

JAMAICAN MARITIME SECURITY. WHAT ARE THE CAPABILITY
GAPS THAT LIMIT THE JAMAICA DEFENCE FORCE IN THE
EXECUTION OF ITS ROLES IN MARITIME SECURITY?

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General Studies

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

JAMAICAN MARITIME SECURITY. WHAT ARE THE CAPABILITY GAPS THAT LIMIT THE JAMAICA DEFENCE FORCE IN THE EXECUTION OF ITS ROLES IN MARITIME SECURITY? by Major Dameon Ignatious Creary, 76 pages.

Jamaica's geostrategic location makes it attractive to transnational organized criminals involved in the illicit narcotics trade. Jamaica's maritime domain is approximately 240,000 square kilometers, and presents a significant challenge to maritime security.

The overall security of Jamaica is threatened by its murder rate, which is one of the highest rates per capita worldwide. Over 70 percent of these murders are committed with guns, and are often linked to the transnational narcotics and guns trade. Since Jamaica does not manufacture guns, addressing this problem must involve the security of the country's porous borders.

The research found that the main capability gaps that limit the JDF in the execution of its roles in maritime security are persistent maritime awareness and maritime presence. Mature technologies such as coastal radar and unmanned aerial vehicles are recommended as a possible part of the broad solution to address the capability gaps. However, further research is recommended to develop the specific materiel solution.

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I dedicate this work to my children and trust that they too will find inspiration and courage to contribute positively to humanity.

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ACRONYMS

C4ISR	Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance
CARICOM	Caribbean Community
CBA	Capabilities-Based Assessment
CBRN	Chemical, Biological, Radiological, and Nuclear
CBSI	Caribbean Basin Security Initiative
COA	Course of Action
DOTMLPF-P	Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy
EEZ	Exclusive Economic Zone
EOD	Explosive Ordnance Disposal
FAA	Functional Area Assessment
FNA	Functional Needs Assessment
FSA	Functional Solutions Analysis
GDP	Gross Domestic Product
HAEUAV	High Altitude Endurance Unmanned Air Vehicle
IEDD	Improvised Explosive Device Disposal
INCSR	International Narcotics Control Strategy Report
IPV	Inshore Patrol Vessel
JDF AW	Jamaica Defence Force Air Wing
JDF CG	Jamaica Defence Force Coast Guard
JDF	Jamaica Defence Force
JIS	Jamaica Information Service
MNS	Ministry of National Security

MPA	Maritime Patrol Aircraft
NSP	National Security Policy
NSS	National Security Strategy
OPV	Offshore Patrol Vessel
SAR	Search and Rescue
SDR	Strategic Defense Review
UAV	Unmanned Aerial Vehicle
UNODC	United Nations Office on Drugs and Crime
US	United States
USCG	United States Coast Guard
USN	United States Navy

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CHAPTER 1

INTRODUCTION AND BACKGROUND

Introduction

Jamaica, the largest of the English speaking Caribbean Islands, is traditionally known for its natural beauty, reggae music, and culture. However, it is also known for being one of the major trans-shipment points for drugs flowing through the Caribbean, and one of the world's murder capitals. This phenomenon is largely attributable to inadequacies in Jamaica's maritime security infrastructure, which lends itself to exploitation by transnational organized criminals in Jamaican waters.

In 2012, the United Nations Office on Drugs and Crime (UNODC) reported that Central America and the Caribbean face extreme violence inflamed by transnational organized crime and drug trafficking. The report also outlined that criminal networks disrupt stability, undermine democratic institutions, and hinder economic growth of the region (UNODC 2012, 15). Over the last decade, Jamaica has had an average annual murder rate of over sixty per 100 thousand members of the population. This is the highest in the Caribbean and among the top five in the world.

Based on statistics from the United Nations Programme of Action Implementation Support System, more than 70 percent of the murders in Jamaica are committed with guns, and often by gang members affiliated with the transnational drug and gun smuggling trades (United Nations 2005). According to the report, it is not possible to separate the link between the flow of illegal arms and drugs in Jamaica. These guns enter Jamaican territory via go-fast boats, light aircraft, and local, as well as foreign, owned fishing boats. This phenomenon of smuggling and other crimes committed in Jamaican

waters and throughout the Caribbean Sea has existed for hundreds of years, dating back to the pirates of the 1500s to early 1800s.

Brief History of Jamaica

Jamaica became known to the world in 1494 when Christopher Columbus first journeyed to the island. Over the following centuries, the island repeatedly changed hands between the Spanish and the English until 1655, when the English defeated the Spanish and took control of the island. Jamaica remained a colony of the United Kingdom and Northern Ireland until 1962 when the island gained independence.

While Jamaica was a colony, the British Royal Navy and elements of the West India Regiment, an indigenous Caribbean Force organized for the defense of British territories in the Caribbean, protected the island and its maritime domain. However, these Forces also protected other countries and maritime interests, and rarely had enough ships to secure the vast expanse of Jamaican waters. Consequently, other countries and individuals with sufficient resources, such as the buccaneers, engaged in piracy and smuggled goods in and out of Jamaica's maritime waters. Though piracy has given way to illegal trafficking of drugs, weapons, and people, the nature and root causes of illegal activities in Jamaican waters have not changed.

Geostrategic Significance

Jamaica is centrally located in the Caribbean and intersects many air and sea routes, which connect North and South America as well as Central America and the Eastern Caribbean. The country has 1,022 kilometers of largely unprotected coastline and a maritime domain of approximately 240,000 square nautical miles (Jamaica Defence

Force 2009b). This large maritime domain, coupled with Jamaica's proximity to the major South and Central American cocaine-producing countries, and their biggest market, North America, makes the island ideally suited for criminals seeking to exploit weaknesses in the country's border security.



Figure 1. Map of the Caribbean

Source: World Atlas, n.d., "Map of the Caribbean," accessed 16 October 2016, <http://www.worldatlas.com/img/areamap/fe82a41adeba42e2e891633dbb223b7d.gif>.

History and Overview of the JDF

The Jamaica Defence Force (JDF) was established in July 1962 in preparation for independence and the new responsibility of securing Jamaica, including the country's maritime domain (Jamaica Defence Force 2009a). The *raison d'être* of the JDF is to “defend Jamaica against external and internal aggression,” and this is further exposed in its mission “to provide military capability to deter and/or defeat threats against the Jamaican State and/or its interests.” The JDF seeks to accomplish this mission by executing and fulfilling several tasks. These include:

1. Defend Jamaica against military or paramilitary threats.
2. Provide military aid to civil authorities, namely relating to:
 - a. Restoration/maintenance of law and order;
 - b. Counter-narcotics operations;
 - c. Search and Rescue (SAR);
 - d. Casualty Evacuation;
 - e. Humanitarian and disaster relief operations;
 - f. Defence diplomacy;
 - g. National building projects;
 - h. Contingency planning; and
 - i. State ceremonial duties.
3. Maintaining the integrity of Jamaica's waters and airspace by demonstrating sovereignty over the territorial space and protecting the rights and interests in the maritime and aeronautical areas of jurisdiction (including marine environmental and fisheries protection).

4. Counter terrorism operations by monitoring and analyzing potential terrorist activities, and preventing or responding to terrorist incidents, including chemical, biological, radiological, and nuclear (CBRN) detection, explosive ordnance disposal (EOD) and improvised explosive device disposal (IEDD).

Upon its formation, the JDF was comprised of a headquarters, two regular units, and the Jamaica National Reserve. In 1963, the Jamaica Air Wing and the Jamaica Sea Squadron were established as sub-units. Since then, the JDF has undergone several other organizational and structural changes. The JDF now totals approximately 3,500 members, and is structured as a light infantry brigade with eight regular units and one reserve unit. The average unit has approximately six hundred members, and the smaller units may have less than four hundred. The JDF Coast Guard and the JDF Air Wing are among its smaller units (IHS Markit 2017b).

Within the broad roles of the JDF, the Jamaica Defence Force Coast Guard (JDF CG) is the unit with primary responsibility for maritime security (Jamaica Defence Force 2009b). The main tasks of the unit are to provide maritime law enforcement, maritime safety, defense readiness, naval duties, and contribute to nation building. The only other JDF unit with a specified task for maritime security is the Jamaica Defence Force Air Wing (JDF AW), which is required to provide air support to military operations, aerial surveillance, and support to counter-narcotics operations.

Since its establishment, the JDF CG, and by extension, the JDF has struggled to provide adequate resources to protect its maritime domain. Notwithstanding regional and international partnerships, Jamaica, like many of its Caribbean neighbors, continues to be challenged in finding adequate solutions to border security. The expansive coastlines and

numerous points of entry, other than formal ports, facilitate undetected entry and other illegal activities along the coast. Hence, it is reasonable to describe Jamaica's borders as porous borders, since neither individual nor collective security is sufficient.

Regional Security

In 2007, the Caribbean Community (CARICOM) recognized security as the fourth pillar of the regional structure (Stabroek News 2010). However, to date, CARICOM has not formally incorporated this into the governing treaty. Consequently, except for weak cooperation agreements between some countries and bilateral agreements such as the Shiprider Agreement and the Caribbean Basin Security Initiative (CBSI) with the United States America, each country is still largely responsible for all security of its maritime domain (Haughton 2011; Chalk 2008, 38-39; Jamaica Information Service 2004). Perhaps, the strongest of these partnerships is the CBSI.

The CBSI is a partnership among the US, CARICOM member states, and the Dominican Republic, which is geared toward decreasing regional crime rates, and thereby improving citizen safety regionally (U.S. Department of State 2016). The initiative focuses on three broad areas:

1. Substantially reducing illicit trafficking in narcotics and illegal weapons through counter narcotics and other programs;
2. Increasing public safety through technical and other support; and
3. Promoting social justice.

Among the top priorities agreed on for cooperation by CBSI partners were the building of a regional information-sharing network, improving maritime interdiction coordination, and reducing the illegal trafficking of firearms. Essentially, the collective

assessment was that the maritime threats were significant, and had to be given focus. Consequently, a significant portion of the US support to the initiative is maritime focused. It includes support to regional coordination by improving radar coverage in some strategic locations, and the sharing of radar information from US collection sources.

Agreements, such as the CBSI with the United States, though beneficial to Jamaica, are largely driven by the US's interest in stemming the flow of drugs before it reaches US borders. US national interests do not always align with the national interests of Jamaica. Hence, as Girvan suggests, the countries of the region must individually and collectively strengthen their security framework (Girvan 2003, 17).

The need for the improved maritime capability becomes even more apparent when taken into context of world geopolitics and possible shifts in the priorities of global partners. General John Kelly, the commander of the United States Southern Command (SOUTHCOM) from 2012 to 2015, in a presentation to the Armed Services Committee in 2014, expressed his concern that budget cuts to his command were having a negative impact on the gains made in fighting drug trafficking in the Caribbean and Latin America. He stated that SOUTHCOM was unable to pursue 74 percent of suspected maritime drug trafficking cases due to a lack of resources (U.S. Senate 2014, 19). In this, and subsequent presentations to the members of the Armed Services Committee in 2015, General Kelly referred to the sequestration affecting the US military, and said he did not expect immediate relief or increase in assets to work in the Caribbean and Latin America (U.S. Senate 2015). If further cuts are made to SOUTHCOM's budget, it is reasonable to conclude that the level of maritime security support Jamaica receives from the United States may decrease. If such a decrease occurs, and the gap is not filled, the overall

security of the country stands to deteriorate even further. However, irrespective of what happens in this regard Jamaica needs to be more self-reliant on internal security mechanisms than on partner nation support, which is largely unpredictable.

The Jamaica Defence Force, despite its efforts, has had limited success in stemming transnational organized crime, especially drug and gun smuggling, in its maritime space. As the primary agent of the nation's security architecture, entrusted with the responsibility of maritime security, consideration must be given to how the JDF addresses existing security gaps.

Research Questions

The primary question that this research seeks to answer is what are the main capability gaps that limit the JDF in the execution of its roles in maritime security.

Subordinate questions that will also be answered include:

1. What are the existing and future threats to Jamaica's maritime security and what is the impact of those threats on the overall security of the country?
2. What are the specified and implied tasks of the JDF in regard to maritime security?

Assumptions

The following assumptions were made during the course of the research:

1. Jamaica's maritime security will continue to be a role of the Jamaica Defence Force.
2. Maritime security issues that are beyond the capacity of the Jamaica Defence Force will continue to exist.

3. The security systems at the recognized ports of entry are effective in preventing the smuggling of narcotics, weapons, and people into and out of the country through those ports.
4. Transnational organized crime will continue to be a significant threat to Jamaica ten years and beyond.
5. Jamaica will still be a developing country beyond ten years.
6. The role of CARICOM, the United States, and other international partners will not increase in any significant way with regard to maritime security.

Limitations

The researcher was limited by available time to conduct the research. Despite the use of technology as a mitigating factor, the geographic location of the researcher at the Command and General Staff College, Kansas, United States, also limited the research by making it difficult to access possible primary and secondary resources in Jamaica, which may have better informed the research. Additionally, security protocols limited the research, which had to be observed in respect to material of a sensitive security nature. Consequently, though certain resource materials were rich in data, they could not be adequately used and cited.

Scope and Delimitations

The research does not seek to examine, in any detail, the role of other state entities that also have roles to fill in maritime security. It will seek to address only the capability gaps for selected major mission areas, executed by the JDF. Additionally, the research will not examine, in any detail, the role of the Jamaica Defence Force Military

Intelligence Unit or the assets held by that unit, and used in support of maritime security operations.

The research is limited to identification and recommendations to fill broad capability gaps. It does not seek to provide precise resource requirements for all the gaps identified or for the recommendations made.

Aim and Relevance of Research

The research seeks to identify the main capability gaps that limit the ability of the JDF to execute its maritime security roles, with a view to finding solutions to guide national security strategy and improve effectiveness and efficiency at the operational and tactical levels.

Summary and Conclusion

This chapter presented a background and context to the research paper. It included a brief history of Jamaica and the JDF as well as an overview of the JDF and its role in Jamaica's maritime security. It also highlighted the geostrategic importance of the island to transnational organized criminals, particularly drugs and guns smugglers. Additionally, this chapter presented the research questions, which later chapters of this study will explore.

Chapter 2 will continue to address these questions by taking a more in-depth look at the current and emerging maritime security landscape, and the effectiveness of the JDF in executing its roles. The chapter will also review the capabilities of the JDF, and will help to form the basis for a later capabilities gap analysis.

CHAPTER 2

LITERATURE REVIEW

Introduction

The purpose of this research is to identify the main capability gaps that limit the JDF in the execution of its roles in maritime security. This chapter provides a review of pertinent literature that is required to answer the research questions, and gives definitions and explanations of key terms and concepts that help to create the theoretical framework of the study. Chapter 2 also develops work started in chapter 1 by examining the nature of Jamaica's maritime threat and the maritime security apparatus of the JDF in further detail. Essentially, therefore, the functional area assessment, the first step of the capabilities based assessment is presented. The capabilities based assessment is one of the research tools used in this study and will be explained further in chapter 3.

A review of another country with similar maritime threats and its maritime security apparatus is provided as a reference for comparison. The chapter closes by introducing the conceptual framework to conduct the capabilities gap analysis later in the study.

Defining Security

In addressing maritime security, it is important that one first understands the concepts of security and national security. Security in its most basic form is the absence of threats to one's well-being. National security takes on a broader view of a country's collective security, and is widely accepted as the safekeeping of a nation as a whole. It includes protection from external and internal threats. Dr. Ivelaw Griffith, political

scientist and scholar, is perhaps the most prominent of the regional scholars who have written about Caribbean security. Griffith's view of security is a broad concept that includes the "protection and preservation of a people's freedom from external military attack and coercion, from internal subversion, and from the erosion of cherished political, economic, and social values. These values include democratic choice and political stability in the political area, sustainable development and free enterprise in the economic domain, and social equality and respect for human rights in the social arena" (Griffith 1997). Griffith asserts that Caribbean states face non-traditional and emerging threats with the primary threats being territorial or border disputes, and geo-narcotics. Griffith's assessment is as accurate now as it was in 2003. As mentioned earlier, this assessment is also shared by the UNODC. In 2012, the organization published a threat assessment of Central America and the Caribbean, which found that transnational organized crime was the biggest threat to regional security. Within this context, the nexus among drug smuggling, gun smuggling, and murders was the issue of most concern.

The more significant of the border disputes among Caribbean states are perhaps among Guyana, Suriname, and Venezuela, and between Jamaica and Honduras. With regard to Jamaica, the country recognizes its exclusive economic zone (EEZ) and maritime domain as two hundred nautical miles from the coast. However, some parts of this territory are contested by neighboring countries. Delimitation agreements have only been concluded with Cuba and Columbia. To the south and west of Jamaica's territorial waters, there are uncompleted boundary disputes between Honduras and Cayman, respectively. To the east, there is an uncompleted boundary dispute with Haiti. The Navassa Island, which lies between Haiti and Jamaica, is claimed by the USA. Neither

these nor any other territorial disputes have ever deteriorated into war or any significant loss of life. To the contrary, transnational organized crime, largely made feasible by under-protected maritime spaces, has led to the loss of thousands of lives and devastating economic conditions. This particular threat to national security is much more relevant to Jamaica and the wider Caribbean and Central American region, and will be addressed throughout this study.

According to a UNODC threat assessment of the region, the effects of transnational crime are perhaps most evident in the countries of the Northern Triangle and Jamaica. Honduras however, holds the unenviable position atop the list. The report highlighted that there was a clear link between cocaine trafficking and the high murder rates in the region and that Honduras had over-taken El Salvador as the country with the highest murder rate worldwide. In 2011, the Honduran murder rate was 92 per 100 thousand inhabitants. This was not just the highest in the world, but also the highest in modern history. Though the report pointed out that the relationship between the flow of drugs and murder rate is not linear, it also pointed out that several Caribbean countries were trending towards the Honduran crime levels. At that time, the Jamaican murder rate stood at fifty-two per 100 thousand inhabitants (UNODC 2012, 15).

The effects of the murder rate and crime in general crippled the Honduran economy and pushed the country into a negative growth rate. The Honduran Commissioner of Human Rights declared drug trafficking and organized crime were the public's number one enemy. The UNODC argues that since 77 percent of murders in the region are committed with a firearm, then stopping the flow of guns to criminals should

be a top priority (UNODC 2012, 59). This author shares this view of the UNODC, and believes that stopping the flow of guns into Jamaica should be a matter of top priority.

Threats are often difficult to define and quantify, and are the subject of many definitions.

A threat to national security is an action or sequence of events that (1) threatens drastically and over a relatively brief span of time to degrade the quality of life for the inhabitants of a state, or (2) threaten significantly to narrow the range of policy choices available to the government of a state or private non-governmental entities (persons, groups, corporations) within the state (Ullman 1983).

This definition adequately captures how transnational crime has affected and continues to affect Jamaica. Hence, it is the definition of threat adopted for this study.

Defining Maritime Security

Maritime security is still a relatively new term, which has many varied definitions by leading scholars, including international scholar Raymond Gilpin. Gilpin provides a definition of maritime security that encompasses responses to transnational organized crime and other non-traditional threats. He defines maritime security as the prevention of unlawful acts in the maritime domain, whether they directly impact the country or region in question, or whether or not the perpetrators are in transit. The maritime domain here refers to:

All areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime related activities, infrastructure, people, cargo, and vessels and other conveyances.

He asserts that, in terms of geographic scope, the maritime domain could be defined as a) territorial waters, twelve nautical miles from the coast; b) contiguous zone or coastal waters, twenty-four nautical miles from the coast; and c) the exclusive

economic zone (EEZ), two hundred nautical miles from the coast (Gilpin 2007, 2-3). Since Jamaica recognizes its EEZ and maritime domain as two hundred nautical miles from the coast, Gilpin's definition of maritime security is applicable to address the prevention of unlawful activities within Jamaica's maritime domain, and will be adopted for this study.

Overview of Jamaica's National Security Architecture

In 2014, the Ministry of National Security (MNS) published an updated national security policy (NSP) for Jamaica, which is meant to guide the actions of all stakeholders in the Jamaican security apparatus. The NSP rates crime, violence, and corruption as the foremost threats to the national security of Jamaica. These issues are so significant that they were assessed as threats to the integrity of the state.

Reduction of crime and violence and the associated insecurity are stated as the main goals of the policy. The NSP highlights the cost of crime to Jamaica, prioritizes specific threats to Jamaica, and establishes objectives to mitigate these threats. How the country is ranked internationally gives an indication of the profound economic cost of crime to the country.

In 2010, Jamaica was ranked at 95th of 132 nations on the World Economic Forum Competitive Index after having fallen seventeen places from the previous year. This was the most rapid decline in the world. By 2011, Jamaica had fallen another twelve places in the rankings to 107th. Since 2004, Jamaica has declined steadily in the World Bank Doing Business rankings. In 2013, Jamaica was ranked at 94th. The decline in these international measures of success was attributed to an inadequate Jamaican security apparatus (NSP 2013, 7-8).

Though significant, it was concluded that the loss of regional and international competitiveness paled in comparison to the debilitating effect crime has had on economic growth and development, and, more so, the physical pain and loss of lives endured by Jamaican families. In terms of comparative percentage of the population murdered and the impact on the society, the number of Jamaicans murdered in 2009 was equated to a 9-11 terrorist attack happening in Jamaica every week of the year (NSP 2013, 21).

The threats are categorized into four tiers based on the likelihood of occurrence and impact. Tier 1 threats are those that have a high probability and high impact (clear and present danger requiring priority and active response). Tier 2 threats are major potential threats, which have a low probability of occurrence, but would have significant impact if they occurred. Tier 3 threats are high impact, low probability threats; and Tier 4 threats are those with low impact and low probability (NSP 2013, 16). Table 1 shows a graphic representation of this matrix.

Table 1. Probability Threat Matrix			
	High Impact	Low Impact	
High Probability	Tier 1 Top priority; Active response	Tier 3 Medium priority; Regular review	
Low Probability	Tier 2 Monitor carefully; Build resilience	Tier 4 Low priority; Occasional review	

Source: Government of Jamaica. 2013. “A New Approach: National Security Policy for Jamaica. Accessed 5 October 2016. [http://www.cabinet.gov.jm/files/NATSEC%20March%2025%202014%20\(1\)%20\(1\).pdf](http://www.cabinet.gov.jm/files/NATSEC%20March%2025%202014%20(1)%20(1).pdf).

Tier 1 and 2 Threats

Addressing all the threats are outside the scope of this paper. However, it is worthwhile to address the top two Tier 1 and Tier 2 threats identified by the NSP. The Tier 1 threats are transnational organized crime (including trafficking in narcotics, guns and people) and gangs and domestic organized crime (including contract killings, dealing in narcotics and illegal weapons (NSP 2013, 17) The top tier 2 threats are the potential negative influence from Mexican, South, and Central American drug cartels and, terrorism. It is clear that this threat posed by drug cartels is similar in nature to the tier 1 threats and may be re-categorized as a higher-level threat in time. Also noteworthy is the finding that transnational organized crime and local organized crime are inextricably linked. This is in keeping with the views of regional scholars such as Griffith and Manwaring (Griffith 1997; Manwaring 2004).

In a monograph entitled, “A Contemporary Challenge to State Sovereignty: Gangs and Other Illicit Transnational Criminal Organizations in Central America, El Salvador, Mexico, Jamaica and Brazil,” Manwaring went a step further in arguing that transnational crime (primarily drug and gun smuggling) are not only inextricably linked to local organized crime, but are so damaging that they threaten the stability and democratic institutions of some countries such as Jamaica.

The policy outlines six objectives to address the Tier 1 threats. These are to remove profit from crime, reform the justice system, police by consent, adopt a coherent anti-gang strategy, focus on at risk individuals, and strengthen systems of governance (NSP 2013, 112). Analysis of these objectives and their subordinate tasks does not reveal any intent to give focus to eliminating Jamaica’s maritime domain as an avenue for the

trafficking of drugs and guns. The policy does, however, mention maritime surveillance resources as one of the areas for priority funding. Since Tier 1 threats should be given priority and direct action, it is therefore reasonable to consider whether there are gaps in the national security policy, the national security strategy, and the military strategy. This possibility will be assessed in chapter 4.

In 2006, the JDF undertook a holistic strategic defense review (SDR). This review was largely driven by the national security strategy (NSS), and has been updated several times since. The SDR is one of the main policy documents that guide the modernization and transformation of the JDF to ensure it is able to fulfil current and future roles (Jamaica Defence Force 2006). Though the SDR covered all areas of the JDF, this paper will focus only on the aspects of the review that have a direct impact on maritime security. The broad responsibilities of the JDF and the specific roles of the JDF CG and JDF AW provided the basis for determining the capabilities required to achieve maritime security.

Monitoring and control of airspace and maritime areas of jurisdiction was one of the ten tasks identified by the SDR, for JDF execution. In order to execute this task, it was recognized that the JDF would require the air and maritime capability to detect and identify aircrafts and marine vessels within Jamaica's territorial areas on a 24-hours basis, interdict vessels involved in illegal activities, and identify and respond to environmental and resource protection issues. The SDR identified that a capability gap existed and that maritime patrol aircrafts, offshore and inshore patrol vessels, aerial surveillance equipment, and the necessary berthing and other supporting infrastructure were among the resources necessary to fill the capability gaps.

The specific resources identified were:

1. To replace the existing four Eurocopter AS355N surveillance and utility helicopters;
2. To acquire two maritime patrol aircrafts;
3. To refurbish and bring into service two of the currently held offshore patrol vessels (OPVs);
4. Take delivery of three new OPVs;
5. Continue the refurbishing of the seven currently held inshore patrol vessel (IPVs); and
6. Acquire twelve new IPVs.

It was envisioned the capability gaps would be filled over a scheduled transformation period between September 2006 and the end of 2008. However, examination of current equipment tables reflect that several pieces of the equipment proposed for acquisition have not yet been acquired, and some equipment that was acquired is aged and not fully serviceable.

In an interview with the Jamaica Information Service (JIS), the official news agency of the Jamaican Government on 11 March, 2009, Lieutenant Colonel David Cummings, then a member of the JDF's Strategy, Policy, Plans, and Transformation Unit, outlined that capability gaps identified by the SDR were still only 56 percent complete. The main challenge highlighted was a lack of financial resources (Jamaica Information Service, 2009).

Though there is development of legislation and laws, the state is still lacking in its physical ability to effectively persecute operations against transnational criminals in its

maritime space. Such situations give credence to the position advocated by Machiavelli that good laws are important, but of equal importance is the ability to enforce those laws (Stanford Encyclopedia of Philosophy, 2014).

In a study titled, *The Difference between the Constabulary Force and the Military: An Analysis of the Differing Roles and Functions in the Context of the Current Security Environment in the Caribbean (The Case of Jamaica)*, McDavid et al. assessed several reasons for Jamaica's susceptibility to crime. They correctly concluded that transnational organized crime and corruption present an imminent threat to national security. They posited that there is a direct link between the lucrative trans-border shipment of drugs through Jamaica to North America and Europe, and the importation of weapons from the United States, Central America, and Haiti into Jamaica. In addressing the economic cost to Jamaica, the authors referenced *The Economist*, which suggests some criminal gangs in the Caribbean are operating on budgets that are greater than that of some of the smaller islands (*The Economist* 2008).

Clarke, in an article titled "Politics, Violence, and Drugs in Kingston, Jamaica," asserts that the drug trade in Kingston was worth US\$3.6 billion in 2001, which was approximately 40 to 50 percent of Jamaica's GDP (Gross Domestic Product). Though Jamaica is not one of the smaller islands, it is reasonable to assess whether the transnational criminals that threaten Jamaica's maritime security are operating with budgets higher than that of the JDF; as such, a budgetary gap would be most likely manifested in a resource or capability gap. The logical questions are therefore:

1. What is the operating budget of the JDF;
2. What percentage of the JDF's budget is directed to maritime security; and

3. Is there a budgetary gap and if so, does it translate into a capability gap?

The answers to these questions are important because of the direct correlation of a military's budget and its ability to develop or acquire the technological and other resources necessary to gain or maintain a position of advantage relative to the threat. The performance of physical resources, such as boats and surveillance systems, can be measured in terms of speed, range, time on station, and other factors that relate to the achievement of a particular measure of effectiveness. The acquisition and maintenance of these resources require budgetary support. Hence, budgets essentially translate to the ability to achieve measures of effectiveness. The implications of the answers to these questions will be assessed further in chapter 4 of this study.

Threats to the Blue Economy

Threats to the blue economy are eluded to but not addressed in policy or at the strategic level in any detail or with much specificity. This is an emerging area of interest in global economic and security circles. The World Bank is one of the organizations that have done significant research and writings in this area. In a report titled *Toward a Blue Economy: A promise for Sustainable Growth in the Caribbean*, the World Bank defines the concept of the blue economy as “a lens by which to view and develop policy agendas that simultaneously enhance ocean health and economic growth, in a manner consistent with principles of social equity and inclusion” (Patil et al. 2016, 43). Essentially, therefore, there should be mechanisms in place to enforce regulations and physically protect resources that are vulnerable.

The World Bank estimated that Caribbean waters generated revenues of \$407 billion in 2012, approximately 14 to 27 percent of the global ocean economy. This

revenue was generated from living resources such as fish, non-living resources such as oil, and ecosystems and ecosystem processes such as tourism centered on beaches and reefs (Patil et al., 2016, 29). The exact portion of this amount that is attributable to Jamaica was not mentioned in the study however, based on the size of Jamaica's tourism industry and other ocean economy related industries it is reasonable to conclude that it is a significant amount.

The report also warned that the natural capital assets of the Caribbean Sea were being depleted due to poor management, overfishing, coastal development, pollution, and other factors. This depletion puts the blue economy and the future prospects for growth at risk. Of particular relevance to this paper, the report highlighted that living resources, especially fisheries, are severely threatened as nearly 60 percent of commercially exploited fish stocks either are overexploited or have collapsed (Patil et al. 2016, 35). Jamaica, like the wider Caribbean is exposed to this risk. Earlier studies of the Pedro Banks area of the Jamaican waters by Bruckner and Hay are in-line with this finding (Bruckner 2012; Hay 2006)

Though, the blue economy does not necessarily fall squarely within the ambits of this study, its relevance takes on heightened importance when considered in the context of the opportunities it presents for further illegal activities, the vast amount of resources required to protect it, and also for the potential revenue that it could generate for the country.

Given Jamaica's fiscal challenges, establishing the real worth of the blue economy and the losses being incurred is an area worthy of further research. Such a study would serve as a useful tool in determining the balance of resources needed to protect it,

and may also serve as justification for an increase in the maritime security budget, even if it is just to protect the resources that are currently known.

The JDF's Capacity to Execute Maritime Security

Chapter 1 gave a general overview of the structure of the JDF. In this part of chapter 2, the JDF budget and its physical resources and capabilities traditionally employed in a direct maritime security role will be addressed. As discussed in chapter 1, these resources are held by the JDF CG and JDF AW; hence, focus will be given to these two units.

According to a report by the JIS, the national budget for Jamaica for the financial year 2016-2017 is 579.93 billion Jamaican dollars (approximately \$4.5 billion). The Ministry of National Security is allocated 59.2 billion Jamaican dollars (approximately US \$459 million) (Thompson 2016). However, this figure is split among the JDF and the other three entities that fall under the Ministry of National Security. The JDF's average annual defense spending (from the national budget) over the past ten years has averaged between US \$123 million and \$150 million, which represents an average of 0.5-1 percent of the GDP. Approximately 75 percent of the defense budget is spent on personnel related matters. It therefore stands to reason that what is left for infrastructure and materiel capabilities is an average of approximately \$30-38 million. The budgets for infrastructure and capability requirements of the JDF CG and JDF AW are taken from this total. However, it is to be noted that special government funding is sometimes provided for acquisition of capital assets.

Additionally, the military budget is often augmented by small amounts of military aid from countries such as China, Canada, and the United States. Knowledge of national

and military budgets are particularly important when viewed in the context of transnational criminal network budgets, and the leverage that their budgets afford them in acquiring resources and technology to carry out illegal activities. In order to be effective, the JDF must at least have enough budgetary support to resource itself and leverage sufficient technology to defeat the threats. Additionally, knowledge of the military budget is critical to understanding what is feasible for the country based on the government's available, overall budget. This will influence the acceptability of any possible solutions to fill a capability gap.

The JDF CG

The JDF CG has a strength of approximately three hundred active service and sixty reserve personnel. However, when consideration is given to personnel unavailable due to illness, vacation, and other administrative and operational reasons the actual working strength of the unit is approximately 150-200. The main base of the CG is located near the eastern tip of Jamaica, and six secondary bases are located around the coast of the island. The CG leverages its personnel, bases, and the resources listed in table 2 to execute its roles in maritime security. The JDF CG is also able to leverage assistance from international partners such as the United States. This is usually in the form of surveillance information or intelligence on drug and gun smuggling operations.

Table 2. JDF CG Patrol Vessels in Service					
Class	Manufacturer	Role	Original Total	In Service	Commissioned
County (Damen Stan Patrol 4207)	Damen Shipyard	Patrol craft	3	2	2017
Hero	Lantana Boatyard, Inc.	Patrol craft	1	1	1985
Fort	Swift ships	Patrol craft	1	1	1974
Dauntless	SeaArk Marine	Patrol craft - inshore	4	4	1992
Fast Coastal interceptors	Silver Ships Theodore	Patrol craft - fast	3	3	2003
Fast Coastal interceptors	Nor-Tech	Patrol craft - fast	4	4	2008
6 m Fast Patrol Boat	Boston Whaler	Patrol craft - fast	1	1	2008
9 m Fast Patrol Boat	Boston Whaler	Patrol craft - fast	1	1	2008
Justice	Boston Whaler	Petrol craft - fast	2	2	2015

Source: IHS Markit. 2017a. *Jane's Sentinel Security Assessment – Central America and the Caribbean. Jamaica – Navy*. 8 March. Accessed 22 March 2017 <http://janes.ihs.com.lumen.cgscarl.com/MilitarySecurityAssessments/Display/1767042>.

The two Damen Patrol Crafts are the only offshore vessels held by the JDF. The theoretical seagoing range of the vessels are approximately four hundred nautical miles (approximately five to seven days at sea) at a maximum speed of thirty knots. Though the boats can be fitted with different communication and radar sets, the typical radar range is

approximately forty-eight nautical miles. However, effective radar range is between three to twenty-four nautical miles based on the size of the target (Damen 2017).

The inshore patrol vessels, as the name suggests, are designed for inshore patrols and consequently possess limited seagoing range. Additionally, when equipped with radar, the effective radar range is only approximately three nautical miles. Hence, at any given time, the JDF CG can only have physical presence to effect deterrence and interdiction in a minimal portion of its maritime domain. Its maritime awareness is equally limited.

The JDF AW

The JDF AW has a strength of approximately one hundred active personnel. Their flight platforms are primarily small utility aircrafts, which perform multiple logistic support roles to the JDF, Jamaica Constabulary Force, and other government agencies (see tables 3 and 4). At the time of this paper, in December 2016, the JDF had only very limited fixed-wing transport and surveillance as it relied on intermittent use of a DA40 and a DA42 aircraft assigned to the military aviation school, used mainly for training pilots. JDF records indicate that other long-range aircrafts reflected on their books were either unserviceable or had been withdrawn from service (see table 3). Essentially, therefore the JDF AW can only provide a limited support role to the JDF CG.

Table 3. JDF Air Wing – Fixed Wing Equipment in Service					
Platform Family	Platform Variant	Primary Role (General)	Primary Role (Specific)	In Service	Commissioned
210 Centurion	210 Centurion	General aviation	Executive	*1	1983
BN2	BN2A	C4ISR	Surveillance/ Reconnaissance	*1	1974
DA40 Diamond star	DA42	Trainer	Basic	2	2006
DA42 Twin star	DA42	Trainer	Basic	2	2009
*1. Withdrawn from service					

Source: IHS Markit. 2016. Jane's Sentinel Security Assessment – Central America and the Caribbean. Jamaica – Air Force. 10 November 2016. Accessed 30 November 2016 <http://janes.ihs.com.lumen.cgscarl.com/MilitarySecurityAssessments/Display/1766869>.

Table 4. JDF Air Wing – Rotary Wing Equipment in Service						
Platform Family	Platform Variant	NATO Designation	Primary Role (general)	Primary Role (specific)	In service	Commissioned
412	Bell 412EP		Logistics	Utility	*2	1998
407	407		Logistics	Utility	3	2007
AS 355	AS 355N	Ecureuil 2	Logistics	Utility	4	1999
206	206B-3	Jet Ranger 3	Trainer	Basic	2	2009
*2. Only one active Jamaican search and rescue and MEDEVAC dependent on one airframe						

Source: Adapted from IHS Markit. 2016. Jane's Sentinel Security Assessment – Central America and the Caribbean. Jamaica – Air Force. 10 November 2016. Accessed 30 November 2016 <http://janes.ihs.com.lumen.cgscarl.com/MilitarySecurityAssessments/Display/1766869>.

Rationale for Case Study

A case study of another island of similar size, with similar maritime security challenges and similar economic standing might appear, at first, to be most prudent. However, there may be no significant value in this, as those countries are likely to have similar capability gaps as Jamaica. To the contrary, analyzing a country that shares threats of a similar nature to Jamaica, but has more economic strength and more resources is likely to give better insight on what capabilities the JDF is lacking. Consequently, the United States was chosen since it is recognized as a developed country with a well-established military.

The United States is widely recognized as a world super power with arguably the world's best-resourced and strongest military with their navy and coast guard being a significant part of that strength. Also of importance is the fact that the United States continues to invest billions annually to bridge the existing and emerging gaps.

The United States Coast Guard

The United States Navy (USN) and Coast Guard (USCG) are generally regarded as the world's strongest sea power (Edmonds and Tsai 2003, 169). Due to their size and the quality of their fleets, they are often used as a benchmark by which other countries are measured. The central concept to the US maritime strategy is Maritime Defense-in-Depth. In very broad terms, this is a layered defense with USN assets as the outer layer and the USCG assets as the inner layer. However, there is overlap. The inner layer occupied by the USCG accounts for another layered defense-in-depth, in and of itself, with the inner layer being from shoreline out to fifty nautical miles, and the outer layer from fifty nautical miles to the limits of the EEZ and beyond.

The USCG falls under the Department of Homeland Security, and is responsible for the protection of the maritime domain of the United States. According to the USCG's official website, the USCG has an active duty component of 42 thousand men and women. Their missions, listed in order of operating expenses, are:

1. Ports, waterways, and coastal security;
2. Drug interdiction;
3. Aids to navigation;
4. Search and rescue;
5. Living marine resources;
6. Marine safety;
7. Defense readiness;
8. Migrant interdiction;
9. Marine environmental protection;
10. Ice operations; and
11. Other law enforcement (U.S. Coast Guard Year).

In 1996, the USCG commenced a twenty-year replacement and modernization program known as Integrated Deepwater System. The program was designed to ensure the service has the requisite numbers and technological upgrades in ships, aircrafts, and command, control, communications, and computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities, and modernized integrated logistics systems to allow it to continue to perform its near shore and deep water operations, thereby achieving its existing and emerging missions (Birkler et al. 2004, 2). The essence of the assessment motivating this change is captured in the following statement:

Many of the Coast Guard's most critical missions – countering terrorist threats, rescuing mariners in distress, catching drug smugglers, stopping illegal migrants, and protecting the marine environment – demand forces that are able to operate effectively across a broad geographic spectrum, from overseas operating areas to US Exclusive Economic Zone, coastal, and port regions. The Coast Guard's Deepwater cutters and aircrafts are designed to operate throughout these diverse environments. They comprise the first line of the Service's layered defense against threats to America's homeland and maritime security. (Birkler et al. 2004, 3)

Unfortunately, the service's current Deepwater assets are aging and technologically obsolete. They lack essential speed, interoperability, sensor, and communication capabilities, which, in turn, limit their overall mission effectiveness and efficiency. To address these shortfalls, the Coast Guard established the Integrated Deepwater System Programme to replace and modernize its aging force of cutters, aircraft, and its supporting command and control, and logistics systems. These new assets, which possess common systems and technologies, operational concepts, and logistics bases, give the Coast Guard a significantly improved ability to detect and identify all activities in the maritime arena, a capability known as “maritime domain awareness,” as well as an improved ability to identify, intercept and engage those activities that pose a threat to US sovereignty and security (Birkler et al. 2004, 3).

This desire for an optimal force structure became a more pressing priority subsequent to the terrorist attacks of September 2001. The RAND Corporation was commissioned to assess the feasibility of accelerating the program. Among the questions that research had to answer were what assets are required to perform all demands of traditional missions and what assets are required to perform all demands of emerging responsibilities. The answers to those questions were recommended as the optimal force structure, and are detailed in table 5.

Table 5. Optimal Equipment Inventory for USCG				
Assets	In Original Deepwater Plan	Traditional Missions (RAND Estimate)	Emerging Responsibilities (CAN Estimate)	Total
National Security Cutter	8	35	9	44
Offshore Patrol Cutter	25	36	10	46
Fast Response Cutter	58	79	11	90
Maritime Patrol Aircraft	35	29	6	35
Long Range Surveillance	6	6	0	6
High Altitude Endurance Unmanned Air Vehicle	7	21	4	25
Vertical Recovery System	34	32	1	33
Multi-mission Cutter Helicopter	93	118	21	139
Vertical Unmanned Air Vehicle	69	85	38	123

Source: Birkler et al. 2004. *The U.S. Coast Guard's Deepwater Force Modernization Plan: Can It Be Accelerated? Will It Meet Changing Security Needs?* Santa Monica, CA: RAND Corporation.

Birkler et al. did not seek to detail the specific materiel solution to fill each capability gap as they were working from a baseline provided to them by the USCG. Additionally, that was not the focus of the study. Instead, the focus was more on timeline of implementation of those solutions. However, the research sought to highlight the importance of using mature and new technologies. For example, the comparative advantage of using unmanned aerial vehicles (UAVs) versus maritime patrol aircrafts

(MPAs). In a theoretical example, using the Global Hawk High Altitude Endurance Unmanned Air Vehicle (HAEUAV) and a MPA, researchers were able to show how the performance of both systems compared to each other, and consequently how they might complement each other if used together. Two of the primary differences between the aircrafts are the endurance and the maximum altitude at which they can operate. The HAEUAV has an endurance of approximately thirty hours, and a maximum ceiling altitude of 60 thousand feet compared to eight hours and 30 thousand feet respectively for the MPA. Since higher operating altitudes increase the effectiveness of radar and signals intelligence coverage, the area covered by the UAV can theoretically be double that covered by the MPA. For instance, the HAEUAV's radar at 30 thousand feet covers an area of 136,405 square nautical miles and approximately 272,508 square nautical miles at 60 thousand feet, almost twice the area. Therefore, in theory, the HAEUAV can cover two times the area of a MPA using similar radar technology (Birkler et al. 2004). Table 6 gives an outline of the theoretical area of coverage of a radar at varying altitudes.

Table 6. Theoretical Horizon and Coverage Area for Radar and Signal Intelligence at Different Altitudes		
Altitude (ft)	Horizon (nmi)	Coverage Area (nmi ²)
10,000	120	45,502
20,000	170	90,970
30,000	208	136,405
40,000	241	181,806
50,000	269	227,173
60,000	295	272,508

Source: Birkler et al. 2004. *The U.S. Coast Guard's Deepwater Force Modernization Plan: Can It Be Accelerated? Will It Meet Changing Security Needs?* Santa Monica, CA: RAND Corporation.

In seeking to bridge the capability gaps of the USCG, the research separated the missions of the USCG into functional tasks of target detection, classification, or sorting into targets of interest, specific target acquisition, and prosecution. By so doing, it was easier to define what capability would best accomplish that task.

Since the inception of the Deepwater Modernization Programme, and more so since 2002, the US Government has invested significantly in the USCG. The USCG budget for financial year 2016 reflected that the CG commanded just under 10 billion dollars, approximately 15 percent of the budget allocated to the Department of Homeland Security, or 0.000596 percent of the US national budget (US Department of Homeland Security 2016, 65). This represents only a small fraction of overall defense spending which was approximately 16 percent of GDP. However, it is noteworthy that the USCG is augmented somewhat by the US Navy, which provides the first layer of the country's maritime defense but has a separate budget from the CG.

Since 2002, the USCG has seen a significant increase in the successes in all mission areas. Perhaps most notable are the successes in drug interdiction. According to the USCG website, the agency had a record-breaking year in 2016. The agency seized 416,000 pounds of cocaine valued at over \$5.6 billion, apprehended 585 suspected drug smugglers and seized six self-propelled, semi-submersible vessels, and 172 other drug smuggling vessels. The interdiction successes were largely achieved through a surge of assets, including national security cutters, medium range cutters, and personnel to support the USCG Western Hemisphere Strategy.

The Western Hemisphere Strategy is an overarching ten-year plan that guides all USCG force structure and operations within its maritime domain in the Western Hemisphere. The strategy, which was promulgated in 2014, identifies combatting transnational organized crime in the Western Hemisphere as one of its key objectives. It highlights smuggling in drugs, weapons and humans, and illegal fishing as some the most serious and devastating transnational crimes affecting the Caribbean, South and Central America (U.S. Coast Guard 2104, 9, 15-16, 21). In recognizing the importance of the work of the USCG, Vice Admiral Fred Midgette, Commander, Coast Guard Pacific Area, pointed out that transnational organized crime networks have significant influence and are responsible for the increase in violence and instability in the countries of the Western Hemisphere, including Jamaica.

Strategy and Strategic Risk

The NSP outlined/guided the formulation of several strategies to deal with national security interests. One of these strategies is the national military strategy. Within the military strategy, there is the maritime strategy, among others. The concept of

strategy is one that is often misunderstood, and is still the subject of debate among leading strategists and scholars. Dr Harry Yarger's model for understanding strategy is one of the most widely used and accepted.

According to Yarger, strategy at any level seeks to align objectives, concepts, and resources in a manner that increases the likelihood of policy success and the third order effects of that success. At the national level, Yarger describes strategy as “the employment of specific instruments of power (political/diplomatic, economic, military, and informational) to achieve the political objectives of the state in cooperation or in competition with other actors pursuing their own – possibly conflicting – objectives” (Yarger 2006, 5). He acknowledges that this is normally done in a dynamic and resource constrained environment.

Yarger further posits that the most important step in strategy formulation is the identification of the correct objectives (ends). In order to achieve this, the process must be rational and linear even though the circumstances may or may not be. This is accomplished by expressing logic in rational, linear terms – ends, ways, and means (Yarger 2006).

Ends (objectives) explain what is to be accomplished. Hence, the success of a strategy is based on whether or not the objectives are achieved. The “ways” explain how the ends are to be achieved. It is expressed in terms of concepts so that it is broad enough to allow flexibility at the lower levels. “Means” are the resources that are necessary to support the concepts of the strategy. These resources may be intangible as well as tangible. Resources are an essential part of good strategy.

Yarger argues that while efficiencies may be gained by doing things better, inadequately resourcing a strategic concept is a recipe for disaster and will cause even greater costs in recovering. In other words, a strategy that is inadequately resourced is not a viable strategy. To be viable, a strategy must be suitable, feasible, and acceptable. However, there is an inherent risk even in a viable strategy.

Risk is the “assessment of the balance among what is known, assumed, and unknown, as well as the correspondence between what is to be achieved, the consequences envisioned, and the resources available” (Yarger 2006, 63). Essentially, therefore, risk measures not only the probability of success or failure, but also the consequences of success or failure. He also posits that risk can be assessed in terms of the balance among the ends, ways, and means.

Summary and Conclusion

Chapter 2 of the study reviewed literature on the present and future maritime security environment of Jamaica by presenting the main threats the country expects to face. The chapter also sought to detail the current security architecture and available capabilities by reviewing strategic documents and the organizational structure of the JDF. In so doing, the functional area analysis (step 1 of the CBA) was completed and the foundation laid for the functional needs analysis (step 2 of the CBA), which will be done in chapter 4.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

The purpose of this study is to identify the main capability gaps that limit the ability of the JDF to execute its roles in providing maritime security for Jamaica. Identifying these gaps will shed light on possible solutions that may also be used to guide national security strategy, and improve effectiveness at the operational and tactical levels. This chapter will outline the methodological approach used in answering the research questions. The structure of the thesis will also be presented in this chapter.

Primary Research Methodology

The primary research methodology used for this paper is a practical applied case study that applies the capabilities based assessment process, using doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy (DOTMLPF) analytical lens to categorize the findings. A practical, applied case study is a research tool for conducting qualitative data research for complex problem areas that are human-centric, dynamic, which contains a mix of stakeholders and interests that requires in-depth understanding in order to make an informed policy decision (Creswell 2013, 2014; Yin 2014). Long recommends this methodology as a suitable tool for military professionals seeking to inform or persuade an audience of a range of policy decisions (Long 2016).

The capabilities based assessment process used in this paper were adopted from version 2 of the U.S. Army Capabilities-Based Assessment User's Guide. The three parts

of the CBA are the Functional Area Assessment (FAA), Functional Needs Assessment (FNA), and Functional Solutions Analysis (FSA). Chapters 1 and 2 of the thesis addressed the FAA by outlining the nature of the security environment, describing the current capabilities, and forecasting future capability gaps based on threats and strategic documents. The FNA is an output of the analysis, which will be presented in chapter 4. The FSA is presented in broad terms as required capabilities, and does not seek to provide specific materiel solutions. The FSA, presented in chapter 5, is a description of broad recommendations for closing the gaps identified in the FNA. These recommendations should meet the criteria of being suitable, feasible, and acceptable.

The screening criteria used to assess suitability, feasibility, acceptability, and completeness are based on the 2011 Joint Publication 5-0, *Joint Operation Planning* and Yarger's Strategic Theory (JP 5-0 2011, GL5, GL10; Yarger 2006, 70). Suitability is the effectiveness of a solution that can accomplish the mission across a wide array of foreseeable and unforeseeable environments. Feasibility assesses a course of action (COA) in its ability to accomplish the mission within the established time, space, and resource limitations. Acceptability refers to whether the COA balances costs and risks with the advantage gained, and fits within the profession current norms. Distinguishable assesses how each planned action differs from current lines of efforts and operations. Complete assesses how each planned action accomplished the mission through decisive, shaping, and sustaining operations (JP 5-0 2011; ADP 5-0 2012). Yarger's model, using ends, ways and means of analyzing strategic risk will also be used as part of the analysis of the suitability, feasibility, and acceptability of the existing maritime strategy.

DOTMLPF is an acronym used by the US Department of Defense in a model for capabilities solutions. It is used mainly as an analytic tool to decide on whether a materiel or non-materiel solution is required to address a capability gap, and how both types of solutions may interact to create the most effective and efficient solution across the eight domains of the DOTMLPF construct (Army Force Management School 2013, 25).

Capability development, using DOTMLPF, analyzes future capabilities of potential and existing adversaries, advancements in technology, and national security strategy, and attempts to leverage technology and other resources to defeat those threats. Doctrine development captures the tactics, techniques, and procedures used in writing. Organizational development produces the organizational designs to carry out the doctrine. Training development produces the training documents, instruments, courses, and techniques to teach organizations and individuals how to employ the doctrine and equipment to execute missions. Leader development includes training programs designed to inculcate or enhance soldier and officer leadership effectiveness. Materiel development, often referred to as acquisition, produces and maintains equipment required to fill organizations, and execute doctrine. DOTMLPF is therefore a useful tool for categorizing and allowing further detailing of the findings of the CBA (Army Force Management School 2013, 23-25).

Secondary Research Methodology

The secondary research methodologies used in the research were a combination of a case study of the US Coast Guard and evaluation of existing literature from various sources. The case study and literature review contributed directly to answering the secondary research questions, and thereby created a context for answering the primary

question. Data derived from the process was entered in the DOTMLPF capabilities gap analysis and solutions construct.

1. The primary question that this research seeks to answer is what are the capability gaps that limit the JDF in the execution of its roles in maritime security? Subordinate questions that will also be answered include:
2. What are the existing and future threats to Jamaica's maritime security and what is the impact of those threats on the overall security of the country; and
3. What are the specified and implied tasks of the JDF in regard to maritime security?

Summary and Conclusion

Chapter 3 provided a description of the practical applied case study methodology and other methodologies that were used to obtain, analyze, and organize information required to answer the research questions. It also gave insights into how the information is analyzed using the DOTMLPF construct and into the screening criteria used to determine the validity of courses of action. The next chapter will provide an analysis for the study.

CHAPTER 4

ANALYSIS

Introduction

The purpose of this study is to identify the main capability gaps that limit the JDF in the execution of its roles in the maritime security of Jamaica. Chapter 2 presented the functional area analysis of the capabilities based assessment. The functional area analysis created the context and the framework, which is necessary to conduct the functional needs analysis, which will be the focus of chapter 4. In this chapter, the literature presented in the earlier chapters will be analyzed in order to answer the research questions. The secondary questions outlined in chapter 1 and the other pertinent questions that arose in chapter 2 will be answered first in order to establish the framework and foundation for answering the primary research question.

What are the Existing and Future Threats to Jamaica's
Maritime Security and what is the Impact of Those
Threats on the Overall Security of the Country?

The existing threats to Jamaica's maritime security are mainly transnational organized crime, threats to the blue economy and terrorism. Jamaica's geo-strategic location and environment will not change. Hence, over the next two to three decades, these threats are expected to remain, and may become even more significant unless adequately addressed.

Transnational Organized Crime

Transnational organized crime is well recognized as the primary threat to Jamaica's maritime security. The policy makers in the Jamaican security architecture

recognize that it is not just the primary maritime threat, but also as one of the most significant threats to national security since it involves the smuggling of weapons and drugs, both of which contribute directly to Jamaica's debilitating murder rate. In the national security strategy, transnational organized crime is ranked in the highest threat category and is described as a clear and present danger. It includes trafficking in narcotics, weapons, and people among the top transnational crimes affecting the country.

Transnational organized crime is not only expected to remain a threat, but it is projected to become an even more serious threat if not addressed. The 2014 and 2016 international narcotics control strategy reports (INCSR) indicated that Jamaica is still the largest producer of marijuana in the region (Bureau of International Narcotics and Law Enforcement Affairs 2014; Bureau of International Narcotics and Law Enforcement Affairs 2016). The reports highlighted the fact that Jamaica is a convenient transshipment point for drugs destined for North America and Europe, and indicated that drug production and trafficking are enabled and accompanied by local and transnational organized crime (Bureau of International Narcotics and Law Enforcement Affairs 2014; Bureau of International Narcotics and Law Enforcement Affairs 2016). It is believed that Jamaica and the Caribbean are experiencing the negative spin-offs of increased success in counter-drug operations in South and Central America. The "bulge" or "balloon effect" are terms used to describe the shift in drug activity from one area to another because of law enforcement activity.

Operation Martillo and the Merida Initiative are two operations that are likely to have negative spin-offs for the Caribbean. These two operations/initiatives are a joint effort among the US, several European countries and several South and Central American

countries to combatting drug trafficking and other forms of transnational organized crime in the region, and particularly the coastal waters of the Central American isthmus.

Given the recent shifts in production and shipping trends in South and Central America and the relative successes of Operation Martillo and the Merida Initiatives in curbing drug flows through Mexico and Central America, the Caribbean routes are likely to become more active. Additionally, the impending construction of a wall on the southern border of the United States and Mexico is likely to contribute further to the “bulge.” Jamaica, with its vast waters and porous coastlines, remains a primary target for narco-traffickers.

It is safe to assume that narcotics and gun smuggling trades will not simply stop because of increased pressure on some routes. The drug cartels will simply try to find the routes of least resistance to reach the US, their main market. Presently, that route is through Jamaica and the rest of the Caribbean. As indicated in chapter 2, the NSP identifies Mexican and Central American cartels and narco-terrorists, who might try to extend their influence in the Caribbean, as a low probability threat with high impact (Tier 2). However, if or when a security wall is constructed between the US and Mexico, the Mexican and other cartels are very likely to further extend their operations and influence in Jamaica and the wider Caribbean. This warrants the threat be re-categorized as a Tier 1 threat, and resourced accordingly. Such an occurrence may be mitigated by the early acquisition of resources to secure Jamaica’s maritime borders and deter potential threats.

The Blue Economy

Threats to the blue economy are existential in nature and related to illegal exploitation and overexploitation and poor management of the sea. Though this

phenomenon is important in all Jamaican waters and for all living resource, it is perhaps most significant in the Pedro Banks region, which is Jamaica's richest fish source. Within this area, the stock of lobster and queen conch are at highest risk.

Overexploitation of fish stock and other living resources, and damage to coral reefs and other natural habitats not only pose a threat to the existence of these ecosystems, but to the livelihood and food source of many coastal communities. Additionally, damage to reefs and other marine resources eventually leads to damaged beaches and coastlines, and ultimately damages tourism and other industries.

Though Jamaicans are involved in the overexploitation and damage to the blue economy, a significant portion of this is also attributable to illegal fishing by foreign nationals. These fishermen are primarily from Nicaragua, Columbia, Cayman, and Honduras (Meggs 2013, 4). In 2010, the JDF CG indicated that it received forty-two reports of poaching by foreign vessels. In each case there were at least two boats operating together. Based on the average catch per boat, very conservative estimates are that Jamaica lost over seven million US dollars from the Pedro Banks area only. Given that the maritime space is largely unmonitored, one can only imagine what the cumulative total losses to the country might be. Ideally, this should be the subject of future research.

Irrespective of the nationality of poachers and others overexploiting the resources, the existence of such a situation highlights further a lack of the physical capabilities required to prevent it. Prevention or deterrence can only be achieved through adequate resources to manage, monitor, and enforce the relevant laws and deny unauthorized access to Jamaica's maritime space. Therefore, the capabilities required by JDF CG are

maritime awareness to detect illegal activities and physical maritime presence to be able to prevent or deter it.

Terrorism

Terrorism, though not currently a significant threat to Jamaica or its maritime security, is assessed as a Tier 2 or major potential threat with particular regard to the tourism industry. Jamaica is likely to remain a potential target for terrorists as long as maritime security is weak and its borders remain porous.

What are the Specified and Implied Tasks of the JDF in Regard to Maritime Security?

Monitoring and control of airspace and maritime areas of jurisdiction was the broad maritime task established for the JDF in the 2006 SDR policy document (JDF SDR, 2016). The main sub tasks arising from this are:

1. Provide maritime law enforcement;
2. Maritime safety;
3. Defense readiness and naval duties;
4. Provision of aerial surveillance; and
5. Support to counter-narcotics operations.

Case Study

The case study brought focus to the extent that the US goes in resourcing its navy and coast guard to protect its national maritime interests, and the priority given to detecting and neutralizing threats as early and as far away from their homeland as

possible. It also highlights the importance attached to their blue economy and the effort made to protect it.

Unfortunately, it was the terrorist attack of 11 September 2001, which led the US to speed up its deep-water force modernization program out of a realization that the homeland was not as safe as it thought. The US was caught off guard, and found itself hurriedly spending billions to secure its safety. Should such a sudden tragedy occur in Jamaica, the country is likely to be even more devastated, and would certainly take longer to recover.

Though not as sudden and somewhat different in nature to a terrorist attack, narcotics and weapon smuggling in Jamaica's maritime domain are perhaps even more devastating to Jamaica than the terrorist attacks on the US. The effects on the Jamaican economy and the quality of life of the people have been devastating. Though the comparison is not necessarily "black and white," it is baffling that there is not a similar and obvious urgency to address the problem. Additionally, the threat to the country's blue economy presents a clear and imminent danger to the overall economy; yet, there is no obvious urgency to address this problem either. Having seen the example of how the most powerful country in the world had to hurriedly invest billions into rebuilding its maritime forces to improve homeland security, it would be most unfortunate if Jamaica were to wait for a sudden catastrophe or were to allow the gradual catastrophes that now exist to further cripple the country before taking decisive action to secure Jamaica's maritime domain.

It is also noteworthy that the US Coast Guard has a clear delineation of assets for the different mission areas. However, there is overlap in mission areas, and use of assets

across mission areas, however this is the exception rather than the rule. Consequently, assets are tailored to the intended mission area, resulting in an extremely huge and resource-intensive maritime apparatus. Complete separation of assets for mission areas might not be a financially viable option for most countries; however, the level of specialization and redundancy that it provides is instrumental.

In terms of a model, Jamaica is unlikely to be able to fund such an expansive program. As highlighted in chapter 2, the US defense spending is approximately 16 percent of GDP compared Jamaica's defense spending which is 0.5-1 percent of GDP. There is a similar disparity in the budgets of the two coast guard services. However, despite resource constraints, the general principles of defense in depth, detection, identification, and prosecution of threats as early as possible, and as far away from the mainland as possible, are worthy of emulating. Additionally, the US use of intelligence, surveillance, and reconnaissance (ISR) to achieve domain awareness and as a force multiplier is instructive.

Missions, Tasks, Functions, and Required Capabilities

The US Coast Guard's and the JDF's maritime strategy have congruence in that they both recognize counter drug operations and protection of marine resources as essential tasks. Additionally, they both recognize that two of the basic capabilities required to be able to execute the tasks within these mission areas is maritime awareness and maritime presence. Both capabilities are provided through ISR and the physical presence of people and equipment to detect, identify, deter, and disrupt illegal activity. Table 7 outlines the capabilities required for these two mission areas.

Table 7. JDF CG Capability Gap Table				
Mission Area	Capability Required	Description	Metrics	Minimum Value
Counter Drug/Weapons smuggling Operations	Maritime Awareness	The Force requires the capability to conduct persistent multi-discipline intelligence collection throughout the maritime domain for sustained situational awareness.	Time on station (Sufficiency) Percent of Time (Operational Availability)	24 hours per day 90%
	Interdiction and Physical Deterrence	The Force requires the capability to interdict, deter and compel compliance	Physical presence throughout maritime domain	24 hours per day/ As assessed by ISR
Protection of Maritime Resources	Maritime Awareness	The Force requires the capability to conduct persistent multi-discipline intelligence collection throughout the maritime domain for sustained situational awareness	Time on station (Sufficiency) Percent of Time (Operational Availability)	24 hours per day 90%
	Interdiction and Physical Deterrence	The Force requires the capability to interdict, deter and compel compliance	Physical presence throughout maritime domain	24 hours per day/ As assessed by ISR

Source: Created by author.

Findings from the NSP and SDR

Both the NSP and the SDR were detailed documents, which appear to have been the product of significant research and collaboration. The NSP was the driving force behind the execution of the SDR. The SDR was well aligned with the national policy and sought to bridge the gaps among policy, strategy, and operational requirements.

The CBA was one of the tools used in the execution of the SDR. The scenario (threats), capabilities required and capability gaps were well documented and presented in a format that somewhat mirrored the DOTMLPF construct. Specific materiel and non-materiel solutions were identified to fill the stated capability gaps.

On initial observation, one might conclude that the SDR adequately identified the threats, the capabilities required to mitigate those threats, the associated capability gaps and the resources required to bridge those gaps. However, closer observation reveals that there is at least one significant capability gap. The SDR correctly assessed that mitigation of the threat requires the capability to detect and identify vessels in Jamaica's maritime domain on a 24-hour resources basis. However, in identifying the resources to fill this capability gap, the SDR fell short as none of the assets identified can provide this capability. Even if the JDF were to acquire all the equipment stated (i.e., OPVs, IPVs, MPAs, and surveillance helicopters), it would still lack the capability to have 24-hour maritime awareness.

Even without the use of precise operational plans, one can easily realize that the time an MPA can remain airborne is limited by the number of hours a pilot can be engaged in continuous flight. Additionally, refueling turn-around times, equipment

maintenance, crew changes, and other factors would dictate that the assets could not be on station for 24-hour persistent coverage. Additionally, standard operating procedures also dictate that not all assets would be deployed simultaneously. However, even if one were to assume that they could be deployed simultaneously, the performance limitations of the assets would still negate the ability to provide 24-hour coverage. Hence, even on the assumption of full acquisition and full employment of all the proposed assets, the JDF would still have a gap in its ability to provide persistent surveillance of its maritime domain. Hence, a capability gap in maritime awareness.

The current organization and disposition of the JDF CG across the island is inadequate to effectively monitor and respond to issues in the maritime domain. As indicated in chapter 2, the main base is located near the eastern tip of the island, and six small bases (outposts) are located at different points along the island's coast. Each base operates with a small team with an average of one IPV per base. Even cursory analysis shows that the bases are not mutually supporting, nor do they operate on the principle of in-depth maritime defense. Despite the employment of joint assets and intelligence to drive routine maritime patrols and operations, it is still reasonable to conclude that the vast areas will often be too much for a single vessel to intercept or interdict the fast moving vessels used by narcotics and weapons smugglers and to respond to reports of other illegal activity. Though some vessels, such as those used by fishermen, are relatively slow, there is still a challenge presented by the magnitude of the maritime space that has to be covered in order to apprehend them in a timely manner. The probability of reaching the shore favors the threat even more so when they operate in groups, using multiple approaches that may split the already thin resources of the JDF.

Additionally, at any given point, there might be several acts of illegal activity to be attended, which requires decisions—which one to address and which to allow to escape. This situation leads to gaps in coverage of the enormous maritime domain, in both time and space. Hence, there is a capability gap in the JDF's ability to physically interdict, deter, and compel compliance in its maritime domain.

Possible Non-Materiel Solutions (DOTLPF Analysis)

1. Doctrine. Changes to the existing doctrine will not adequately reduce or eliminate the capability gaps requiring persistent maritime awareness and the ability to project force quickly throughout the maritime domain. However, a clearly articulated and comprehensive doctrine would serve as a guide and template for the development and acquisition of organizational and materiel solutions. The combination of inputs from these three domains would in-turn drive changes and developments in the other domains.
2. Organization. Organizational design will create the structures necessary to execute doctrine and may lead to greater effectiveness and efficiency. However, organizational design cannot eliminate the requirement for persistent surveillance and maritime presence.
3. Training. Additional training and or modifications to the current training of personnel may help to optimize efficiency and effectiveness. However, training cannot eliminate the capability gaps.
4. Leadership and Education. This may enhance effectiveness but it cannot eliminate the capability gaps.
5. Personnel. Increases to personnel levels may increase efficiencies in some

areas; however, the personnel cannot achieve maritime awareness or maritime presence without additional ISR and patrol resources. However, acquisition of these resources would necessitate additional manpower to operate the systems.

6. Facilities. Additional facilities that are complemented by resources would enhance efficiencies. For example, if additional bases are constructed it could extend operational reach and maritime presence, if properly resourced. However, by themselves additional facilities will not have any impact on maritime awareness or maritime presence.

Possible Materiel Solutions Analysis

Materiel solutions can eliminate the capability gaps of persistent maritime awareness and the ability to interdict, deter, and compel compliance in Jamaica's maritime domain. Mature technologies such as UAVs, coastal radar systems, and satellite can provide persistent surveillance that would not only provide situational awareness, but would also act as a force multiplier and enhance command and control. The acquisition of additional OPVs and IPVs is a natural solution to enable the force to better interdict, deter, and compel compliance within its maritime domain. However, the introduction of new or additional systems would have further implications for other areas of the DOTMLPF construct and for the budget of the JDF. Therefore, the acquisition of any new system should be done only after the relevant risk assessment, and the second and third order effects have been assessed?

What Risks Exist in Not Having a Capable Maritime Strategy?

Since risk is inherent in every strategy, there are risks to Jamaica's maritime strategy. Based on Yarger's definitions of risk, presented in chapter 2, analysis of the existing maritime strategy is most effectively done if it examines the interplay among what is to be achieved, the concepts envisioned, and available resources. In other words, risk is determined by analysis of the imbalances among ends, ways, and means. The ends for Jamaica's maritime strategy are derived from the NSS. The vision outlined in the NSP is to establish a safe and secure environment for the Jamaican people. Within this broad vision, the priority objective is to reduce the level of crime and violence, and the associated fear and insecurity. The maritime strategic end in support of this NSS priority objective is to protect and control Jamaica's maritime domain.

The ways are the various initiatives that have been described in the NSP. Though there are other state entities involved, the JDF is identified as the lead entity and given strategic guidance. Among the ways stated are the maintenance of a viable capability to provide for sustained, effective surveillance, and monitoring of Jamaica's maritime borders, and protection of Jamaica's sovereign territory, including terrestrial, marine, and air space, and defending the nation against terrorism and transnational crime.

The means refer to the resources necessary to fulfil the ways that in turn lead to the attainment of the ends. The JDF is the primary means by which the national maritime strategy is fulfilled. Other government entities play various roles in the execution of the strategy.

Examination of the ends, ways, and means reveal that the most significant challenges relate to the means available to pursue the strategic ends. In 2006, the JDF

crafted the military maritime strategy in alignment with and in support of the NSS. The initial assets (the operational means) required were identified and scheduled for acquisition over a three-year period. Up until 2016, some of those assets were still not acquired, and some of those that were acquired had fallen into disrepair due to lack of budgetary support.

Jamaica's financial constraints, and, by extension, the budgetary constraints of the JDF are due in a large part to the impact of crime on Jamaica's economic progress over decades. However, it is also impacted by other factors such as natural disasters and the global recession of 2008, which crippled the economy. Despite receiving assistance from some international partners, the JDF was still not able to acquire all the assets deemed necessary to execute the strategy. This is clearly a risk within the strategy. In fact, the question of feasibility comes into play: could the strategic concept be executed with the resources available? The answer to this question is "no." Hence, if Yarger's theory of strategy is applied, Jamaica's maritime strategy is invalid.

Risks based on the probable third order effects of success are mainly associated with an increase in smuggling by other means such as aircrafts and cargo shipping, and an increase in other types of transnational criminal activities as criminals seek to reorient to find weaker targets and easier opportunities to continue generating money. On the other hand, risks based on the probable consequences of failure are much more significant and detrimental to the country than those associated with success. These risks include an increase in transnational maritime narcotics, weapons, and human trafficking, which could lead to an even more disastrous crime situation in Jamaica than that which presently exists. Should the crime situation get worse, the country runs the risk of

becoming a failed state. This is clearly an unacceptable risk for any government and country. With this in mind, there can be no monetary price too high to pay for a capable maritime defense, to secure the Jamaican state.

Summary and Conclusion

This chapter provided the necessary analysis of the literature that was used to answer the secondary as well as the primary research questions. It also laid the foundation for the functional solutions analysis that will be presented in chapter 5.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The primary research question for this paper sought to identify the main capability gaps that limit the JDF in the execution of its roles in maritime security. In order to answer this question, it was necessary to first answer two secondary questions—what are the existing and future threats to Jamaica’s maritime security, and what is the impact of those threats on the overall security of the country? Additionally, what are the specified and implied tasks of the JDF in regard to maritime security? The research was able to generate answers for all the questions.

What are the existing and future threats to Jamaica’s maritime security and what is the impact of those threats on the overall security of the country? The existing and future threats to Jamaica’s maritime security are transnational organized crime (particularly the illegal drug and weapons trade), overexploitation of the blue economy and terrorism.

What are the specified and implied tasks of the JDF in regard to maritime security? The JDF is mandated to provide maritime security for Jamaica, a task, which has several implicit and explicit components. However, counter drug operations and protection of maritime resources were identified as the most significant of these tasks, and the focus of this research.

Additionally, during the research process, other significant questions arose and were answered as follows:

1. Is there a gap in Jamaica's National Security Policy with regard to the level of

priority and direct action given to the maritime component of transnational organized crime? There is no objective in the National Security Policy, which is directly aligned with maritime security. This omission suggests that maritime security in the face of transnational organized crime is of lesser importance than the areas and objectives that are addressed in reasonable detail. It is evident therefore that there was a gap in the policy's environmental analysis which resulted in insufficient consideration being given to transnational organized crime in Jamaica's maritime domain.

2. Is Jamaica's current maritime strategy feasible? The strategic concept cannot be executed with the existing resources hence the strategy is not feasible. This lack of feasibility highlights the capability gaps in Jamaica's maritime security as identified by the main research question.

The purpose of the research was to identify the main capability gaps that limit the JDF in the execution of its roles in the maritime security of Jamaica. The main capability gaps are persistent maritime awareness and maritime presence, which are necessary for detection, interdiction, and deterrence.

Recommendations for Jamaica's Maritime Security

Based on the findings of the research, the Government of Jamaica must adequately address maritime security if the country is to effectively manage the overall murder rate and security of the island. Though only the role of the JDF is highlighted in this paper, the significance and roles of the other state and non-state entities that play a part in maritime security must also be addressed at the individual and collective levels.

Recommendations for a way forward are presented below, in the form of short term and mid-term goals.

Short Term Goals

1. By 1 October 2017, the JDF and other stakeholders in maritime security should establish a qualified team to conduct further research into the following:
 - a. What are the specific systems that are currently available or will become available in the near future, that provide the required capabilities for improving maritime security?
 - b. Which system or combination of systems will best fill the capability gaps?
 - c. Given cost and other relevant factors, what is the best solution set for the JDF?
 - d. Should Jamaica/JDF invest in additional maritime security capabilities now, hedge or continue to accept risk?
2. By December 2017, develop, where necessary, doctrine to govern the acquisition and employment of resources across multiple mission areas for maximum efficiency and to ensure that military actions are in alignment with national objectives.
3. Within one year, take the necessary action at the policy/strategic level to revisit the objectives established to address Tier 1 threats in order to ensure that they align with the maritime component of transnational organized crime. This revision should prioritize the resourcing and use of the maritime component of transnational organized crime. Given the fiscal constraints of the government, this would inevitably mean a shifting of resources from other areas. However, if we accept that there is an

inextricable link between transnational and local organized crime, one of the key premises of the NSP, then this shift of resources to address one of the root causes of Jamaica's biggest threat to security would be well justified.

Mid Term Goals

4. Within five years, acquire mature surveillance and detection technologies such as coastal radars and UAVs and additional vessels to fill the capability gaps in maritime domain awareness and maritime presence respectively. The exact solution set should be based on the research conducted.
5. Within three to five years of acquisition of any new system/capability, conduct studies to establish the effectiveness of the systems/capability acquired and whether or not the strategic objectives are being met.
6. By December 2018, facilitate the conduct of an in-depth analysis of the value of the blue economy and the losses being incurred. This analysis would serve as a useful tool in determining the balance of resources needed for maritime protection and may also serve as justification for an increase in the maritime security budget.

Research is a critical aspect of the way forward and should not be overlooked even when quick decisions are required. The research questions outlined under short term and mid-term goals, above, are meant to guide the process in terms of a timeline and parameters for required information. Though working products such as initial capabilities document should be generated, the overall end product should be valid information that is fed into the development of different courses of action for solutions that are suitable, feasible, and acceptable.

Further Research

There are several questions, which are beyond the scope of this paper. Further research is recommended in order to address the following:

1. What are the deterrents to addressing narcotics and weapon smuggling in Jamaica's maritime domain? Why does this threat not receive as much attention as other terrorist threats locally and internationally?
2. What is the likely impact of increased maritime security? Will TOC use more aerial routes? How will this shift be detected?
3. Are Jamaica's institutions of governance for maritime/port security adequate? What improvements, if any, are required?

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