Sessions Court, which is presided over by a Justice of the Peace (JP). A JP is a person of unquestionable integrity who seeks to promote and protect the rights of individuals and helps to give justice to those persons in a particular community. This position originated in England in 1327 with the enactment of the Justice of the Peace Act and was adopted by Jamaica after colonization. The Ministry of Justice of Jamaica provides supervision for the various processes involved in the appointment of Justices of the Peace and ensures that records are accurately maintained. ("Who Is a Justice of the Peace?," 2014) The office is a voluntary one and there is no requirement for legal training prior to appointment. However, every appointed JP must complete a period of training before he/she is commissioned into office. For a Petty Sessions Court to be properly constituted, a minimum of two JPs must preside.
The next tier of court is the Resident Magistrates’ Court; an inferior court of record governed entirely by statute. In this court, Resident Magistrates have the jurisdiction to try cases summarily and on indictment. Sanctions, such as fines and imprisonment are generally imposed, but the levels of sanctions are lower than that which may be imposed in the Supreme Court. Resident Magistrates preside over a range of courts at this level; Coroner’s Court, Traffic Court, Drug Court, Tax Court, Family Court, Juvenile Court and Civil Court. The jurisdiction of the Civil Court, prior to 2013, was limited to claims not exceeding Two Hundred and Fifty Thousand Jamaican Dollars ($250,000.00) or US $2,200.00, but has now increased for regular civil matters to One Million Jamaican Dollars ($1,000,000.00) or US $8,800.00. (Henry, 2013). Appeals from the Resident Magistrates’ Court are to the Court of Appeal.

At the third tier is the Supreme Court, the highest first instance court. It is a superior court of record and has unlimited jurisdiction with both inherent and statutory jurisdiction. Courts of equivalent jurisdiction in other countries are generally referred to as “High Courts”. The Supreme Court has jurisdiction in Civil, Criminal, Family, Commercial, Succession and Admiralty cases. There are also specialised courts which also exercise superior jurisdiction which are presided over by Supreme Court Judges. These are the High and Circuit Court Divisions of the Gun Court and the Revenue Court. Appeals from the Supreme Court are also made to the Court of Appeal. ("The Court Structure and Hierarchy," 2013)

The court to which all appeals are first referred is the Court of Appeal. It is the fourth tier of the court structure and its procedure is governed by statute. The Court of Appeal has the power to confirm, overturn or vary judgments in any cases in which there are appeals from any of the first-instance courts. The decisions of the Court of Appeal may be subject to appeal to the Judicial Committee of the Privy Council (The Privy Council) in the United Kingdom. The Privy Council is the fifth and highest tier of the Jamaican Court System and technically, the appeal is to the Head of State which is the Sovereign. The Privy Council hears the appeal and makes a recommendation to the Sovereign as to the manner in which the appeal is to be resolved. It may recommend confirmation, overturn or variation of the judgment of the Court of Appeal. Appeals to the Privy Council are restricted to cases of a certain monetary value or where they are of exceptional public importance. The power to refer cases to the Privy Council is allowed under the Jamaican Constitution and Jamaica was among the eight nations, the others being Barbados,
Belize, Dominica, Guyana, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago to ratify a treaty to establish the Caribbean Court of Justice (CCJ). The CCJ settles disputes between the Caribbean Community (CARICOM) Member States and to date, only three (3) of said CARICOM states have replaced the Privy Council with the CCJ: Barbados, Belize and Guyana. The CCJ does not have the competence to hear individual cases on human rights violations, but may apply rules of international law as required. It sits at the fifth tier of the Jamaican Court Structure.

It must be noted that decisions from courts outside of Jamaica are not binding, but may also be referred to as persuasive authority if there is no local case which has settled the point in issue. That said judgments of the various international courts and tribunals such as the International Court of Justice (ICJ) and the International Tribunal on the Law of the Sea (ITLOS), as well as international maritime arbitrations can be considered persuasive authority in matters similar in nature ("The Court Structure and Hierarchy," 2013).

5.3 Jamaica’s Admiralty Jurisdiction

Being a former colony of the United Kingdom (UK) and having adopted the basic structure of their legislative system, decisions from the UK, particularly those from the House of Lords, are also very persuasive in Jamaican courts. As is evident in Figure 5.1, there is no separate Admiralty Court in Jamaica, rather an Admiralty Division of the Supreme Court. The Judicature (Supreme Court) Act was passed in Jamaica in 1880 and section 4 of the said Act itemized the Courts which would constitute the Supreme Court of Judicature of Jamaica. Section 4 made no mention of the Admiralty Court.

The matter of admiralty jurisdiction was raised in the recent Jamaican case of Matcam Marine Limited v Michael Matalon (The registered owner of the Orion Warrior (Formerly Matcam 1) Claim No. A0002/2011 (delivered on October 6, 2011), where Counsel for the Defendant raised doubts about the applicability of the Administrative of Justice Act 1956 (UK) to Jamaica. Justice Sykes gave a detailed and instructive response to the lawyer’s claim, outlining that the omission in Section 4 is not an indication that admiralty jurisdiction does not exist in Jamaica. He further
gave a two-step process to identifying the admiralty jurisdiction of the Supreme Court of Jamaica. These being;

“...The first step is that section 2(2) of the Colonial Courts of Admiralty Act of 1890 (UK) shall be read as if the admiralty jurisdiction set out there was substituted with the Admiralty jurisdiction set out in section 1 of the 1956 Act.

The second step is that this new reading of the 1890 Act applies to the Supreme Court of Jamaica. Section 1 of the 1956 Act (UK) sets out the admiralty jurisdiction applicable to the Supreme Court of Jamaica...”

Justice Sykes also mentioned two other Jamaican cases which affirmed that the UK legislation is applicable in Jamaica; Citadelle Line S.A. v The Owners of Motor Vessel ‘Texana’ (1996) 16 JLR 1 and DYC Fishing Ltd v The Owners of MV Devin and MV Brice Claim No. 2010 A 00002 (delivered October 8, 2010).

Presently there are very little cases heard in the Admiralty Division of the Supreme Court of Jamaica but with the JLH initiative, there is a likelihood of increase in volume. While it is accepted in Matcam v Matalon supra that admiralty jurisdiction does exist in Jamaica, the Supreme Court may benefit from examining the current structure, and considering the establishment of a separate Admiralty court rather than a mere Division of the said court, based on the number of matters being brought before the courts as the project progresses.

5.4 Jamaica’s Maritime Governance

Maritime operations in Jamaica are managed by the Ministry of Transport and Works, which was established to provide a safe and efficient transportation system, and the building and maintenance of high infrastructural works including roads. There are three main government agencies responsible for the maritime operations in Jamaica; the Maritime Authority of Jamaica (MAJ), Port Authority of Jamaica (PAJ) and the Caribbean Maritime Institute (CMI).
The MAJ was established to implement the provisions of the Shipping Act of Jamaica 1998, with an objective to pursue the development of shipping and to regulate matters relating to shipping and seafarers. Additionally, the shipping registry of Jamaica is the responsibility of the maritime authority, along with the inspection of ships for the purposes of maritime safety and prevention of marine pollution. The PAJ is responsible for the regulation and development of Jamaica’s ports. Its functions include regulating the use of all port facilities in a port, providing and operating such port facilities and other services as the Minister may require, giving recommendations to the Minister from time to time regarding measures necessary to maintain or improve port facilities, operating facilities owned by, or leased to the Authority and maintaining and improving port facilities vested in the Authority (MHTWW, 2014).

CMI is the premier maritime training institution in the Caribbean and is considered the region’s centre of excellence for the training of professional seafarers and personnel in the shipping, logistics and supply chain management sectors (MHTWW, 2014). Figure 5.2 below is a simplified illustration of maritime governance in Jamaica.

**Figure 5.2: Maritime governance structure of Jamaica**
Source: Ministry of Transport and Works of Jamaica (2013)
5.5 Jamaica’s Domestic Laws

There are a number of statutes that apply to maritime operations in Jamaica, some directly and others indirectly, but all applicable depending on the nature of the situations.

5.5.1 Maritime Security Laws

Maritime security is one of the main areas of concern in the international maritime community, and concerns matters such as piracy, armed robbery, terrorism and other transnational crimes such as drug, arms and human trafficking.

Particularly in the Caribbean region, transnational crime continues to be a major issue, and in an effort to address this problem, Jamaica introduced the Maritime Drug Trafficking (Suppression) Act in 1999. This Act introduced the provisions of the United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988 and established a Central Authority with the power to conduct law enforcement operations for the prevention, detention and suppression of illicit traffic in drugs. Of noted importance is the fact that the Maritime Drug Trafficking (Suppression) Act 1999 accommodates treaties and bilateral agreements relating to illicit traffic in drugs. Section 18 of the 1999 Act allows for aircrafts or vessels to follow foreign vessels into Jamaica’s territorial waters, under special circumstances, in order to maintain contact with or investigate, board and search the vessel. Additionally, section 21 of the said 1999 Act establishes jurisdiction of Jamaican courts in situations outside of Jamaica’s waters where the vessel in question is registered in Jamaica and/or the alleged offender is a Jamaican national or found in Jamaica.

Another local instrument is the Port Authority (Port Management and Security) By-Laws 2005 which implements Chapter X-2 of the International Convention on the Safety of Life at Sea (SOLAS) 1974, as amended, which further incorporates the ISPS Code addressing port facilities.
Piracy is not a major issue in the Caribbean area but nonetheless, should not be ignored. It is possibly one of the oldest maritime crimes and certainly one of the most feared, as it endangers the crew, the shipowner, the cargo owner, the charterer, the Flag State and even the coastal State depending on the location of the incident.

Jamaica, in particular, is flanked by North, Central and South America, as well as other Caribbean countries. In 2013, seventeen vessels were attacked in South American waters, while since 2014, attacks were reported in Grenada, Dominica, Panama, Martinique, St. Martin and St. Lucia (World Cruising Club Limited, n.d., Reports on Acts of Piracy and Armed Robbery Against Ships, 2013). With the expected upsurge in vessel traffic, it seems highly probable that more attention will be directed in the neighbouring and territorial waters of Jamaica hence, a solid regulatory framework is required to tackle such matters.

It is noteworthy that there is no national legislation in Jamaica adequately addressing piracy which raises some concern considering Jamaica’s history with piracy and associated activities, and is a matter of great concern with the establishment of the JLH.

**5.5.2 Maritime Environmental Laws**

Being totally surrounded by water and with the extended area of territorial waters due to its archipelagic status, as declared in section 3 of the Maritime Areas Act of Jamaica; it is of particular importance that Jamaica enacts laws to protect its marine environment.

Jamaica possesses a varied and irregular coastline which consists of various coastal features such as harbours, beaches, mangrove swamps and coral reefs, which contribute to the economic well-being of the country mainly through tourism. ("Coastal and Marine Resources Management," n.d.) Proper management of the country’s coastline and marine resources is addressed under the Beach Control Act 1956. Section 7 of this Act speaks to the Minister’s power to declare protected areas and prohibit activity within the area having regard to the Harbours Act, Shipping Act, Pilotage Act, Fishing Industry Act and the Exclusive Economic Zone (EEZ) Act. The Act is
currently being reviewed to address more contemporary issues, which is a good indication of the government’s attention to protection of the State’s marine environment.

The management, conservation and protection of the natural resources of Jamaica fall under the Natural Resources Conservation Authority Act 1991. Section 9 of the said Act creates a Ministerial discretion to declare parts of or the entire island a ‘prescribed area’, in which specified activities require a permit, and for which activities an environmental impact assessment may be required. Subsequently, pursuant to the Section 9, the Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order, 1996 and the Permits & Licensing Regulations were passed. The Order provides that the entire island of Jamaica is a prescribed area and lists specified categories of enterprise, construction or development that require a permit, and also addresses Sewage and Trade Effluent discharges as well as air emissions.

The Watersheds Protection Act 1963 provides for the protection of watersheds and areas adjoining watersheds, as well as, promotes the conservation of water resources. Jamaica is considered to be one watershed, but for management purposes is divided into smaller units. Similarly, the Wild Life Protection Act 1945 (as amended in 1991) protects specified species of fauna, while the Fishing Industry Act 1975, administered by the Fisheries Division of the Ministry of Agriculture, protects and conserves the marine resources in Jamaica through the issuance of licenses for temporary and/or permanent fishing activities.

The Aquaculture, Inland, Marine Products and By-Products (Inspection, Licensing and Export) Act 1999 addresses the inspection and certification of various categories of products and by-products intended for export. The main objective of the Act is to advance public health and safety standards however, it includes the monitoring of the hygienic and sanitary conditions of vessels engaged in the processing of aquaculture, inland and marine products and their by-products.

Jamaica’s compliance with its obligations under the Convention on International Trade in Endangered Species (C.I.T.E.S) of Wild Flora and Fauna are fulfilled under its Endangered Species (Protection, Conservation and Regulation of Trade) Act 2000. This involves the protection, conservation and management of endangered species, wild flora and fauna of Jamaica.
and other countries by regulating the exportation of specimens that are or are derived from indigenous Jamaican animals or plants. The link to the maritime industry falls under section 2 of the Act where an “authorized officer” is defined to include, among others; a Fisheries Inspector appointed under the Fishing Industry Act, a Marine Officer under the EEZ Act and the Maritime Areas Act, and any Inspector under the Aquaculture, Inland, Marine Products and By-Products (Inspection, Licensing and Export) Act 1999.

The Maritime Areas Act and the EEZ Act refer to the delimitation of Jamaica’s maritime zones in line with the provisions of UNCLOS and the Shipping Act 1998 sets out the legal framework for administration of ship registration, seafarers’ welfare, safety, wrecks, salvage, casualty investigation and other related matters. It establishes the Maritime Authority of Jamaica and incorporates the primary international treaties governing the safety of life at sea and provides for the inspection of foreign ships calling at Jamaican ports, with contains certain restrictions related to the commercial operation of foreign flag ships in Jamaican waters. This Act also incorporates the provisions of a number of ILO and IMO Conventions to which Jamaica is a party.

The Petroleum Act 1979 (as amended in 2006) declares all petroleum existing in its natural state in strata in Jamaica, including petroleum on the seabed and subsoil of the State’s territorial sea, continental shelf and exclusive economic zone, property of the State; and for the purposes of the jurisdiction of any court in Jamaica, any such maritime extension shall be treated as if it were located in the parish in which proceedings are brought.

The most recent introduction to the environmental regulatory framework is the Draft Shipping (Pollution Prevention and Control) Bill, which is expected to incorporate a number of International Conventions dealing with the prevention of pollution, response to pollution incidents and compensation for pollution damage. The Bill had specifically incorporated provisions from CLC, the FUND Convention and the Bunkers Convention regarding issues of civil liability and compensation.
5.5.3 Maritime Labour Laws

Laws that touch and surround the regulation of labour in Jamaica’s maritime industry include the Factories Act 1943 which regulates the registration of factories and equipment and the approval of plans for the construction of new factories and the health and safety conditions required to be maintained. Additionally the Immigration Restriction (Commonwealth Citizens) Act, 1945 governs the control of the employment of foreigners, while the Labour Relations and Industrial Disputes Act, 1975 (as amended in 2010), coupled with the associated Regulations regulates the industrial relations in Jamaica.

The Caribbean Maritime Institute Act, 1993 establishes the country’s only maritime training institution, the Caribbean Maritime Institute, to deliver training for the shipping industry.

Labour laws are somewhat few compared to the other sectors, which is interesting to note considering Jamaica’s role in the training of seafarers in the Caribbean region.

5.5.4 Maritime Commercial Laws

The national laws that govern trade and trade relations, particularly in the maritime context are the Income Tax Act, 1955, which outlines regulations of the State’s income tax requirements, the Customs Act, 1955, which addresses matters regarding licenses of customs brokers and their duties are addressed in this Act, with a view to ensuring that standards are being maintained; and the Fair Competition Act 1993 which was established to prohibit anticompetitive conduct, and established the Fair Trading Commission, a body that investigates the actions of enterprises that may result in an abuse of an enterprise’s dominant position in the market. The Customs Duties (Dumping and Subsidies) Act 1999 establishes rules relating to the determination of fair market price and material and injury arising from the dumping of goods, while the Export Industry Encouragement Act, 1956 provides fiscal incentives to companies involved in export activities.

The Jamaica Export Free Zone Act 1982 addresses the legal framework for prescribed export activities that may be carried out in a free zone and the establishment of single-entry free zones
are also prescribed therein. In addition the Carriage of Goods Act 1889 addresses the rules governing bills of ladings and maritime commercial activities, and the Bill of Lading Act 1855 enables consignees and other lawful holders of bills of lading to sue under the contract evidenced by the Bill of Lading.

The Cargo Preference Act 1979 requires specific cargo to be carried by ships owner, chartered and operated by the Government of Jamaica. This legislation has not been applied for many years as the Government of Jamaica no longer owns ships.

A more modern legislation, the Shipping (Local Trade) Regulations 2006 provide for conditions under which foreign ships can operate within Jamaica’s territorial waters.

All these regulations create the maritime commercial law framework of Jamaica and it will be necessary to review these as the JLH initiative progresses.

5.6 Other Relevant Legislation

Other relevant legislation include the Harbours Act 1874 that establishes the position of the Harbour Master and regulates the movement of ships within the declared harbours of Jamaica. This Act and also contains provisions on the maintenance of aids to navigation. Additionally, the Wharfage Act 1895 governs the rights and duties of a wharfinger, who is defined under section 2 as the person in occupation of any public wharf and carrying on the business of landing, receiving and otherwise dealing with thereat the goods of other people. The said Act sets the wharfage rates for goods that pass through the ports. The Act also sets out the duties of wharfingers in relation to the receipt, delivery and storage of goods. Under the Act, a wharfinger is required to erect and maintain adequate sheds or other places of security for storing. Matters relating to free storage periods and penal rates for the storage of goods beyond the statutory free period are also addressed under the Act. The Act also provides for the Port Authority and wharfinger to set rates for loading, unloading, movement, receiving and delivery of containers or other service of whatever nature rendered in connection with that wharf in relation to containers.
The Harbour Fees Act 1927 provides for the payment of fees by ships to the Collector of Customs, on behalf of the Port Authority, for maintaining the harbour. Under the Act, certain vessels are exempted from paying fees (for example, government ships, pleasure craft, and vessels in distress), and the Quarantine Act 1951 regulates the prevention of the spread of any infection by means of a ship. Quarantine officers have the power to inspect ships to determine whether the cargo may be discharged, as well as the power to detain or send it to a port which the officer thinks can address the presence of a communicable disease on board. Also addressing the matter of health is the Public Health Act 1985, which regulates the prevention of communicable diseases. The definition of ‘premises’ under the Act is all-embracing and includes warehouses, factories, port facilities and ships in so far as issues affecting public health are concerned.

With regards to the regulations of the ports, the Port Authority Act 1972 established the Port Authority of Jamaica with a mandate for regulation and development of port facilities and the maintenance of ship channels and navigation aids. The Port Authority is charged with the regulation of the use of all facilities in a port. Port facilities are defined as facilities for, inter alia, dry-docking, berthing, loading and unloading of goods, carriage of passengers, and warehousing. The Port Authority may also operate port facilities vested in the Authority and may, under the direction of the responsible Minister; operate port facilities which are not vested in the Port Authority. Also, the Port Authority (Compulsory Towage) (Harbour of Kingston) Directions 1994 regulates the provision of towage services in the port of Kingston, while the Pilotage Act 1975 Act regulates the pilotage service, which adds to the safety of vessels calling at Jamaican ports and devolves the administration of the service to the Port Authority of Jamaica.

5.7 Summary of Chapter Five

The aforementioned legislation, regulations and agreements are those particularly applicable, to a great extent or paradoxically with very minuscule effect to the maritime industry and the associated operations. A detailed analysis on the efficacy of these regulations as it relates to the JLH initiative will be discussed in Chapter Seven.
CHAPTER SIX

6.0 CASE STUDIES

6.1 Case Study 1 – Singapore

Singapore gained independence in 1958 and is located on the southern end of the Malay Peninsula. Shortly after gaining independence, the State suffered some blows to its economy. Shortly after, the State embarked on a project to save its economy through restructuring its transportation industry. The share of the transport and communication sector of Singapore in GDP in 2007 was 14.6% with a real growth of 8.8% in the previous five (5) years (WB, 2009). Singapore is described as having world-class seaports and airports, excellent infrastructure, an efficient telecommunication network, a pro-business environment, intensive use of information technology, wide-ranging logistics capabilities, as well as a skilled and professional workforce. The combination of these factors has helped Singapore to become a modern hub of international trade and a base of operations for a large number of multinational and regional companies (Economic and Social Commission for Asia and the Pacific, 2002).

6.1.1 Singapore’s Maritime Governance

As Singapore transformed into the fifth best performing logistics hub worldwide out of 160 in the World Bank 2014 Logistics Performance Index (LPI), the State underwent a governance transformation that incontestably contributed to the success of the logistics hub. Prior to 1996, port regulations and cargo operations were managed by three (3) agencies:

1. The National Maritime Board, which overlooked matters relating the training of seafarers;
2. The Port of Singapore Authority, which handled matters relating to cargo operations and port regulations; and
3. The Maritime Department, a department in the Ministry of Transport that overlooked the ship registry.
In 1995, the Government of Singapore made a bold move and enacted the Merchant Shipping Act, which was then revised in 2006 to become the Maritime and Port Authority of Singapore Act. This new legislation combined the regulatory functions of the three (3) abovementioned agencies and separated them from the commercial and marine activities. As illustrated by Figure 6.1, the Maritime and Port Authority of Singapore (MPA) adopted management and administration of the Port of Singapore through the regulation of the essential port and marine services and facilities, while the operational aspects of the terminal businesses and other commercial activities became the responsibility of the PSA Corporation, an entity of Temasek Holdings, the investment company of the Singapore Government.

Figure 6.1 Structural changes to the governance of the Port of Singapore

Source: Brooks & Cullinane (2007)

The MPA falls under the purview of the Ministry of Transport and the major policy decisions are made at the ministerial level, in close consultation with the members of the maritime community, including the Singapore Shipping Association and the Singapore Maritime Foundation. Brooks & Cullinane (2007) found that the benefit of this arrangement is that policies are formulated with a strong focus on their relevance and importance to the commercial needs of the maritime community. The MPA is headed by a Chief Executive who oversees the daily operations and in turn reports to the Board of Directors, which is chaired by the Permanent Secretary of the Ministry of Trade and Industry (MTI) and its functions include;
1) Regulating and licensing port and marine services and facilities

The MPA discharges Singapore’s roles as flag and port State by ensuring that the regulations are current and that the State remains compliant and adherent to the IMO conventions and other international instruments to which Singapore is party. The MPA is also responsible for issuing licences to cargo-handling operators and these licenses extend to the provision of pilotage and towage services.

2) Protecting the marine environment and ensuring navigational safety and maritime security

The MPA is also responsible for, inter alia, the management of vessel movements, prevention of marine accidents, oil spill prevention and working with other Singapore governmental agencies and the private sector in the implementation of the necessary security measures.

3) Managing Singapore’s merchant fleet

The Singapore Registry of Ships (SRS) is responsible for the registration of ships sailing under the Singapore flag, while the MPA is responsible for promoting and marketing the SRS. MPA promotes the Singapore registry as a high-quality, attractive register through targeting shipowners and providing support services to the shipping community.

4) Working with various government agencies and industry partners to develop and promote Singapore as a leading port and International Maritime Centre (IMC)

MPA is also responsible for assessing industry trends and developing strategies aimed at identifying new business opportunities, and applying the appropriate port planning to maintain a high status in the industry. Attracting local participation, foreign investments and enhancing the breadth and depth of services being offered are also duties of the MPA.

5) Safeguarding Singapore’s maritime interests in the international arena

The MPA serves as the de facto advisor on maritime related matters to the Government of Singapore, which includes management of foreign relations and building networks with important maritime countries and international organizations such as the IMO.
6.1.2 Singapore’s National Maritime Laws

To date, Singapore is party to thirty-one (31) IMO Conventions, inclusive of SOLAS, MARPOL and STCW. Apart from the main maritime instrument, the MPA Act, the Government of Singapore also enacted a cadre of national maritime laws, to safeguard the State’s interests with the establishment of the Singapore logistics hub. These are the Maritime Offences Act, which gives effect to the provisions of the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation and addresses matters of piracy, hijacking of ships and other maritime security matters; the Merchant Shipping (Civil Liability and Compensation for Bunker Oil Pollution) Act 2008 and Merchant Shipping (Civil Liability and Compensation for Oil Pollution) (Compulsory Insurance) Regulations, addressing oil pollution and issues of liability.


Other national regulations include the MSA Notification 1 (Exemption under Section 222), MSA Notification 3 (Authorisation to extend expired certificates), MSA Notification 4 (Exemptions of Govt and PSA vessels), MSA Notification 5 (Notice under Section 14(5)), MSA Order 1 (MS (Limitation of Liability)(Sing $ equivalents)), MSA Rule 1 (MS (Shipping Casualties, appeals and rehearings)), MSA Rule 2 (MS (Court of Survey)), MSA Rule 3 (MS (Transit of Cattle by Sea)), MSA Rule 4 (MS (Survey of Passenger Steamers)), MSA Rule 5 (MS (Staff Transfer)) and the Merchant Shipping (Training, Certification and Manning) Regulations, all of which
speak to certifications, liabilities, casualties and judicial proceedings amongst other maritime issues.

The most recent instrument is the Merchant Shipping (Maritime Labour Convention) Act 2014, which was enacted following the entry unto force of the Maritime Labour Convention 2006. It must be noted that a vast amount of Singapore’s national maritime laws are current, dating back to about 2004, which suggest that the laws are compliant and contemporaneous. The amount of regulations can be attributed to Singapore’s legal system, which is a common law system. This type of system indicates that when the State ratifies an international instrument, it will have to enact a separate domestic law to give effect to the terms of the said international instrument, unless said instrument is declared as self-executing.

Singapore’s shipping law in particular, covers the areas of carriage of goods by sea, admiralty law and merchant shipping legislation. The Carriage of Goods by Sea Act and the Bills of Lading Act, form the body of the law on carriage by sea. The primary legislation on admiralty law and jurisdiction is the High Court (Admiralty Jurisdiction) Act of Singapore which is modelled after the UK Administration of Justice Act 1956. An amendment to this statute came into effect on 1 April 2004 permitting arrest of demise chartered vessel.

There have been a number of cases heard in Singapore as a result of international conflicts in or related to shipping operations. The notable impressive maritime regulations of Singapore and its expeditious judicial system resulted in recent judgments in cases such as The “STX Mumbai” [2014] SGHC 122 and the Pacific Marine & Shipbuilding Pte Ltd v Xin Ming Hua Pte Ltd [2014] SGHC 102.

The government sector is important for the formulation and implementation of appropriate policies, but it needs the private sector to carry out and translate the overall policy direction into action. Thus, a good partnership between the government and the private sector is an important ingredient to the success of a logistics hub strategy. Based on Singapore’s experience, the government of Singapore has always been pro-active and supportive to the logistics providers by providing world-class infrastructure and a broad range of logistics solutions and services including the establishment of efficient customs procedures and pro-business environment (Tongzon, 2004).
6.2 Case Study 2 – Hong Kong

The world class infrastructure and free port status are significant ingredients in Hong Kong’s enduring success as a leading logistics hub. (Millar, n.d.) Hong Kong currently stands at number 15 on the Logistics Performance Index 2014 and boasts one of the best cargo airports and one of the largest container seaports worldwide. Figure 6.2 depicts the air freight statistics for the years 2003 to 2012, with Hong Kong’s performance surpassing that of the other major logistics States.

Figure 6.2: Air Freight Statistics 2003-2012
Source: Arvis et al. (2014)

Government involvement in the transformation process can be attributable to its boast-worthy success in the global logistics sector. An examination of the maritime governance is vital to fully appreciate the notability of policy and regulation to the success of the global trade operations.
6.2.1 Hong Kong’s Maritime Governance

The Transport Department, the Civil Aviation Department and the Marine Department are the three (3) government agencies directly involved in the governance of transportation in Hong Kong. The Transport Department is directly responsible to the Secretary for the Environment, Transport & Works, while the Civil Aviation and Marine Departments report to the Secretary for Economic Development and Labour, which heads the Economic Development and Labour Bureau (EDLB). The EDLB and the Marine Department are responsible for Hong Kong’s maritime matters. The Marine Department is headed by the Director of Marine, and provides a number of major services such as, vessel traffic, pilotage, hydrographic office, dangerous goods, maritime search and rescue and mooring buoys.

June 2003 marked a significant transformation in the maritime governance in Hong Kong. The then, Hong Kong Port and Maritime Board (PMB) became two (2) separate bodies; the Hong Kong Maritime Industry Council (MIC) and the Hong Kong Port Development Council (PDC) (see Figure 6.3). The MIC assumed responsibilities for the promotion of Hong Kong as an International Maritime Centre and the development of the maritime industry, provision of advice to the government on the formulation of measures and initiatives, and to assist the government to promote the Hong Kong Shipping Register and the development of human resources for the maritime cluster. In 2001 the Logistics Development Council (LOGSCOUNCIL) was formed to further promote Hong Kong as a key logistics hub. Although its focus is wider than the MIC and PDC, it performs an important role in representing stakeholders from the sector.

The PDC, on the other hand, was created to provide advice to the government on port development strategies and port planning, including the development of terminal facilities and to assist in the promotion of Hong Kong as a regional hub port and a leading world container port.

Unlike many other countries, Hong Kong does not have a port authority. Most of the port facilities are privately owned and operated with minimal interference from the government, whose role is limited to undertaking long-term strategic planning and to provide the necessary support infrastructure.
Figure 6.3 Hong Kong’s maritime governance structure before and after 2003
Source: Brooks and Cullinane (2007)
6.2.2 Hong Kong’s National Maritime Laws

Hong Kong was a British Dependent Territory before 1 July 1997. The legal system was based on that in England and the laws of both jurisdictions were similar and often identical. The People's Republic of China resumed the exercise of sovereignty over Hong Kong on 1 July 1997. Hong Kong has become a Special Administrative Region ('SAR') directly under the Central People's Government and is recognised as an inalienable part of the People's Republic of China. The Basic Law is the constitutional document for the Hong Kong SAR. It sets out the new constitutional order of 'one country, two systems', 'a high degree of autonomy' and 'Hong Kong People ruling Hong Kong'.

Despite the fact that Mainland China is a civil law jurisdiction, Article 8 of the Basic Law of China states that the laws previously in force in Hong Kong, that is, the common law, rules of equity, ordinances, subordinate legislation and customary law shall be maintained, except for any that contravene the Basic Law, and subject to any amendment by the legislature of the Hong Kong SAR. Maritime law is the law which is applied by the Admiralty Jurisdiction of the High Court in Hong Kong by legislation, or has been adopted by the court by decision, tradition and principle. (Chan, Ng, & Wong, 2002)

Hong Kong’s port law is to be found in the Shipping and Port Control Ordinance. This piece of legislation encapsulates all the major topics under the maritime and transport law of Hong Kong. It is a go-to document for all maritime needs covering matters of safety and security to mooring of vessels, and even pollution of the sea. Under section 56 of the Ordinance, the Secretary for Transport and Housing may declare any area of the waters of Hong Kong to be a port. Other provisions of the Ordinance give permission to the Director of Marine with respect to port facilities, to refuse a vessel entry or departure from Hong Kong, provide for inspections, outline pollution offences, reporting and defences and deal generally with other practical port-related issues such as port dues.

In addition to the Shipping and Port Control Ordinance, Hong Kong is subject to the Closer Economic Partnership Agreement (CEPA). CEPA is an agreement between the Mainland China
and Hong Kong designed to improve trade and business integration. Article 1 of the main text provides that the strengthening of trade and investment cooperation between the two sides will be achieved by progressively reducing tariffs, progressively achieving liberalization of trade in services through reduction or elimination of substantially all discriminatory measures and promoting trade and investment facilitation. Other business services related to the shipping sector are permitted under CEPA, including liberal policies for freight forwarding agencies. Supplements to the main text have extended benefits and advantages to other businesses within the maritime sector.

Hong Kong is currently party to 36 IMO Conventions, and the Ordinance gives effect to all the matters addressed in these conventions. Maritime arbitration is an important element in the development of a logistics hub. Singapore and Hong Kong have been described as the leading arbitration jurisdictions in the Asia-Pacific. The Hong Kong International Arbitration Centre (HKIAC) established the Hong Kong Maritime Arbitration Group (HKMAG) in 2000. The HKMAG maintains a register of experienced maritime arbitrators and is a response to growing demand from the industry. The HKIAC, on the other hand, handled 624 dispute resolution matters in 2010 and 291 were arbitration matters. Of the arbitration matters, most were commercial disputes, 17 per cent of which were maritime related. A new Arbitration Ordinance was passed by the Legislative Council on 11 November 2010 and entered into force on 1 June 2011 which aimed to reduce the costs of arbitration through a number of measures including reduced judicial intervention and incorporating maximum recoverable limits for fees and costs.

In spite of the fact that Hong Kong did not institute the traditional port authority to oversee and regulate port operations, the logistics hub has been largely successful and competitive in the global trade arena. The success however, could not have been realized without the structural and policy changes implemented by the Government in 2003.
CHAPTER SEVEN

7.0 ANALYSIS OF SELECTED MARITIME CONTEMPORARY ISSUES

It goes without question that a successful project requires the establishment of a solid foundation and in a major venture like the JLH, such a foundation is a solid and efficient regulatory and policy framework. With the development of the Singapore logistics hub, as indicated in Figure 7.1, it was identified that political, economic and regulatory stability was a vital enabler to ensure the success of the venture.

Figure 7.1: Vision for Singapore logistics hub
Source: ERC Logistics Working Group

Having reviewed the legislative frameworks of Jamaica, Singapore and Hong Kong, the question still remains: Is the current maritime legislative and administrative framework of Jamaica
sufficient to address the likely issues associated with the establishment of the Jamaica Logistics Hub?

The framework of Jamaica will be examined in light of selected maritime issues; trafficking, pollution, carriage of goods and maritime labour, amongst other pertinent matters.

7.1 Trafficking

“It's not just Jamaica that's on alert. The central Caribbean as a whole seems to be coming back into favour with transnational drug cartels, with authorities reporting sharp increases in cocaine seizures and scrambling resources to contain the apparent surge.” (Gordts, 2013) The preceding quote recapitulates the situation within the Caribbean region at present. Drug trafficking has been a long standing issue for Caribbean states that has affected the growth of their economies for centuries. As depicted in Figure 7.2, there are a number of drug trafficking routes within the Caribbean.

![Figure 7.2: Main Caribbean drug-trafficking routes](image)

**Figure 7.2: Main Caribbean drug-trafficking routes**

Source: "Full Circle," (2014)
With specific reference to Jamaica, illegal drugs are transported to the island via go-fast speedboats from Venezuela, and are transported from Jamaica via yachts, mules, cargo vessels, cruise ships and/or go-fast speedboats (See Figure 7.2). This indicates that the illegal substances are transported by sea which ultimately affects the maritime operations and regulatory activities of the State.

The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988 is one of the main international instruments addressing illegal trafficking of drugs. Jamaica became a party to this convention on 2\textsuperscript{nd} December 1995, and the State’s national framework consists of the Dangerous Drugs Act, which is a piece of legislation addressing the general activities related to selected illegal drugs and the associated penalties. The Maritime Drug Trafficking (Suppression) Act delves further into illegal drug trafficking and addresses the transport of same by sea, as well as the establishment of patrols and law enforcement. The Jamaica Defence Force (JDF) Coast Guard conducts all patrol and search and rescue operations in Jamaica’s territorial waters. The Maritime Drug Trafficking (Suppression) Act goes further to address bilateral agreements between Jamaica and other States and allows for cooperation in the fight against illicit drug trafficking.

Despite these initiatives, drug trafficking continues to be a major issue in Jamaica’s waters and in the neighbouring regions. Gordts (2013) stated,

\begin{quote}
\textit{“Drugs are also concealed in commercial cargo. Big container ships call at transhipment ports such as Kingston in Jamaica or Freeport on Grand Bahama. In the Dominican Republic only one port, Caucedo, is certified under the Container Security Initiative that allows United States’ officials to examine cargoes. Smaller vessels of a few hundred tonnes chug from the mainland to the Dutch islands of Aruba or Curaçao, or from Guyana to the eastern Caribbean.”}
\end{quote}

With the anticipated increase in vessel traffic in Jamaican waters, it is apparent that drug trafficking will continue to be a major source of concern for the country. The legislative framework exists but its effect is not as strong as desired or required.
7.2 Pollution

The *Torrey Canyon* 1967 propelled marine pollution to becoming an area of concern for years. In addition to concerns about the oceans and the living organisms and natural resources therein, pollution is such a major matter because of the extensive costs associated with marine pollution. Marine pollution, in essence, is the contamination of the natural water ecosystems by alien substances. It can be by organic pollution in the form of sewage, petroleum hydrocarbons and oil, particles, sediments, solid wastes, noise, heat and even by invasive species, and can be classified into three categories; intentional, operational and accidental. Intentional marine pollution includes activities such as ballast water exchanges, and discharges from ships into the ocean; operational marine pollution involves, among other things, seepage from the land at ports and other shipping facilities; and accidental marine pollution includes oil spills from ships whether the ship has been involved in a collision or not.

In addition to being a major transhipment country, Jamaica has very active cruise ship traffic within its waters. This is profitable for the State but also doubles the risk of a major marine incident occurring in its territorial sea and/or EEZ. Schmidt (2000) reported that pollution from mega cruise liners continue to be a major challenge for many local cruise tourism destinations.

One of the largest oil pollution accidents to date is the BP oil spill in the Gulf of Mexico. The incident involved the explosion of an offshore oil rig in the deep-water horizon in 2010 and resulted in the death of eleven workers on the rig and the spillage of over 205 million gallons of crude oil in the Gulf. The spill impacted the coastlines of Louisiana, Alabama, Mississippi and Florida, all states in the USA. Lying just 712 miles away from Florida, Jamaica’s vulnerability is even more evident. Jamaica is party to the MARPOL Convention, the CLC and the FUND 1992, however to date there is no national legislation addressing the matter of pollution from vessels. As mentioned in Chapter 5, the Draft Shipping (Pollution Prevention and Control) Bill was introduced, but is yet to be enacted. Considering Jamaica’s present susceptibility regarding pollution and the present JLH Initiative, the current legislation on pollution is highly insufficient to address vessel pollution.
7.3 Carriage of Goods

Central to any logistics hub initiative is carriage of goods by air, land and/or sea. Jamaica is a transhipment country with most of its maritime commercial activity surrounding the transshipment of cargo. It is safe to say that the nature of maritime commercial law has changed with time with regulations and international legislation evolving to meet the needs of the growing and dynamic industry.

Jamaica is currently party to the Hague Rules, which established carrier liability for the seaworthiness of ships at the beginning of the voyage, and the duty of care of the said carrier, with a few exceptions; These include nautical fault, perils of the sea, and third party fault. The Hague Rules have undergone further revisions, through the introduction of a Protocol in 1968, otherwise known as the Hague-Visby Rules and following that, the carrier’s liability was revisited in a new convention called the Hamburg Rules in 1978. The Rotterdam Rules, established in 2008 aim to address further advancements in the maritime commercial sector, like electronic bills of lading and multimodal transportation, as well as the creation of liability on particular parties involved in the carriage.

Jamaica’s current Bill of Lading Act allows for lawful holders of valid bills of lading to take legal action for damage suffered under the contract. The legislation was passed in the nineteenth century and as such does not address more modern forms of bills of lading, such as electronic bills of lading. The Cargo Preference Act, on the other hand, requires specific cargo to be carried by ships owned, chartered and operated by the Government of Jamaica. This legislation has not been applied for many years as the Government of Jamaica no longer owns ships. In essence, this law proves obsolete and it has no applicability in present times.

It is also interesting to note that the Carriage of Goods Act of Jamaica does incorporate the different modes of transportation, being on land and by sea, however, the liabilities of the carrier and associated persons are not mentioned therein. This leaves cause for concern especially within the operations of the JLH. How will the courts be guided to handle issues regarding
damage to goods for instance, considering Jamaica’s failure to ratify more modern maritime commercial regulations, as well as, the inadequacy of national laws relating to carriage of goods?

7.4 Maritime Labour

In August 2013, the minimum working and living standard for all seafarers working on ships and flying the flags of State parties were established in the Maritime Labour Convention (MLC) 2006. The MLC 2006 is an ILO convention aimed at, among other things, protecting the economic interests of seafarers. Surprisingly, despite being a nation that trains and certifies seafarers not only from Jamaica, but also from the Latin American and Caribbean region, Jamaica has not ratified the MLC 2006.

Ratifying countries represent more than 50% of the world seafarers and more than 75% of the world gross tonnage. ("Basic Facts on the Maritime Labour Convention 2006," 2013) Entry into force of the MLC 2006 will occur 12 months after ratification and this will introduce new requirements, for example, certification; a Maritime Labour Certificate and a Declaration of Maritime Labour Compliance are required to be carried on board at all times, and all vessels are subject to inspection and possible seizure if the standards are not complied with. Interesting to note is that the Convention also entails the concept of “no more favourable treatment”, in that despite having not ratified the convention, ships from non-ratifying states will be subject to the convention when calling at ports of State parties.

Jamaica has a small registry of fourteen (14) vessels in total, all foreign owned. The owners are from Denmark, Germany and Greece respectively ("Jamaica Merchant Marine," 2014). Despite the size of its registry, and considering the current ratification statistics of the MLC, it is possible that Jamaica may come face to face with the MLC 2006 at some point; and why not sooner than later?

According to Mukherjee (n.d.), the predominant interest in Jamaica has been in the field of maritime education and training, with the Caribbean Maritime Institute, previously known as the Jamaica Maritime Institute, being well known throughout the region. This reputation has caused
Jamaica to emanate as a significant crew supplying country in the Latin America and Caribbean region. As a State that trains seafarers, ratification is not only right, it is vital. This action will not only send a signal to the international community, but will also indicate to the very seafarers that are being trained that the State is concerned about their welfare, and is interested in keeping with the international standard as it regards training, certification, manning and maritime labour in general.

Jamaica’s domestic labour laws are limited in their scope of maritime application. The Immigration Restriction (Commonwealth Citizens) Act consists of two main sections, one which allows for a Notice to a Prohibited Immigrant to be served to prohibited immigrants and master of vessel and the other which gives a right to the master of a vessel to apply to the Resident Magistrate Court in Jamaica for a warrant to convey a prohibited immigrant back on the vessel. The Labour Relations and Industrial Disputes Act, on the other hand, does not specifically refer to marine workers or employees in the maritime industry, but generally applied only to unionized workers. The Act was amended to extend its application to non-unionized persons in 2010 and the jurisdiction of the Supreme Court in matters of unjustifiable dismissal was sonorously illustrated by Justice K. Anderson in *Calvin Cameron v Security Administrators Ltd [2007] HCV 02271*.

This limited scope of application is cause for concern and is one which policy makers and the government will need to consider.

### 7.5 Goat Islands

An investment proposal was submitted by China Harbour Engineering Company (CHEC) to establish a transhipment port and an industrial and commercial economic zone on the Goat Islands and the lands north of the islands in the Old Harbour Bay area. The investment which values approximately US $1.5 billion is promised to positively impact the growth of the Jamaican economy. Nonetheless, the Memorandum of Understanding (MOU) between the GOJ and CHEC for the said investment has raised concerns and became the subject of a national controversy. This is largely due to the protected status of the area. The Goat Islands, consisting
of the Great Goat Island and the Little Goat Island, form a part of the Portland Bight Protected Area (PBPA), which received its protected status under the Natural Resources Conservation Authority Act 1991. The main features of the Goat Islands are the dry limestone forest, mangrove wetlands, coastal vegetation assemblage on sand, brackish water bodies, sea grass bed and reef slope. (Port Authority of Jamaica, 2013) Additionally, the Little Goat Island was developed during World War II by the United States as a naval station, which included an airstrip, barracks, a power plant, fuel storage facilities and a water treatment system. Figure 7.3 is an aerial illustration of the Goat Islands.

![Figure 7.3: Aerial view of the Goat Islands](image)

The Port Authority of Jamaica (2013) noted that the PBPA did not fall under any of the categories of the International Union for the Conservation of Nature (IUCN). Additionally, Moore (2014) pointed out that the PBPA was under consideration as a UNESCO Biosphere Reserve until 2013, when the GOJ retracted their proposal indicating that there was an ominous change of plans. Despite the retraction, a number of organizations, such as the Jamaica Environmental Trust (JET), maintain that the CHEC project is in contravention of the law. The
GOJ however, insists that they will carry on with the project in an effort to gain fiscal benefits for the State, and this was potently expressed by Dr. Omar Davies, Minister of Transport and Works, who stated, “...let me make it unambiguously clear. For a host of reasons, we are serious about implementing this project.” (Henry, 2014)

7.6 Tax Structure

A major element of any logistics hub is that of investments and more specifically, foreign investments. A probable deterrent of said investment, however, is high tax rates. It is a given that a favourable tax environment will attract investors to the State. A review was conducted of the corporate tax rates in Jamaica from 2009 to 2014 and compared with those of Singapore, Hong Kong and the United Kingdom. The findings are clearly illustrated in Figure 7.4.

In each year, Jamaica’s tax rate surpassed the other locations with a rate of 33.33% from 2009 to 2012, and this rate was reduced by ¼ of the said rate to 25% in 2013 and 2014. The United Kingdom also had rates ranging from 28% to 21% over the period, while Singapore and Hong Kong have rates below 20%. Of noticeable importance is the fact that the corporate tax rate of Hong Kong has remained at a constant 16.5% over the period and that indicates some form of stability and reliability, which in turn makes the location attractive for investments.
Taxation in shipping is considered to be a vital driver of economic growth. In fact, according to Maritime UK (2012), a 2011 study by Oxford Economists concluded that the implementation of the tonnage tax has delivered significant benefits to the UK economy, in that the estimated contribution of tonnage tax to the UK gross domestic product is two-thirds more than it would have been otherwise.

The local regulations that affect tax and investments as it regards the JLH are the Income Tax Act, Customs Act, Jamaica Export Free Zone Act and the Shipping (Local Trade) Regulations. As outlined in Chapter 4, Jamaica instituted a number of free zones which, under the Jamaica Export Free Zone Act, allows for no tax to be levied on profits, and exemption from customs duties on imports and exports, provided that 85% or more of the exports are destined outside of CARICOM. These free zones are being phased into SEZs, which is a commendable move by the GOJ. Special regard must be had however, to the altitudinous tax rates currently in place in Jamaica as this may well be the determining factor between huge success in foreign investments or conversely a massive faux pas.
7.7 Summary of Chapter 7

Having examined selected major maritime issues, and Jamaica’s current structure, it is evident that the State has to make some considerations regarding its maritime regulatory and legislative framework. A colossal project like the JLH should be carefully thought through and all aspects touching and relating to the said project should be considered, reconstructed or demolished as the case may be.

Jamaica has a functional legal framework, as adopted from the British through colonization but the maritime sector leaves much to be desired. Currently, the only court in Jamaica designated to handle maritime matters is the Admiralty Division of the Supreme Court of Jamaica and Part 70 of the Civil Procedure Rules (CPR), which sets out the procedures for making a claim to the Supreme Court of Jamaica. It must be noted, however, that Part 70 only speaks to claims in rem.

Singapore and London both have internationally approved maritime arbitration institutions. Arbitration is a major element in the maritime industry and is the preferred choice for the settlement of disputes as it is much more expeditious and does not involve negative publicity for the parties involved. In Jamaica, there are certified arbitrators who are members of the Caribbean Branch of the Chartered Institute of Arbitrators, as well as local arbitrators at the Jamaica Dispute Resolution Foundation. In 2013, it was noted by the Minister of Justice that the Jamaican courts were experiencing a backlog of over 400,000 cases, with just over 200,000 at the Resident Magistrate level ("RM Court Backlog Passes 200,000 Mark", 2013). This overwhelming backlog is a matter that requires urgent attention. Shipowners, cargo owners, crew and other persons involved in a single voyage enterprise, as well as investors and shipping companies require expeditious and efficient court systems and/or dispute settlement systems so as to avoid any extensive delay in their operations. Jamaica’s current alternate dispute resolution system has been tasked with assisting with this backlog, but the State still has some way to go before overcoming this mass of incomplete cases.

In light of the aforementioned, the State has much to do before being considered ready to fully engulf in the operations of the JLH. The following chapter proposes recommendations that the GOJ may consider to align the State with the major logistics countries.
CHAPTER EIGHT

8.0 RECOMMENDATIONS AND CONCLUSION

It must be noted that a considerable amount of Jamaica’s domestic laws have been in existence for a number of years without any amendments, some being enacted even prior to the independence of Jamaica. In order to achieve a state of readiness to manage and regulate the JLH, Jamaica will have to review its maritime judicial and regulatory policies and examine their effectiveness and expanse. National shipping policy is correlated to the State’s economic policy and has two aspects, these being foreign and domestic. Shipping policies can be further separated into two main groups; those concerned with safety, security and the environment and those with commercial issues. Alderton (2008) identified major points that should be borne in mind by policy makers. The first is that a port is a major national interface between a country and the outside world and as such, it is a vital element in the national economy, which is an expensive capital investment and requires long-term commitment. Secondly, a port cannot exist in a vacuum and should be the focal point of a national transport system with access to rails, roads and airports, so as to attract businesses and industries and become an area of commercial activity. It must be noted also that it will also attract tourists and undesirable elements such as terrorists, drug smugglers and be a constant concern for environmentalists. Thirdly, the evolution of ports may result in changes in locations and development of other areas.

In light of the aforementioned points, the following are submitted to the Government of Jamaica and their associate policy makers as recommended actions to be taken into consideration while the JLH is underway, so as to produce an efficient system that functions at a high local standard and an impressive international standard. The recommendations will be made based on the selected maritime issues discussed in Chapter 7 herein.
8.1 Maritime Safety and Security

As mentioned in the previous chapter, Jamaica’s regulations on maritime safety and security appear insufficient to tackle some of the current maritime issues that exist today. It is noteworthy that Jamaica has been active in its efforts to repress the issue of illegal drug trafficking through the enactment of laws such as the Money Laundering Act, Drug Offences (Forfeiture of Proceeds) Act, Mutual Assistance (Criminal Matters) Act and the Drug Court (Treatment and Rehabilitation of Offenders) Act. The most recent legislation to combat financial crime is the Proceeds of Crime Act 2007, as amended in 2013, which replaced the Money Laundering Act (MLA). Despite being nowhere short of relevant legislation, the quandary that is illicit drug trafficking still exists in Jamaica and the Caribbean. This could be attributable to a number of problems including but not limited to enforcement and compliance.

Griffiths (1997) stated that according to the West Indian Commission; “nothing poses greater threat to civil society in Caribbean countries than the drug problem; nothing exemplifies the powerlessness of regional governments more.” (as cited in "The Drug Trade and Jamaica's National Security,” n.d.) Drug trafficking is a major problem because it encapsulates and/or facilitates other national and transnational crimes. In fact, it is believed that drug trafficking provides established channels and systems for moving all types of illegal imports, such as guns and the funds to purchase them (Boxhill et al, 2007). As such, it is feasible that the prevalence of drug trafficking can lead to the upsurge of other transnational and international crimes such as piracy.

The merchant marine fleet of Jamaica is considerably small, but it is expected that the JLH will attract more shipowners to register their vessels within the State. That said, it is necessary to have proper laws in place to protect these vessels and proper guidelines for prosecution should any incident occur involving a Jamaican registered vessel. Interestingly, Jamaica had enacted the Terrorism Prevention Act prior to its ratification of the SUA convention and Protocol, and the said Act contains two provisions incorporating what constitutes an offence under the SUA convention and Protocol, however this is far from sufficient to satisfy its requirements under Article 94 of UNCLOS and under the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988.
Singapore has had an excellent record in keeping the problem of piracy to nil in its own territorial waters (Beckman, Grundy-Warr, & Forbes, 1994). With the development of its logistics hub, Singapore enacted both the Singapore Armed Forces Act and the Maritime Offences Act in 2000 and 2003 respectively, which have regulated the State’s maritime security operations and have contributed to the country’s success as a logistics centre.

In light of the aforementioned, it is therefore recommended that a National Maritime Security Plan be implemented to institute suitable policy and regulations on security issues while the JLH continues to develop. This plan should include the participation of sufficiently trained members of the judiciary, maritime lawyers and maritime administrators to ensure the establishment of a sound framework that will perform at an international standard and conform with the relevant IMO conventions to which Jamaica is a party such as SOLAS, ISPS Code, UNCLOS and more recently SUA.

### 8.2 Marine Environment

The expected increase in vessel traffic will also increase Jamaica’s vulnerability to marine pollution. Whether it is intentional, accidental or operational, the State will face greater risk to its territorial waters and EEZ. Marine pollution has been occurring in states that stand in close proximity to Jamaica and this has contributed to the vulnerability of the State. The State is party to MARPOL, CLC, FUND, the BASEL convention, OPRC and is a member of the Caribbean MOU which cooperates in Port State Control procedures. Jamaica’s international participation is clearly felt but the country still needs to enact suitable domestic marine pollution legislation to safeguard its citizens and investors.

Despite the broad scope of the Natural Resources Conservation Authority Act and the very slight reference to vessel source pollution in the Harbours Act, the national framework on the prevention of pollution from ships in Jamaica appears insufficient to satisfy its duties under the relevant international regulations. To address this matter, it may benefit the government to consider attaching some priority to the Draft Bill on pollution as part and parcel of the JLH
establishment so as to have proper laws in place when the vast operations and activities begin to hit Jamaica’s waters.

8.3 Enforcement and Implementation

An excellent policy which lacks enforcement and control is obviously useless. (Alderton, 2008) The Government of Jamaica must ensure that the policies implemented at the national or international level are maintained and enforced to bring about the desired result. This includes, to a large extent, addressing the judicial system and clearing the paralyzing backlog that currently exists within the court system. It may prove beneficial to establish a separate National Admiralty and Marine Court to handle all marine related disputes, such as those for breach of charterparties, arrest of vessels, marine pollution, marine salvage, piracy and other crimes on board vessels, among others. This will require increased awareness and education of maritime legal professionals within Jamaica, so as to produce internationally competent marine judges and lawyers to try and argue cases. Coupled with the suggested admiralty court is an expansion of the current national alternate dispute resolution facilities to try facilitating maritime arbitrations, borrowing from the structures and functioning of the arbitration centres in Singapore and London. These institutions will certainly aid in propelling Jamaica to becoming the desired fourth node in the global logistics network.

8.4 Regulatory Committee

Implementation of the previously mentioned suggestions is no simple task but should not be approached disjointly. The Government of Jamaica may benefit from establishing a specialized group of persons, in the form of a Jamaica Logistics Hub Policy Committee (JLHPC), tasked with conducting a full review of existing relevant legislation and proposing the introduction of new legislation, regulations and/or policies, where necessary. The JLHPC will also work in collaboration with the appointed Policy Steering Committee, as mentioned in Chapter 3, to establish the SEZs and the relevant policies to govern the activities in these SEZs; as well as,
perform a stringent review of the tax policies, regulations and rates and structure the system so as to invite and attract foreign and local investors. In addition, it may suit the State to introduce tertiary level and post-graduate maritime law courses at the Caribbean Maritime Institute and the other tertiary institutions to train more maritime legal professionals to take advantage of the imminent activities of the JLH. The JLHPC will also be responsible for the preparation of periodic reports and constant monitoring of the JLH process, reviewing the regulations where appropriate, and the management of shifting from a personality-based to an objective-based processing system, calling for a consistent standard which can only be met through alignment with global quality systems (Pinnock & Ajagunna, 2012).

This Committee should entail the most highly trained maritime legal professionals, maritime executives and administrators, and consultants; and should include Government personnel, business owners, ship owners and other influential persons within the industry. Given that these considerations are acknowledged and acted upon, the JLH promises reap great economic and social benefits for the country and place Jamaica in high regard in the global shipping and trade network.

8.5 Conclusion

The need for a light-handed, flexible and clear legislative and regulatory framework has been cited as critical elements of a successful logistics services sector. The quality of the regulatory framework for the attraction and support of logistics services is critical to the development of the sector, and achieving the balance of enforcing internationally acceptable standards while increasing competitiveness is a challenge for most countries, not the least being Jamaica (Pinnock and Ajagunna, 2012). In order for the true potential of the JLH to be realized and felt, Jamaica needs to ensure that it has a well-structured, efficient and relevant maritime legislative and regulatory framework. This will take some time to implement, but will be well worth it in the end with real benefits to be gained when fully instituted. According to Mukherjee & Brownrigg (2013), any governmental action which is protectionist or restrictive, tends to erode free competition in terms of price, cargo availability and the ability to trade and limit the
of exporters and importers to choose their service-providers or is too rigid in nature can only lead to disaster.

The Jamaica Logistics Hub will not only affect the shipping industry and economy of Jamaica, but will also promise benefits for the neighbouring Caribbean States, and the North, Central and South American countries. Jamaica currently stands at number 70 on the 2014 World Bank Logistics Performance Index, placing third amongst the Caribbean countries, with Bahamas at number 66 and the Dominican Republic at number 69. (World Bank, 2014) The JLH Initiative, if properly implemented, promises to bring vast economic gain to the country through the increase of cargo and vessel traffic, increased foreign direct investments and the creation of thousands of job opportunities.

Jamaica has ratified a considerable number of international instruments, and in particular, maritime international conventions, but on its own, this proves insufficient. These international laws cannot take effect unless there has been proper implementation and enforcement by the ratifying States at the municipal or domestic level. Ironically, the World Maritime Day Theme of this year, 2014, is “IMO Conventions: Effective Implementation”, and this distinctly indicates the need for effective implementation of the IMO conventions by States at the local level. In the words of the IMO Secretary-General, Mr. Kofi Sekimizu,

“The adoption of an IMO convention cannot be the end of a process. A conference is held, the text agreed, there are handshakes all round. But it’s not the end of the process. It should be just the end of the beginning. Because an IMO convention is only worthwhile and meaningful if it is effectively and universally implemented” ("IMO Secretary-General Launches 2014 World Maritime Day Theme: “IMO Conventions: Effective Implementation”," 2014).

Jamaica has secured a plan that can change the fate of the country for decades and result in an overwhelming success, but failure to review its current maritime legal and regulatory framework could result in one of the most costly blunders in the State’s history.
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Green ports: from trade-offs to win-wins

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Let me introduce you to the Jamaican Iguana. Almost extinct twenty years ago, but now making a spectacular comeback in the Portland Bight nature reserve in Jamaica – considered a success story by nature conservationists. But this is a success story under threat, because the China Harbour Engineering Company wants to build a port in this exact nature reserve. See here the trade-off: do you want a port? Or an iguana? This is not an isolated case. There are similar stories for port directors in OECD countries: there is always a bird, frog or some rare species of grass that needs to be protected. This can be an absolute trade-off, but more and more often forms of compensation are applied. So, ports have built islands for birds, replaced frogs and created nature reserves in or close to port areas. This has become such a trend that the most valuable urban nature areas are now, in most cases, located in and around ports. This article states that the most advanced port directors in OECD countries: there is always a bird, frog or some rare species of grass that needs to be protected. This can be an absolute trade-off, but more and more often forms of compensation are applied. So, ports have built islands for birds, replaced frogs and created nature reserves in or close to port areas. This has become such a trend that the most valuable urban nature areas are now, in most cases, located in and around ports. This article states that the most advanced

Greening as pre-condition

This approach is based on a concrete reality in many ports: new development is only possible if the port is green. The San Pedro Bay, with the two largest US ports of Los Angeles and Long Beach, is an illustration in point. Both ports can now be considered as the greenest in the world. The 2006 San Pedro Bay Clean Air Action Plan, with its various updates, has been widely hailed as a global best practice in being comprehensive, ambitious and effective in combating the air pollution emitted from the ports. However, this is the result of a tumultuous history of local opposition against port activity, stressing the disastrous health effects of port trucks passing through what were labelled ‘diesel death zones’ just next to the ports.

It took a court case to oblige the ports to become cleaner before further expansion of the port could be considered. Therefore, greening ports became a pre-condition for further development. This is a story that has been repeated in other ports. The details may be different, but the story was the same: the only way to unblock local opposition against port activity was to become clean. A new ‘natural port law’ was thus born: as countries advance, ports can only sustain their functions if they are sustainable – that is, if they are green.

Greening ports as product differentiation

Being green is not only a pre-condition for future relevance, it could actually also be an advantage for ports. Simply take a look at the annual sustainability report of Maersk Line. In this report, the container shipping line sets out its actions to promote green maritime transport. Maersk certainly seems to care about its green image and ports that can only sustain their functions if they are sustainable – that is, if they are green.

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There are also green shippers that have been pushing shipping companies as they work in specific green ways in an attempt to purify the supply chain. The Clean Cargo Working Group and the Carbon War Room are both active in developing carbon footprint calculations of supply chains and environmental ship indexes that can be used by ports to reward green ships. Obviously, there are many other indicators for port selection, but as port efficiency and port costs converge throughout the world, a green profile might become a more important element of port competitiveness.

Green knowledge = competitive advantage

Green-thinking is more than a marketing tool. Think again of Los Angeles. Part of its effort to ‘green’ the port consisted of stimulating green innovation and entrepreneurship. A clean-tech incubator was established in the area and a technological advancement programme was created. Some of the results include an Advanced Maritime Emissions Control System and an Automated Photosynthetic Algae Reactor. The first innovation is an in-port filtering system that removes NOx, SOx and PM from auxiliary engine exhaust gases while ships are hotelling. The second innovation consumes CO2 and NOx and produces three grades of biofuel from it, while waste products are used as fertilizer and pharmaceutical additives.

In short, green ports could produce knowledge that can be commercialised and exported. The port of Los Angeles helps the port of Shanghai to develop shore power – which is a form of knowledge transfer, but which also helps to cement business links from which new opportunities will flow. Moreover, green ports have much to offer: smart ports can be interesting laboratories of green innovations, ranging from energy efficiency to climate change adaptation.

Green business opportunities (win-wins)

The last approach is where green-thinking becomes the core business of ports. The key word here is ‘circular economy’. At the core of this concept of circular economy is the idea that waste does not exist, every residual product could be considered the input of another product or production process. Ports, in particular industrial ports, are ideal locations for the circular economy as they have the required feedstock, the industrial processes, the know-how and the infrastructure such as pipelines and storage tanks. Moreover, they are nodes of commodities and potential flows of ‘waste’ and residual products.

Waste, heat and waste-water are no longer the inevitable consequences of port activity that port managers can be more
or less ashamed about. Instead, they have become resources that provide business opportunities for ports. The future will see more and more ports turning into utility providers to their cities. Industrial heat can be recaptured and used for urban district heating, whilst waste from the city could be used for energy production in a port, and many other ingenious ways are waiting to be found to turn waste into a resource and business opportunity for ports.

**Conclusion**

The relation between ports and their natural environment has evolved. Ports have for a long time paid little attention to their environment and have regularly tried to gain the upper hand in rigidly conceived trade-offs. However, things have changed. Environmental impacts have been dealt with in a less confrontational manner, compensation measures are more common, and most ports go beyond simply addressing trade-offs.

A diversity of policy approaches has emerged, suggesting a move from mitigation of environmental impacts to greening as a competitive advantage and business opportunity. Strict environmental rules can be a constraint, and port directors have, in many cases, a point in complaining about it, but they also offer opportunities, provided that ports have autonomy to be entrepreneurial and creative. This article hinted at some of these green business opportunities for ports and I am convinced that we will see much more of this emerge in the coming years.

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The International Transport Forum (ITF) at the Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation with 54 member countries. It acts as a strategic think-tank for transport policy and organises an Annual Summit of Ministers. The next Annual Summit will take place 27-29 May 2015 in Leipzig, Germany.

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Environmental Policy and Chinese Finance in the Caribbean: The Tale of Jamaica’s Goat Islands

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Abstract: China’s growing profile in Latin America and the Caribbean mirrors its rise to geopolitical prominence within the wider international community. As China-Caribbean diplomatic relations have grown deeper and closer, assistance through Chinese development finance has increased. Projects financed through Chinese investment are often associated with significant environmental and social impacts, as highlighted by the proposal for a logistics hub and strategic trans-shipment port in an ecologically sensitive area off the coast of Jamaica in 2013. This paper briefly compares the guidelines that currently govern Chinese investment, with reference to internationally established environmental safeguards and accountability mechanisms. A case is made for the implementation of similar mechanisms to facilitate greater social and environmental accountability in Chinese-funded projects throughout the Caribbean.

Keywords: Jamaica; China; Development Assistance; Environmental Policy; China-Caribbean Relations

Since the beginning of the 21st Century, the People’s Republic of China (PRC) has established a strong presence in the Western Hemisphere. China’s growing profile in Latin America and the Caribbean is consistent with its rise to geopolitical prominence and its rapidly growing economic power. As diplomatic relations between China and the Caribbean have grown deeper and closer,
development finance has become a highly visible feature of China-Caribbean relations. Indeed, Ellis notes that

[a]part from Costa Rica, the vast majority of Chinese construction work performed as “gifts” from the PRC have been done in the Caribbean, with typical projects including sports stadiums, government buildings, roads, hospitals and clinics.

These ‘gifts’ include a $35 million cricket stadium in The Bahamas and a $55 million cricket stadium in Grenada named Queen’s Park. More recently, the Government of Jamaica revealed plans to lease two cays known as the Goat Islands to China Harbour Engineering Company (CHEC) to develop a trans-shipment port at a cost of US$1.5 billion.

Chinese foreign policy continues to be driven largely by an interest in penetrating important markets within the Caribbean region. The impetus for China’s growing economic presence has been documented by several scholars, including, internationally, Kevin Gallagher and Richard Bernal, and, from within the region, Annita Montoute. All note the importance of how China’s thirst for resources drives its economic diplomacy. In its quest to continue strengthening diplomatic ties with Latin America and the Caribbean, China is undoubtedly poised to continue serving as a major source of development finance for the LAC region. To this end, China has entered into bilateral treaties with Jamaica, Cuba, Trinidad & Tobago and Barbados for the purpose of facilitating investment opportunities with these Caribbean territories.

THE ROLE OF INTERNATIONAL LENDING INSTITUTIONS IN STRENGTHENING ENVIRONMENTAL SAFEGUARDS

External assistance is a popular instrument of Chinese diplomacy, and all those developing countries that enjoy relations with Beijing receive offers of zero-interest loans or grants. These are sourced from financial institutions based in China with mandates for international development. Currently, the majority of the country’s international lending is derived from the China Development Bank and the China Export-Import Bank (EximBank). Both were the subjects of reform in 1994, when the Chinese government restructured them to be ‘policy banks’, or ‘tools of the government’. The objective of these reforms was to facilitate the availability of loans for the purpose of explicitly supporting the Chinese government’s policy objectives.
Often, Chinese loans are used to finance development projects in environmentally sensitive industries, such as mining, or on infrastructure projects in developing countries with low environmental standards. In this regard, the role of financial institutions engaged in international development programs, such as the China Development Bank, is a rather significant one. As lenders, such banks can promote corporate compliance with widely accepted environmental practices through the terms of credit provision. Where environmental and social policies are instituted and implemented by development finance organizations, these policies play a critical role in the mitigation of unanticipated environmental and social harm which could otherwise undercut the long-term success of a development project. As Bradlow observes of international financial institutions: ‘legally the structure of the transactions shares many characteristics with the private sector’s financial contracts’. However, these institutions are parties to transactions which involve recipient states. These states, in turn, are governed by the international legal principles applicable to international agreements.

The global community has placed great emphasis on the need to manage environmental risk in the context of sustainable development. In a remarkable policy shift, The World Bank Group developed ‘safeguard’ policies following a wave of protests by civil society against environmentally harmful projects such as the construction of dams in India’s Narmada Valley. The Narmada Valley project, which was first funded by financing from the World Bank 1985, led to the displacement of more than 300,000 people. The World Bank’s safeguard policies which exist today are designed to identify, avoid, and minimize such harm to people and the environment. Notably, institutions which borrow funds from the World Bank are required to conduct environmental and social impact assessments and consult with local communities.

The World Bank Inspection Panel, first established in 1993, is charged with the responsibility of investigating projects funded by the International Bank of Reconstruction and Development and the International Development Association which are both part of The World Bank Group. The Inspection Panel is responsible for oversight of these bodies’ compliance with the policies and procedures in the design, appraisal, and execution of projects funded by The World Bank Group. In 2006, the International Finance Corporation (IFC), which is also part of The World Bank
Danielle Edwards

Group, released its own environmental policies, known as ‘Performance Standards on Environmental and Social Sustainability’. The Compliance Advisory Ombudsman (CAO), with duties quite similar to those of The Inspection Panel, is the watchdog for projects funded by the IFC and the Multilateral Investment Guarantee Agency (MIGA).

The CAO investigates complaints stemming from projects funded by the World Bank Group. The CAO’s self-proclaimed mission ‘is to address complaints by people affected by IFC/MIGA projects and to enhance the social and environmental accountability of both institutions’. It was established for the express purposes of resolving disputes arising from complaints of project-affected communities about the social and environmental impacts of projects funded by the IFC or MIGA, and to assist parties in finding alternatives for the resolution of the environmental and social issues.

With all of this in mind, then, and given their prominent role in regional development in the Caribbean, it is far from unreasonable to expect that Chinese lending institutions should lead by example in promoting environmental and social risk management, as well giving priority to accountability in development projects in the Caribbean.

THE TALE OF JAMAICA’S GOAT ISLANDS

The 2013 proposal for a trans-shipment point on Jamaica’s Goat Islands, in the heart of an ecologically sensitive area, has highlighted the complex issues arising where environmental risks are associated with prospective Chinese investment in the Caribbean.

Jamaica’s Goat Islands are small uninhabited cays which contain 30,000 acres of mangroves. They are situated in the Portland Bight protected area, which spans more than 200 miles of land and 524 miles of sea. The Portland Bight protected area has been designated as a nature reserve since 1999. The Goat Islands also feature four dry limestone forests and they are a prospective sanctuary for the Jamaican iguana. The construction of the proposed port has been cited as an opportunity to exploit Jamaica’s ‘ideal central position in the Caribbean and proximity to the Panama Canal’ to create a logistics hub. But, given the ecological significance of the Portland Bight protected area, the proposal for a trans-shipment port to be built in this area has provoked fears
among Caribbean environmental activists as well as members of the international community.

In a letter dated October 8th 2013, a representative from the United Nations (UN) to Jamaica, Dr Arun Kashyap, noted the major environmental challenges faced by Small Island Developing States (SIDS) in the quest for sustainable development, while grappling with the threat of climate change. He highlighted the work of the UN in the ‘delicate ecosystems of Jamaica’ geared towards safeguarding livelihoods and ‘enhancing protective benefits of the biodiversity-laden and wetland areas of Jamaica’. He also pointed out that ‘This work is being accomplished through resources obtained from the Global Environment Facility, Climate Change Adaptation Fund, private sector banks and other Environmental funding sources including core resources of the UN Agencies’. More notably, Kashyap warned that the proposed development project in the Goat Islands would ‘be contrary to the principles and objectives’ of several international instruments including the Cartagena Convention and the Convention on Biodiversity. Another international organization actively involved in the field of nature conservation, the International Union for Conservation of Nature (IUCN) documented its concerns that the proposed transhipment port would endanger fifty species of plant endemic to Jamaica in official correspondence to the Jamaican government. The IUCN also noted that seventeen of these endemic species are endangered.

Notwithstanding the concerns expressed by the UN and the environmental activists, in 2014 the Jamaica Gleaner reported that the Regional Director of the China Harbour Engineering Company was poised to proceed with the construction of the logistics hub ‘and has never harboured any thought of jumping ship’. Two professors of the University of the West Indies - Dr Kurt McLaren and Dr Byron Wilson - have also expressed concern that the continuation of the project would send a strong message that [the Jamaican] Government is not committed to mitigating climate change or to protecting biodiversity; nor can they be trusted to participate in carbon trading initiatives, because they could make a decision to destroy the target site before the end of the offset period.

The international community has recognized the potentially destructive impact of shipping - through spills of oil and other hazardous materials - in The International Convention on the Prevention of Pollution from Ships 1973 as modified by the
Protocol of 1978 (known as MARPOL 73/78). This is the chief international instrument drafted with the aim of preventing pollution of the marine environment, whether from accidental or operational means. According to its preamble, MARPOL 73/78 was drafted to address the 'need to improve further the prevention and control of marine pollution from ships, particularly oil tankers'. Therefore, it must be noted that the environmental concerns over the proposed trans-shipment port and development in Goat Islands have not been exaggerated.

The China Harbour Engineering Company, which has been carded to construct the proposed trans-shipment port is a subsidiary of China Communications Construction Company Ltd known as CCCC. The CCCC is owned and run by the government of China, and it is the first Chinese transportation infrastructure group to enter the overseas capital market. Like other subsidiaries of the CCCC, the China Harbour Engineering Company is principally engaged in developing and implementing plans for the construction of transportation infrastructure, dredging and manufacturing heavy machinery. It is not a newcomer to projects within the Caribbean: since the commencement of the wave of development finance between Beijing and the region, it has worked on the construction of a series of roadworks and bridges in the Bahamas, including a bridge to link the Little Abaca and North Abaco islands. These were valued at $40 million dollars.

The China Harbour Engineering Company was also involved in the construction and rehabilitation of a road to connect Jamaica’s capital Kingston to the main international airport on the island. This project was valued at $80 million. In Guyana, the China Harbour Engineering Company was slated to be a contractor for the construction of a project for the expansion of the Cheddi Jagan International Airport at a projected cost of $138 million, to be financed by the EximBank. However the Guyanese Parliament eventually stopped funding for the airport expansion project. Ellis suggests that

Chinese construction and financing is not a monolithic activity, but rather, as with projects involving Western Companies, there are implicit partnerships between specific Chinese banks and their construction partners.

Indeed, numerous projects in which China Harbour Engineering Company is involved have been financed by EximBank, and where Chinese financing is used, it is regularly Chinese firms that
undertake construction. The Jamaica Development Infrastructure Program (JDIP) is one such project, which was funded and carried out by these two firms.\textsuperscript{39}

To date, no official information has been released on the particulars of the source of development finance in relation to the proposed logistics hub for Jamaica’s Goat Islands. Nonetheless, as a financier of projects in which China Harbour Engineering is involved, EximBank and the China Development Bank have a responsibility to the affected communities, and the international community, to ensure that they comply with globally accepted standards and best practices for environmental risk management.

Exim Bank is also governed by ‘Green Credit Guidelines’ issued by the China Banking Regulatory Commission in 2012 for local offices, policy banks, state-owned commercial banks, joint enterprise group finance companies, and financial leasing firms directly regulated by the Commission.\textsuperscript{40} These guidelines strengthened the 2007 Green Credit Policy which was launched by the China Banking Regulatory Commission, the Ministry of Environmental Protection, and China's central bank. Howell et al observe that

\begin{quote}
the Green Credit Policy aims to restrict lending activities to enterprises and projects that violate environmental regulations and limit the expansion of energy-intensive and highly polluting industries.\textsuperscript{41}
\end{quote}

Pursuant to the Green Credit Guidelines, these Chinese lending institutions should identify, assess, monitor, control or mitigate environmental and social risks associated with business operations.

According to article 4 of the Guidelines, ‘environmental and social risks’ refer to potential impact and risks brought to the environment and communities by banks’ clients and their primary supply chains through construction, production and operational activities, which include such environmental and social issues as energy consumption, pollution, land, health, safety, resettlement, ecosystem protection, climate change.\textsuperscript{42} Pursuant to Article 10, Banks are encouraged to ‘improve policies, systems and procedures for environmental and social risk management; management’ and also to ‘identify business focus and priority sectors for green credit investment in accordance with national environmental laws and regulations’\textsuperscript{43}
One major shortcoming of the Green Credit Guidelines is the fact that this policy document lacks sufficient mechanisms to guarantee compliance. Further, there is no grievance mechanism available to facilitate the report of complaints by aggrieved communities, in circumstances where the contracting Chinese company does not comply with either the Guidelines themselves or, indeed, established international procedures to mitigate environmental harm.44

In this regard, the Green Credit Guidelines may be considered inadequate when compared to the Inspection Panel and the Compliance Advisory Ombudsman which are responsible for the investigation complaints associated with the International Development Association or the International Finance Corporation respectively. However, Caribbean governments and public interest organizations have a duty to propose China-Caribbean mechanisms to bolster the impact and effectiveness of the existing social and environmental safeguards for projects financed by the People's Republic of China.

CHALLENGES FOR INVESTMENT AND ENVIRONMENTAL POLICY IN THE CARIBBEAN

At times, the sites carded for development projects financed by China may be identified and publicized by Caribbean leaders even before the pre-requisite environmental impact assessments are conducted in accordance with Caribbean domestic laws and regulations, or prior to consultation with environmental policymakers and members of the public.

This was illustrated in the case of Jamaica’s Goat Islands, wherein the island’s Minister of Transport, Works and Housing, Dr Omar Davies, indicated in May 2014 that the China Harbour Engineering Company would submit terms of reference to the National Environment and Planning Agency for the authorization to conduct an environmental impact assessment.45 However, the Jamaican Government had already signed a non-binding framework agreement with the company in March 2014, prior to the stage at which the National Environment and Planning Agency, the administrative body for supervision of planning and environmental matters, had become involved. Similar scenarios may create significant challenges for strengthening environmental policy in the Caribbean, as similarly placed domestic institutions
may question the significance of their roles in facilitating checks and balances for Chinese-funded projects.

It has also been argued that while Chinese financing institutions are governed by their own environmental guidelines, there are a few disparities between these Chinese environmental policies and those of their Western counterparts, such as the World Bank. According to a Tufts University Report:

Major infrastructure and heavy industry projects have the potential to create environmental problems in LAC [Latin America & the Caribbean]. In response to civil society efforts to “green” the development banks, many Western banks now have significant environmental guidelines. China has developed similar environmental guidelines for its development banks. However, comparison of those guidelines finds that, despite significant progress in the past decade, China’s guidelines do not yet match those of its Western counterparts.

As noted above, China’s guidelines do not offer a grievance mechanism for communities affected detrimentally by Chinese investment. On the other hand, the World Resources Institute, an independent global research organization, observes that the policies of the Chinese government ‘reveal a growing commitment to environmental and social concerns’. Nonetheless, there is significant scope for continued progress.

Robust environmental and social policies are surely fundamental for the success of projects funded by Chinese financiers. The development and implementation of these policies can also contribute to improved foreign relations with Caribbean states and reduce friction among local communities. However, the role of Caribbean governments is equally important. Regional leaders must not be tempted to circumvent domestic regulations by the lure of development finance. In this regard, it is important that the leaders of recipient states resist pressure to make decisions on development projects in a rushed manner. It is also vital that regional leaders respect the domestic laws and procedures ordinarily required for locally funded construction projects.

Environmental interest groups and the Caribbean community can only wait and see how the proposed port development on the Goat Islands will unfold. However, Chinese policymakers should strive to encourage greater social and environmental accountability by adopting stronger grievance mechanisms for
projects such as these. Such policies will promote stronger relationships between affected communities and the Chinese financiers whose contributions are becoming increasingly significant within the Caribbean development process.

NOTES ON CONTRIBUTOR

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NOTES

2 Ibid., p.4
4 Ibid., p.52.

See Gallagher et al (February 2012), p.3.

Ibid., p.20.


See Bradlow (2010) at p.1.

Ibid.


A useful overview of the functions of the Compliance Advisor/ Ombudsman (CAO) can be found in a brief description, ‘About the CAO’, 2009, available on the official CAO website at http://www.cao-ombudsman.org/about/

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International Convention for the Prevention of Pollution from Ships (MARPOL 1973) as modified by the Protocol 1978 relating thereto (MARPOL 73/78)

33 The business profile of the China Communications Construction Company can be found on the company's official website; ‘China Communications Construction Company’, 2008 at http://goo.gl/cvmSQ6

34 Ibid.
35 See Ellis, R. Evan (2014) at p.78
36 Ibid., p.79.
37 Ibid. p.82.
38 Ibid., p.78.
39 Ibid.


42 See The China Banking Regulatory Commission
43 Ibid.
44 Ibid.


47 Ibid. p.20.


49 Ibid at p.23

50 See Gallagher et al (February 2012), p.21.

51 Jamaica Environmental Trust, The Goat Islands / Portland Bight Protected Area The Proposed Site For A Transshipment Port In Jamaica, Kingston: Jamaica Environmental Trust, 2013: http://goo.gl/XlebTJ

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1. Introduction

The recent visit by President Obama to the Caribbean region served to underline the importance of the region’s location, forming the third border of the world’s most powerful nation and highlighting its proximity to the largest consumer market in the globe. The Caribbean also sits at the cross roads of the major trade lanes between the Far East and the America’s. It sits at the center of a hemisphere of over 800 million persons with diverse consumption needs.

Cognizant of the region’s advantageous location, several Caribbean nations have articulated plans to become more involved in logistics and to deepen their participation in global and hemispheric trade. Our capacity to succeed in these endeavours requires that we understand the major underlying forces affecting the sector and to clearly articulate models or paradigms to guide our decision making.

To facilitate this understanding, this presentation is organized as follows. In section 2, we briefly review salient features of two widely admired small nations that have attained prominence in logistics, Singapore and Panama to identify elements of their development paradigm that may be relevant to the Caribbean. In section 3, we discuss the major driving forces with which the industry participants must contend. This is followed in section 4 by an assessment of the driving forces that are specific to Caribbean transhipment and logistics. In section 5 we review the Caribbean’s logistics performance and examine some of the constraints to further investment in the sector. Section 6 focuses on the case of Jamaica to understand how it has addressed these challenges and some of the relevant features of its logistics development paradigm. The discourse concludes in section 7.
2. Lessons in Logistics & Development: the Cases of Singapore and Panama

Singapore: A Trading Hub

On the southern tip of the Malaysian peninsula sits the island of Singapore. This island city is the home to five million people with an economy that has grown at an annual rate of over 5% and provides a standard of living higher than in the United States. Yet, like many Caribbean States, Singapore has almost no natural resources. Its wealth derives from its location and its people. Singapore is the world’s busiest transhipment port. It transships more than one seventh of the world’s maritime containers, processing 31.24 M TEU’s in 2013. It is connected by 200 shipping lines to 600 ports in 123 countries. About 85% of the containers that come to the port never officially enter the country and over half of the remaining 15% eventually leaving as re-export. A significant part of the nation’s economy comes from the logistics activities built around its ports and airport, through which more than $500 billion in goods flow each year.

Singapore has never been satisfied simply with its geography. As trade expanded, Singapore undertook various infrastructure projects such as filling in the beachfront space to create a main road between various port facilities. The Singapore government also built breakwaters, dredged increasingly deep channels, rebuilt ports to accommodate larger ships and filled in the sea between small outlying islands to create larger, more functional land. To do this, the government levelled local mountains and imported sand from neighbouring countries. Since the 1960’s the islands land mass has grown by over a quarter. Singapore graduates more than 8,500 students in Science and Engineering annually.

The stability of its macroeconomic environment, the sustained investment in transportation and logistics infrastructure and the sophistication of its microeconomic business environment have resulted in the development of the world’s most dynamic logistics cluster. Today it is home to 20 of the top 25 global logistics firms\(^1\), serving as regional and/or global headquarters for several of them. It is a preferred logistics hub for leading manufacturers across industries\(^2\).

Panama: A Connector Hub

The North and South American continents stretch over 8,700 miles. Midway between the top and bottom of the Americas is the conveniently narrow Isthmus of Panama which in its natural form is but a swampy stretch of tropical forest.

The Panama Canal was conceived as a link node or connector in the international maritime trade network. It is an artificial conduit for maritime traffic, akin to a toll road, between the

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\(^1\) Including DHL, Kuehne + Nagel, Sanku, Schenker, Toll, UPS and Yusen Logistics

\(^2\) Including Avaya, Diageo, Dell, Hewlett Packard, Infineon, LVMH, Novartis, ON Semiconductor, Panasonic, Siemens Medical Instruments etc.
Pacific and Atlantic Oceans. To make sure that it leverages the canal’s traffic expected to follow the latest expansion, Panama focused its 2010-14 strategic plan in large measure on logistics with the vision of becoming the “hub of the Americas” and specifically on leveraging the canal’s traffic to generate incomes by providing services with added value to the products which go through the canal. That is, Panama has been investing in the conditions for logistics cluster development around its canal.

The Panamanian government has been investing in the development of new logistics parks as well as new terminal facilities along the canal particularly at its Pacific and Atlantic mouths. Currently there are 5 industrial/logistics parks and 7 Free Trade Zones around the Panama City/Colon area alone. With a population of 3.5 M, and a GPD/capital of about $33,200 in 2013, the country has enjoyed a growth rate of 8.7% between 2010 and 2014.

The Panamanian government has also enacted several laws to enhance the attractiveness of Panama to companies moving their logistics operations and their administrative and headquarter function to Panama. For example, a 2007 law exempts foreign companies from the cap on the number of expatriates employed, eliminates income tax on provision of service to affiliates abroad and facilitates work permits for workers coming into Panama. Earlier, a 2004 law gave companies operating in special economic zones benefits such as streamlined coordination of all government functions and licenses, no indirect taxes and waivers of most direct taxes and long term work visas including family visas. More importantly, the 2004 law eased labour rules, facilitating a flexible work week, capping overtime charges and easing the termination of labour contracts. Most logistics parks in Panama have been classified as special economic areas. These efforts have borne fruit. By 2009, several multinational companies had anchored their Latin American logistics and related operations in Panama.

These two case studies indicate that while geography is important, so too is the policy environment. Stable macroeconomic policies, sustained investment in logistics infrastructure and a globally competitive micro economic business environment are important. Also essential it seems, is the capacity of its policy makers and firms to innovate and respond to the forces of change.

3. The Driving Forces of Change in Global Logistics

Three major forces of change are evident in Global Logistics.

i. Increasing Vessel Size

Driven by rapid advances in the engine technologies and hull design, the maximum size of
container vessels has expanded dramatically in the past two decades as illustrated in exhibit 1. Today, the world’s largest container vessel is 400 meters in length, with a beam of 59 meters and a carrying capacity of 19,224 TEU’s and is capable of carrying over 39,000 cars. Already there are several orders for vessels with a capacity exceeding 20,000 TEU’s clearly signalling the era of the Ultra-Mega containerships.

One effect has been the displacement of smaller vessels and a rapid increase in the average container vessel size as shown in exhibit 2. This increase in average vessel size is being experienced on all of the major shipping routes in the globe. Between 2011-14, the average vessel size increased on the Asia to Europe routes from 9,000 to 11,000 TEU’s, from 6,000 to 7,500 TEU on the Asia to the West Coast of the US and from 4,500 to 7,500 on the routes into the Caribbean, the largest increase.

With improved fuel efficiency and economies of scale in operation, these larger ships promise higher rates of profitability to operators in a business where freight rates are low and competition is fierce.

**ii. New Alliances among Shipping Lines**

In an effort to extract even further economies, the sixteen largest shipping lines have formed themselves into 4 major consortia, collectively controlling over 95% of the cargo volumes moving in the major east-west trades as shown in exhibit 3. Designed to further increase efficiencies and economies of scale, this consolidation is intended to give the participating lines greater control over pricing and vessel capacity.³

³ The **2M Alliance** is comprised of Maersk and MSC. It controls 35% of the global market and has a average vessel size of 15,000 TEU

The **Ocean 3 (O3) Alliance** is made up of CMA CGM, China Shipping and United Arab Container Line. It controls 15% of the global market share, with an average vessel size of 14,000 TEU.

The **G6 Alliance** recently created by merging the Grand Alliance (NYK, Hapag-Lloyd and OOCL) and the New World Alliance(APL, HMM, MOL) and controls 24% of the world’s vessel capacity. The alliance focuses on the Far East to Europe trade routes.
iii. The rise of Global Terminal Operators

From the perspective of the Container Terminals, the increasing size of vessels has resulted in the need for (i) deeper drafts in the access channels and at the berth faces, (ii) the need for larger cranes to handle the wider vessels with containers stacked higher and (iii) expanded storage areas to accommodate to the larger volumes being discharged. Taken together these requirements have imposed on terminal operators the need for larger investments in dredging, equipment and facilities.

Associated with the increased market dominance of the alliances is stronger bargaining power in relation to the terminals. Faced with declining loyalty, fewer port calls but a heightened demand for service, many independent terminals have ceded operating control or ownership to Global Terminal Operators, large multi terminal operators that operate in more than one region of the world. Today, terminals owned or managed by the top five Global Terminal Operators control 62% of the Global throughput (see exhibit 4). Another 10% of the volume are owned by large multi terminal state operators who themselves operate in more than one region, including Singapore Port Authority, Dubai Port World and Chinese Port Companies.

3. Driving Forces in Caribbean Transhipment and Logistics

The Caribbean is home to a number of hub terminals in the global supply chain, including the ports in Jamaica, Columbia, Dominica Republic, Puerto Rico, Venezuela and Trinidad as shown in exhibit 5.

The CKYHE Alliance is made up of Cosco, “K” Line, Yang Ming, Hanjin Shipping and Evergreen. It control 24% of the world’s vessel capacity.
The region is served by a number of feeder services operated by international carriers providing effective onward transfer of cargo from the hub ports to the remainder of the Caribbean, the gulf coast, the eastern seaboard of the USA, the northern and eastern seaboards of South America and to Central America as shown in exhibit 6.

While the Caribbean hub ports have grown, they are still less heavily trafficked than the largest ports in the world as illustrated in exhibit 7. There are however a number of driving forces for growth and expansion in Caribbean logistics. Among them are the following:

i. Expansion of the Panama Canal

In response to the growing vessel size, a new set of locks is being installed at the Panama Canal to accommodate vessels four times the size of those which can currently be handled (see exhibit 8). Currently, the canal can accommodate vessels with a capacity of if 4,400TEU’s. The new locks, to commence service in mid-2016, will accommodate vessels of up to 13,200 TEU’s. The effect will be to usher larger vessels into the Caribbean sea from the Pacific Ocean.

ii. Realignment of Trade Routes

The largest consumer markets in the world are clustered on the Eastern seaboard of the United States. Typically, cargo destined for these markets from the Far East arrive either via the West Coast Terminals (Los Angeles, San Francisco, Seattle) and then by the land bridge, rail/road to the Great Lakes area where major distribution centers are located, or by the “all water route” through the
Panama Canal into the Caribbean from where there are transhipped to the terminals on the Eastern Seaboard (see exhibit 9). An important effect of the increased canal capacity will be the enhancement of the all water services, offering greater supply chain flexibility, risk mitigation and lower costs to cargo owners and shippers.

Additionally, with the improved economies of the larger ships, it is now possible to route cargo via the Suez Canal into the Atlantic Ocean and on to the Caribbean or directly to the East Coast terminals. These new developments offer an opportunity for the Caribbean ports as shippers realign the trade routes between the major production and consumption centers of the globe. Medium Term Container Market Forecasts indicate that the Caribbean and Central American markets are expected to experience a 7.7% annual growth to 2017 compared to 6.5% in global container volumes (see exhibit 10).

**iii. Logistics**

With the migration of the flow of goods through the hubs in the Caribbean on their way to the major markets of the Eastern Seaboard, there is the potential of other logistics-related services including warehousing and distribution also migrating to these hubs allowing them to develop into full-fledged logistics clusters. This is already clearly in evidence in Panama.

There is the opportunity to add value to the cargo transiting through the Caribbean Hub Ports while they wait to be transhipped. This, in turn, creates the opportunity for employment and a higher level of economic development, with opportunities for persons of varying skill levels as shown in exhibit 11.

4. **Caribbean Logistics Performance**

While there are important opportunities for growth in Caribbean Logistics, there are important challenges. In an effort to assess the logistic capacities of countries the World Bank has developed a *Logistics Performance Index*. It is a measure of a country’s perceived logistics
capacity based on a number of factors including, the quality of the trade and transport related infrastructure, the efficiency of the customs processes, the ease of arranging competitively priced shipments, the quality of the logistics services, the ability to track and trace consignments and the frequency with which shipments reach consignees within the scheduled time. Exhibit 12 provides a profile of the region on this measure. While the major hub ports of the region are in the middle of the group of countries that were assessed by the World Bank, their performance is considerably behind countries such as Singapore.

The ability to improve the logistics capacity of the countries of the region will require sustained investment in the trade and transport related infrastructure including the marine and air ports and the road infrastructure. It will also require investment in the automation of the trade facilitation systems.

An important challenge for some of the Caribbean nations investing in logistics enhancing capabilities is the current state of their economies. As reflected in recent reports of the CDB, the Caribbean nations continue to reflect high debt to GDP ratios, with several nations currently engaged in IMF monitoring programmes (see exhibit 13).

In rethinking Caribbean Logistics, new paradigms for development must reflect the economic realities of the nation states even as they seek to respond to the driving forces of change in the global and regional logistics markets.

5. The Jamaican Case Study

Jamaica, with its aspiration to become a prominent logistics center in the hemisphere is a useful case study in a search for a new Caribbean logistics development paradigm.

Centrally located between North and South America and within the Caribbean, Jamaica sits at the intersection of some of the most important trade lanes, enabling extensive cargo connectivity to global markets.
Home to one of the largest transhipment terminals and two international airports as well as a number of prominent educational institutions, Jamaica has nonetheless underperformed in respect of its logistics performance.

Faced with the reality of a very high debt level (145% of GDP) and low official growth levels over long periods of time, Jamaica has embarked on an economic reform programme to reduce its debt levels by reducing government expenditures, enhancing customs and tax collections and improving its net international reserves. The country has established for itself the ambitious target of operating with a very high primary surplus (7.5%). These targets form a part of a program which is being monitored by the International Monetary Fund and transparency is enhanced by the oversight and quarterly reporting of an Economic Programme Oversight Committee headed by a prominent member of the private Financial Community and the Governor of the Bank of Jamaica.

Counterbalancing the stringent economic programme to curtail public expenditures and enhance revenue collection are programmes to protect the most vulnerable in the community and a growth agenda in which the further development of the nation’s Logistics capacity is identified as an important target. Among the goals of the Government are to:

i. enhance the maritime trading capabilities by dredging the Kingston Harbour access channel to develop new deeper berths to accommodate the larger ships expected to be entering the Caribbean Sea, to suitably equip the Kingston Container Terminal to handle these larger vessels and to expand its operating capacity.

ii. extend the runways at both international airports to accommodate direct traffic from Europe and Asia and to modernize the facilities

iii. construct a network of highways to open up the country for investments and to provide access to the large labour markets outside of major cities

iv. implement a modern, automated system to manage the flow and processing of information associated with trade and to enhance the efficiency and integration of the port community in the country.

Historically, the government has led the process of investment in infrastructure including the sea and air ports, road and rail services. Typically, the management of these facilities and the associated services has been the responsibility of statutory agencies. The facilities have been financed almost exclusively with loans obtained with government guarantees. With the new economic reform programme however, a centrally important feature is the fact that the
government will no longer provide support to these entities in the form of government guarantees.

The dilemma therefore is how to facilitate the investments in the needed infrastructure without the financial support of the government. The approach has been to finance the investments through public private partnerships, encouraging and facilitating the access and use of private capital in these projects, attracting world class businesses and reducing government risks.

i. The Kingston Container Terminal

The Port of Kingston is an important asset to Jamaica. It is a major transhipment hub serving the region and acts as the major gateway port for the maritime cargo trade in the Jamaica.

In April, following the completion of an international bidding process, the Government, through the Port Authority of Jamaica, signed a Concession Agreement with Kingston Freeport Terminal Limited which is a special purpose vehicle owned 60% by the world’s third largest shipping line, CMA CGM and 40% by the tenth largest Global Terminal operator, Terminal Link, which is a subsidiary of CMA CGM.

The concession agreement with a 30 year renewable term and a total transaction value in excess of US$700M will see the concessionaire dredging the access channel to the Kingston Harbour and the basin of the KCT to allow for the handling of the 13,200 TEU vessels that will transit the Panama Canal after its expansion (see exhibit 14). The concessionaire will also upgrade and modernize the existing infrastructure including the berths, yard, cranes, handling equipment and terminal operating systems and will train and develop the workforce. As part of a suite of performance metrics the concessionaire will operate the terminal efficiently and will grow and expand the business in line with demand.

_The Government of Jamaica will provide no financial, traffic or other guarantees and will make no loans nor take any equity in the project._

ii. Airport Development

Over a decade ago, the Government embarked on a programme to modernize and expand its two international airports – Sangster International Airport (SIA) in Montego Bay and the
Norman Manley International Airport (NMIA) in Kingston (see exhibit 15). The SIA was privatized in 2003 to a Special Purpose Vehicle, MBJ Airports Ltd, owned by a consortium of four investors via a concession agreement with a 30 year term. The performance has exceeded all of its major targets and the airport has been recognized as one of the most successful and rapidly growing terminals in Latin America and the Caribbean. MJB is now embarking on a new programme of works to extend the runway and to expand the airport perimeter.

NMIA is currently engaged in an international bidding process for a concessionaire which is expected to be completed within a year. Five entities have been shortlisted and the concessionaire will be expected to finance the extension of the runway and the further developments of the infrastructure. *The Government will not provide financial or other guarantees, nor will it participate in the financing of the project.*

**iii. Highway Network**

The Highway 2000, is among the first toll roads in the English Speaking Caribbean covering 50 km of roadway, constructed at a cost of US330M. Implemented as a design, build, operate and transfer arrangement, the 35 year concession is held by Bouygues Travaux Publics (see exhibit 16).

The North South Highway, currently under construction is a concession agreement based on an UNSOLICITED offer from a major Chinese Infrastructure company, China Harbour Engineering Company (CHEC). The Concession is a design, build, finance, operate and transfer arrangement with a 50 year concession period and is fully financed by the concessionaire.

The project is being implemented in three sections at an estimated cost of US$720M for 67 km of roadway. Section 2 was completed in August 2014 and sections 1 & 3 are on target to be completed in the first quarter of 2016.

The Government of Jamaica provides no financial, traffic or other guarantees and makes no loans nor takes any equity in the project. However, the government has made available approximately 1,200 acres of land to the Concessionaire for the development along the highway. These lands cannot be sold or disposed without the developments being undertaken.
and if no development takes place within the prescribed period they are re-transferred to the Government.

The highway network of which these toll roads are a part have the potential to integrate the labour markets, to impact on investment opportunities, to diversify the economic activities and to expand the output of existing sectors including tourism. The network is an important facilitator of logistics activities within the country and a facilitator of the country’s development as an international logistics center (see exhibit 17).

iv. Near Port Logistics

With the KCT Concession Agreement in place, the attention of the Port Authority has turned to developing the lands immediately adjacent to the terminal for import/export cargo transformation and logistics activities. The objective will be to develop the near terminal sites, shown in exhibit 18 in phases and in public private partnerships with one or more global logistics companies and local logistics firms. Discussions are in train in respect of these developments with important international and local logistics service providers.

The close physical proximity between Kingston’s maritime and air ports and the lands available for development for near port logistics activities (as shown in exhibit 19) has the potential to create a unique and valuable logistics environment.

v. The Portland Bight Industrial and Maritime Park

The Government has receive an unsolicited proposal from CHEC for the development of an Industrial park and a deep water port and maritime facility in the Portland Bight Area highlighted in exhibit 20 under a design, finance, build, operate, transfer arrangement. The project envisages an industrial park of over 2,400 hectares (6,000 acres) for design,
manufacturing and assembly of goods with its own power plant and other infrastructure, training facilities and housing, and a marine park with a transhipment port, facilities for the assembly of major terminal equipment and a facility for maintaining and housing of maritime equipment used in dredging and port construction.

The proposed concession period is 49 years, subject to renewal. The development is expected to create over 10,000 jobs and business opportunities in a wide range of industries. CHEC is at an advanced state in completing the technical and feasibility studies ahead of conducting the necessary environmental impact studies.

*The Government will provide the lands for the development but no traffic or financial guarantees.*

**vi. Port Community System**

A port community system is an electronic platform which integrates the multiple systems operated by a variety of organizations (public and private) that make up the country’s sea, air and inland port community. It automates, manages and optimizes the flow of information and facilitates efficient port and logistics processes through a single submission of data and by connecting the transport and logistics chains.

The port community system will make it possible to manage the manifest and unloading lists from the vessels, process customs declarations and obtain the necessary government approvals, allow for paperless integration with the terminal operating system and facilitate the movement of containers for inspection and release as well as schedule pickup and delivery from haulage contractors.

The Port Authority and the Jamaica Customs, in a unique arrangement are at an advanced stage of implanting an integration of the ASYCUDA system owned and operated by customs and which is capable of processing all government to government transactions with a PCS to process all business to business and business to government transactions being implemented as a public private partnership with a Global PCS developer.
and implementer selected through an international tender process and local players in the industry (See Exhibit 21).

_The arrangement will not require the government to guarantee traffic or finance for project._

While the Jamaican model remains a work in progress, it has allowed the country to progress significantly in implementing its economic reform programme while advancing its objectives to develop itself as an important logistics center in the region. Important elements of the model include:

i. the provision of stable, well managed enabling macroeconomic environment

ii. a strong financial and regulatory framework to help ensure economic and financial stability which are both necessary to encourage long term investments and to enhance the risk-reward equation

iii. clear guidelines and timelines for projects, from announcement to award and to avoid a practice of ‘stop and start’ progress

iv. Transparency which will enhance predictability which in turn will help long term forecasts and better match investor’s long term goals with project objectives

v. stable labour and industrial relations climate

vi. leveraging state assets (lands) to enable economic development.

Taken together, these policies create the potential for productivity growth. Already, as the case study shows, the environment has been created to which a number of world class players from a range of sectors have been attracted to invest. Already a comparatively advanced transportation infrastructure is being established linking all sectors of the island with enhanced maritime and air nodes linked to global markets. This new microeconomic capacity coupled with the relatively low factor costs associated with the country’s comparatively well trained labour force creates the environment for investment by other world class firms in areas such as logistics services.

Ultimately however, productivity growth will be most stable when local firms begin to take advantage of the stable macroeconomic environment and improving microeconomic foundation to create or deepen their sources of competitive advantage in industries in which they compete.

One industry in which the region has demonstrated world class capacity is the hospitality and tourism sector as exhibit 22 demonstrates. Already firms that provide logistics and distribution services to the hospitality sector in Jamaica have begun to exploit the increasingly advanced
logistics capabilities available in the country coupled with the substantial feeder network serving the region to source, warehouse, repackage and distribute for the hospitality firms throughout the region. This in turn lays the foundation for hospitality firms to provide even more differentiated products and services at competitive prices. This type of development needs to be repeated in all of the competitive clusters in the region. It is the foundation for growth.


This discourse has sought to highlight the forces driving the need to rethink Caribbean Logistics, identifying three major global driving forces and an additional three regional driving forces.

The Geography of the Caribbean remains important. As Professor Rex Nettleford frequently reminded, we are at the cross roads of Civilization. With our societies serving as the melting pot of influences from Africa, Asia, Europe, the Middle East and the Americas, we have developed unique cultural sensitivities and expressions and established a creativity and innovativeness which has seen us assuming international leadership and demonstrating world class capabilities in multiple spheres from international politics, to music, art, sports, literature and hospitality and tourism.

We are also at the cross roads of trade between the major politics and economic leaders, at the cross roads between some of the major factories and consumption centers of the globe. We are at the center point of a market of 800 persons with diverse market needs in the Americas.

This geography bestows on us important opportunities which if appropriately harnessed could assist even those states among us with no other natural resources besides or location and our people to participate in an effective way in global trade, adding value, creating increased employment and facilitating economic growth and development.

We are, in many instances however, challenged by economic realities of high debt levels which inhibit the ability of governments to invest directly in the expanded, modernized and more efficient infrastructure required to facilitate Caribbean logistics. It is important that our creativity and capacity to respond to adverse conditions which has served us well in the centuries past not desert us at this point. In this respect we have used examples from Jamaica to point to a new paradigm for responding to the driving forces of change in Logistics. The elements of this new paradigm include Proactive Governance to create a sound macroeconomic environment, with clear economic policies and legal frameworks; firmly
managed financial regulations, a clearly articulated vision for development, clear guidelines and timetables for projects, transparency and predictability and the ability to creatively leverage state assets including land in order to achieve the objectives. Combined with new investments in transportation and logistics infrastructure and systems, without guarantees from the Government for traffic flows or finance, and with improved capabilities at the microeconomic level, the foundations for productivity growth and economic development have been laid for the sectors able to take advantage of these capacities.

The potential and opportunities for the development of Caribbean logistics is real, but with the forces of change still evolving, the window of opportunity is narrow. It is important that we continue to act without delay.
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Jamaicans must read China’s record, not just its lips  
June 15, 2015 COHA  2 Comments Andrew Lumsden, China, Jamaica
By: Andrew Lumsden, Research Associate at the Council on Hemispheric Affairs
http://www.coha.org/jamaicans-must-read-chinas-record-not-just-its-lips/#_ednref34

On May 26, 2015, Li Keqiang, the Premier of the People’s Republic of China spoke before the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC). He urged greater economic cooperation between Latin American and Caribbean nations and Beijing. Since the opening of the 21st century, China has exponentially increased its direct investment in the developing world, and now the Chinese treasure ship has landed on the island of Jamaica. In the wake of slow economic growth, increasing debt, and declining infrastructure, Kingston has eagerly engaged with Chinese companies. The government bills its engagement with China as a chance to improve infrastructure, create jobs, and stimulate economic growth on the island. The government, however, demonstrates no clear understanding of China’s record in previous dealings with developing nations, specifically sub-Saharan Africa, and the socio-economic and environmental consequences brought on by engagement with China.

In recent years, Jamaica has deepened its relationship with China. In August 2012, during Jamaican Prime Minister Portia Simpson-Miller’s visit to Beijing, Chinese Head of State Xi Jinping announced that Jamaica had become his country’s top trading partner in the Caribbean. State-run Chinese enterprises have also undertaken major infrastructure development projects on the island. A convention center, bridges, roads, and, most notably, the Highway 2000 North-South Link, which connects the north coast city of Ocho Rios to the capital, Kingston, are among some of these projects. China’s state-run China Harbour Engineering Company (CHEC), which is constructing the link, is scheduled to pay the entire $610 million USD project cost.[1] CHEC, which has been sanctioned by the World Bank, the United States, and the Asian Development Bank for corruption and fraud, has also been contracted by the Jamaican government for a number of public works projects across the country.[2] The Chinese government has also provided millions in loans to Jamaica, which, as of June 2015, is $24.7 billion USD in debt to China.[3]

Goat Islands Transshipping Port Plan

Since late 2013, the Jamaican government has controversially engaged in talks with the Chinese government to allow CHEC to build a deep-water transshipping port on Great Goat Island. Great Goat Island and its counterpart, Little Great Island, are part of the Portland Bight Protected Area, an ecologically sensitive area, which is home to a large population of critically endangered and endemic species of birds, fish, and reptiles. The protective zone was designated in 1999 to guard the region’s delicate ecosystem, which in addition to the fauna includes mangrove forests and coral reefs, which conceal and protect the eggs and larvae of the resident animals. The protected area is also home to a human population of about 50,000, which includes about a quarter of the island’s 16,000 fishermen. The majority of households in the protected area live at or below the poverty line, and the livelihoods of many of the region’s residents rely on access to fishing.

In a statement to Parliament on February 25, 2014, Dr. Omar Davies, Jamaica’s transport, works and housing minister, outlined CHEC’s plan for construction of the port. The project will involve “dredging and land reclamation activities” as well as the “construction of a coal-fired electricity generation plant.”[4] Experts, however, warn the project could have severe consequences for the region’s denizens, both human and non-human. Dr. Ann Sutton, ecological consultant for the Caribbean Coastal Area Management Foundation warned that “the livelihoods of thousands of people will be lost. Residents will no longer be able to supplement their diets by fishing. Those people will not benefit from the proposed hub.”[5] The livelihoods of local residents would be severely disturbed because the project would likely lead to the complete devastation of fish, conch, and lobster populations.[6] Environmental experts in Jamaica have urged the government to reconsider the use of the Goat Islands site with an eye to protect the island’s environmental treasures.
Lack of Transparency and Concerns over Jamaican Sovereignty

The government, on the other hand, argues that the port will be a great benefit to Jamaica. Dr. Davies has asserted in a statement delivered before Parliament that in addition to economic profit and development, the port will provide “opportunities for employment, technical skills training, and knowledge transfer.”[10] The government predicts that the project will create 2,000 jobs during the initial construction phase and 10,000 when the port is in full operation. Likely in response to project opposition, Dr. Davies warned that “even if Jamaica did not pursue the CHEC proposal, that company is likely to implement the project elsewhere in the region.”

There are also apprehensions regarding Chinese neo-colonialist tendencies. This issue is prominent throughout sub-Saharan Africa, where China has significantly stepped up investment in recent years. Jamaicans—both the government and members of the populace—should look to the experiences of African countries to more accurately weigh the costs and benefits of deeper engagement with China.

Chinese hiring practices in Africa and Jamaica

The Jamaican government has promised that the port project would create jobs for Jamaicans. However, cases in Africa suggest that this claim may need more scrutiny. In his chapter China’s African Relations and the Balance with Western Powers, Suisheng Zhao, director of the University of Denver’s Center for China–U.S. Cooperation explains, “Chinese companies have tended to keep local hiring to a minimum,” preferring instead to bring in cheap labor from China.[11] Zhao cites Angola as an example, where Chinese companies hire 70 to 80 percent of their labor force directly from China. It is worth noting that China’s foreign investment may not actually be meant to provide meaningful employment to locals. In 2009, Zhao Zhihai, a researcher with the Zhangjiakou Academy of Agricultural Sciences in Heibei Province near Beijing, proposed before the National People’s Congress, China’s nominal legislature, that sending Chinese laborers to Africa could provide about 100 million jobs and solve the problem of unemployment in China.[12] While these ideas were not publically adopted by the Chinese government, the presence of such ideas in Chinese political discourse, as well as China’s trend of importing labor from home and restricting local hiring, should be cause for concern for those looking to Chinese investment as a solution to unemployment—in Jamaica and elsewhere.

Jamaican Government’s Response to Criticism of Chinese Investment

In his Parliamentary address, Dr. Davies assured that ratios between the number of local and foreign workers would be negotiated beforehand for both the Highway 2000 project and the Goat Islands port. In 2013, Labour Minister Derrick Kellier denied claims that unfair hiring was being practiced in Jamaica, insisting that “qualified and skilled Jamaicans are always given preference over foreigners.” Kellier also claimed that Chinese workers are only brought in to do advanced technical tasks, when Jamaican workers are not sufficiently qualified. [13] However, the Joint Industrial Council (JIC), the coalition of building and construction workers’ unions, has called the government’s comments “egregious and misleading.” The JIC explains that photographic and video evidence exists showing Chinese workers doing “common labourers’ work.” The JIC also says it is “simply misleading” that currently unemployed Jamaican craftsmen are not at least as qualified to do the requisite tasks Chinese workers are being brought in to do.[14] Opposition leader Andrew Holness also weighed in, commenting that the government has “brushed aside” the issue of Chinese being brought in to do common jobs instead of Jamaicans. Holness added that the Prime Minister and the government are “under an illusion.” [15] The government has denied that there is any problem with the hiring practices and has condemned any criticism of the Chinese. Prime Minister Portia Simpson-Miller responded to concern over hiring practices by saying that continued discussion of this issue could send the message, “Do not invest in Jamaica” to the Chinese and added that anyone critical of China should first “show their level of investment in Jamaica.”[16] Dr. Davies also urged against criticism of the Chinese, saying “Don’t let us descend into this whole thing about Chinese coming and ‘thieving’ jobs.” Davies added that
Chinese investment provides “opportunity” for Jamaica, and while Jamaica needs the investment, “[the Chinese] are under no obligation to come.”[17]

**Jamaican Government’s Fierce Support for China**

In addition to defending Chinese investment, the government also continually lauds Chinese workers—sometimes at the expense of Jamaicans. Labour Minister Kellier said, “The culture of the Chinese is a little different from the culture of the Jamaican worker,” adding that, while a Jamaican engineer encountering a wheelbarrow on a worksite would “walk around it,” a Chinese engineer would “take it up and move it.”[18] In 2004, Omar Davies, then finance minister, went so far as to say, “I do not expect no black man to work like that,” referring to the speed with which Chinese workers completed a construction project after starting late. [19] In 2013, Davies also urged Jamaicans not to criticize the Chinese, because “there is nothing unique about Jamaica which would say that this is the only place that they can invest.”[20] Even though China’s record in Africa, and now increasingly in Jamaica, suggests that its companies have little intention of providing employment to locals, the government has so far demonstrated that it has prioritized pleasing China over securing meaningful employment for Jamaicans. Jamaican workers and unions must continue to remain vigilant and make sure that working-class Jamaicans are the ones benefitting most from the Chinese investment in the country.

**Abuse and Mistreatment of African Workers by Chinese Companies**

Jamaicans should also take China’s record of poor treatment of workers into account. Locals working for Chinese companies throughout Africa have reported being paid less than their Chinese counterparts and being victims of physical abuse by their Chinese supervisors. In a January 2012 report by The Guardian, African construction workers building a university in Zimbabwe near Harare, the capital, recounted their tales of abuse. One carpenter reported that “beatings happen very often… They ill-treat you and, if you make a mistake, they beat you up.” Another reported, “I saw some men beaten up yesterday… They beat him up and he was fired.” Another reported, “The Chinese eat off plates, then give us the leftovers.”[21] Whenever complaints are made, the Chinese bosses reportedly reply that the workers should appreciate that the Chinese have come to assist them. Chinese managers also opened fire on Zambian miners protesting low and unequal wages. In 2006, six were shot by their managers and another 13 in 2010.[22] In 2014, construction workers in Mozambique employed by China Road and Bridge Corporation, an associate of CHEC, reported beatings, verbal abuse, arbitrary dismissals, and arbitrarily withheld wages. One worker explained that they were not “respected as human beings.”[23]

**Conflicts Between CHEC and Jamaican Workers**

The labor issue in Africa should not seem too far removed for Jamaicans. Jamaican workers and unions have already had conflicts with Chinese firms operating on the island. Chinese-run Pan-Caribbean Sugar Company bought three Jamaican state-run sugar factories in 2010 and promptly laid off over 100 security guards, sparking protests. The company also cut the jobs of nearly 300 other workers, calling the moves “restructuring.”[24] Jamaican workers and unions also sparred with CHEC in 2014 when workers went on strike, protesting pay rate discrepancies and poor working conditions.[25] Highway workers decried CHEC’s decision not to pay the 16 percent end-of-project bonus unionized workers are entitled to under an agreement made by the JIC, which companies of all other foreign countries operating in Jamaica have adhered to.[26] The workers also complained of poor working conditions and no documentation of their salaries.[27] The company also refused to recognize the rights of the Bustamante Industrial Trade Union and the National Workers Union to represent Jamaican workers on CHEC’s Highway 2000 North-South Link project, in violation of the JIC agreement, which allows the two unions to represent Jamaican construction workers on all projects. CHEC half-heartedly relented only after a weeklong strike.[28] The issue of workers’ representation, however, went unresolved.[29] In contrast to Africa, workers and their unions in Jamaica have hitherto been very proactive in making certain Chinese companies operating in Jamaica adhere to labor standards and respect workers’ rights. However,
while the workers and their unions must continue their efforts to protect workers’ rights, they will also need to pressure their government, which so far has taken a very conciliatory attitude toward China rather than acting in the interests of Jamaican workers.

Impact of Chinese Investment on Domestic Politics in Africa

Chinese activity in Africa has also shown that deeper engagement with China could have serious ramifications for domestic politics in Jamaica. China’s meddling in local African politics has become more invasive in recent years. The clearest example of this is in the 2006 presidential election in Zambia. Candidate Michael Sata ran against incumbent president, Levy Mwanawasa. Sata ran on a firmly anti-China campaign, launching “repeated verbal attacks on Chinese investors.” Sata criticized the mining of Zambian copper by Chinese companies, their use of Chinese workers instead of locals, and the flooding of the local market with cheap products from China. Sata also vowed to establish relations with Taiwan. China’s communist government sees Taiwan as a rogue province and requires all countries wishing to have relations with it to sever all ties with Taiwan. Sata became popular among Zambians, promising “lower taxes, more jobs, and more money in your pockets.”[30] In response, Li Baodong, the Chinese ambassador, threatened that China would sever diplomatic relations with Zambia if Sata won the election and that Chinese investments in Zambian “mining, construction and tourism” would be “put on hold.”[31] Sata lost the 2006 election, but was elected president in 2011 with a noticeably warmer attitude towards China. It is difficult to claim that China’s threats led directly to Sata’s defeat in 2006; however, the mere fact that Chinese officials would involve themselves in a foreign country’s democratic process warrants concern. However beneficial China’s loans, grants, and infrastructural development projects may appear, the Jamaican people must keep in mind what would happen to these investments should they one day decide to elect a government China does not find agreeable.

Economic Contraction in China

The meteoric economic growth which has taken place in China over the past decade is often what allures the leaders and people of developing nations and encourages them to trust China’s designs and cast their lots with what is often billed as the next superpower. However, evidence suggests the days of exploding economic growth in China may have come to an end. Diana Choyleva, the head of research and chief economist at Lombard Street Research Limited, explains in an interview with The Epoch Times the economic problems China is facing. Choyleva explains that China’s economic growth has seen a rapid decline, growing at a rate of less than 5 percent this year, compared with average growth rates between 8 and 10 percent in the previous d, at the expense of locals. Most importantly, however, economic slowdown in China would almost certainly lead the government to pursue far more extractive and predatory relationships with developing countries. China will put more focus on how much capital it can generate and resources it can extract from their dealings with developing nations; China will also be less willing to contribute to local economies. Signs of this are already present in Africa. John Mahama, Ghana’s president, noted that the Chinese are now “looking more at projects that have the potential to repay over time.” Ghana has also seen delays in the commencement of Chinese infrastructure projects, as well as delays in the full payment of loans promised by the Chinese. [32]

In his ECLAC speech, Premier Li promised that a deeper relationship between China and the Latin American and Caribbean region will lead to development “in such a way that everyone wins.” Ultimately, the truth is China’s state run companies are working to ensure that above all, China wins. Despite their many assertions to the contrary, evidence suggests China’s goals will not help people in the developing world; rather, China seeks to expand its global influence through “soft power,” presenting itself as a friendly alternative partner to the West. Jamaicans and people and governments across the developing world should pay more attention to China’s record rather than its words. It promises to create jobs, yet it imports workers from home and abuses locals. It promises non-interference, yet it tries to dictate which countries can and cannot be recognized and is not above using its investments as leverage to meddle in domestic affairs to secure its interests. Li Keqiang said China will partner with Latin American and Caribbean nations to create “a more
beautiful world," yet China’s industries show no concern for the environment in Jamaica, in Africa or at home. [33]

None of this is to say Chinese investment and Jamaica’s partnership with China are inherently negative. However, the focus for Jamaicans and their government must not be on appeasing China. The focus must be on ordinary, hard-working Jamaicans and all agreements and projects must take into account that they definitively, not hypothetically, will be affected. Jamaicans should remember there are alternatives to achieve economic growth apart from Chinese investment. Environmentalists have suggested eco-tourism as a better use for the Goat Islands than the shipping port. Studies conducted by international environmental research groups, such as Niras-Fraenkel Ltd (NFL), a UK-based port and marine engineering consultancy, have found alternative sites for the port. NFL’s analysis found that constructing the port at Macarry Bay in Clarendon, Bowden in St. Thomas or Kingston Harbour, would be both financially cheaper and significantly less environmentally damaging.[34] Jamaicans should continue to re-approach the export of bauxite, sugar, and fruit, all of which contributed to Jamaica’s strong economy during the 1960s—interestingly enough, a time when China was in a chaotic state during the Cultural Revolution. While Jamaica may need foreign investment, it does not need China more than it needs to protect its people and environment.

By: Andrew Lumsden, Research Associate at the Council on Hemispheric Affairs

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[6] ibid

[7] ibid


[9] ibid


Statement by H.E. Ralph Thomas Jamaican Ambassador to the People’s Republic of China to the JAMPRO Business Forum
27th August 2015, Beijing, China

The Hon. Anthony Hylton, Minister of Industry, Investment and Commerce
Jamaica Promotions, JAMPRO
Ms Diane Edwards, President of Jamaica Promotions, JAMPRO
Mr Claude Duncan, Vice President for Investment Promotions, JAMPRO
Ms Nardia McKenzie, Snr. Consulting Officer, Caribbean, Latin America and Emerging Markets, Regional Office, JAMPRO
Distinguished guests,
Ladies and gentlemen,

Good afternoon, I would like to extend a warm welcome to JAMPRO’s Business Forum here in Beijing, China.

Today’s session is aimed at building knowledge of opportunities for investing and doing business and making connection in Jamaica. JAMPRO, Jamaica’s trade and investment arm will show you exactly what we mean when we say “Jamaica means Business” by providing you with the details. I am however, truly honoured to address you today as Jamaica’s Ambassador to People’s Republic of China charged with promoting Jamaica on a number of levels which include economic diplomacy with emphasis and focus on trade and investment which is at the core of Jamaica’s international relations.
I am also especially pleased that we are here today to build on the excellent relations Jamaica shares with China. Jamaica and China are important trade and economic development partners and high levels of support and collaboration exist between our two nations.

The multi-polar nature of a globalized world and the resulting interconnections demand that we engage new spaces and confront new challenges. Rapid developments in technology and communication provide new tools for diplomacy and international relations which means that as a Small Island Developing State, we are not exempt from the effect of developments at the global level. We must therefore position ourselves to be able to seek opportunities for advancement and take advantage of these opportunities. That is why we are here today to see how we can work together for mutual benefit with you the companies that are interested in doing business with us.

As Jamaica’s representative on the ground we are here to facilitate the process. Our foreign policy is a platform for our sustainable development; the expansion of production and exports, via new investments are important to strong economic growth and lowering our debt burden.

Jamaica and China have agreed to cooperate and work together for the realization of stability, peace and prosperity while acknowledging that there is strength in unity of purpose as we strive to secure common goals of steady growth for our people and nations. These are the imperatives which underlie the success of our partnership with the People’s Republic of China and our delight in the celebration of forty three (43) years of a strong partnership based on our mutual respect for the sovereignty and the territorial integrity of states.

Ours is a partnership built through migration, international cooperation, history, trade and investment. During the 2013 visit of Jamaica’s Prime Minister the Most Honorable Portia Simpson Miller to China she held a number of meetings with companies such as COMPLANT, China Communications Construction Company, China Harbour Engineering Company, China Gezhouba (Group) Company, Sinohydro, the China Development Bank and the Shanghai Municipal Council and many others.
We have built on these connections which began with China Communications Construction Company (CCCC) and their first international investment project in Jamaica - the North/South leg of the Highway 2000 project.

Jamaica has acted on bilateral initiatives to facilitate both tourist visitors to Jamaica and business travel between the two countries.

We are here today to continue the process.

Jamaica is committed to continue to provide an enabling environment for our partners aimed at transforming our society from a middle income developing country to one which provides each with a high quality of life and world-class standards in the services we provide.

We believe that a competitive economy is an engine of growth and prosperity that is inclusive and sustainable. We have taken steps to enhance this competitiveness through business environment reforms and have been rewarded with an improved ranking on the World Bank’s Ease of Doing Business Index moving up to 58 from 94 out of 189 countries.

This is part of our quest to attract top investments to a Jamaican economy which is highly diversified, with powerful democratic traditions and an excellent place of choice to live, work, raise families and do business in the Caribbean region.

As founding members of the Caribbean Community, CARICOM, and the Community of Latin American and Caribbean States, CELAC, Jamaica is also geopolitically positioned to serve as a hub for China’s business forays in the region. We offer particular advantages such as a stable democracy, a diversified market economy, an advanced telecommunications and road network among many other things which as I said, JAMPRO will detail later on.

At this point, let me therefore thank you once again for coming and remind you that on behalf of the Government and people of Jamaica we are here to help you the companies interested in doing business in Jamaica.
Prime Minister Opens Angels to Linstead Section of North-South Highway

Prime Minister Portia Simpson Miller On Thursday (February 4) symbolically commissioned the section of the North-South Highway from Angels, just outside Spanish Town, to Linstead in St. Catherine, to join the leg opened last year which now ends in Moneague. The recently built roadway will be open to the public for travel as of next Monday (February 8). Travel on the newly opened section will be free of cost temporarily.

The opening of the Angels to Linstead leg of the highway provides Jamaicans with the option of bypassing the often dangerous Bog Walk Gorge, which, for centuries has been the main thoroughfare for persons travelling from Kingston to the North Coast.

“Today, we signal the dawning of a new day in travel and economic development. This is an indication of my Government’s commitment to modernising Jamaica. We are building first world infrastructure and providing first world services for the Jamaican people,” Prime Minister Simpson Miller declared, as she gave the keynote address of the opening ceremony.

She noted that the project’s completion is delivery on the promise she made in August 2014 when she opened the Linstead to Moneague section of the Highway. The work on the North-South Highway network began with the Mount Rosser Bypass in 2007.

Describing the road as “a development whose time has come,” Prime Minister Simpson Miller noted that this ultra-modern alternative to the Bog Walk Gorge will be of practical benefit to all Jamaicans. The main objective, she explained, is to upgrade the country’s infrastructure and assist in providing economic opportunities for growth and the creation of jobs.

“Jamaicans will now have greater choices of where to live, work, do business and engage in recreation. This, we expect, will trigger a massive expansion in business, housing and planned settlements along the corridor of the new highway,” the Prime Minister pointed out.

In addition to those benefits of the mega-infrastructural investment, the Prime Minister said it will be the catalyst for more rapid expansion in the hotel and tourism industry.

“The Government, as part of the agreement for this US$720 million highway development, has made lands available to the developer, China Harbour Engineering Company for hotels, housing and commercial developments. One of the areas slated for development, Mammee Bay will see the construction of resorts which will add more than 2,000 hotel rooms, and 500 new homes,” Mrs. Simpson-Miller reported.

The road construction is also providing jobs for numerous persons. “I am informed that over 2,000 persons are currently employed on this project, 1,522 Jamaicans and 658 Chinese. They are working hand-in-hand to shape a modern highway,” the Prime Minister observed.

Noting that the government has made Jamaica attractive for mega investments, the Prime Minister added that the highway, which is only the beginning of such massive infrastructure investments, is a
Prime Minister Opens Angels to Linstead Section of North-South Highway

major vote of confidence in Jamaica by China Harbour Engineering Company Limited and the Chinese Government.

Mrs. Simpson-Miller expressed gratitude to the Government of the People’s Republic of China; and appreciation and commendation to China Harbour, referring to company a trusted partner in Jamaica’s continued development. She also lauded the Ministry of Transport, Works and Housing under the leadership of Minister Dr. Omar Davies for its ministerial oversight of the project, while acknowledging the work of the National Road Operating and Constructing Company (NROCC).

“The entire country has waited patiently yet anxiously for the Jamaica North-South Highway. This Highway will stand for more than 100 years as a marvel of modern engineering. It will hold pride of place as the centre-piece of the Millennium Projects Programme initiated by the Government of Jamaica to upgrade Jamaica’s infrastructure which was first announced by former Prime Minister P. J. Patterson,” the Mrs. Simpson Miller stated.

Officials participating in the opening function included, Dr. Omar Davies; His Excellency Niu Qingbao, Ambassador of the People’s Republic of China; Minister with Responsibility for Sport in the Office of the Prime Minister and North Central St. Catherine Member of Parliament Natalie Neita Headley.

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As Chinese engagement with the Western Hemisphere has received increasing attention from business, academic, and government circles, the focus has traditionally been on the nations of South America, whose large resource endowments and consumer markets have given rise to multi-billion dollar loans, acquisitions, and trade flows with the PRC. Although eclipsed by the volume of activity in the Southern Cone, few parts of the Western Hemisphere have witnessed more strategically significant engagements relative to their size, than has the Caribbean. China’s first overt military presence in the hemisphere in modern times was the contingent of military police which it deployed to Haiti in September 2004, and has maintained there since. China’s key logistics hub for the region is the massive deepwater port and airport facility which the firm Hutchison-Whampo operates in Freeport, the Bahamas, 65 miles from the continental United States. The largest population of Chinese students in Latin America is currently Cuba, where between 1,000 and 2,000 Chinese study Spanish, medicine, and other topics. The majority of investment flows between
China and Latin America involve Caribbean “tax shelter” states such as the Cayman Islands and the British Virgin Islands, creating massive opportunities for money laundering and organized crime. Finally, the largest concentration of Chinese work projects are also found in the Caribbean, where a combination of resorts backed by Chinese investors, and infrastructure projects backed by Chinese banks, are being performed under conditions which permit thousands of Chinese laborers to be imported into the region by the Chinese companies contracted to perform the work.

This paper analyzes PRC engagement with the Caribbean, with a focus on eight key trends in this present that are strategically significant from a US perspective:

• Growing PRC military activities in the region
• Expansion of Chinese investment
• Increasing numbers of Chinese companies operating on the ground
• Growing PRC Chinese financial presence
• Expanding activities by Chinese organized crime
• Expansion of the Chinese presence in telecommunications
• Expansion of PRC-Caribbean political and cultural ties
• Use of the region by the PRC as a logistics hub

Growing PRC military activities in the region. Although the PRC has been very cautious to portray its military activities in Latin America in a non-threatening manner, some of its most significant military engagements in Latin America have occurred in the Caribbean.

The first deployment of Chinese military forces into Latin America was the sending of a detachment of Popular Liberation Army (PLA) security police to Haiti in September 2004. Since that initial deployment, the PRC has continually rotated its forces to sustain a presence in Haiti. Indeed, 4 PLA officials from this force, plus four visiting officers, were killed in the January 2010 Haiti earthquake, becoming the first PRC military personnel to officially be killed in Latin American territory in modern times.²

In September 2011, the PRC chose the Caribbean as the destination for the first-ever visit by a PLA hospital ship to the Western Hemisphere. The first and only such ship built by the PRC, given the name “Peace Ark,” was scheduled to make port calls in Jamaica, Cuba and Trinidad, as well as Costa Rica as part of the mission “Harmonious Mission 2011.”³

The PRC also conducts significant interactions with the militaries of virtually all of the Caribbean nations with which it has diplomatic relations. A series of senior level Caribbean military leaders have visited China in the past two years, including Colonel Ernst Mercuur, Commander of the Suriname Armed Forces.
At a lower level, people-to-people military interactions have included inviting uniformed Caribbean military personnel and defense civilians for professional military education trips to the PRC, including classes in military studies institutes in Chanping and elsewhere.\(^8\) In the case of Jamaica, in addition to officer exchanges, the PLA donated $3.5 million in non-lethal military equipment to the Jamaica Defense Force (JDF) in 2010.\(^9\) Although the size of the donation was relatively modest, it was significant relative to the size of the JDF, and came at a time in which the JDF had been profoundly challenged by difficulties in entering and asserting control over the Tivoli Gardens neighborhood of Kingston.\(^10\)

Beyond such public military to military engagement, the PLA is also reported to have personnel at Soviet-era intelligence collection facilities in Bejucal, Lourdes, and Santiago de Cuba, although the Chinese government has denied such allegations.

**Expansion of Chinese investment.** Although the Caribbean has traditionally lacked the large national markets or natural resources which have drawn Chinese investment to other parts of Latin America, its modest quantities of key raw materials, such as petroleum, nickel, and bauxite have attracted the attention of multiple Chinese companies, as have its opportunities for tourism.

Its geographical position also serves as a natural logistics hub for goods transiting between China and Europe and the Atlantic coast of the Americas. Historically, Chinese resources have flowed into the region in modest quantities as gifts, such as soccer and cricket stadiums and development assistance, as a reward to nations changing diplomatic recognition from Taiwan to the PRC. By one estimate, China spent $132 million in “aid and soft loans” to Caribbean nations through 2007,\(^13\) including $100 million in aid for Dominica following its recognition of the PRC in March 2004,\(^14\) and the construction of a $40 million multi-use sports stadium for Grenada following its own diplomatic switch from Taiwan to the PRC in January 2005.\(^15\)

Aside from such “political rewards,” in recent years billions of dollars of Chinese loans and investments which may be characterized as “commercial” in character have also begun to flow into the Caribbean (although still channeled
principally toward those countries which maintain diplomatic relations with the PRC).

These funds have had a significant effect on the relatively small economies of the region, as well as on the associated political environment and popular consciousness. Some of the most notable projects include:

• Commitment to invest $2.4 billion to construct the 3800-room “Baha Mar” resort on New Providence Island in the Bahamas.16
• $462 million in the Punta Perla beachfront resort on the eastern coast of the Dominican Republic.17
• Hutchison-Whampoa’s establishment of its major regional logistics hub in Freeport, Bahamas, including administration of the airport, the container port, and various companies and commercial properties operating in the area, with an accumulated investment of between $500 million18 and $2 billion, depending on what is counted.
• Construction of a warehousing hub at the Caymans Estate facility near Kingston, Jamaica.19
• The July 2010 purchase of 30,000 hectares of sugarcane fields and three ethanol refineries in Jamaica by the Chinese firm Complant.20
• Purchase of 70% interest in the Omai Bauxite mine from the Guyanese government in February 2007 for $46 million.21
• A $6 billion project to expand and modernize the Cienfuegos refinery in Cuba.22
• Participation by China National Petroleum Corporation in oil drilling operations off the west coast of Cuba.23
• Plans by a group of private Chinese investors to invest $200 million in two hotel resort complexes in Grenada.24

Expansion of Chinese companies operating on the Ground. As a function of the investment and works projects mentioned above, as well as other activities, Chinese companies have moved from an indirect presence, purchasing from and selling goods to the region through intermediaries, to a larger, direct presence on the ground. The use of Freeport by Hutchison-Whampoa as its regional logistics hub was particularly significant in establishing a large PRC commercial footprint in the region, both because of its own operations, and also because of implied flows of Chinese goods that the operation enabled, including links with other Chinese entities such as China Overseas Shipping Company (COSCO).

Beyond projects funded by PRC investors, Chinese construction companies have secured a number of major highway, port, and building projects with the help of funding for the packages from Chinese financial institutions. Such projects typically involve the importation of thousands of Chinese laborers, although officially only on a temporary basis. As an example, an estimated
6,150 Chinese workers will be brought to the Bahamas for the construction of the Bahia Mar resort.\textsuperscript{25}

Chinese construction projects in the Caribbean other than direct investments include the following:

- Construction of 3,500 homes in Jamaica by the Chinese firm Complant, leveraging a $76 million (USD) loan provided by Chinese banks.\textsuperscript{26}
- Construction of the $45 million Convention Center in Montego Bay, Jamaica, also by Complant, with funding from PRC financial institutions.\textsuperscript{27}
- Commitment to $6 billion in work to build a deep sea port and highway improvements in Suriname to support that country’s role as a transportation hub for northern Brazil commerce, with the work to be done by two Chinese companies: Don International and China Harbor Engineering Corporation.\textsuperscript{28}
- A $400 million USD 5-year highway construction project for the Jamaican government and a separate $65 million USD project to improve the road from Kingston to the international airport, with the money loaned by China Development Bank, and the work to be done by China Harbor Engineering Company.\textsuperscript{29}
- A $70 million improvement project for the international airport in Nassau,\textsuperscript{30} for which the Chinese government provided loans at preferential interest rates.\textsuperscript{31}
- Drilling of oil wells by the Chinese oil service company Great Wall Drilling Co. (GWDC) under contract with the Cuban national oil company CUPET.\textsuperscript{32}
- Construction of the Prime Minister’s residence and the National Performing Arts Center in Port of Spain, Trinidad, by Shanghai Construction Company.\textsuperscript{33}
- A new $45 million terminal at the Antigua international airport, paid for by a Chinese loan.\textsuperscript{34}
- Chinese companies’ construction of the Mt. St. John Medical Center\textsuperscript{35} and an electric generating plant in Antigua,\textsuperscript{36} the Skeldon sugar factory in Guyana,\textsuperscript{37} and the expansion of the State College and State House in Dominica.\textsuperscript{38}

Such projects, as well as the ongoing commercial activities of Chinese telecommunications companies Huawei, ZTE, and Shanghai Alcatel Bell, the appliance company Haier, and others, both give Chinese businesses a weight in their respective communities, and maintain Chinese management and technical personnel in the region.

This presence has implications for the level of Chinese interactions with local communities, including possibilities for conflict, as well as the influence of these businessmen in local Caribbean politics and social dynamics. Indeed, there have already been protests in Jamaica, that China Harbor Engineering is not employing a sufficient number of Jamaicans in the Palisadoes road project,\textsuperscript{39} and discontent in the Bahamas regarding the labor practices of Hutchison Whampoa, the Chinese logistics company operating the container terminal at Freeport.\textsuperscript{40}
Beyond such commercial presence, a complimentary role is also played by Caribbean educational institutions, which bring Chinese students and professionals into the region, with a type of interaction arguably less conflictual than that which applies to the interaction between Chinese laborers and their host countries. The primary exchange programs are in Cuba, including the University of Havana, which alone hosts more than a thousand Chinese students for language, medical, and technical programs.\(^{41}\)

**Growing PRC Chinese financial presence.** Tax shelter countries such as the Cayman Islands and the British Virgin Islands have long served as instruments for the movement of Chinese, as well as Western capital. Previously, Chinese laws giving favorable tax treatment to “foreign capital” encouraged a process by which funds from the PRC would be exported to a foreign tax haven such as the Cayman Islands and the British Virgin Islands, transformed, and re-invested into mainland China at the more favorable tax rate.\(^{42}\) While reform to Chinese tax laws have eliminated many of the incentives for “round-tripping,” because of massive and growing Chinese financial assets (over $3 trillion in foreign exchange reserves as of April 2011),\(^{43}\) the quantity of funds flowing into Caribbean tax shelter countries has continued to increase.

Some evidence also suggests that the flow of funds between Chinese and Caribbean banks has complicated the prosecution of money laundering activities by international authorities. This is because banking secrecy in Caribbean tax shelter countries such as the British Virgin Islands or the Cayman Islands greatly magnifies the administrative and linguistic barriers involved in following the money trail between China and the Caribbean, creating incentives for Chinese organized crime groups to use such routes for their own money laundering activities. Recognizing such vulnerabilities, the PRC has attempted to improve its visibility over Caribbean tax shelters, reaching an agreement with the British Virgin Islands in 2010, for example, forcing banks there to disclose the actual owners of companies registered there if formally requested to do so.\(^{44}\)

In addition to tax shelter countries, the presence of Chinese financial institutions in Caribbean nations has also begun to increase more broadly. As noted previously, loans from Chinese financial institutions such as China Development Bank and the Export-Import Bank of China have played key roles in billions of dollars of work projects by PRC companies in the region. The PRC has also become a member of the Caribbean Development Bank,\(^{45}\) with Chinese bankers playing a key role at the May 2010 Caribbean Development Bank Board of Governors meeting,\(^{46}\) as well as trips by delegations from the China Development Bank to Antigua & Barbuda in October 2009,\(^{47}\) and a visit to Trinidad and Tobago by the Vice President of China ExIm Bank.\(^{48}\)
Expansion of Chinese organized crime activities in the region. Chinese triads and other organized crime groups have long had a presence in the Caribbean among Chinese immigrant populations. Nonetheless, the expansion of trade, human, and financial flows between the PRC and the region has proliferated opportunities for organized crime in ways that are difficult to monitor and control, given the lack of Chinese language capabilities and ethnically-Chinese agents among small, modestly resourced Caribbean security forces, as well as a frequent lack of collaboration from Chinese communities regarding crimes involving their own members.49

There is very little public evidence regarding the presence of Chinese criminal organizations in the Caribbean. The Chinese triad organization Tian Dao Man reportedly has a presence in Grenada.50 Recent murders within the Chinese community in Trinidad have led to speculation that triad groups have a presence there as well.51 In general, indications suggest that activities of such groups in the Caribbean concentrate on money laundering through casinos and human trafficking, possibly leveraging the influx of Chinese guest workers, as well as the increasing Chinese goods and capital flowing through regional financial institutions for legitimate purposes.52

Expansion of PRC-Caribbean political and cultural ties. There are two reasons why the PRC gives the Caribbean a level of political attention uncharacteristic for its size: (1) Because of its longstanding ties with Cuba, an ideologically receptive country in strategic proximity to the United States, and in need of powerful global allies, and (2) because six of the 23 nations in the world that diplomatically recognize the Republic of China (Taiwan) are found in the Caribbean.

The closest political partner of the PRC in the Caribbean is arguably Cuba. During the 1970s and 1980s, Sino-Soviet geopolitical competition, in combination with close ties between Cuba and the Soviet Union, impaired the Sino-Cuban relationship. Nonetheless, with the end of the cold war, a rapid Sino-Cuban rapprochement was driven by mutual interest and need. With the withdraw of Soviet military and economic aid, Cuba found itself in need of a new international patron, at the same time that the events of Tiananmen Square left the PRC isolated and in search of friends on the international stage.53 China-Cuba political and cultural interaction seems to have particularly accelerated since 2007. In November 2008, Chinese President Hu Jintao stopped in Cuba, as well as Costa Rica, on his way to the APEC summit in Lima, Peru.54 There have also been regular contacts at the level of Vice President and party leadership including the June 2011 trip to Cuba by Chinese Vice President Xi Jinping.55 At the level of cultural exchanges, Cuba is the Latin American country with the most Chinese students, with between 1000-2000 currently studying topics such as Spanish language and medicine at various Cuban institutions, including the University of Havana.56In addition,
a Confucius Institute was established at the University of Havana in November 2009.\(^{57}\)

In addition to PRC relations with Cuba, Chinese political and cultural engagement with other Caribbean countries has arguably been driven by those countries, which, diplomatically do not recognize the PRC, and an effort to preserve recognition of the PRC in the rest, avoiding reversals such as the May 2007 decision by St. Lucia to undo its 2007 decision to recognize PRC.\(^{58}\)

With the exception of the November 2008 trip by Hu Jintao to Cuba,\(^{59}\) no Chinese president has traveled to the Caribbean in recent times, although Caribbean Presidents and Prime Ministers have traveled to China, including Jamaican Prime Minister Bruce Golding, who traveled to China in February 2010 and was received by Chinese President Hu.\(^{60}\) Below the executive level, senior visits include the February 2009 trip by Chinese vice-president Xi Jinping to Jamaica, and the near-simultaneous trip by Chinese vice-premier Hui Liangyu to Barbados and the Bahamas. In that year as well, National People’s Congress chairman Wu Bangguo traveled to the Bahamas as part of a two nation Latin American tour.\(^{61}\)

Within universities and the business community of the Caribbean, the language and experience base for doing business with the PRC has been limited, although it has begun to make progress in recent years. In 2009, the PRC established its first “Confucius Institute” in the Caribbean, for the promotion of Chinese language and culture at the University of the West Indies, in Kingston, Jamaica.\(^{62}\) Since that time, other Confucius institutes and classrooms have been established in the College of the Bahamas and the University of the West Indies Cave Hill Campus (Barbados) as well as the University of Havana, as noted previously. In addition, Caribbean participation in events such as the 2010 Shanghai World Expo\(^{63}\) have also served to promote contacts.

**Expansion of the Chinese presence in space and telecommunications.** For years, the Caribbean telecommunications infrastructure was considered a relative “backwater,” monopolized, atomized, and generally non-profitable. Like their western counterparts, Chinese telecommunication giants ZTE and Huawei refrained from making major investments in the sector. In recent years, however, that has begun to change. Since 2007, Huawei has won telecom infrastructure work in Trinidad and Tobago,\(^{64}\) Jamaica, Aruba, Cayman, and Barbados,\(^{65}\) while ZTE has developed a smaller, but important presence in Guyana, Guadeloupe\(^{66}\) and Haiti.\(^{67}\)

The newest Chinese entrant to the Caribbean telecom market has been Shanghai Alcatel Bell which, in December 2010, was announced as the agent for a fiber optic communication line that would connect Cuba and Jamaica to
the Venezuelan grid. While the project in itself is modest, it makes Cuba, and to a lesser extent Jamaica, more dependent on the Chinese for international data connectivity, since Chinese firms Huawei and ZTE have played major roles in the modernization of both the fiber optic and space-based components of the Venezuelan architecture to which the cable connects.

**Conclusions.** The significance of Chinese engagement with the Caribbean should not be underestimated because of its modest absolute size, or commercial character. While the dominant form of Chinese engagement with the Caribbean is loans and investments, the volume of capital involved is enormous relative to the size of the economies involved, giving the Chinese enormous and growing influence in the region. Moreover, the vast majority of these involve work to be performed on the ground in the Caribbean with hundreds or thousands of Chinese workers. Such presence will increase possibilities for political unrest by displaced local workers, social frictions between Chinese and locals, and possibly, opportunities for the growth of Chinese criminal organizations leveraging the large “floating” Chinese population.

In addition, the political character of Chinese interest in the Caribbean should not be overlooked. While Chinese companies are legitimately seeking to make money in the Caribbean through sales of products and services, and to secure supplies of key primary products such as petroleum, nickel and bauxite, the Caribbean is also strategically important both to the US and to China. Not only is the region home to 6 of the 23 nations in the world that diplomatically recognize Taiwan as the legitimate government of all of China, but it is also a central geographic location, encompassing both the key “southern approaches” to the United States, as well as the gateway for commerce passing through the Panama Canal from Asia to nations of the Atlantic.

In the end, the strategic significance of China’s engagement with the Caribbean for the United States is three-fold. First, by capturing the attention of Caribbean governments, and providing an alternative source of investment and trade, Chinese engagement undercuts the ability of the US to advance its own agenda in the region, including issues such as human rights, democratization, respect for law, and fiscal accountability. While the PRC may not promote an anti-US agenda in the region, it does serve as an enabler for vulnerable states in the region to follow the alternative path advocated in the region by states such as Venezuela and Cuba.

Second, over the longer term, PRC activities in the Caribbean may interact with other regional dynamics to give rise to new security challenges. The importation of Chinese laborers for work projects, logistics hubs which create opportunities for the distribution of Chinese contraband goods, and the use of the region as a tax shelter by Chinese investors, for example, each nurtures a
small but dangerous presence by Chinese organized crime groups in the region. As such groups potentially grow in strength and diversify into other activities; they may interact in difficult to predict ways with other transnational criminal entities currently engaged in operations in the Caribbean, such as Mexico and Colombia-based narcotrafficking organizations, as well as local Caribbean gangs.

Finally, the PRC presence in the Caribbean has the potential to take on a much more menacing character should Sino-US relations degenerate into a hostile geopolitical competition. Under such undesirable circumstances, the presence of substantial Chinese naval facilities and telecommunications infrastructure (albeit commercial), and thousands of Chinese personnel, many less than 100 nautical miles from US shores, and the associated potential to observe or disrupt key maritime routes and nearby US facilities would become a major liability for military planners.

In the end, the implications of China’s engagement with the Caribbean thus depend on the broader China-US relationship, as well as on the evolution of the region itself, highlighting once again the importance of evaluating a range of contingencies, seemingly only different in subtle ways, but in which the imperatives and risks for US planners responsible for Caribbean security issues will be dramatically different.

En septiembre de 2011, la República Popular China seleccionó al Caribe como destino para la primera visita de un buque hospital del PLA (Ejército Popular de Liberación) al Hemisferio Occidental. El primero y único buque fabricado por la PRC, bautizado con el nombre “Arca de Paz”, estaba programado a hacer escalas en Jamaica, Cuba y Trinidad, al igual que en Costa Rica, como parte de la “Misión Armoniosa 2011”.

Notes

1. The views expressed in this article are those of the author and do not reflect the official policy or position of the National Defense University, the Department of Defense, or the U.S. Government.
3. “China’s Hospital Ship sets sail for Caribbean States.” *CRI English.*
5. “China, Guyana pledge to advance military ties.” *Xinhua.*
7. “Cuban leader meets senior Chinese military official.” *Xinhua.*
9. “China sends $3.5M in military equipment to Jamaica.” *Today Online.*
http://www.todayonline.com. January 15, 2011. Note that this donation was reported in the local press as $300 million (Jamaican) dollars, which convert to US dollars at a ratio of approximately 80:1. See “China donates $300m in military gear to Ja” Jamaica Observer. Kingston, Jamaica.
10. See, for example, Marc Wignal, “Something went horribly wrong in Tivoli Gardens.” *Jamaica Observer.* Kingston, Jamaica.
12. Senior China scholar David Shambaugh notes, for example, that Chinese leaders with whom he has spoken have said that there is no Chinese presence at these facilities. Interview with author. Beijing, China. June 2, 2011.
14. This aid included a $2.3 million primary school, a new sports stadium, the rehabilitation of the Princess Margret Hospital, and repair and upgrade of the principal road connecting the capital Roseau to the principal town of Roseau. Ronald Sanders. “China’s presence in Dominica.”
http://www.caribbean360.com/index.php/opinion/389630.html#axzz1L32alt


17. This project is particularly notable because it is one of the few major investments by a Chinese company, where the PRC does not have diplomatic relations with the receiving country. See “China’s Caribbean march.” BBC. http://www.bbc.co.uk/caribbean/news/story/2010/10/101019_chinadomrep.shtml. October 20, 2010.


19. In Jamaica, for example, the PRC has overtaken the United States as the largest source of foreign direct investment. “Jamaica Aims to Double Russian Tourists as Cuba Market Opens.” San Francisco Chronicle. http://www.sfgate.com/cgi-bin/article.cgi?f=/g/a/2011/06/09/bloomberg1376-LMJJK41A114H01-3TL9NRDOV12Q1UV016TAHBDU3F.DTL. San Francisco. June 9, 2011.


64. See, for example, “Huawei Deploys WiMAX Network in Trinidad and Tobago.” Caribbean Information Society Portal. http://www.carib-


Contributer

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Dr. Ellis is also the technical lead for the center’s signature “NationLab” program of custom-designed, interactive exercise events, conducted by CHDS with partner institutions throughout Latin America on issues of strategic importance to the host countries. Dr. Ellis has presented his work on Latin America strategic issues and other topics in a broad range of business and government forums in the United States, Argentina, Bolivia, Belize, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Jamaica, Mexico, Panama, Paraguay, Peru, Venezuela, France, and the United Kingdom, and is a frequent guest lecturer at the U.S. Air Force Special Operations School.
1.0 INTRODUCTION

Jamaica, with a population of approximately 2.7 million, is known to have one of the highest road densities in the world, having the main and parochial road network of 5,286km and 9,962km respectively - a total of 15,248 km - traversing an area of only 11,400km². The total value of this road network is estimated at over US$70 billion.

The Jamaican economy relies heavily on road transport for passenger and freight movement. Although a large percentage of these roads have been improved over time, it is recognized that they were never originally constructed to modern engineering standards, but have evolved in many cases, from bridle tracks. The absence of proper road profiles and drainage facilities have taken their toll over the years and the resulting condition of much of the network, particularly the tertiary roads, can be regarded as ranging from poor to very poor.
This, when coupled with the high traffic volumes, leads to:

- Congestion;
- Increase in crashes; and
- Increase in vehicle operating costs.

MIDP addresses the urgent need to increase safety on our roads by improving a number of important corridors to arterial standards via widening, rehabilitation and realignment where necessary. The programme calls for the improvement of priority road segments and bridges islandwide, commencing in financial year 2013/2014.

The estimated cost of the programme is US$350 million.

2.0 BACKGROUND

MIDP is a follow-up of the Jamaica Development Infrastructure Programme (JDIP), funded by China Exim bank and implemented by China Harbour Engineering Company (CHEC) at a cost of US$400 million, and saw to the implementation of the following projects:

- Construction of the Christiana Bypass, in Manchester.
- Construction of Westmoreland Bridge, St. Mary.
- Construction of Cassia Park Bridge, St. Andrew.
- Construction of Queensborough Bridge, St. Andrew.
- Construction of Dawkins Pen Bridge, St. Catherine.
- Fern Gully road and drainage improvement, St. Ann.
- Rehabilitation of housing scheme and parish council roads, across the island.
- Rehabilitation of urban, secondary and tertiary main roads, islandwide.
- Patching of main roads, islandwide.
The new infrastructure programme MIDP, will also focus on upgrading additional key arterial, secondary and tertiary roads along the network.

3.0  PROGRAMME SCOPE

- Under the MIDP, the National Works Agency has identified over 700km of prioritised roads which are in need of urgent intervention in order to adequately and safely handle the current average daily traffic being experienced.

- Rehabilitation or reconstruction of critical bridges as identified by the NWA.

- Critical retaining walls which have been damaged or being undermined on other sections of the road network will be rehabilitated or reconstructed under the programme.

- Protective works such as bunding, construction of gabion walls, placement of boulders, will also be carried out where rivers and gullies negatively impact on the network.

Special attention will be given to the drainage requirement of each road segment being considered under this programme, but it is recognized that funding limitations may prevent the wholesale implementation of the identified drainage works.

Finally, it is realized that a number of worthwhile projects were started under JDIP 1, but for a variety of reasons were never completed. All such projects will be completed under this programme – MIDP.
4.0 PROGRAMME FINANCING

The MIDP is being funded by the China Exim Bank in the amount of US$300 million, with counterpart financing of US$52.9M from the Government of Jamaica. Negotiations pertinent to the terms and conditions of the loan will be the prerogative of the Ministry of Finance & Planning. The programme will be divided into three (3) major components as listed below:

<table>
<thead>
<tr>
<th>Component</th>
<th>Cost (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Works (to be implemented by China Harbour Construction)</td>
<td>220,000,000</td>
</tr>
<tr>
<td>Jamaica Emergency Employment Programme (JEEP)</td>
<td>50,000,000</td>
</tr>
<tr>
<td>Other Works (to include rehabilitation, intersection improvement, periodic maintenance, river training)</td>
<td>82,941,765</td>
</tr>
<tr>
<td>Grand Total</td>
<td>352,941,765</td>
</tr>
</tbody>
</table>

5.0 PROGRAMME JUSTIFICATION

The poor state of the road network is reflected in the large backlog of deferred maintenance. The project is urgently required at this time so as to stem the rapid deterioration of these critical roads now taking place and prevent further loss to an extremely valuable though vulnerable infrastructure. Safety along these corridors would increase and assist the government in reaching and maintaining its target of Under 300 fatalities resulting from crashes and collisions in any given year. It is of note that the number of fatalities on record for the year 2012 showed a marked reduction at 261 when compared to recent years.
6.0 DEMAND ANALYSIS

The roads slated for periodic maintenance and rehabilitation are all part of the transportation network and are essential for the movement of goods and services through these parishes

Further deterioration of these roads would adversely impact the economy of these communities, as longer detour roads would have to be travelled resulting in increased travel time and vehicle operating costs.

Improvement to a number of these roads can open new regions to the benefit of the economy, including tourism on a larger scale, and allowing for speedier and safer access of agricultural produce to markets across the island.

6.1 Project Selection Criteria

Roads were selected under MIDP, based on the following criteria:

- Regional importance;
- Connectivity of route;
- Traffic Volume;
- Condition/ in need of critical intervention;
- Critical infrastructure affected;
- Corridors that will support the Government’s development objectives.

The NWA has based the selection of roads on a prioritisation methodology that has been shared with the Ministry of Transport, Works and Housing. A number of assumptions were required to develop a workable model, matched with availability of data. The ranking methodology culminated with the development of an index through which competing projects are ranked.
The ranking criteria are as follows:

- **Roads that have Tourism Product based attractions were given a score based on the total number of rooms along the road section**

<table>
<thead>
<tr>
<th>Tourism Rank</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Hotels/Attraction accessed along this route</td>
</tr>
<tr>
<td>1</td>
<td>SMALL HOTELS - Hotels or attraction accessed along this route &lt; 10 rooms</td>
</tr>
<tr>
<td>2</td>
<td>MEDIUM HOTELS - Hotels or attraction accessed along this route 10 - 50 rooms</td>
</tr>
<tr>
<td>3</td>
<td>LARGE HOTELS - Hotels or attraction accessed along this route &gt; 50 rooms</td>
</tr>
</tbody>
</table>

- **Roads that provide access to active agricultural producing and or processing facilities**

<table>
<thead>
<tr>
<th>Agriculture Rank</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No farms</td>
</tr>
<tr>
<td>1</td>
<td>Small Farms accessed along this route - Total of all farms less than 100 acres</td>
</tr>
<tr>
<td>2</td>
<td>Medium Farms accessed along this route - Total of all farms accessed 100 - 500 acres</td>
</tr>
<tr>
<td>3</td>
<td>Large Farms accessed along this route - Total of all farms accessed &gt; 500 acres</td>
</tr>
</tbody>
</table>
• **Roads that provide access to manufacturing facilities**

<table>
<thead>
<tr>
<th>Manufacturing Facilities Rank</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No facilities accessed along this route</td>
</tr>
<tr>
<td>1</td>
<td>Small Facilities accessed along this route (total employ of all facilities less than 50 persons)</td>
</tr>
<tr>
<td>2</td>
<td>Medium Facilities accessed along this route (total employ of all facilities 50–100 persons)</td>
</tr>
<tr>
<td>3</td>
<td>Large Facilities accessed along this route (total employ of all facilities &gt; 100 persons)</td>
</tr>
</tbody>
</table>

• **Roads that provide access to schools, police stations, emergency shelters and other emergency facilities or critical government institutions.**

<table>
<thead>
<tr>
<th>School/Hospital/Emergency Shelter Rank</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Any one</td>
</tr>
<tr>
<td>3</td>
<td>Any two</td>
</tr>
<tr>
<td>5</td>
<td>More than two OR Large Schools &lt; 1000 students</td>
</tr>
<tr>
<td>3</td>
<td>Large schools &gt; 1000 students</td>
</tr>
</tbody>
</table>

• **The last factor is the class assigned to each road in the network management system with A roads receiving the highest ranking, primarily since they tend to have the highest miles driven.**

<table>
<thead>
<tr>
<th>Road Class Rank</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>1</td>
<td>PC</td>
</tr>
<tr>
<td>1</td>
<td>FARM</td>
</tr>
</tbody>
</table>
Weighting

Weighting factors are introduced to complete the formula.

<table>
<thead>
<tr>
<th>Weighting (W)</th>
<th>OVERALL RANKING CRITERIA (ORC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Tourism Rank</td>
</tr>
<tr>
<td>2</td>
<td>Agriculture Rank</td>
</tr>
<tr>
<td>0.0002</td>
<td>Traffic Factor</td>
</tr>
<tr>
<td>1</td>
<td>School/Hospital/Emergency Shelter Rank</td>
</tr>
<tr>
<td>2</td>
<td>Road Class Rank</td>
</tr>
<tr>
<td>1</td>
<td>Manufacturing Facilities Rank</td>
</tr>
</tbody>
</table>

The ranking formula is as follows:

\[
= (Tourism \times Tourism \, W) + (agriculture \times Agriculture \, W) +
(Manufacturing \times Manufacturing \, W) + (School \times School \, W) +
(Road \, Class \times Road \, Class \, W) + (Traffic \, Volume \times Traffic \, W)
\]

The above formula is computed for each road section in the project and a value determined which provides a direct comparison between the different roads. This value is included in the table at appendix which shows ranked major items within the overall project.

7.0 PROJECT IMPLEMENTATION

7.1 Major Works

It is recommended that these works be implemented by the contractor utilising design and build contracts. This means that a brief will be provided by the client/engineer to the contractor indicating requirements and expected outcomes. The contractor will then
price in accordance with the requirements and negotiations will ensue to determine the final cost for each of the major projects. The contractor is responsible for the performance of the roads/bridges delivered for a period to be determined by the client/engineer.

7.2 Other Works

These would be implemented in the conventional way where specifications/drawings are provided by the client/engineer and the contractor is asked to price accordingly.

In all instances, the standard pricing schedules for civil engineering works developed by the NWA shall form the basis for project prices.

7.3 Project Management and Supervision

7.3.1 The NWA is responsible for the Quality Assurance monitoring of the project. This will include routine monitoring, random testing, project/surveillance auditing and reporting on works and their conformance to contract/regulatory requirements. These activities will be done as per the established NWA Quality Assurance department procedures.

7.3.2 The Contractor as stipulated in FIDIC is responsible for quality control testing in accordance with the NWA specification. As such, for any subcontracts let under the main contractor it remains the contractor’s responsibility to ensure that the works are executed in accordance with the specification. Each interim payment certificate must be accompanied by the requisite test results in support of the works for which claims are being made.
7.3.3 Upon substantial completion of the project, a “Take-over” exercise will be conducted to confirm the execution of the works in accordance with the scope and terms of the contract.

7.3.4 Subsequent to the issue of the taking over certificate the defect liability period commences, during which time the contractor is obliged to remedy all outstanding defects noted in the certificate together with any on other defects which may arise during the defects liability period resulting from material and workmanship. These in addition to any orders instructed by the engineer for which he will be compensated.

7.3.5 At the end of the defects liability period a final inspection must be conducted and where works are found to be satisfactory, the contractor is relieved of all further responsibility with the issue of a Defect Liability Certificate.

8.0 ENVIRONMENTAL STUDY

8.1 Objective and Scope
All potentially adverse impacts can be mitigated to an acceptable level through the enforcement of suitable environmental protection clauses in the construction contracts, and residual impact is expected to be non-significant in all cases. All works contemplated under the programme will be subjected to the appropriate statutory environmental protocols.

The programme will not involve construction or major earth work activities in areas which have been designated, or are likely to be designated as national parks or as other forms of protected area, coastal areas and or natural forests.
As Chinese engagement with the Western Hemisphere has received increasing attention from business, academic, and government circles, the focus has traditionally been on the nations of South America, whose large resource endowments and consumer markets have given rise to multi-billion dollar loans, acquisitions, and trade flows with the PRC. Although eclipsed by the volume of activity in the Southern Cone, few parts of the Western Hemisphere have witnessed more strategically significant engagements relative to their size, than has the Caribbean. China’s first overt military presence in the hemisphere in modern times was the contingent of military police which it deployed to Haiti in September 2004, and has maintained there since. China’s key logistics hub for the region is the massive deepwater port and airport facility which the firm Hutchison-Whampoa operates in Freeport, the Bahamas, 65 miles from the continental United States. The largest population of Chinese students in Latin America is currently Cuba, where between 1,000 and 2,000 Chinese study Spanish, medicine, and other topics. The majority of investment flows between
China and Latin America involve Caribbean “tax shelter” states such as the Cayman Islands and the British Virgin Islands, creating massive opportunities for money laundering and organized crime. Finally, the largest concentration of Chinese work projects are also found in the Caribbean, where a combination of resorts backed by Chinese investors, and infrastructure projects backed by Chinese banks, are being performed under conditions which permit thousands of Chinese laborers to be imported into the region by the Chinese companies contracted to perform the work.

This paper analyzes PRC engagement with the Caribbean, with a focus on eight key trends in this present that are strategically significant from a US perspective:

- Growing PRC military activities in the region
- Expansion of Chinese investment
- Increasing numbers of Chinese companies operating on the ground
- Growing PRC Chinese financial presence
- Expanding activities by Chinese organized crime
- Expansion of the Chinese presence in telecommunications
- Expansion of PRC-Caribbean political and cultural ties
- Use of the region by the PRC as a logistics hub

**Growing PRC military activities in the region.** Although the PRC has been very cautious to portray its military activities in Latin America in a non-threatening manner, some of its most significant military engagements in Latin America have occurred in the Caribbean.

The first deployment of Chinese military forces into Latin America was the sending of a detachment of Popular Liberation Army (PLA) security police to Haiti in September 2004. Since that initial deployment, the PRC has continually rotated its forces to sustain a presence in Haiti. Indeed, 4 PLA officials from this force, plus four visiting officers, were killed in the January 2010 Haiti earthquake, becoming the first PRC military personnel to officially be killed in Latin American territory in modern times.²

In September 2011, the PRC chose the Caribbean as the destination for the first-ever visit by a PLA hospital ship to the Western Hemisphere. The first and only such ship built by the PRC, given the name “Peace Ark,” was scheduled to make port calls in Jamaica, Cuba and Trinidad, as well as Costa Rica as part of the mission “Harmonious Mission 2011.”³

The PRC also conducts significant interactions with the militaries of virtually all of the Caribbean nations with which it has diplomatic relations. A series of senior level Caribbean military leaders have visited China in the past two years, including Colonel Ernst Mercuur, Commander of the Suriname Armed Forces.
(visit to the PRC in June 2009), 4 Coronel Alvin Quintyne, Chief of Staff of the Barbados Defense Force (November 2009), Gary Anthony Rodwell Best, Chief of Defense Staff of Guyana (July 2010), 5 and Lamure Latour, Minister of Defense of Suriname (December 2010). 6 Publicized trips by Chinese defense leaders to the Caribbean during the past two years have principally involved Cuba, including the December 2010 visit to Havana by Ma Xiaotian, deputy chief of the General Staff of the Chinese People’s Liberation Army. 7

At a lower level, people-to-people military interactions have included inviting uniformed Caribbean military personnel and defense civilians for professional military education trips to the PRC, including classes in military studies institutes in Chanping and elsewhere. 8 In the case of Jamaica, in addition to officer exchanges, the PLA donated $3.5 million in non-lethal military equipment to the Jamaica Defense Force (JDF) in 2010. 9 Although the size of the donation was relatively modest, it was significant relative to the size of the JDF, and came at a time in which the JDF had been profoundly challenged by difficulties in entering and asserting control over the Tivoli Gardens neighborhood of Kingston. 10

Beyond such public military to military engagement, the PLA is also reported to have personnel at Soviet-era intelligence collection facilities in Bejucal, Lourdes, and Santiago de Cuba, although the Chinese government has denied such allegations.

Expansion of Chinese investment. Although the Caribbean has traditionally lacked the large national markets or natural resources which have drawn Chinese investment to other parts of Latin America, its modest quantities of key raw materials, such as petroleum, nickel, and bauxite have attracted the attention of multiple Chinese companies, as have its opportunities for tourism.

Its geographical position also serves as a natural logistics hub for goods transiting between China and Europe and the Atlantic coast of the Americas. Historically, Chinese resources have flowed into the region in modest quantities as gifts, such as soccer and cricket stadiums and development assistance, as a reward to nations changing diplomatic recognition from Taiwan to the PRC. By one estimate, China spent $132 million in “aid and soft loans” to Caribbean nations through 2007, 13 including $100 million in aid for Dominica following its recognition of the PRC in March 2004, 14 and the construction of a $40 million multi-use sports stadium for Grenada following its own diplomatic switch from Taiwan to the PRC in January 2005. 15

Aside from such “political rewards,” in recent years billions of dollars of Chinese loans and investments which may be characterized as “commercial” in character have also begun to flow into the Caribbean (although still channeled
principally toward those countries which maintain diplomatic relations with the PRC).

These funds have had a significant effect on the relatively small economies of the region, as well as on the associated political environment and popular consciousness. Some of the most notable projects include:

- Commitment to invest $2.4 billion to construct the 3800-room “Baha Mar” resort on New Providence Island in the Bahamas.\(^{16}\)
- $462 million in the Punta Perla beachfront resort on the eastern coast of the Dominican Republic.\(^{17}\)
- Hutchison-Whampoa’s establishment of its major regional logistics hub in Freeport, Bahamas, including administration of the airport, the container port, and various companies and commercial properties operating in the area, with an accumulated investment of between $500 million\(^{18}\) and $2 billion, depending on what is counted.
- Construction of a warehousing hub at the Caymans Estate facility near Kingston, Jamaica.\(^{19}\)
- The July 2010 purchase of 30,000 hectares of sugarcane fields and three ethanol refineries in Jamaica by the Chinese firm Complant.\(^{20}\)
- Purchase of 70% interest in the Omai Bauxite mine from the Guyanese government in February 2007 for $46 million.\(^{21}\)
- A $6 billion project to expand and modernize the Cienfuegos refinery in Cuba.\(^{22}\)
- Participation by China National Petroleum Corporation in oil drilling operations off the west coast of Cuba.\(^{23}\)
- Plans by a group of private Chinese investors to invest $200 million in two hotel resort complexes in Grenada.\(^{24}\)

Expansion of Chinese companies operating on the Ground. As a function of the investment and works projects mentioned above, as well as other activities, Chinese companies have moved from an indirect presence, purchasing from and selling goods to the region through intermediaries, to a larger, direct presence on the ground. The use of Freeport by Hutchison-Whampoa as its regional logistics hub was particularly significant in establishing a large PRC commercial footprint in the region, both because of its own operations, and also because of implied flows of Chinese goods that the operation enabled, including links with other Chinese entities such as China Overseas Shipping Company (COSCO).

Beyond projects funded by PRC investors, Chinese construction companies have secured a number of major highway, port, and building projects with the help of funding for the packages from Chinese financial institutions. Such projects typically involve the importation of thousands of Chinese laborers, although officially only on a temporary basis. As an example, an estimated
6,150 Chinese workers will be brought to the Bahamas for the construction of the Bahia Mar resort.25

Chinese construction projects in the Caribbean other than direct investments include the following:

- Construction of 3,500 homes in Jamaica by the Chinese firm Complant, leveraging a $76 million (USD) loan provided by Chinese banks.26
- Construction of the $45 million Convention Center in Montego Bay, Jamaica, also by Complant, with funding from PRC financial institutions.27
- Commitment to $6 billion in work to build a deep sea port and highway improvements in Suriname to support that country’s role as a transportation hub for northern Brazil commerce, with the work to be done by two Chinese companies: Don International and China Harbor Engineering Corporation.28
- A $400 million USD 5-year highway construction project for the Jamaican government and a separate $65 million USD project to improve the road from Kingston to the international airport, with the money loaned by China Development Bank, and the work to be done by China Harbor Engineering Company.29
- A $70 million improvement project for the international airport in Nassau,30 for which the Chinese government provided loans at preferential interest rates.31
- Drilling of oil wells by the Chinese oil service company Great Wall Drilling Co. (GWDC) under contract with the Cuban national oil company CUPET.32
- Construction of the Prime Minister’s residence and the National Performing Arts Center in Port of Spain, Trinidad, by Shanghai Construction Company.33
- A new $45 million terminal at the Antigua international airport, paid for by a Chinese loan.34
- Chinese companies’ construction of the Mt. St. John Medical Center and an electric generating plant in Antigua,35 and the Skeldon sugar factory in Guyana,36 and the expansion of the State College and State House in Dominica.37

Such projects, as well as the ongoing commercial activities of Chinese telecommunications companies Huawei, ZTE, and Shanghai Alcatel Bell, the appliance company Haier, and others, both give Chinese businesses a weight in their respective communities, and maintain Chinese management and technical personnel in the region.

This presence has implications for the level of Chinese interactions with local communities, including possibilities for conflict, as well as the influence of these businessmen in local Caribbean politics and social dynamics. Indeed, there have already been protests in Jamaica, that China Harbor Engineering is not employing a sufficient number of Jamaicans in the Palisadoes road project,39 and discontent in the Bahamas regarding the labor practices of Hutchison Whampoa, the Chinese logistics company operating the container terminal at Freeport.40
Beyond such commercial presence, a complimentary role is also played by Caribbean educational institutions, which bring Chinese students and professionals into the region, with a type of interaction arguably less conflictual than that which applies to the interaction between Chinese laborers and their host countries. The primary exchange programs are in Cuba, including the University of Havana, which alone hosts more than a thousand Chinese students for language, medical, and technical programs.\(^{41}\)

**Growing PRC Chinese financial presence.** Tax shelter countries such as the Cayman Islands and the British Virgin Islands have long served as instruments for the movement of Chinese, as well as Western capital. Previously, Chinese laws giving favorable tax treatment to “foreign capital” encouraged a process by which funds from the PRC would be exported to a foreign tax haven such as the Cayman Islands and the British Virgin Islands, transformed, and re-invested into mainland China at the more favorable tax rate.\(^{42}\) While reform to Chinese tax laws have eliminated many of the incentives for “round-tripping,” because of massive and growing Chinese financial assets (over $3 trillion in foreign exchange reserves as of April 2011),\(^ {43}\) the quantity of funds flowing into Caribbean tax shelter countries has continued to increase.

Some evidence also suggests that the flow of funds between Chinese and Caribbean banks has complicated the prosecution of money laundering activities by international authorities. This is because banking secrecy in Caribbean tax shelter countries such as the British Virgin Islands or the Cayman Islands greatly magnifies the administrative and linguistic barriers involved in following the money trail between China and the Caribbean, creating incentives for Chinese organized crime groups to use such routes for their own money laundering activities. Recognizing such vulnerabilities, the PRC has attempted to improve its visibility over Caribbean tax shelters, reaching an agreement with the British Virgin Islands in 2010, for example, forcing banks there to disclose the actual owners of companies registered there if formally requested to do so.\(^ {44}\)

In addition to tax shelter countries, the presence of Chinese financial institutions in Caribbean nations has also begun to increase more broadly. As noted previously, loans from Chinese financial institutions such as China Development Bank and the Export-Import Bank of China have played key roles in billions of dollars of work projects by PRC companies in the region. The PRC has also become a member of the Caribbean Development Bank,\(^ {45}\) with Chinese bankers playing a key role at the May 2010 Caribbean Development Bank Board of Governors meeting,\(^ {46}\) as well as trips by delegations from the China Development Bank to Antigua & Barbuda in October 2009,\(^ {47}\) and a visit to Trinidad and Tobago by the Vice President of China ExIm Bank.\(^ {48}\)
Expansion of Chinese organized crime activities in the region. Chinese triads and other organized crime groups have long had a presence in the Caribbean among Chinese immigrant populations. Nonetheless, the expansion of trade, human, and financial flows between the PRC and the region has proliferated opportunities for organized crime in ways that are difficult to monitor and control, given the lack of Chinese language capabilities and ethnically-Chinese agents among small, modestly resourced Caribbean security forces, as well as a frequent lack of collaboration from Chinese communities regarding crimes involving their own members.49

There is very little public evidence regarding the presence of Chinese criminal organizations in the Caribbean. The Chinese triad organization Tian Dao Man reportedly has a presence in Grenada.50 Recent murders within the Chinese community in Trinidad have led to speculation that triad groups have a presence there as well.51 In general, indications suggest that activities of such groups in the Caribbean concentrate on money laundering through casinos and human trafficking, possibly leveraging the influx of Chinese guest workers, as well as the increasing Chinese goods and capital flowing through regional financial institutions for legitimate purposes.52

Expansion of PRC-Caribbean political and cultural ties. There are two reasons why the PRC gives the Caribbean a level of political attention uncharacteristic for its size: (1) Because of its longstanding ties with Cuba, an ideologically receptive country in strategic proximity to the United States, and in need of powerful global allies, and (2) because six of the 23 nations in the world that diplomatically recognize the Republic of China (Taiwan) are found in the Caribbean.

The closest political partner of the PRC in the Caribbean is arguably Cuba. During the 1970s and 1980s, Sino-Soviet geopolitical competition, in combination with close ties between Cuba and the Soviet Union, impaired the Sino-Cuban relationship. Nonetheless, with the end of the cold war, a rapid Sino-Cuban rapprochement was driven by mutual interest and need. With the withdraw of Soviet military and economic aid, Cuba found itself in need of a new international patron, at the same time that the events of Tiananmen Square left the PRC isolated and in search of friends on the international stage.53 China-Cuba political and cultural interaction seems to have particularly accelerated since 2007. In November 2008, Chinese President Hu Jintao stopped in Cuba, as well as Costa Rica, on his way to the APEC summit in Lima, Peru.54 There have also been regular contacts at the level of Vice President and party leadership including the June 2011 trip to Cuba by Chinese Vice President Xi Jinping.55 At the level of cultural exchanges, Cuba is the Latin American country with the most Chinese students, with between 1000-2000 currently studying topics such as Spanish language and medicine at various Cuban institutions, including the University of Havana.56 In addition,
a Confucius Institute was established at the University of Havana in November 2009.\textsuperscript{57}

In addition to PRC relations with Cuba, Chinese political and cultural engagement with other Caribbean countries has arguably been driven by those countries, which, diplomatically do not recognize the PRC, and an effort to preserve recognition of the PRC in the rest, avoiding reversals such as the May 2007 decision by St. Lucia to undo its 2007 decision to recognize PRC.\textsuperscript{58}

With the exception of the November 2008 trip by Hu Jintao to Cuba,\textsuperscript{59} no Chinese president has traveled to the Caribbean in recent times, although Caribbean Presidents and Prime Ministers have traveled to China, including Jamaican Prime Minister Bruce Golding, who traveled to China in February 2010 and was received by Chinese President Hu.\textsuperscript{60} Below the executive level, senior visits include the February 2009 trip by Chinese vice-president Xi Jinping to Jamaica, and the near-simultaneous trip by Chinese vice-premier Hui Liangyu to Barbados and the Bahamas. In that year as well, National People’s Congress chairman Wu Bangguo traveled to the Bahamas as part of a two nation Latin American tour.\textsuperscript{61}

Within universities and the business community of the Caribbean, the language and experience base for doing business with the PRC has been limited, although it has begun to make progress in recent years. In 2009, the PRC established its first “Confucius Institute” in the Caribbean, for the promotion of Chinese language and culture at the University of the West Indies, in Kingston, Jamaica.\textsuperscript{62} Since that time, other Confucius institutes and classrooms have been established in the College of the Bahamas and the University of the West Indies Cave Hill Campus (Barbados) as well as the University of Havana, as noted previously. In addition, Caribbean participation in events such as the 2010 Shanghai World Expo\textsuperscript{63} have also served to promote contacts.

Expansion of the Chinese presence in space and telecommunications. For years, the Caribbean telecommunications infrastructure was considered a relative “backwater,” monopolized, atomized, and generally non-profitable. Like their western counterparts, Chinese telecommunication giants ZTE and Huawei refrained from making major investments in the sector. In recent years, however, that has begun to change. Since 2007, Huawei has won telecom infrastructure work in Trinidad and Tobago,\textsuperscript{64} Jamaica, Aruba, Cayman, and Barbados,\textsuperscript{65} while ZTE has developed a smaller, but important presence in Guyana, Guadeloupe\textsuperscript{66} and Haiti.\textsuperscript{67}

The newest Chinese entrant to the Caribbean telecom market has been Shanghai Alcatel Bell which, in December 2010, was announced as the agent for a fiber optic communication line that would connect Cuba and Jamaica to
the Venezuelan grid. While the project in itself is modest, it makes Cuba, and to a lesser extent Jamaica, more dependent on the Chinese for international data connectivity, since Chinese firms Huawei and ZTE have played major roles in the modernization of both the fiber optic and space-based components of the Venezuelan architecture to which the cable connects.

Conclusions. The significance of Chinese engagement with the Caribbean should not be underestimated because of its modest absolute size, or commercial character. While the dominant form of Chinese engagement with the Caribbean is loans and investments, the volume of capital involved is enormous relative to the size of the economies involved, giving the Chinese enormous and growing influence in the region. Moreover, the vast majority of these involve work to be performed on the ground in the Caribbean with hundreds or thousands of Chinese workers. Such presence will increase possibilities for political unrest by displaced local workers, social frictions between Chinese and locals, and possibly, opportunities for the growth of Chinese criminal organizations leveraging the large “floating” Chinese population.

In addition, the political character of Chinese interest in the Caribbean should not be overlooked. While Chinese companies are legitimately seeking to make money in the Caribbean through sales of products and services, and to secure supplies of key primary products such as petroleum, nickel and bauxite, the Caribbean is also strategically important both to the US and to China. Not only is the region home to 6 of the 23 nations in the world that diplomatically recognize Taiwan as the legitimate government of all of China, but it is also a central geographic location, encompassing both the key “southern approaches” to the United States, as well as the gateway for commerce passing through the Panama Canal from Asia to nations of the Atlantic.

In the end, the strategic significance of China’s engagement with the Caribbean for the United States is three-fold. First, by capturing the attention of Caribbean governments, and providing an alternative source of investment and trade, Chinese engagement undercuts the ability of the US to advance its own agenda in the region, including issues such as human rights, democratization, respect for law, and fiscal accountability. While the PRC may not promote an anti-US agenda in the region, it does serve as an enabler for vulnerable states in the region to follow the alternative path advocated in the region by states such as Venezuela and Cuba.

Second, over the longer term, PRC activities in the Caribbean may interact with other regional dynamics to give rise to new security challenges. The importation of Chinese laborers for work projects, logistics hubs which create opportunities for the distribution of Chinese contraband goods, and the use of the region as a tax shelter by Chinese investors, for example, each nurtures a
small but dangerous presence by Chinese organized crime groups in the region. As such groups potentially grow in strength and diversify into other activities; they may interact in difficult to predict ways with other transnational criminal entities currently engaged in operations in the Caribbean, such as Mexico and Colombia-based narcotrafficking organizations, as well as local Caribbean gangs.

Finally, the PRC presence in the Caribbean has the potential to take on a much more menacing character should Sino-US relations degenerate into a hostile geopolitical competition. Under such undesirable circumstances, the presence of substantial Chinese naval facilities and telecommunications infrastructure (albeit commercial), and thousands of Chinese personnel, many less than 100 nautical miles from US shores, and the associated potential to observe or disrupt key maritime routes and nearby US facilities would become a major liability for military planners.

In the end, the implications of China’s engagement with the Caribbean thus depend on the broader China-US relationship, as well as on the evolution of the region itself, highlighting once again the importance of evaluating a range of contingencies, seemingly only different in subtle ways, but in which the imperatives and risks for US planners responsible for Caribbean security issues will be dramatically different.

En septiembre de 2011, la Republica Popular China selecciono al Caribe como destino para la primera visita de un buque hospital del PLA (Ejercito Popular de Liberación) al Hemisferio Occidental. El primero y único buque fabricado por la PRC, bautizado con el nombre “Arca de Paz”, estaba programado a hacer escalas en Jamaica, Cuba y Trinidad, al igual que en Costa Rica, como parte de la “Misión Armoniosa 2011”.

Notes

1. The views expressed in this article are those of the author and do not reflect the official policy or position of the National Defense University, the Department of Defense, or the U.S. Government.


12. Senior China scholar David Shambaugh notes, for example, that Chinese leaders with whom he has spoken have said that there is no Chinese presence at these facilities. Interview with author. Beijing, China. June 2, 2011.


14. This aid included a $2.3 million primary school, a new sports stadium, the rehabilitation of the Princess Margret Hospital, and repair and upgrade of the principal road connecting the capital Roseau to the principal town of Roseau. Ronald Sanders. “China’s presence in Dominica.” http://www.caribbean360.com/index.php/opinion/389630.html#axzz1L32alt.


17. This project is particularly notable because it is one of the few major investments by a Chinese company, where the PRC does not have diplomatic relations with the receiving country. See “China’s Caribbean march.” BBC. http://www.bbc.co.uk/caribbean/news/story/2010/10/101019_chinadomrep.shtml. October 20, 2010.


19. In Jamaica, for example, the PRC has overtaken the United States as the largest source of foreign direct investment. “Jamaica Aims to Double Russian Tourists as Cuba Market Opens.” San Francisco Chronicle. http://www.sfgate.com/cgi-bin/article.cgi?f=/g/a/2011/06/09/bloomberg1376-LMJKJ41A1I4H01-3TL9NRDOV12Q1UV0T6TAHBDU3F.DTL. San Francisco. June 9, 2011.


64. See, for example, “Huawei Deploys WiMAX Network in Trinidad and Tobago.” Caribbean Information Society Portal. http://www.carib-


Contributer

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Dr. Ellis is also the technical lead for the center’s signature “NationLab” program of custom-designed, interactive exercise events, conducted by CHDS with partner institutions throughout Latin America on issues of strategic importance to the host countries. Dr. Ellis has presented his work on Latin America strategic issues and other topics in a broad range of business and government forums in the United States, Argentina, Bolivia, Belize, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Jamaica, Mexico, Panama, Paraguay, Peru, Venezuela, France, and the United Kingdom, and is a frequent guest lecturer at the U.S. Air Force Special Operations School.