

# 1. Introduction

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The security of maritime transport and ports has long been a concern to governments, traders and industry, especially at times of wars and crises. However, it was not until the hijacking of the cruise ship *Achille Lauro* in 1985 that the international shipping community formally recognized maritime security as an issue for inclusion in the international legal and regulatory frameworks that govern shipping and port operations. Until then, maritime security essentially involved state actions against piracy, an activity with a long and often romanticized history, and traditional naval warfare though the issue of maritime safety that had emerged as a matter of international concern.

The first Safety of Life at Sea Convention (SOLAS) was adopted in 1914 following the sinking of the *RMS Titanic* in April 1912 on her maiden voyage to New York and was modified on various occasions. With the establishment of the United Nations in 1948, it became possible to achieve a long-standing goal, the creation of an international organization devoted to ensuring maritime safety and the International Maritime Organization (IMO) convention was finally ratified in 1958, ten years after its formal establishment. Various international rules and regulations were subsequently adopted in order to enhance the safety of ships and their crews.

The issue of maritime security, however, did not receive the same level of attention because the *Achille Lauro* incident did not mark the beginning of a series of sustained attacks against ships, perhaps because the terrorists' favourite target remained aviation. Only in 2000 was a suicide boat attack launched, and though this one failed, a similar technique was successfully used against the *USS Cole* later that year.

The events and aftermaths of the terrorist attacks of 9/11 marked an important turning point. Though the number of actual attacks against maritime transport had been limited, the potential threat was readily recognized so that maritime security, which had not featured at the forefront of the agenda of market players nor of that of policy makers, began to

receive increased attention. They not only implemented a series of new policy, regulatory and operational measures targeted at the security of maritime transport, ports and the wider supply chain operations but these measures also triggered a fundamental shift in the perception and definition of security risks and fostered the addition of further dimensions to maritime and port security.

The USA, for obvious reasons, has taken the lead in the effort to ensure the security of the global supply chain. It adopted the Maritime Transport Security Act (MTSA) in 2002 and other security measures, most notably the Container Security Initiative (CSI), the Customs-Trade Partnership against Terrorism (C-TPAT) and the 24-hour advance vessel manifest rule, commonly known as the '24-hour rule'. Many other countries primarily in the Western hemisphere have followed the US lead and introduced a wide range of maritime security regulations that often adapted or incorporated US security provisions.

Globally, the International Ship and Port Facility Security (ISPS) code, a set of security measures and procedures that were drafted and developed by the IMO, entered into force on 1 July 2004. Since then, the ISPS code has been the most important global maritime security initiative, with its impacts affecting the international shipping and port community and beyond. Other global initiatives have also been adopted including the World Customs Organization (WCO) SAFE programme and the IMO/International Labour Organization (ILO) code of practice on security in ports. Parallel initiatives have been introduced at regional levels, for instance, the European Community (EC) Regulation 725/2004 on enhancing ship and port facility security, the Association of South East Asian Nations (ASEAN)/Japan Maritime Transport Security and the Secure Trade in the Asia Pacific Economic Cooperation (APEC) Region (STAR). Elsewhere, a number of industry-led and voluntary programmes have been introduced to strengthen and streamline maritime and supply chain security. Examples include but are not limited to the Smart and Secure Trade-lanes (SST) and the ISO/PAS 28000: 2005 standard (specification for security management systems for the supply chain).

The growing concern with maritime security and the implementation of such a plethora of programmes and policies designed to safeguard ports and shipping has, not surprisingly, been accompanied by a rapidly growing body of scholarly and policy work. Much of the literature has focused on the prescriptive details of the measures being put in place, the computation of their costs of compliance and their *ex ante* economic evaluation, and the analysis of their scope and impacts either on location-specific or industry-specific operations. Other researchers have addressed risk aspects of maritime security including the threats and vulnerabilities

and the systems and procedures for ensuring security resilience, mitigation and recovery. Nevertheless, the global scope and wider impacts of maritime security still remain under-researched and fragmented and only a very limited number of comparative analyses have been carried out.

Moreover, since the attack on the *MS Limburg* in 2002 very few terrorist incidents have involved the maritime sector. The most notable was the Abu Sayaf Group's bombing of a ferry in the Philippines in 2004 that killed 116 persons. Thus, since the years following the introduction and adoption of the ISPS code and the numerous policy measures implemented by individual countries have been marked by the absence of a major terrorism-led security accidents in international shipping and ports, the danger of complacency is very real and questions can readily be raised concerning the wisdom, especially since most countries often confront financial difficulties, of continuing to spend billions of dollars on securing this sector. Many researchers and practitioners may well share this perspective and be of the view that since the current policy and regulatory framework of maritime security has proved its fitness of purpose and robustness against maritime security threats and vulnerabilities, it is appropriate to reduce such expenditures.

In this book, we aim to challenge several assertions, normally used as justifications for the scope and the shape of the current body of research on the subject, that maritime security has now achieved maturity in both theory and practice and thus attention should be drawn to other or new areas of research. Consequently, the chapters highlight the prevalent issues and challenges of maritime transport security and examine their policy frameworks and applications within and across national, regional and global contexts. We consider the likelihood and consequences of a successful attack since there is general agreement that terrorist organizations, especially Al-Qaeda, have developed the capability to wreak havoc with the global economy as well as consider techniques for developing more effective and efficient policies and the ways in which different nations have defined and attempted to deal with the many issues subsumed under the general label of maritime security.

## 1.1 THE STRUCTURE OF THE BOOK AND ITS CONTENT

The book is divided into two parts, the first identifies critical themes, issues and frameworks related to maritime security. The second part presents analyses of how countries in several regions of the world (North America, Europe, Africa, Middle East and Asia) are dealing with issues

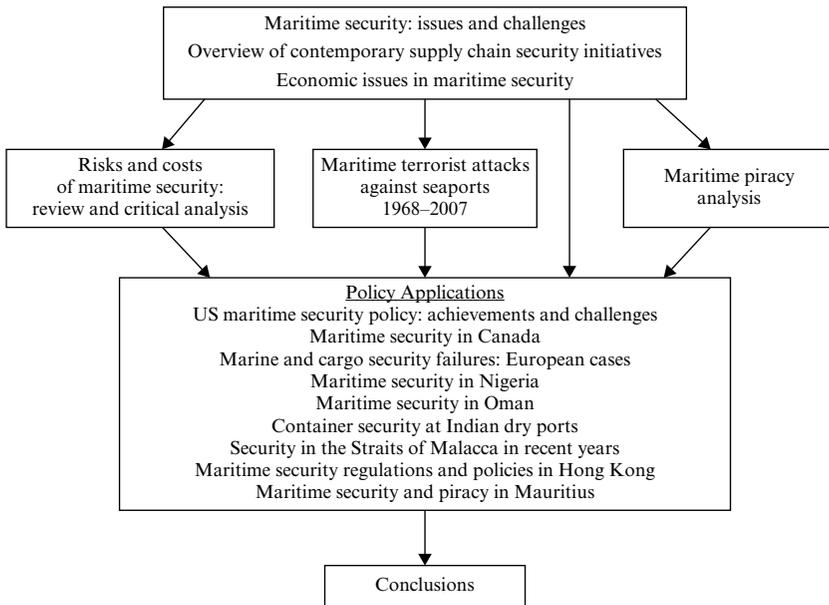


Figure 1.1 Structure of the book

of maritime security and thus providing data to draw generalizations concerning the nature and dimensions of maritime security, best practices, unresolved issues and areas for further research.

Figure 1.1 displays the structure of the book. Chapters 2, 3, and 4 ('Maritime security: issues and challenges', 'Overview of contemporary supply chain security initiatives' and 'Economic issues in maritime security') provide a preliminary analysis of the main themes of the book.

This introductory analysis is complemented by the discussions developed in Chapters 5, 6 and 7 of three major issues, the risks and costs of maritime security, the degree to which seaports have presented attractive targets and the problems posed by maritime piracy.

Chapter 2, 'Maritime security: issues and challenges' by Joseph Szyliowicz and Luca Zamparini, provides a general overview of the main issues that have had a determinant impact on maritime security in the last decades. It first considers the ways in which technological developments have impacted security through increased globalization, the development of container-based transport, the increasing destructiveness of weapons available to terrorists and the elimination of physical distance. It then discusses how piracy has evolved from crime organizations mainly oriented to obtain the highest possible ransoms to syndicates who use the financial

resources obtained through ransoms as founding sources for large-scale criminal activities, sometimes in collaboration with other criminal and ideological groups. It then considers ports as the most relevant targets for terrorist actions related to the maritime sector. These are difficult to secure because of their physical layouts and the need for coordinated interactions by numerous public and private agencies and actors. Lastly, the chapter considers the efforts that have been made by the USA and the key international organizations to safeguard ports and global trade routes.

In Chapter 3, 'Overview of contemporary supply chain security initiatives', Khalid Bichou and Risto Talas discuss the main initiatives that have been related to supply chain security. These can be divided into the following categories: (1) mandatory; (2) voluntary; (2a) voluntary location-specific; and (2b) voluntary business-specific. The first set (mandatory initiatives) includes the IMO ISPS code, whose objective is to establish an international framework for cooperation among governments, agencies, local administrations and port and shipping industries, and by the 24-hour rule, which obliges sea carriers to provide US customs with a detailed description of the containers bound for the USA. The second set (voluntary supply chain security initiatives) is constituted of the efforts by the Business Alliance for Secure Commerce to reduce the risks of legitimate cargo used by illegal organizations for narcotics trade, cargo theft and contaminated cargo, by the CSI, which addresses the threat to border security and global trade by attempts to minimize the potential for terrorist use of a maritime container to deliver a weapon, by the European Union Authorized Economic Operator, which grants customs simplifications to reliable traders, and by the WCO framework of security standards to secure and facilitate global trade. The most important voluntary location-specific supply chain security initiative is the C-TPAT, whose core principle is to strengthen and improve overall supply chain and US border security by incorporating sound security practices and procedures into existing logistical activities. The Partners in Protection initiative also enlists the cooperation of private industry in the effort to enhance border security, combat organized crime and terrorism, increase awareness of customs compliance issues and help detect and prevent contraband smuggling. The StairSec initiative, originated by Swedish customs, is based on higher inspection rates of uncertified cargo in order to increase early warning and prevention. Lastly, the Secure Export Partnership is designed to protect cargo against tampering, sabotage, smuggling of terrorists or terrorist-related goods. The last section of the chapter deals with the Technology Asset Protection Association, a voluntary business-specific initiative related to emerging threats to the technology industry and high-tech businesses.

Chapter 4, 'Economic issues in maritime transport security' by Luca Zamparini, provides an overview of the main economic issues that are related to maritime transport security, highlighting the possible trade-offs and synergies. It first considers the economic costs of an attack to a port by surveying three studies that focused on Los Angeles and Long Beach ports, ports which play an important role in global trade. The chapter then takes into account the economic costs of another aspect of maritime security, piracy. These are divided into nine different components (ransoms, military operations, security equipments and guards, re-routing, increased speed, cost to labour, prosecutions and imprisonment, insurance and counter piracy organizations). The enormous costs of terrorist acts and piracy highlight the need for security regulations whose costs and benefits are analysed in the last section of the chapter, which concludes by presenting a general framework, based on marginal costs and benefits, that can be used to assess the worth of security plans at country and international levels.

The kinds of risk assessment and management models that have been developed and that are applicable to maritime and port security and their adequacy is discussed by Khalid Bichou in Chapter 5, 'Risks and costs of maritime security: review and critical analysis'. He first considers safety risk-based models and discusses the limitations in extending these models to security issues given the difficulty of estimating the probability of malicious acts. He then considers a layered approach to security systems that emphasizes the interconnections among three channels (logistics, trade and supply) and three flows (payment, information and physical). The interplay between supply chain security and supply chain risk is then discussed, with the importance of considering network-related vulnerabilities highlighted. Lastly, the author proposes an economic evaluation of the maritime security regulations contained in the ISPS code.

Risto Talas and David Menachof in Chapter 6, 'Maritime terrorist attacks against seaports 1968–2007' utilize the RAND Database of Worldwide Terrorism Incidents (<http://www.rand.org/nsrd/projects/terrorism-incidents.html>) in order to validate the hypothesis that these attacks have followed a Poisson distribution. The chapter first proposes a review of several alternative definitions of port security risk and merges them into a new one that considers the probability of an attack, the vulnerability of the target and the financial consequences of the terrorist act. The analysis of the database leads the authors to identify a series of recurrent patterns that are then used to quantify the risks and, consequently, to estimate a reasonable insurance premium against terrorist acts.

In the last chapter in Part I, 'Maritime piracy analysis', George Kiourktsoglou and Alec Coutroubis focus on this important aspect of

maritime security. They begin by considering how piracy is currently defined. They then evaluate the business models of pirates, which they find to vary on a geographical basis (West Africa, East Africa, Caribbean/Latin America and South East Asia). The authors then focus on the current counter piracy policies and stress the importance of such key factors as intelligence and information (especially with respect to the Djibouti code of conduct, the satellite automated information system and unmanned underwater vehicles), of reporting and of operational responses on land. They note that the activities and interests of the major groups of stakeholders (national governments, supranational organizations and business firms) are tightly interwoven and, hence, that cooperation and coordination are essential prerequisites to tackle piracy in an effective way.

Essentially, these chapters provide the general framework for Part II, which consists of analyses of how a number of countries selected in order to reflect a variety of approaches are defining and dealing with issues of maritime security.

This part of the book opens with an analysis of the policies implemented by a key actor in efforts to enhance global maritime security, the USA. In Chapter 8, 'US maritime security policy: achievements and challenges', Joseph Szyliowicz discusses the limits on maritime security policies created by the fact that international organizations cannot impose effective policies upon nation states and by the continuing focus on single modes of transportation while international trade is inherently multimodal. In this context, the chapter considers the policies that the USA has adopted to counter the challenges posed by ports and by containers, discussing their strengths and weaknesses. The chapter concludes by discussing the challenges that the USA confronts in policies towards maritime security including the problems that arise when attempting to coordinate policy with foreign countries possessing unique cultural, political, social, economic and environmental attributes.

In Chapter 9, 'Maritime security in Canada', Mary Brooks deals with another North American country. She reviews recent Canadian maritime regulations and comments on the fact that, until recently, security was not mentioned in legislative Acts. She then stresses the importance of trade with the USA as one of the main driving forces that has led Canada to consider security issues in a different way. A description of recent regulations of marine and port security in Canada is then provided along with a discussion of the maritime security function. Lastly, the chapter evaluates the current maritime security activities in Canada, stressing that integrated security arrangements have made considerable progress, although the sheer size of the US Department of Homeland Security (DHS) creates major difficulties in coordinating and implementing policy.

Chapter 10, 'Maritime and cargo security failures: European cases' by Mark Rowbotham, shifts the attention to Europe and critically discusses the ISPS code and the Entry Summary Declaration (ENS) system and the way in which they are used by the European Union to maximize the degree of cargo security. Moreover, the chapter presents and discusses the most relevant security-related episodes in Europe. A particular emphasis is placed on the *Hyundai Fortune* case in 2006, the *MSC Napoli* and the container feeder vessel *Annabella* in 2007, the *Husky Racer* episode in 2009 and the *Genoa-Voltri* container that developed between 2010 and 2011. The chapter concludes by proposing some recommendations on the basis of the analysed cases.

The very different issues and challenges faced by an African nation are discussed by Frank Ojadi in Chapter 11, 'Maritime security in Nigeria'. He begins by outlining the political structure and the policy-making organizations of the country and then provides a historical profile of the maritime security institutions. The first was the Nigerian Maritime Department, created by the British in 1914, which evolved into the Nigerian Ports Authority, the Inland Waterways Department and the Naval Defence Force in 1955. Maritime security problems faced by Nigeria are discussed, highlighting the most important one connected with energy (oil) security in the Gulf of Guinea, requiring country-level but, above all, regional initiatives. The lack of regional coordination appears to be the most relevant issue limiting maritime security in the area. Lastly, funding issues are considered as well as the strategies pursued by the Nigerian government in this sector.

Another area where maritime security poses a complex challenge is the region around the Arabian Sea. This is clearly explained in Chapter 12, 'Maritime security in Oman' by Sigurd Neubauer. The chapter first describes how Oman has pursued a policy of independent internationalism and then concentrates on the sea threats faced by Oman, especially Somali piracy and the tensions between the international community and Iran. It notes that maritime security is a national priority that is managed by the Royal Oman Navy, the coast guard and the Royal Air Force. Large efforts are devoted to international cooperation and bilateral and multilateral security exercises with various countries. Oman's strategy to use diplomacy to mitigate the tensions in the Hormuz Strait and its port security practices and anti-terrorism procedures are also discussed.

We then turn to the Asian continent. Chapter 13, 'Container security at Indian dry ports' by Girish Gujar and Hong Yan discusses container security initiatives and instruments at global and country levels. It discusses Indian dry ports as key hubs in the global trading system and classifies them with respect to size, primary mode of connectivity to

gateway sea ports and distance from sea ports. The chapter then considers three possible types of security failures. The least damaging involves the non-matching of containerized cargo to that declared in the manifest by quantity/value. The intermediate one is related to the fact that the entire container does not match what was declared. The most dangerous type is related to undeclared dangerous goods transported with a criminal or terrorist intent. An analysis of the occurrence of these problems indicates that the majority of events are related to the first type of security failure. The chapter concludes by analysing the possible tools that can be used to minimize security failures.

Another type of maritime security is discussed by Nazery Khalid in Chapter 14, 'Security in the Straits of Malacca in recent years'. The chapter begins by noting the importance of the Straits as a 'choke point' and discusses the important improvements with regards to piracy since the declaration of the Straits of Malacca as a war risk area by the Joint War Committee of Lloyd's Market Association in 2005 and the related increase in insurance risk premiums for ship transiting the area. This led to protests by Malaysia, Singapore and Indonesia. However, security initiatives were put in place that have resulted in a drop in the number of piracy events since 2009. The chapter describes how these countries have handled an actual maritime security alert and concludes by discussing the relationships between piracy and terrorism.

The last chapter dealing with a port on the Asian continent, 'Maritime security regulations and policies in Hong Kong: a critical review and the development of a risk-based security assessment model' by Adolf Ng and Zaili Yang, considers the maritime regulations and policies issued by the Hong Kong maritime department and their actual implementation. The chapter emphasizes the efforts to involve all important stakeholders in an advisory committee and in a working group. The chapter describes the strengths (that is, compliance with international regulations and guidelines) and weaknesses (that is, rather ambiguous implementation of the security assessment process). A risk-based model for port security assessment and management on the basis of the earlier analysis is proposed that could be a basis for decisions and procedures in maritime security.

The final chapter in Part II deals with the maritime security issues that small island nations confront. In Chapter 16, 'Maritime security and piracy in Mauritius', Shakeel B. Burthoo-Barah and Verena Tandrayen-Raghoobur note that Mauritius and similar states have to sometimes deal with a geographical challenge – they have to patrol maritime areas that are thousand times bigger than the island itself. After presenting an overview of Mauritius's economy and the role of the maritime sector therein, the way in which maritime security is organized and deployed are considered

– by complying with international regulations, by enacting idiosyncratic policies and by collaborating with international organizations in order to tackle the piracy threat.

The last chapter in the book carries out a comparative analysis of the case studies and draws general conclusions regarding the state of maritime security in both practice and theory. It seeks to integrate the diverse country studies by analytically comparing the security policies that have been adopted, their achievements and the issues that remain. It concludes with a discussion of best practices and proposing possible future directions of research.