

OMAN'S MARITIME DOCTRINE

Submitted by

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ABSTRACT

The economic and security significance of maritime and political interests around the world has altered with the changing international security environment, as has the importance of secure sea routes to meet global demand. Oman increasingly relies on the sea for maritime trade and exploitation of marine resources, but without a common maritime policy and strategy to align its commercial and maritime interests, its offshore resources will remain under-developed. Oman's primary interest is to ensure national maritime security by maintaining an effective navy and other agencies to guard its sea areas, and protect its maritime trade. However, it still lacks a formal maritime doctrine to underpin its policies

This study argues that a maritime doctrine will assist Oman to utilise its maritime power and protect its national interests. In the absence of archive material, this study has drawn upon personal interviews with maritime experts and practitioners, and reviewed and analyzed a wide range of official publications and secondary sources on maritime policy and doctrine. It highlights the relationship between economic growth and maritime trade in Oman, examines the role of Oman's shipping industry and related activities, and compares the experiences and expertise of several nations that have established maritime doctrine.

Oman's need for a maritime doctrine in order to protect its national interests and sovereignty is pressing. It should connect and coordinate its maritime power, military strategy, policies, and standing operating procedures through a single maritime doctrine that will provide the basis for mutual understanding between units of the Sultan's Armed Forces, related government agencies, and national policy-makers, ensuring operational familiarity and efficiency. In proposing a discrete administrative body to oversee the codification of principles and procedures, the study fills a significant gap in Oman's national maritime policy and strategy, since the expression of maritime doctrine will help protect the integrity and interests of the state and its people.

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ABBREVIATIONS

AL	Arab League
ASW	Anti-Submarine warfare
BR (1806)	Book Reference, refers to British Maritime Doctrine 1806
BRIC	Countries (Brazil, Russia, India and China).
C2	Command and Control
CIS	Command and Information System
CRNO	Commander Royal Navy of Oman
DWT	Dead Weight Tonnage
EEZ	Exclusive Economic Zone
EOR	Enhanced Oil Recovery
EIU	Economist Intelligence Unit
FAD	Fisheries Aggregation Devices
FAO	United Nations Food and Agriculture Organisation
GCC	Gulf Co-operation Council
GDP	Gross Domestic Product
HSC	High Speed Craft
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IHO	International Hydrographic Organization
IMO	International Maritime Organization.
IN	Indian Navy
IOHC	Indian Ocean Hydrographic Commission
IRG	Iranian Revolutionary Guard
ITZ	Inshore Traffic Zone
IORARC	Indian Ocean Rim Association for Regional Cooperation
ISPS	International Ships and Ports Security Code
ISTAR	Intelligence, Surveillance, Target Acquisition and Reconnaissance
IUU	International Union for the Conservation of Nature (IUCN)
LNG	Liquefied Natural Gas
MACA	Military Aid to the Civil Authority
MACC	Military Aid to the Civil Community
MACP	Military Aid to the Civil Powers
MARPOL 73/78	Marine Pollution = International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978.
MCM	Mine Counter-Measures
MEED	Middle East Economist Digest
MENA	Middle East and North Africa
MMEA	Malaysian Maritime Enforcement Agency
MODI	Ministry of Defence Instructions
MPA	Maritime Patrol Aircraft
MSA	Maritime Security Agency
MSFC	Marine Science and Fisheries Centre
NFC	National Ferries Company

NGL	Natural Gas Liquid
OGC	Oman Gas Company
OIC	Organization of the Islamic Conference
OMIFCO	Oman India Fertilizer Company
OOC	Oman Oil Company
OPEC	Organization of Petroleum Exporting Countries
OPV	Ocean Patrol Vessels
OSC	Oman Shipping Company
OTW	Oman Territorial Waters
PASEX	Passage Exercises (Naval)
PDO	Petroleum Development Oman
PSC	Port State Control
RAFO	Royal Air Force of Oman
RAN	Royal Australian Navy
RAO	Royal Army of Oman
RAP	Recognised Air Picture
RECOFI	Regional Commission on Fisheries
RMA	Revolution in Military Affairs
RMN	Royal Malaysian Navy
RMoU	Riyadh Memorandum of Understanding
RNO	Royal Navy of Oman
ROE	Rules Of Engagement
ROPCG:	Royal Oman Police Coast Guard
ROPME	Regional Organization for the Protection of the Marine Environment
Ro-Ro	Roll on-Roll Off (ferries)
SAF	Sultan Armed Forces
SAFI	Sultan's Armed Forces Instructions
SAR	Search and Rescue
SLOC	Sea Lines of Communication
STCW	Standards of Training, Certification and Watch-keeping
STUFT	Ships Taken Up From Trade
Tcf	Trillion cubic feet
TEU	Twenty-foot Equivalent Units
TSS	Traffic Separation Scheme
TTP	Techniques, Tactics and Procedures
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
VLCC	Very Large Crude Carriers

CHAPTER ONE

INTRODUCTION

1.1. Purpose and Significance of the Study

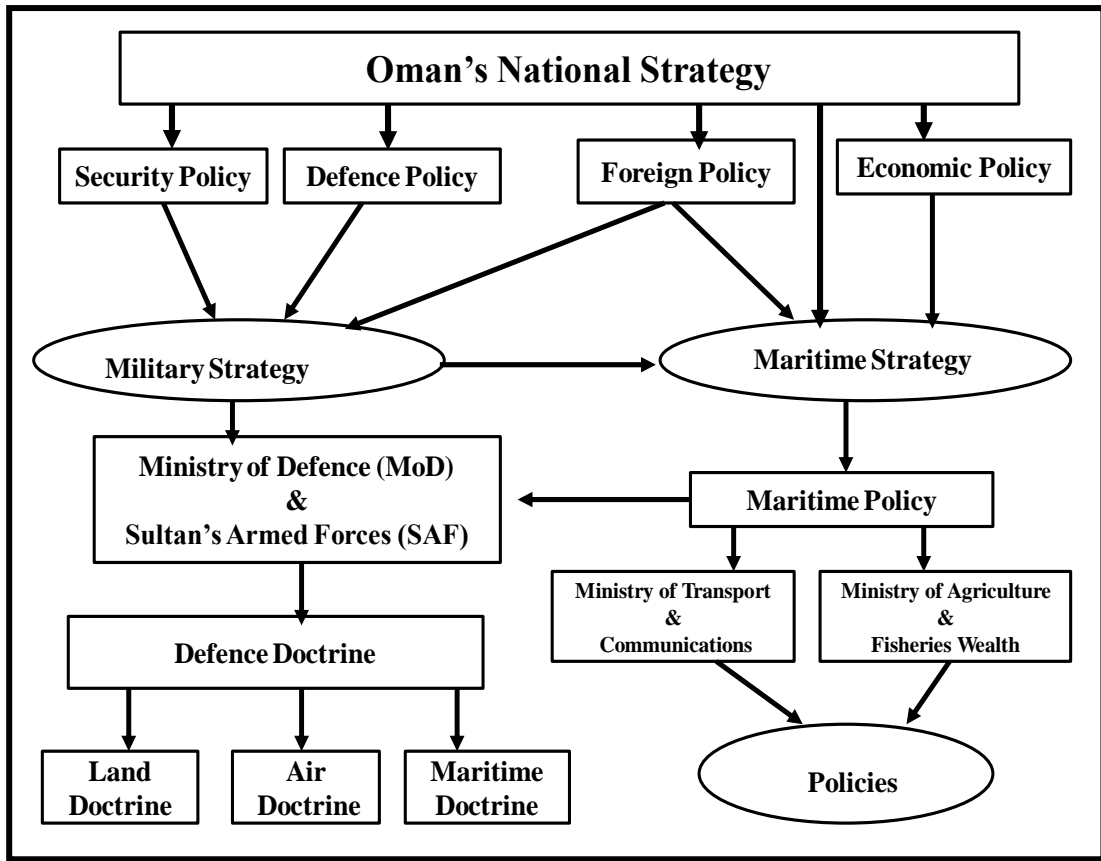
Changes in today's international security environment have expanded the economic and security significance of maritime and political interests. Concurrently the importance of secure sea routes has increased global demand and reliance on the sea for maritime trade and exploitation of marine resources by a variable policy. The offshore resources of the Sultanate of Oman (hereafter referred to as Oman) are economically important but, lacking a common vision for the exploitation and management of Oman's seas and a maritime doctrine and strategy to align commercial significance with other national maritime interests, these resources remain under-developed. Since resource development must support national assets, Oman's primary interest is to ensure national maritime security by maintaining an effective navy and other national security agencies that will guard its coastline and island territories, and protect its maritime trade, shipping, ports, coastal installations, offshore resources, and Exclusive Economic Zone (EEZ).

As is common with many emerging maritime states, Oman's development is based primarily on a vision for land development and developments on land rather than on or at sea. The sea is, however, a vital factor in both the nation's economy and security and without a clear vision of its potential and development both its economy and security will certainly suffer. Oman must recognize the need to formulate an Omani vision of the seas to take important steps to exploit and protect its seas. A key consideration in formulating Oman's vision should be the development of offshore resources and a greater role for private sector funding in this direction. Visions of the seas must be well recognized and acknowledged within the government's planning and future policies.

Oman has not developed a maritime doctrine mainly because, for the past century and a half, the main threat facing the government in Muscat was land-based: initially the Imamate in Nizwa from the 1870s to the 1950s, and then Dhofar in the 1960s and 1970s (Ghubash 2006: 103-178). The Sultan's Armed Forces (SAF) were originally established in the twentieth century to address this land-based threat and this land-based orientation remains at the core of SAF's strategic thinking and planning today. In the twenty-first century, however, the main threats and challenges facing Oman today are no longer land-based, they are sea-based. Oman has been slow to adjust to this new reality in part because of the greater historical role and present-day power of the land forces. The land forces continue to receive the bulk of the defence budget as a result. The time has come for Oman to reassert itself as a regional maritime power. To do this, it must formulate a "Vision of the Seas" around which a maritime doctrine can be developed. The lack of such a doctrine has prevented Oman from exploiting the sea and its resources to full advantage.

The top priority for the Royal Navy of Oman (RNO) and other national security agencies is to safeguard the Sea Lines of Communication (SLOC), along with the country's own sovereignty and maritime interests, which requires communication and collaboration by way of a defined structure and policy directives that cascade from higher authorities down to task elements. Figure 1.1 below outlines the inter-relatedness of the policy elements within the overall picture of the country's National Security Strategy that can lead to the formulation of a maritime doctrine for Oman.

Figure 1.1. The development of Oman’s Maritime Doctrine



The study serves a number of purposes. It examines how Oman presently manages and protects its maritime resources and interests without a maritime doctrine. It then outlines what a maritime doctrine might look like, based on Oman’s resources and capacity. It fills a significant gap in the literature on Oman’s maritime policy and the branches of government charged with protecting Oman’s maritime interests, such as the RNO. It explains how a maritime doctrine can help Oman by providing a common philosophy, a common approach, and a common language, enhancing unity of effort at all levels, thereby increasing efficiency and effectiveness. Oman’s maritime doctrine should provide guidance to the questions “What were we trying to achieve? What is the end state?¹ How do we achieve it and with what means?” This study argues that the failure to develop a

¹ **End-state**, the political and/or military situation to be attained at the end of an operation, which indicates that the objective has been achieved (UK MoD 2004: 255).

unified approach and coordinated policies across all the government agencies with responsibility for Oman's maritime interests has resulted in fragmentation and inefficiency.

There are reasons why Oman needs to have such a doctrine. The only workable method of ensuring national unity of effort lies in the correct preparation of the minds of the various individuals involved in policy- and decision-making, and their subordinates at all levels (UK MoD 1999: 2-5). Not only does such preparation encompass adequate strategic study, analysis, and training, but it also involves a common meeting ground of beliefs as to the proper manner of applying principles to achieve the desired end state.

The study involves reviewing literature on the subject, as well as examining and assessing the government's existing policy and strategy for dealing with Oman's maritime interests, on the basis of information gleaned from various ministries and relevant national agencies. It is argued that development of a maritime doctrine is essential for supporting the nation's shared policies and objectives, since this will lead to enhanced and better-coordinated efforts and performance.

The most important of the maritime interests is Oman's national security and, for the purposes of this study, Oman's maritime interests have been identified as: Maritime Trade and Shipping, Ports and the Offshore Resources of oil, gas, and fish. Within each chapter, the study identifies gaps and shortcomings, and analyzes and assesses the existing policies, strategies, missions and conditions that are currently constraining governmental agencies from achieving comprehensive organisational success in dealing with Oman's maritime interests. The RNO's roles and missions in policing Oman's sea areas are examined as they relate to the nation's interests and provide for its maritime security, and an outline proposal for a possible maritime doctrine is given.

In conclusion, the major findings of the study are addressed and recommendations are offered. Oman has significant economic and strategic maritime interests and the need for a national maritime doctrine that is specific to the country is justified by these interests. The study asserts that although the maritime doctrines of seafaring nations have basic principles

in common (India MoD 2004: 1), the details will differ because of geographical location, foreign policy, and an individual nation's own maritime environment.

A maritime doctrine for Oman is an essential requirement because of its location and in particular the critical importance of the Strait of Hormuz and adjacent waters as a strategic choke point. Freedom of navigation in its waters can never be guaranteed by Oman, simply because of the magnitude of the task and the threats posed, both conventional and asymmetric. Therefore, a maritime doctrine will indicate to its allies how, allowing for their coordination, Oman intends to set about discharging its obligations. It will also show that Oman is serious about its commitment to freedom of navigation in its waters to others who, feeling that Oman is not up to the task, might decide to take on the responsibility themselves.

Doctrine exists to link policies with strategies; different planning methodologies, fragmented strategies, and unsecured policies (Vego 2007: XII-8). For example, the RNO and other national security agencies currently operate in a constrained environment that fosters independent operational and tactical planning, limited operational and intelligence functions, independent budget formulation, and independent programme and policy direction (Till 2009: 46-47). In other words, each national agency performs all of these functions solely for their individual purposes, with little attention given to integrating with other ministries and stakeholders, and without much interest in knowing if better ways exist for accomplishing these tasks (MoD India 2004: 2-9).

Oman has always relied upon the sea for its economy and security. It can be argued that because of its maritime geography and reliance upon its maritime interests, the state is maritime by nature. Naturally this dependence upon the use of the sea, once threatened, can develop into vulnerabilities requiring protection and stability that can be achieved only through establishing a maritime doctrine that will bring together the government's policy and endeavours.

After the demise of the empire in 1862 and until 1970, Oman remained economically and politically isolated. But the country once again looks seaward to invest, and Omanization of the navy and the development of a professional officer corps of mariners have taken

place relatively recently. In the absence of a maritime doctrine, the RNO has operated under certain constraints and has had to manage through the use of fragmented documents and operating procedures, at times with some difficulty. Clearly the requirement for a maritime doctrine, which was recognised some years ago, could have been addressed before now. The need for such a doctrine is now pressing:

- To enhance the capabilities of Oman's maritime power to carry out its assigned duties.
- To reinforce the collective maritime operation and security effort; and to eliminate gaps in the performance of its operational mission (Vego 2007: XII, 3-9).
- To establish clear lines of authority to address problems and issues in an efficient and methodical manner through a common and unified approach (Scudder 2009: 1).
- To create communication and collaboration by way of a defined structure that originates with the higher authorities and their policy directives, and cascades down to on-task elements (Till 2009: 46).
- To align the efforts made by national agencies by supporting each other's processes and procedures for coordinating and prioritising activities, which serves to institutionalize an organization's unifying principles and priorities (Till 2009: 46 and, UK MoD 1999: 5-6).
- To construct a shared environment and a way of thinking conceptually and strategically (Till 2009: 112).
- To provide a common understanding, standardization and unity of effort without relinquishing freedom of judgment and the need to exercise initiative (India MoD 2004: 4).
- To develop collaborative plans through leveraging best practices (Scudder 2009: 1), and to regulate procedures and facilitate readiness.

1.2. Argument

Notwithstanding the success of roles and tasks of operations, the RNO's ability to project national power is constrained by the absence of a maritime doctrine. Without a maritime doctrine that is oriented towards coastal defence and sea denial operations, its capability is reduced. This does not reflect the fact that in an era of uncertainty Oman may well need to project power beyond its maritime environment. Because much of Oman's extensive coastline is isolated from the main population centres, (see Chapter Three, Figures 3.6 and

3.7 on Population Densities), along with its strategic islands overlooking the Strait of Hormuz, and islands in the Arabian Gulf, Sea of Oman and in the Arabian Sea monitoring and controlling these crucial waters, including the Strait, is also a vital task for the RNO (see Figure 1.2).

During the period of the Cold War, Oman avoided relations with communist countries because of their support for the rebellion in the southern region of Dhofar (1965-1975) and their attempts to spread communism in the region through Oman. In a strategic context, Oman's foreign and security policy is built upon the doctrine of peaceful co-existence with its neighbours.²² With the hegemony of the US as the only superpower that has strategic initiatives in the region, and by following what can be described as a friendly offensive policy, Oman is attempting to retain independence in its foreign policy. It has undertaken various diplomatic initiatives in the region, simultaneously maintaining good relations with Iran, Pakistan, and India, while also becoming an active member in international and regional organizations, notably the Arab League (AL), the Organization of the Islamic Conference (OIC), and the Gulf Co-operation Council (GCC).

Oman exists in an unstable region that is also a maritime geo-strategic environment; therefore threats to its national security and interests are possible at any time. This is significant if diplomatic and international realities are to be fully understood by Oman. Its geographic location means that, for the development of its economy, Oman is dependent on the use of the sea to import materials and export commodities, including oil and gas. Its sea area, which is twice that of its land area, will provide an increasing proportion of the nation's wealth through exploitation of offshore oil, gas, mineral, and fishing resources.

Oman's national interests are also integrated with the environment beyond the coast, and need to be clearly expressed. One of the central features of maritime doctrine is that it has an application throughout a continuum of operations. This means that benign applications, or the use of its armed forces "solely for provision of capabilities that are not directly associated with combat" (UK MoD 2004: 242), are just as relevant to a comprehensive

²² Interview with Ambassador Dr Mohammed Al-Busaidi (Deputy Director General Diplomatic Institute, Ministry of Foreign Affairs, Muscat), 17 April 2011.

strategy as combat operations, and that maritime doctrine has a well-defined peacetime dimension.

Oman's strategic location at a key maritime trade route through which more than 40 percent of the world's exported oil shipments currently pass (Oxford Business Group 2010: 15), will help to ensure that this critical sea lane remains open to commercial traffic and naval vessels. Such was the impact of the Iran-Iraq war (1980-1988) and the Gulf conflicts of 1991 and 2003 on ships seeking freedom to navigate those waters that the importance of the Strait of Hormuz as an international shipping route was decisively established. Since the Strait and its approaches are an international waterway and are inside Oman's territorial or national waters, any interference by another state against shipping transiting those lanes implies interference with Oman's sovereignty. Surveillance of the Strait therefore assumes a high national priority for Oman and dictates a maritime doctrine.

The operations of any maritime nation like Oman can easily be frustrated by a relatively sophisticated submarine threat. Oman's deep waters provide a useful environment for the operation of major global maritime powers such as the US. Therefore, it has been well-recognized by the US that good relations with Oman are in the interests of US foreign policy in the region, since this will provide them with vital access to Omani waters and military facilities when forming overseas bases to support their operational requirements in the region.

For a nation with a long maritime tradition because of its strategic geographical position astride vital maritime trade routes, and its desire to utilize the sea, the security of the sea-lanes is of great economic importance to Oman and its allies.³ The fact that it is a seafaring nation determines the need to document and teach the extent to which the sea remains the major means of its links with the rest of the world. Its offshore oil and gas fields and major ports, together with international companies operating big cargo and container ships, as well as oil and gas tankers from its ports, must all be protected. These factors dictate that the RNO and national security agencies will at some stage be obliged to

³ Interview with Major General Mungo Melvin (British Army 'ret'd', Tisbury UK), 17 February 2012.

provide security for these assets. Such a circumstance is, in itself, sufficient justification for investment in a strong navy that bases its operations on a sound maritime doctrine.

Contingencies can be envisioned where Oman may be compelled to protect its own territories, or even reach out-of-area to safeguard the interests of its friends. Combating terrorism, piracy, drug trafficking and illegal immigration, at sea all require a workable strategy to maintain maritime security in its own and adjacent waters. This also includes responsibility for surveying Omani waters, providing Search and Rescue (SAR) facilities to those in need, as well as coordinating navigational warnings over a vast oceanic area. The security and stability of Oman is dependent upon the security of its maritime areas.

Maritime forces employed as an instrument of foreign policy must be capable, manned, equipped and trained at the appropriate readiness level to protect the SLOC, and approaches to ports. These forces must have a sound maritime doctrine on which to work, in terms of crises and reactions that will provide national security and ensure the country's unhindered economic growth and development. The doctrine will provide a guide for training for combat and strengthening capability to enforce control of sea, land and air territory, while also helping to improve inter-operability⁴ amongst Omani military assets, and allied and friendly forces. Planning and employment of assets based upon a doctrinal base will enhance Oman's ability to utilise resources effectively.

Doctrine also plays a relevant and vital role within armed forces and constitutes a constant test in ensuring that the agreed doctrine is the best option to meet threats and challenges, and to deal with crisis management and natural disasters (UK MoD 2004: 57-88). To cater for all contingencies, Oman needs to establish a credible force with the capability to operate across Omani waters and with capabilities required to deter challenges and threats (Chapter Five-section 5.8). However, to operate in a secure environment, there are certain fundamental areas for Oman to address for the future; foremost among them is to establish a structured maritime doctrine.

⁴ **Inter-operability.** The ability to operate in synergy in the execution of assigned tasks (Australia MoD 2010: 197).

Aerial surveillance and situation awareness of Oman's maritime area is an essential requirement and another area of concern. Situation awareness will meet the navy's need for intervention, military contingency, and other emergency operations by maintaining high readiness assets (Chapter Five, sections: 5.4.1-5.4.3). The navy's responses will depend upon the nature of the mission, but the initial response, including afloat command, would be outlined in the maritime doctrine.

In terms of planning, Oman has no maritime contingency plans and so such literature would provide a better understanding of the aims and objectives under both normal and abnormal conditions. The deployment of maritime assets to a mission area with the clear setting of contingency plans (*where*, *do what* and *why*) would provide the answer to *how*, which is missing and needs addressing. Thus difficulties would inevitably be caused primarily by Oman not having a maritime doctrine. In other words, maritime doctrines written for other countries simply will not do for Oman: therefore, Oman requires its own doctrine to cater for the unique circumstances affecting the country.

The SAF and the national security agencies provide the military capability of Oman's national power. Within the country's foreign and security policy, its strategic environment may be defined as the context within which it must exist and interact with all nations (Australia MoD 2010: 39-40). This context is the result of a wide range of changing factors that include: geographic, economic, political and social (Australia MoD 2010: 39-42; also Buzan and Hansen 2009: 10-65). Because of Oman's strategic position, it is possible to make judgments about the fundamental security challenges facing Oman; even so, assessments and courses of action relating to those challenges are inherently dynamic and must be reviewed constantly as the situation demands (Oman MoD 2009: Chs 1-4).

Oman's maritime boundary claims, as those of other coastal states, have their foundations in the 1982 United Nations Convention on the Law of the Sea (UNCLOS III), a binding treaty under international law to which Oman is a signatory. With due regard for the sovereignty of all states, it establishes a legal order for the seas and oceans which facilitates international communication, promotes peaceful use of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment

(Borgerson 2009: 6-21). The sea presents the prospect of wealth to all, and yet may be a source of future conflict over its resources (Till 2009: 286-288). Oman's long coastline compared to the Arab Gulf states gives the country a sea area of rich mineral and other resources (Kelly 1980: 104). Successful exploitation of these elements will have a beneficial impact on the economy and the future development of the country. Whilst Oman is unique, as are all states, in the writing of this doctrine there is much to be learned from the study of other nations and their maritime doctrines to gain best practice.

1.3. Definitions (Literature Review)

Oman lacks a maritime doctrine. This section reviews the literature related to doctrine in terms of its definition and its use, citing historical and more updated examples as they pertain to doctrine.⁵ The section also discusses issues faced by Oman resulting from the absence of doctrine, and considers how these issues can be improved. The review is divided into sections that describe the available literature on doctrine with regard to definitions of doctrine, its purpose, nature and development, and its significance.

1.3.1. Defining Doctrine

The word 'doctrine' comes from the Latin *doctrina* meaning teaching (Vego 2007: XII-3). In its strict definition it means 'that which is taught' (UK MoD 1999: 2), or 'set forth for acceptance or belief' (Vego 2007: XII-3). The term was widely used in the fourteenth century and referred mostly to the teachings of the Roman Catholic Church or to politics (Vego 2007: *ibid*). In a military sense it is a framework of principles, practices, and procedures relating to the deployment of forces (UK MoD 1995: 12). Through training, doctrine leads to a general comprehension or even anticipation of the commander's intent, to consistent behaviour, mutual confidence, and properly-orchestrated collective action (Vego 2007: XII-3).

Doctrine comes in various forms; thus, as a part of the conceptual component of 'fighting power', it is not a set of principles that must be slavishly followed (Vego XII, 3-6). Rather

⁵ For a fuller account of some of the significant maritime theorists and thinkers, and a more detailed review of the core literature available on maritime doctrine and related areas, see Chapter Six, section 6.2.

it is a framework for understanding the nature of armed conflict and the use of military force, and provides a common approach without constraining initiative (UK MoD 1999: 6). The understanding of doctrine and its application assists clarity of thought in the chaos of crisis and war (Canada DND 2009: 1-1). In the relevant literature, the term ‘doctrine’ is used to mean military doctrine as developed and used by armed forces worldwide in the provision of the defence capabilities required by a state (Vego 2007 XII, 3-8). Doctrine is further defined as “the fundamental principles by which military forces guide their actions in support of objectives” (UK MoD 2004: 254). Maritime doctrine is the application of maritime theory in a particular time and space (Till 2009: 46).

Based on the processing of experience, doctrine has developed differently over periods of time among different nations, not just for military purposes but for all fields. It is always authoritative but requires fair judgment in application (India MoD 2004: 5). The particular aim of doctrine is to give planners and decision makers (civilian and military), a sense of common purpose (UK MoD 1999: 4-5). In this context one might suggest that Oman’s maritime doctrine will provide a central point of reference and authority for all groups of decision-makers within the government. Clearly it also allows the other services (army, air force, etc) to acquire an understanding of maritime operations, and assists them to think more clearly in situations of chaos, crisis, conflict and war (UK MoD 1995: 11-15). As a whole, it provides an instrument based on methodical thinking that is not bound by any prescriptive rules (Scudder 2009: 1-2).

1.3.2. Purpose of a Doctrine

In the military sense, the main purpose of a doctrine is to provide a military organization with a common philosophy, language, purpose and unity of effort (UK MoD 1999: 4-5). It is a bridge between military theory and practice, and translates theoretical ideas into doctrinal principles, which are then used to devise tactics, techniques, and procedures (Till 2009: 46-5, 112-113). It is a framework of principles, practices and procedures, the understanding of which provides a basis for action (UK MoD 1999: 4-5). Maritime doctrine fulfils this function for the use of military power at sea and from the sea. It has internal educational and training functions, and explains the naval view on the utility of maritime power and the conduct of operations (Cable 1971: 98-127). Oman’s Maritime

doctrine (when established), which should be forward thinking, can allow the Omani decision-makers to plan for the future, including budgetary considerations, procurement strategies, manpower, military establishments and bases. It stimulates professional debate (Vego 2007: XII-4), identifies Oman's future threats and challenges, and how these can best be countered, and explains to the public what they are paying for; hence it also becomes a media tool.

Doctrine has a professional motivational function in providing maritime forces with clear statements about their roles and objectives (UK MoD 1999: 2). At the military-strategic level, doctrine informs the wider defence community, including politicians, industrialists and academics, as well as the general public, about the roles and political utility of maritime power (UK MoD 1999: 2-5). It provides the important intellectual tools for the conduct of conflict by explaining the nature of war, setting standard definitions, explaining tactical or operational concepts, and presenting tenets about how to fight. This view is shared by Hew Strachan who notes that “operational thinking finds its intellectual focus in doctrine” (Strachan 2011: 1292). The Royal Australian Navy (RAN) considers that doctrine is important in balancing the maintenance of its combat preparedness with the many requirements of peacetime operations and future capability development; the RAN has therefore developed a structured maritime doctrine with the purpose of supporting the delivery of combat power at and from the sea. The Australians have argued that the successful fulfilment of all the elements involved depends on a comprehensive and thoroughly understood maritime doctrine (Australia MoD 2010: 1-5).

In 2004 the Indian Navy (IN) issued the first edition of the Indian Maritime Doctrine with the purpose of fulfilling India's maritime intentions (India MoD 2004: 1). Analysis indicates that, although the IN has adopted the Mahanian⁶ approach in developing the structure of its naval force, Soviet influences were inevitable, given the introduction and integration of vast numbers of ships, submarines, aircraft sensors and weapon systems of Soviet origin. Additionally, since many Indian naval personnel were trained in the former Soviet Union it was clear that some of their thinking would be influenced by Soviet

⁶ Alfred Thayer Mahan (1849-1914) was a US naval officer whose concept of ‘sea power’ was (and still is) very influential in shaping the strategic thinking of navies across the world.

doctrines (Till 2009: 328). By examining the Australian and Indian approaches to doctrine, it is clear that both recognize the inherently joint nature of maritime operations as well as the fact that operations at, or over, the sea are only useful if they can, directly or indirectly, affect the fundamental outcome of a campaign.

Oman's maritime doctrine, when established, will no doubt influence ideas and the way in which Omani servicemen think. It will also offer a foundation of understanding from which the exploitation of maritime power can be assessed. The objective of Oman's maritime doctrine is to construct a framework or model that explains the full capability of Oman's maritime forces in a logical and realistic fashion, while avoiding doctrinal inconsistencies among the various elements of joint, multinational, and single service doctrine.

1.3.3 The Nature and Development of Maritime Doctrine

Maritime doctrines in general are conceptual and dynamic in nature and must be reviewed and updated to meet emerging requirements and challenges. According to Vego, doctrine should be "general in nature, remain flexible, and be based on correct perception of the threat". (Vego 2007: XII, 12-19). The UK's Royal Navy simply recognizes that doctrine must evolve as its political and strategic foundations alter, and in the light of new technology, the lessons of experience, and the insights of operational analysis and requirement (UK MoD 1995: 13). India's maritime doctrine recognizes that while any formalized maritime doctrine is authoritative, its application should be well-judged to meet challenges (India MoD 2004: 5). Changing perceptions of the threat of piracy in Omani waters offer a good example of challenges. Had maritime doctrine been written five years ago, piracy would not have featured prominently as a threat, whereas today piracy has become different matter and is of much greater concern. The point to make is that maritime doctrine has to be flexible and dynamic to embrace future changes.

Regarding the development of doctrine, since the environment (political, strategic, threat, technological, etc) alters, doctrine must be sufficiently adaptable to be able to develop incrementally, i.e., to evolve. The rapid changes in technology associated with maritime power have been a compelling influence on the development of maritime doctrine which,

having become dynamic must therefore be regularly reviewed (Veg 2007: XII, 9-13). Booth concluded that while naval history may be used to illustrate points, it cannot be used to prove what *is* happening or predict what *will* happen (Booth 1977: 124). Technology has a critical role, especially for developing countries, in the elaboration of sound doctrine, and new technology (platform, weapons, sensors, equipment) will undoubtedly influence employment of forces and methods of execution in combat.⁷ For geo-political reasons, some weapons and sensors may have restrictions imposed on their use by the country of origin; therefore the purchasing country will be unable to apply the weaponry against any allies close to the manufacturing country.⁸

One of the keys to developing sound doctrine for Oman is to anticipate technological evolution, the requirements of Oman for that technology, and its potential strategic impact. As far as RNO is concerned, one problem is the longevity of a warship – a life span of up to fifty years which, even with mid-life refits and upgrades, still presents a considerable technical challenge in the face of changing strategic priorities. A critical example is the difficulties encountered with the British ‘Future Carrier Programme’.⁹ This also raises the question of the degree to which domestic issues can intrude into doctrinal matters – the need to maintain a skilled labour force, and the economic and social consequences. An example of the strategic impact was the way the region’s strategic scenario changed when Iran first acquired the *Kilo*,¹⁰ class submarines in the early 1990s; this meant that Iran had developed its Anti-Submarine Warfare (ASW) capability. Military doctrine and military technology are regarded as intertwined, with each directing and reinforcing the other (Vego 2007: XII, 9-13).

Certainly technological advances and doctrine exist in a form of symbiotic relationship; but technology should not lead to enforcing inappropriate doctrine; nor should out-dated doctrine constrain technological innovation (Vego 2007: XII, 9-13). In some cases, required changes to doctrine necessitate advances in military technology, while in others,

⁷ Interview with Charles Le Gallais (Serco Defence, Science and Nuclear; also consultant to Oman’s ports security, in Exeter. UK), 7 February 2012.

⁸ Noted during attendance at 10th International Naval Engineering Conference and Exhibition 11-13 May 2010, arranged by BAE Systems, HM Naval Base, Portsmouth UK.

⁹ Interview with Eric Morris (Geopolitical analyst and defence specialist with wide experience in advising governments in the Middle East of Good Governance Group London), 28 September 2011.

¹⁰ *Kilo* class is the name for a diesel-electric submarine made in Russia.

technological innovation (e.g., introduction of stealth) will force doctrinal change (Vego 2007: XII-10). Certainly, developments in naval technology have profoundly influenced doctrine. Changes in capital ships from wood and sail to steel and steam, to rotating gun turrets, torpedoes, submarines, aircraft, nuclear propulsion and strategic missile capabilities, all indicate that doctrine and technology are connected, dynamic processes (Parshall and Tully 2005: 82-86). If doctrine lags behind technology, then new weapon systems, sensors or equipment may be unrelated to realistic needs. And if technology lags behind doctrine, then actual capabilities are disconnected from tactical or operational realities (Vego 2007: XII-22).

Doctrines are shaped by the potential of geo-strategic interests in a changing environment, as well as by a combination of external and internal influences (Strachan 2011: 1292-1294). Vego proposes that service and joint doctrine should be developed from the top down (Vego 2007: XII-12). For Oman, some important considerations are finance and funding, e.g., the RNO's share of the defence budget and the role of doctrine in a competitive environment. Even though Oman's sea area is twice the size of its land mass and the threat is now more from sea than from land (see Chapter Five-section 5.8), the army is bigger in size and gets a bigger share of the budget. Other external influences include the size and shape of the threat to national security and overall strategy. The main internal influences are experiences, institutional approaches to the concept of doctrine, and debate on the roles and missions of individual services and joint operations (Borgerson 2009: 22-35).

1.3.4. Significance of Maritime Doctrine

Despite the absence of formal doctrine in the past, many armies succeeded because they had certain prescribed training techniques, established organizational structures, and commonly-applied tactical procedures (Vego 2007: XII, 3-22). In the days of Oman's sea-based empire (seventeenth – nineteenth century), doctrine had no particular significance, although if plans and orders received had been written in commonly-understood terms, subordinates and commanders would have been greatly helped when interpreting them. Today, coordinated effort in combat is difficult or even impossible without the existence of highly-developed mutual understanding and common convictions between the higher

commanders and their subordinates: these cannot be hurriedly achieved during combat and must be instilled in peace-time through common training based on sound doctrine. RNO operates under certain constraints by having to deal with various operation procedures, so that knowledge and understanding of doctrine and its application will assist with clear thinking in the chaos of crisis and war. Thus sound doctrine provides good grounds for common approaches and ways of thinking. Through training this will lead to consistent behaviour, mutual confidence, and properly-orchestrated collective action, but without constraining individual initiative (Scudder 2009: 1-2). Doctrine also encompasses organization and command to ensure unity of effort, by being relevant across the whole range of military operations (at sea, on land, and in the air), and at each level of warfare (Vego 2007: XII-19).

The significance of doctrine should never be considered absolute or as representing a recipe for making decisions. In the military hierarchy of levels – Political, Strategic, Joint/Operational and Tactical, doctrine is a descriptive guide for action (Vego 2007: XII-19), It is an authoritative paradigm and should be used as the core of combat philosophy; i.e., acting to unify thought processes without producing predictable thoughts (UK MoD 1995: 11-15). Although doctrine has a great value it can easily slide into dogma (Vego 2007: XII-19), if not regularly reviewed and updated. With this in mind, the creation of Oman's maritime doctrine will generally raise the level of competence and should then be followed except when exceptional circumstances dictate otherwise.

Regarding sources of doctrine, these are generally drawn from guiding principles that provide a framework as to how the objectives are to be achieved. Doctrine is also built on operating concepts that form the means by which the guiding principles are applied, and that describe the answers to *what*, *how* and *when*. Clausewitz suggests that historical experience is the bedrock of theory: therefore it cannot exist separately from theory but must always be based on historical realities (Vego 2007: XII, 8-9). On the other hand a historical study that does not result in theory has no value, and this could be used to study the legacy of Oman's sea-based empire that provided the country with a commercial fleet and strong navy to defend both the fleet and the country (Till 2009: 35-37).

By contrast, theory based on future technology, such as theories of strategic bombing, and the *effects-based approach*¹¹ to operations, is based on certain assumptions that may or may not be true. The problem with the theory of future technologies is the lack of rigorous scientific methods to test the basic ideas properly; thus, doctrine based on future technology may lack factual observations because future capabilities are in fact available only as predictions (Till 2009: 46-47). Similarly, if a doctrine neglects the available historical experience, it may become disconnected from reality. The principal sources of doctrine are based on historical experiences, as Till acknowledges by noting that “both maritime theory and doctrine are based largely on the processing of historical experience or what is usually found to work” (Till 2004: 11).

The repeated success or failure of actions over time tends to be generalized into beliefs that become relevant to the present and the future. Eric Grove agrees with Corbett in stressing the importance of the careful study of experience before it is incorporated into doctrines (Till 2004: 1-185). Of course there are possibly some benefits to be gained from the study, analysis, and careful interpretation of history, training, exercises and experience, since these can be taught in order to provide a common starting point for future action (Vego 2007: XII, 7-8). As an example, lessons from the past that seem to have proved themselves over an extended period of time have been elevated to a higher level and are termed the *Principles of War*¹² (Till 2009: 41-47).

Oman’s maritime doctrine will be similarly influenced by historical factors, experience, and social and economic aspects, as well as by the interaction between Oman’s foreign policy and maritime doctrine in line with global events, and by facing both military challenges and natural disasters (e.g., cyclones). Clearly, the fundamentals of any successful doctrine are derived from a combination of history, practice, theory, policy, and the implications of technological developments. Doubtless, Oman’s doctrine will be influenced by national interaction with its own rich maritime history.

¹¹ **Effects-Based Approach:** operations designed to influence the will of an adversary, own forces or neutral through the co-coordinated application of military capability in order to achieve the desired strategic objectives (UK MoD 2004: 255).

¹² **Principles of War:** guides to action and fundamental tenets forming a basis for appreciating a situation and planning, but their relevance, applicability and relative importance changes with circumstances (UK MoD 2004: 285).

Sources of the doctrine will come from experience gained through combat and peacetime training and manoeuvres, and exercises with the country's own and foreign forces. The RNO conducts continuous internal and external exercises, demonstrations, and training. Large-scale combined and joint exercises are carried out, sometimes with forces including the UK, the US, France, Pakistan, and India, and regularly with the GCC states. Passage Exercises (PASEX),¹³ are also conducted with friends and allies on an opportunity basis. Own and foreign experiences should be extensively studied and lessons identified and evaluated for the benefits of doctrine. Generally, the more diverse the sources, the more likely it is that the resulting doctrine will be grounded in reality. Thus maritime doctrine must address contemporary realities and, importantly, look into the foreseeable future. Therefore, for Oman, with its location, history, maritime interest and effective use of the sea, the link between theory, practice and technological developments must be established and maintained. Oman's maritime doctrine might take account of the way that maritime entities would ideally meet, overlap and support each other through the integration of their structures.

In summary, maritime doctrine describes the principles which will guide maritime forces in achieving their objectives. As a department of the state, Oman's MoD should formulate its defence policy, which needs to describe how it will achieve the aims of the national strategy. This should cover its objectives and its priorities and should give guidance and set out the main concerns for tasking and equipment procurement, etc.

1.4. Geographical Overview

In shape, the Arabian Peninsula somewhat resembles a foot, with Oman's territory of 309,500 square km extending out into the open waters of the Indian Ocean at the extreme southeast of the Arabian Peninsula. In area, Oman exceeds Bahrain, Kuwait, Qatar and the UAE taken together (Kelly 1980: 104). More than a quarter of a total Arabian coastline of over 4,000 miles (Rippenburg 1998: 1) belongs to Oman, which commands the entrance to the Gulf and to the north, east and south faces the sea – respectively the Arabian Gulf, Sea

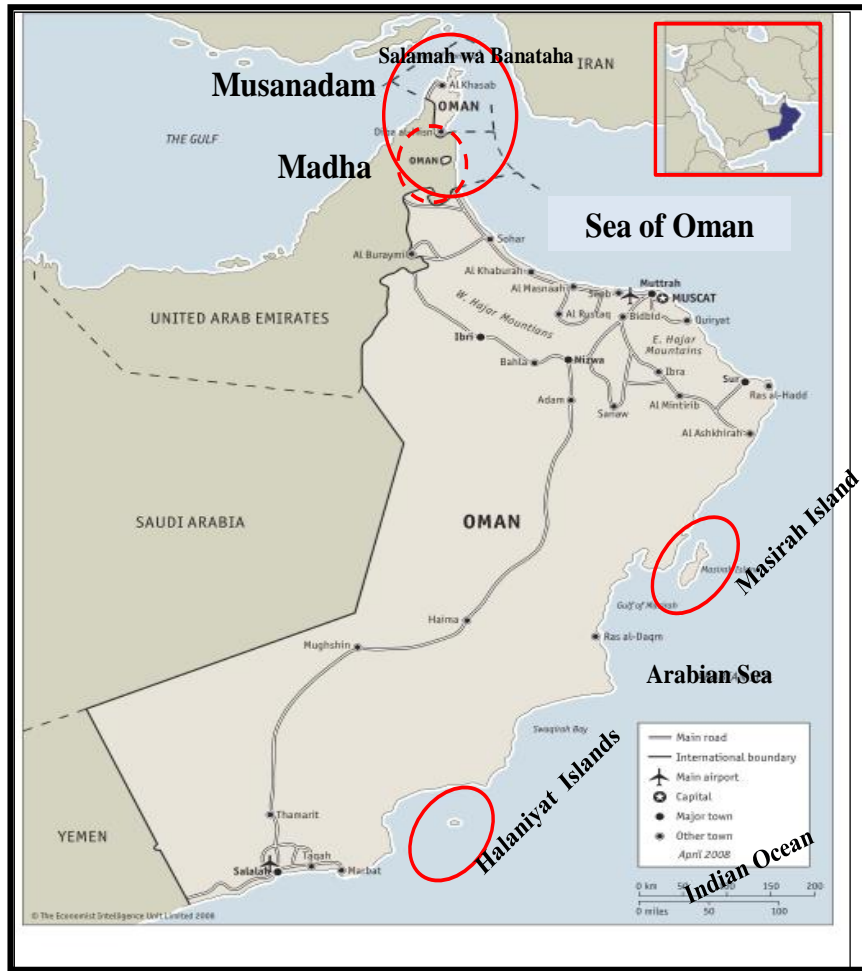
¹³ **Passage Exercise (PASEX):** A non-delaying exercise, conducted with foreign naval units on passage in Omani waters

of Oman, Arabian Sea, and the Indian Ocean (see Figure 1.2). It is the only Arab Gulf state that enjoys a complete continental shelf in the Indian Ocean (Razavi 1997: 95), and an EEZ of 200 nautical miles, extendable to 350 nm. The country also has disconnected territories and islands that can only be reached by sea (Figure 1.2). Oman's EEZ as it currently stands, is over 550,000 square km, which is more than twice that of the Arabian Gulf (241,320 square km) (Razavi 1997: 6) and exceeds that of the Red Sea (455,680 square km) (Blake 1982: 5). Along with its own seas, the country also commands one of the world's most significant waterways, thereby shouldering global as well as regional commitments.

Oman's geography has shaped its history and people,¹⁴ which have developed separately from the remainder of the Peninsula, and has created a virtual island (Kelly 1968: 2), from which has sprung Oman's character as the only Arab state to have held an empire supported by its maritime strength. Geographically, historically, and politically Oman remained outside the major currents of Arab history for more than a century, from the demise of its empire in 1862 until 1970 (Kelly 1980: 104-162). During this time, its economy, which was linked to the Gulf and Indian Ocean, had little cultural or commercial exchange with Europe and the US, or even with the rest of Arabia (Valeri 2009: 19-34). However, Oman remains historically and strategically important. This view is supported by Kelly, who notes that, "though not in terms of present wealth and power, Oman is the most important and also is the most interesting of the minor states of the Gulf". He argues that, this significance is derived from Oman's geographical diversity and history. He further asserts that Oman's "history is an incomparable one reaching back to antiquity which can not be matched by the Gulf sheikhdoms" (Kelly 1980: 104). This is why Oman's maritime position and its distinctive geography are central to understanding the country's rich maritime history as well as the underlying reason for the creation and maintenance of its maritime power.

¹⁴ Interview with Dr Abdul-Aziz Al-Kindi (Vice- Chancellor for Academic Affairs, Nizwa University, Muscat), 10 October 2011.

Figure 1.2. Oman, the Musandam Peninsula Madha and the Islands of Masirah, the Halaniyats and Salamh wa Banataha



Source: Economist Intelligence Unit 2008

1.5. Note on Methodology and Sources

The study aims at suggesting the basis for a suitable maritime doctrine for Oman. Accordingly, the research method is that of a comparative and analytical study that benefits from the experiences in this field of several nations, including the UK's Royal Navy, the US Navy, the Royal Australian Navy, and the Indian Navy, all of which have extensive expertise in the subject. Where appropriate, similarities and differences were assessed for suitability before being drawn upon during the research process. In particular, the doctrines of the UK, Australia and India were reviewed, since these countries have knowledge and

experience of extensive sea areas, straits, and maritime commitments from which Oman can benefit.

Because of the absence of archive material on Oman's maritime policies and activities over the past two decades, this study has drawn quite extensively on interviews and government publications. Interviewees included contemporary maritime strategists, historians, thinkers and planners. Omani theorists and senior policy makers, military commanders from Oman and allied countries, and professional military academics and other practitioners in the field were also approached.

Secondary information was obtained from libraries, journals, media outlets such as magazines, newspapers, credible satellite channels (BBC World, Jazeera Satellite Channel, al-'Arabiyya Satellite Channel, Oman TV etc.) and other television programmes, as well as from a variety of online sources, including governmental and international organisations. Secondary information also included reviews of relevant publications and up-to-date works on the subject of maritime strategy and doctrine specific to the region in general and to Oman in particular.

1.6. Organization of the Study

This study is divided into seven chapters. Following this introductory chapter, which presents some brief background details and establishes the context of the study, Chapter Two highlights the relationship between economic growth and maritime trade and analyses the role of the shipping industry and the activities that support it. Despite the fact that Oman is by its very nature a maritime power, its merchant navy (merchant marine) and the shipping industry in general have not developed to their best advantage, having suffered from fragmented strategies. This chapter also discusses the impact on economic growth and the implications for Oman's national security resulting from the neglect of maritime trade and shipping, a problem exacerbated by the absence of a coordinated policy. The delayed development of the shipping industry in Oman cannot be attributed to any single factor. Weak economic policies and planning, the absence of capacity as well as expertise in building merchant vessels, and misjudgement and failure to anticipate the economic

significance of maritime trade and shipping are among the reasons for the present state of the national shipping industry. This sector and the activities associated with it are important both for economic growth and for the nation's security. However, such development can only be realized with effective policies and the participation of other stakeholders in the government.

Chapter Three discusses the importance of Oman's ports as elements of its maritime interests. Following a brief introduction to ports in general and more specifically those of Oman, the chapter examines the economic importance of ports, asserting that with good facilities, a port can provide the link between land and sea transports and create economic growth in the surrounding region and beyond. It also contends that, in addition to the economic factor, ports play a significance role in national security, since they provide employment opportunities, operating bases for naval and other military forces as well as for national security agencies. The policies and implementation strategies of the government of Oman with are examined, and the chapter concludes with an assessment of these policies and strategies.

Oman's offshore oil, gas, and fish resources are examined in Chapter Four. Initially it explores the economic importance of Oman's offshore resources as important national interests, since each of these elements has its own significance for the country's economic growth and national security. The discovery and exploitation of offshore energy resources (oil and gas) is both economically and strategically important because they provide good revenues and can create jobs, while optimum exploitation of renewable offshore resources (fish) also contributes substantially to economic growth and generates employment opportunities. The chapter then looks at the policy through which each of these resources is managed, and the strategy that puts the policies into practice for implementation. It is argued that since the vast sea area of Oman is under-used, the contribution of the offshore resources is consequently not significant. Finally, after examining the security aspect of these resources and how they contribute to the framework of national security, and assessing all of the policy, strategy and security aspects that have been discussed in the chapter, it is concluded that exploitation of offshore resources, both renewable and non-renewable, can have great economic potential for a maritime nation like Oman. The

resources of its EEZ, characterized by distinctive oceanic phenomena that produce hydrocarbon resources, minerals, and rich fisheries, are considered as a maritime strength that influences the national economy and the nation's security and enhances the country's growth and development and its GDP.

Chapter Five examines the RNO's roles and policing in protecting Oman's sovereignty. It offers an overview of the history and evolution of the RNO and asserts that Oman's modern navy has existed because of a national need. Following the evolutionary history overview, it examines maritime security in the context not only of geography and maritime history but also from the strategic perspective of Oman's past, present and future geopolitical significance. The maritime environment is also examined, including legal and environmental issues, and critical national infrastructure and threats. The chapter then discusses the roles and related tasks that will help to shape the strategic options that encompass the end-state, and the ways and means of achieving this outcome.

Chapter Six discusses the factors of a maritime doctrine that would encompass all of the policies that are apparently unrelated since they have developed in isolation from each other.

The major findings and recommendations of the study are summarized in Chapter Seven, which offers conclusions about the role of maritime doctrine in the economic development and national security of Oman and recommendations to correct the shortfalls. Despite the country's heavy dependence on maritime trade, exploitation of the maritime sector has remained slow. Development of the maritime industry is not possible without the active participation of the private sector and foreign investment, but to achieve any meaningful investment, the government must provide clear and transparent policy build a strong economic base. Ports development has remained slow in the past: however, the trend has altered and there is now an increased emphasis on the development and expansion of both new and existing ports and infrastructures. With this farsightedness, Oman is expected to benefit from such development by attracting regional and global trade and in the long term by transforming the ports into major trans-shipment or hub ports. However, without a sound maritime doctrine, this remains to be seen.

In recent years the exploration and exploitation of Oman's offshore resources (oil, gas, and fish) has gained some momentum and has attracted foreign investments because of the policies promulgated by the government; the results of these activities are promising. However, these national interests will provide a considerably larger contribution to GDP when the efforts of governments and national agencies are better regulated through some form of maritime policy. In this regard the challenge is environmental, on the basis of the marine pollution that could impact negatively on Oman's renewable offshore resources if not properly monitored and addressed. The correct exploitation and management of Oman's maritime interests calls for a maritime doctrine.

The role and mission of the RNO is to provide forces as an instrument of national policy, capable, manned, equipped and trained at the appropriate level of readiness to provide the highest degree of the maritime contribution to the state's military objectives. The roles in general explain why there has to be an RNO. The most important element of maritime strategy is a combatant navy; it is this component of the maritime spectrum which provides security to all the other maritime elements. In addition RNO must have the potential to support broad national objectives, particularly with regard to foreign policy and the national economy. Finally, to enhance the collective performance of all national agencies (military and civilian), develop collaborative policies and strategies through leveraging best practices, the essential purpose of a sound maritime doctrine.

CHAPTER TWO

MARITIME TRADE AND SHIPPING

2.1. Introduction

The physical process of ‘shipping’ involves the carrying of all types of goods by land, air, and sea, but in the present context refers specifically to conveying objects by sea in ships. Among all forms of shipping, perhaps the most international in terms of its value to the world’s economy is the shipping industry (i.e., the ships and their crews that constitute a nation’s merchant navy). Oman’s modest shipping industry covers a number of activities linked by a common characteristic which is use of the sea by all types of vessels for the carriage of cargo and people (Vassiliki & Katsoulakos 2008: 15-22). The shipping industry should therefore be viewed, particularly in the trade sector, against a wide range of global development rather than from a more restricted national or indeed nationalistic perspective (Farthing 1993: 1).

Despite the fact that Oman by its very nature should have been a maritime power, its merchant navy (merchant marine) and the shipping industry in general in Oman have not developed to their best advantage, having suffered fragmented strategies. Maritime trade and shipping represent two of Oman’s main maritime interests, and the relationship between economic growth and maritime trade highlights the important role of the shipping industry and its supporting activities.

This chapter discusses the impact on economic growth and the implications for Oman’s national security caused by the neglect of its maritime trade and shipping, a problem that has been exacerbated by the absence of a coordinated policy. The delayed development of the shipping industry in Oman cannot be attributed to any single factor. Weak economic policies and planning, the absence of capacity in maritime industry and failure to anticipate the economic significance of maritime trade and shipping are some of the reasons for the present state of the national shipping industry. This sector and the activities associated with it are important both for economic growth and the nation’s national security. However, the

necessary development can only be realized with effective policies and strategies and the participation of national agencies and other stakeholders including foreign investment. The existing economic foundation of Oman's maritime trade and its supporting activities does not show the necessary degree of aggressiveness for the pursuit of expansionary maritime trade strategies. Without a maritime policy, maritime trade and shipping strategies cannot establish a well-defined direction and therefore cannot put down the economic base for the development of ports, maritime industries, and the nation as a whole.

The sea has fascinated Omanis since ancient times, and is 'the great provider' (*massdar rezq*) for all human beings.¹⁵ As a seafaring nation, Oman has historically relied upon the sea for its economy and for its security (Till 2009: 35-37). About 60 percent of its population live along the coastline, on islands, or within twenty nautical miles (35 km) of the coast, and have always depended primarily on the sea for their livelihood through fishing, building wooden ships, and/or related activities. With the increasing importance of the maritime domain, the sea and its activities have become matters of global interest (Commission of the European Communities 1985: 1). This change is a result to the growing global awareness that the sea is a highway for commerce and war, as well as a provider of food and other resources (Anwar 1995: 19), and that it must be preserved by a robust policy, including the need to regulate maritime transport at the international level. Therefore there has been a progressive widening of the scope of the conventions which in turn has led to the setting up of international organizations (Commission of the European Communities 1985: 1), among which the most important is the International Maritime Organization (IMO), a specialized agency of the United Nations. The chapter will now look at the commercial aspect of Oman's maritime trade.

2.2. Commercial Aspects of Oman's Maritime Trade

Despite the use of land and air transport, 95 percent of the world's commerce today travels by sea (Herbert-Burns, Bateman and Lehr 2009: 29), since this provides the cheapest and the most efficient mode of transportation. Maritime trade is thus increasingly critical to the

¹⁵ In Arabic, literally 'the source of daily needs'.

global economy (*IHS Global Insight* 2009: 1), and to that of Oman; however, an inadequate maritime system and policies hinder the development of this viable sector and prevent it from contributing more into the national economy. Although there have recently been some useful initiatives, development and investment in the national shipping industry has been overlooked, perhaps because of an element of short-sightedness in the planning of economic policies. A revival of the shipping industry in Oman is important, both for economic growth and for the country's national security. However, such a development can only be seen with effective participation of the Omani private sector and encourage of foreign investment. Although a high-cost firm like the Oman Shipping Company (OSC) is a state-owned monopoly business, the private sector can also become involved. According to a source with first-hand knowledge, government policy requires a business to be set in motion before the state hands it over to the private sector; in other words it has to be well-established and sustainable.¹⁶ However, government policymakers must at some stage provide a level playing field for the private sector and foreign investors to enable them to achieve meaningful investment in, and development of the shipping industry.

In today's globalized world, maritime commerce affects people and industries throughout the entire world (*IHS Global Insight* 2009: 1). Many regularly traded and purchased goods and materials that arrive at Oman's ports are then distributed by truck or by boat (to those living on islands such as Masirah, the Halaniyats etc.) and in the near future by rail¹⁷, to both domestic and overseas consumers. In 2010 Oman's export/import amounted, in Omani *riyals*,¹⁸ to OMR14.1 billion (US\$36.67 billion) and OMR6.9 billion (US\$17.94 billion) respectively.¹⁹ Nationally, local industries, fishermen, farmers and the government in regard to oil and gas exports rely on the maritime industry or network system to sell and buy their products and needs. In addition, the maritime industry itself is responsible, both locally and abroad, for jobs related to vessels, ports, shipyards, and numerous support industries, and it is clear that the maritime system comprises a myriad of

¹⁶ Interview with an anonymous informant, Muscat, 9 October 2011.

¹⁷ Oman's ambitious plan for the implementation of a national railway network will include links between Muscat and its major ports and cities (Oxford Business Group 2010: 111).

¹⁸ Calculated on an exchange rate of US\$ 1 = OMR 0.3845

¹⁹ Export/Import partners include: China (26.3%), South Korea (12.4%), Japan (12.1/15.4%), India (11.3/5.6%), UAE (10.8/25.1%), Thailand (6.6%), and USA (5%).

<https://www.cia.gov/library/publications/the-world-factbook/geos/mu.ht>, accessed 30 November 2011.

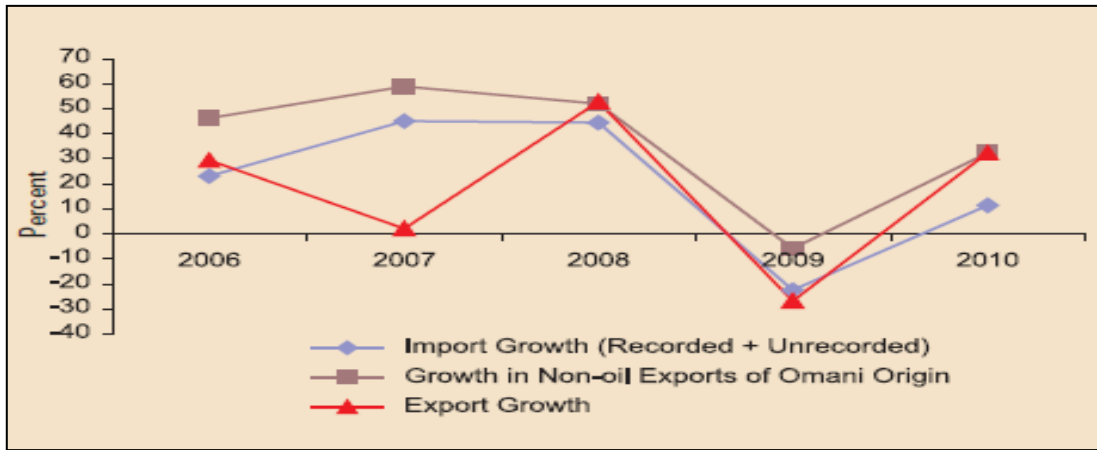
users, supply-chains, and connections to other modes and industries (*IHS Global Insight* 2009: 1-8). Therefore any disruptions or inefficiencies in the maritime system can have negative and costly impacts on a large number of participants in Oman's economy. It will be seen that Oman's trade is forecast to grow substantially in the coming years and that it will comprise an increasing share of Oman's Gross Domestic Product (GDP).

While maritime trade is the backbone of any coastal state economy, Oman was late in starting to explore the benefits to be derived from its domestic shipping industry and marine sector, and even after 1970, when the country was experiencing budget constraints and shortages of revenues essential for development, exploitation of this viable economic field remained modest. As a result its contribution to the overall economy was relatively insignificant. The flow of maritime trade is important to Oman, not only for economic growth but also for the country's national security because the economy and national security are interlinked. In addition, the country is still dependent on its depleting oil and gas resources which together (oil 42.35 percent and gas 4.1 percent) accounted in 2010 for 46.45 percent of GDP.²⁰

During 2008, 66 percent of Oman's imported trade was carried by sea, and since then, Oman's exports and imports have shown a steady increase. According to statistics published by the Central Bank of Oman, the rise in the value of total exports by 32.4 percent was more pronounced than the 11.4 percent rise in total imports during 2010. As a result, Oman's merchandise trade balance registered a robust surplus of OMR6.4 million (US\$16.64 million) in 2010 compared with the 2009 surplus of OMR3.7 million (US\$9.62 million), this represented an increase of 71.1 percent over the year (CBO 2011: 93) (see Figures 2.1, 2.2, 2.3 and 2.4).

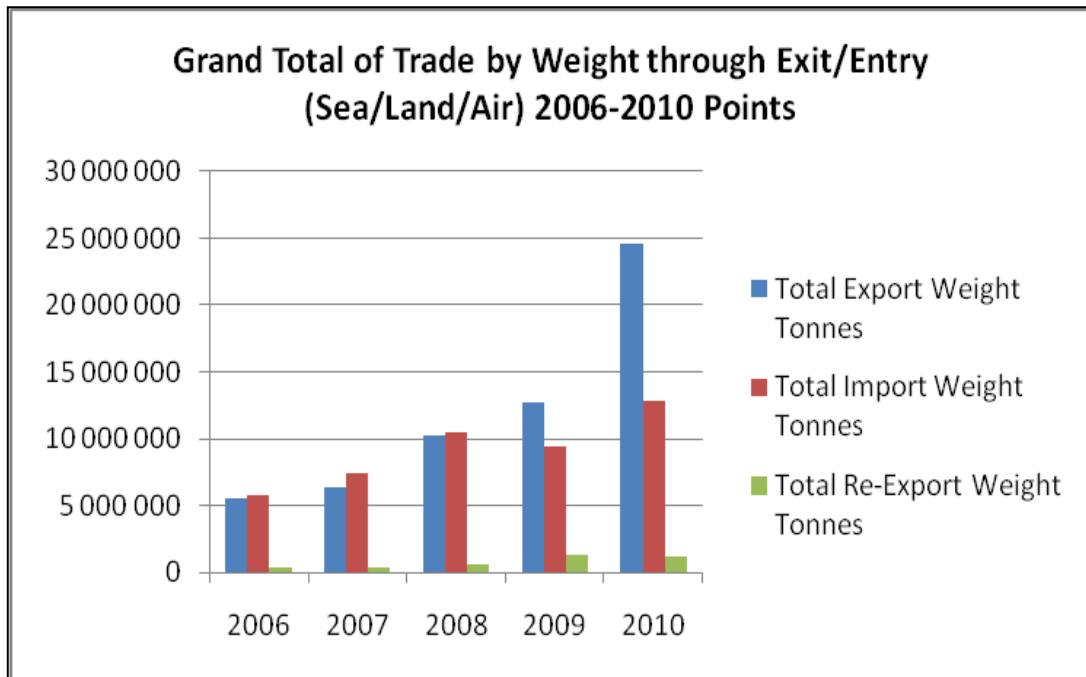
²⁰ Interview with Dr Qais Al-Yahyia (Central Bank of Oman, Muscat), correspondence, 6 December 2011.

Figure 2.1. Growth in Oman’s Imports and Exports, 2006-2010



Source: Central Bank of Oman, 2011.

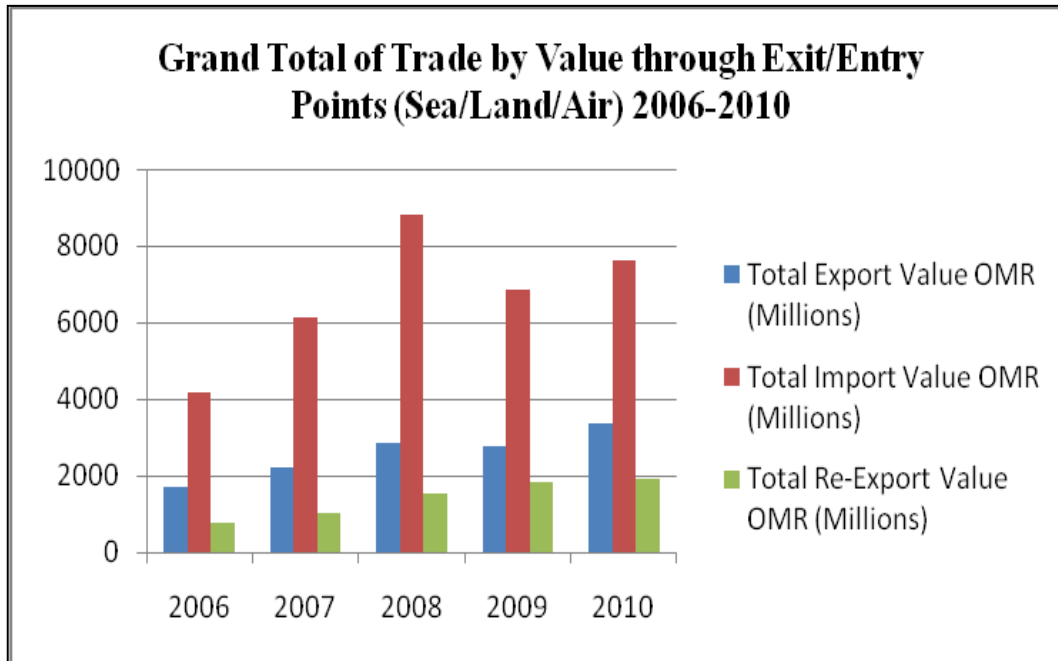
Figure 2.2. Total Trade by Weight through Exit/Entry Points, 2006-2010²¹



Source: Directorate General of Customs, Royal Oman Police 2012

²¹ Data for 2010 in Figures 2.2 and 2.3 was made available by the Director, Directorate General of Customs, Royal Oman Police, Muscat, 14 January 2012.

Figure 2.3. Total Trade by Value through Exit/Entry Points, 2006-2010



Source: Directorate General of Customs, Royal Oman Police 2012

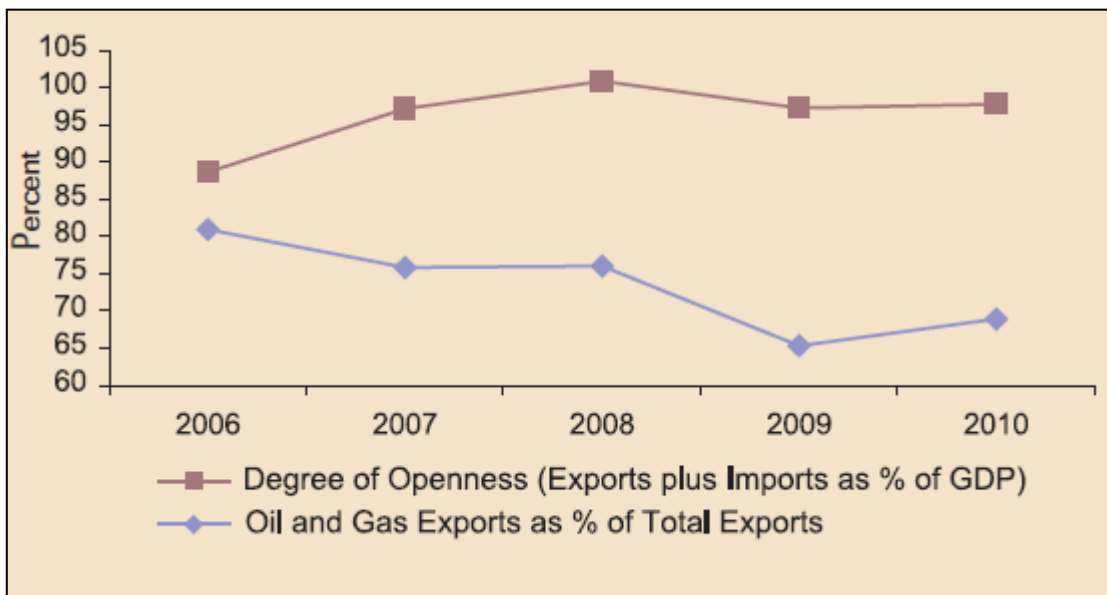
During the late 1980s Oman, like most of its Gulf neighbours, saw its economic position deteriorate owing to chronic government deficits and an inability to rein in public spending. According to Central Bank of Oman (2011 report) that, in 2010, as in previous years, trade continued to dictate Oman's balance of payments, reflecting the major share of exports in domestic production and the role of imports in meeting domestic consumption and investment demand (see Table 2.1 and Figure 2.4).

Table 2.1. Oman's Trade Transactions 2006-2010.

Trade Transactions (Rial Omani Million)						
	2006	2007	2008	2009	2010	% Change 2010/09
Imports (c.i.f.)	4244.4	6161.5	8896.3	6896.0	7679.5	11.4
Exports (f.o.b)	8299.5	9493.9	14502.9	10632.0	14073.2	32.4
Crude Oil	5528.3	5553.5	8415.9	5359.5	8007.7	49.4
Refined Oil	47.4	466.0	1007.0	618.9	519.4	-16.1
LNG	1144.6	1180.4	1601.3	969.5	1176.2	21.3
Non-Oil	812.3	1290.7	1962.9	1849.5	2448.2	32.4
Re-Exports	766.7	1003.3	1515.8	1834.8	1921.7	4.7
Trade Balance	4055.1	3332.4	5606.6	3736.0	6393.7	71.1
(Exports+Imports) as % of GDP	88.6	97.2	100.5	97.3	97.8	
Trade Balance as % of GDP	28.7	20.7	24.0	20.7	28.7	
Total Non-oil Exports as % of GDP*	11.2	14.2	14.9	20.4	19.6	

Source: Central Bank of Oman, 2011

Figure 2.4. Degree of Trade Openness and Domination of Oil Exports, 2006-2010



Source: Central Bank of Oman, 2011

Having discussed the commercial aspect of Oman's maritime trade, the next sections will examine the significance of shipping industry (Oman's and foreign shipping).

2.3. Shipping

2.3.1. Oman's Shipping Industry

The historical importance of a merchant fleet under a national flag cannot be overemphasized (Lovett 1996: 317). This section examines Oman's shipping industry. Ships were an essential constituent of Oman's maritime power that enabled the country to trade. Oman's fleet at the time of its sea-based empire, (seventeenth to the nineteenth century), was a classic example in this regard (Till 2009: 35-37). Now, however, with the exception of the ferries, all Omani vessels are foreign-registered, in Panama and Malta.²² Certainly, the demise of Oman's sea-based empire in the middle of the nineteenth century (Al-Qasimi 1989: 5-9), was the main reason for the drastic decline of the Omani fleet, while the government's rigid policies and limited vision in the mid-twentieth century, which prevented it from recognising the benefits of a shipping and marine industry sooner, were partly responsible for its failure to establish a viable merchant navy after 1970. Today, Oman's shipping industry includes the OSC whose vessels sail under foreign flags, mainly Panamanian, and the National Ferries Company (NFC), (established in 2006) whose ships, with a single exception of one, sail under the state flag.

It is argued that Oman is not yet ready to register the OSC fleet under its national flag as a 'Flag State'²³ because it currently lacks the appropriate technical ability to register ships and to maintain the registry in accordance with IMO requirements. For example, a flag state is required to issue various certificates to the ships, including operational certificates, such as a Document of Compliance (DOC) or a Ship Management Certificate (SMC) and others, all of which are highly technical and need to be administered by specialised staff as is typically done by a Classification Society. A further reason why Oman is not being made

²² 'Flag State' is the term used to refer to a country that maintains a vessel registry. That country is also sometimes referred to as the Administration. A vessel must agree to abide by international rules and regulations as set forth by the country in which it wishes to be flagged (McNicholas 2009: 87).

²³ Landing Craft LC *Halaniyat* sails under the flag of the Bahamas

a flag state is that insurance companies feel more comfortable when a ship is registered under a well-established flag state.²⁴

The OSC, established in 2003 to develop Oman's maritime transport industry, is the country's main shipping company and dominates the national shipping business. It is a closed joint stock company, and is owned by the Government of Oman through the Ministry of Finance (80 percent) and the Oman Oil Company (20 percent).²⁵ The Company has a fleet of forty three vessels that includes gas carriers, crude oil tankers and multi-purpose vessels (see Table 2.2), and is currently (2012) responsible for all the major shipments of oil and gas from Oman. Due to the size of the Company's fleet and because of government backing, it is not easy for foreign companies to compete when it comes to the shipping of oil. The second important company is the NFC, established in 2006, which has three high-speed craft and one landing craft for domestic use.

In venturing into the shipping industry, the government aspired to use the country's own fleet to export Oman's oil and gas production, to develop a national shipping industry, to create employment and to explore business opportunities that were associated with the shipping industry in Oman. The OSC's mission, which was laid down mainly by the government, was to revive the historical Omani seafaring tradition through chartering modern shipping, and to participate in the transporting of import and export products into and from Oman. The Company has continued with its business development objectives by entering new joint venture agreements for expanding its fleet. Correspondingly, it has expanded into various shipping sectors, such as Very Large Crude Carriers (VLCCs), Gas Carriers, Product Tankers, Bulk Carriers, and the Container market (see Table 2.2).

²⁴ Interview with Khalil Al-Balushi (Former staff of OSC, now the General Manager of Arabian Maritime and Navigation Aids Services, Muscat), correspondence, 28 May 2012.

²⁵ Owned by the Government of Oman, the Oman Oil Company (OOC.) <http://www.oman-oil.com>, accessed 25 November 2011.

Table 2.2. The Oman Shipping Company's Fleet, 2001-2012

No	Vessel	Size	Delivered
Liquefied Natural Gas Carriers (7)			
1	<i>Sohar LNG</i>	138,000 M3	2001
2	<i>Muscat LNG</i>	145,000 M3	2004
3	<i>Nizwa LNG</i>	145,000 M3	2005
4	<i>Salalah LNG</i>	145,000 M3	2005
5	<i>Ibri LNG</i>	145,000 M3	2006
6	<i>Ibra LNG</i>	145,000 M3	2006
7	<i>Barka LNG</i>	153,000 M3	2008
Chemical Tanker Vessels (2)			
8	<i>Masirah</i>	12,929 DWT	2007
9	<i>Songa Pearl</i>	17,500 DWT	Time Charter
Crude Oil Tanker Vessels VLCC (10)			
10	<i>Marbat</i>	317,000 DWT	2008
11	<i>Manah</i>	317,000 DWT	2008
12	<i>Duqum</i>	308,000 DWT	2008
13	<i>Mazyonah</i>	317,000 DWT	2009
14	<i>Saham</i>	300,000 DWT	2010
15	<i>Sifa</i>	317,000 DWT	2011
16	<i>Saiq</i>	300,000 DWT	2011
17	<i>Fida</i>	317,000 DWT	2011
18	<i>Samail</i>	300,000 DWT	2011
19	<i>Seeb</i>	317,000 DWT	2011
Methanol Carrier Vessels (2)			
21	<i>Matrah</i>	50,000 DWT	2008
23	<i>Al Amerat</i>	50,000 DWT	2008
Product Tanker Vessels LR-2 (2)			
24	<i>Haima</i>	110,000 DWT	2009
25	<i>Raysut</i>	114,500 DWT	2009

Multi-Purpose Vessels (2)			
26	<i>Fanja</i>	8,700 DWT	2008
27	<i>Hamra</i>	8,700 DWT	2008
Very Large Gas Carrier – VLGC (1)			
28	<i>Musanah</i>	83,000 M3	2009
Product Tanker Vessels (2)			
29	<i>Liwa</i>	75,000 DWT	2008
30	<i>Pyxis Delta</i>	46,616 DWT	Time Charter
Bulk Carrier Vessels – Supramax (1)			
31	<i>Jewel of Shinas</i>	56,000 DWT	2011
Vessels Under Construction Crude Oil Carrier – VLCC (7)			
32	<i>Daba</i>	317,000 DWT	2011
33	<i>Suwaiq</i>	317,000 DWT	2011
34	<i>Habrut</i>	317,000 DWT	2011
35	<i>Ezki</i>	317,000 DWT	2011
36	<i>Buka</i>	317,000 DWT	2012
37	<i>Taqah</i>	317,000 DWT	2012
38	<i>Adam</i>	317,000 DWT	2012
Dry Bulkers Vessels – VLOC (4)			
39	<i>Jazer</i>	400,000 DWT	2012
40	<i>Yanqul</i>	400,000 DWT	2012
41	<i>Al Kamil</i>	400,000 DWT	2012
42	<i>Wafi</i>	400,000 DWT	2012
Bulk Carrier Vessels (1)			
43	<i>Jewel of Sohar</i>	56000 DWT	2012

Key: DWT = Dead Weight Tonnage; M3 = cubic metre

Source: Oman Shipping Company, www.omanship.co.om/ accessed 25 November 2011.

The OSC is a young organisation compared with similar companies in neighbouring Arab Gulf states. It is smaller in size than the Nakilat part of the Qatar fleet, which has more LNG ships, and is also smaller than the shipping arm of the Kuwait Oil Company and the

Saudi companies, although it is bigger than Abu Dhabi's LNG fleet. However, it is fair to say that most of these companies have specific types of ships operating one specific type of cargo. For example, the Kuwaiti company operates VLCCs and the Abu Dhabi LNG fleet operates only LNG vessels, whereas the OSC operates different types of craft. And despite its late start, the modestly-sized Omani shipping fleet continues to provide efficient and transportation of export of oil and gas.

The NFC was established to provide a transport network to connect Oman's geographically diverse coastal towns and cities. The ferry services carry passengers, vehicles, and cargo, providing a vital link between local communities and the rest of the country, as well as providing local jobs and boosting Oman's tourism sector. The Company's three high-speed diesel ferries operate scheduled services between Muscat and Khasab in the northern Musandam peninsula. The ferries also provide scheduled ferry services to coastal cities and towns (see Table 2.3). As a part of its growth strategy, plans being are considered to provide ferry services between Oman and neighbouring countries.

Table 2.3. The National Ferries Company Fleet, 2001-2012

No	Vessel	Capacity		Year built
		Crew-passengers	Vehicles	
1	<i>HSC Shinas</i>	12- 208	56	2008
2	<i>HSC Hormuz</i>	12- 208	56	2008
3	<i>HSC Sawqrah</i>	10- 106	22	2008
4	<i>LC Halaniyat</i>	11-9	20	2001

Key: HSC - High Speed Craft; LC - Landing Craft: Port of registration Nassau (Bahamas)

Note: All HSCs work under the national flag. LC is registered in Nassau, Bahamas

Source: National Ferries Company website, www.nfc.om/ennew/content.aspx?id=87, accessed 25 November 2011.

The OSC and the NFC should be merged, since with this change another consideration can be envisaged that would engage both fleets in short-sea shipping. Martin Stopford

describes short-sea shipping as a maritime transport system within a region which distributes cargo delivered to regional centres by vessels, and provides a port-to-port service (Stopford 1997: 8-9). It is often claimed that short-sea shipping is crucial to the issue of enhancing land-sea inter-modality, thus pursuing environmental benefits since it reduces the pollution and accidents generated by road traffic transport. Short-sea shipping is not limited to domestic shipping industry (*IHS Global Insight* 2009: 2-8) and can be of some benefits to Oman.. In other words, the short-sea exhibits many positive externalities and spill-overs for the rest of Oman's national economy, and is thus an area for high official consideration.

Nor would plans to develop a rail network compete with short-sea shipping; rather they would complement it. For instance, despite its relatively small population outside the main cities, Oman has one of the world's highest road-based mortality rates.²⁶ Local maritime transport can alleviate congestion on roads and highways where vehicle accidents are detrimental (*IHS Global Insight* 2009: 63). Furthermore, it is also part of the solution to reducing environmental problems, though ship emitted pollution is an issue to the marine environment. With this shift and with sound policies in place, Oman can offer intelligent national and global transport solutions that will directly benefit the national economy by providing a vehicle for investment returns, enforcing Oman's market growth in the maritime industry, and creating employment opportunities at home and abroad. The next section will examine the importance of foreign shipping industry.

2.3.2. The Foreign Shipping Industry

The story and the importance of the international shipping industry since the nineteenth century has been one of ingenuity, professionalism, and profit, although it has also witnessed some disastrous miscalculations like the drama of the Italian cruise ship *Costa Concordia* in January 2012.²⁷

Shipping is one of the world's most international industries and is directly connected to trade. The first reaction of ship owners on hearing of some global event – such as Japan's

²⁶ There were 1,056 people killed in road accidents in 2011 (*Oman Daily Observer* 16 May 2012: 4).

²⁷ Italian Ship disaster, <http://www.telegraph.co.uk/news/worldnews/europe/italy/9016774/Italy-cruise-ship-disaster-did-island-sail-past-put-ship-on-course-for-disaster.html> accessed 20 February 2012.

nuclear disaster in 2011, the issues with Iran and nuclear activity, or changes in oil prices – is to consider what effect this will have on the shipping market. Many shipping fortunes have been made from political conflict, notably those amassed during the closure of the Suez Canal in the 1950s and 1960s. But the political aspect of the maritime market should not be ignored, nor should the strategic importance of shipping be underestimated (Stopford 1979: 2-3).

In business terms, shipping has become more significant, and the maritime industry has provided the vehicle for an extraordinary growth of trade. Indeed the shipping industry has been one of the prime forces responsible for shifting the world from a collection of essentially national systems to the global economy that exists today (Lorange 2009: 1-13). With ships, though of slow speed, distances have been shortened. The integration of global community was made possible with shipping and trade (*IHS Global Insight* 2009: 4-8), both of which are very important maritime interests for Oman.

Today. Oman is connected to international maritime transport system where cargo moves between more than 3,000 major commercial ports (see section 2.2) (Stopford 2009: 347). and The vulnerabilities of maritime shipping are determined by some factors: the sea lines of communication, the ports, and the ships with their cargoes and crews. The flow of shipping through the Sea Lines of Communication (SLOC) is conditioned entirely by chokepoints whose geo-strategic value in some cases is so important that countries have threatened to close or protect them. The physical geography of some chokepoints imposes limits on global shipping because of the increased width and draught of new merchant ships, with many chokepoints proving too narrow or too shallow to permit the passage of these ever-larger vessels. Thus depth becomes the major problem in some cases, while in other locations the straits are so narrow that the largest ships need to use both the inbound and outbound passage lanes simultaneously. This means that during their transit, the straits have to be limited to one-way traffic only, as with the Suez Canal. State interference with and political conduct towards normal maritime shipping through the SLOC can also endanger international maritime passage through the chokepoints and confined waters. In this regard the issue of Iran and the Strait of Hormuz is a case in point, being highly relevant to Oman (see section 2.5).

Another factor in the vulnerability of merchant shipping is represented by the vessels, the cargoes, and the crews. Of the many ways to label merchant or commercial vessels, the most common categories are size and type (McNicholas 2009: 30), and include tankers, dry bulk carriers, and general cargo vessels, as well as containerized cargo vessels. Vessel types are further categorised by McNicholas into container ships, bulk carriers, tankers, ferries and cruise ships (ibid: 45-57).

The shipment of containerized cargo differs from the other dry bulk cargoes because of the ever-increasing use of trans-shipment²⁸ to complement the direct calls made by larger vessels between hub ports like Port Salalah. The container business has grown so large that it is now possible for companies to maintain fleets that trade exclusively over oceans. As a result, major container-shipping companies have instituted round-the-world services. A voyage may start at an American port, loop through Asian ports, and proceed through the Strait of Malacca before calling in to Oman. The vessel will then transit the Suez Canal, stop in Mediterranean ports, head to northern Europe and cross the Atlantic to various US ports before reversing the entire route. Since the whole round trip may be accomplished in just sixty days (McNicholas 2009: 45), questions of security then arise. As with many other countries, Oman's merchant shipping and ferries sail under foreign flags, and although regulations might be less stringent under flags of convenience, this also makes it more difficult to enforce compliance with international security standards.

The ports are one of the key elements in maritime traffic as well as a focal point in the inter-modal logistic chain, as is discussed in detail in Chapter Three. The events of 11 September 2001 undoubtedly influenced the evolution of port structures by highlighting the need for tighter security for both cargo and passenger traffic, which in turn has required greater levels of international cooperation. The trend towards trans-global sea routes has fostered the growth of major hub ports while reducing traffic in less important ports (Herbert-Burns, Bateman and Lehr 2009: 119-149). As noted earlier that the sea provides the most efficient way of transportation system which explains the importance of shipping. Therefore it is important to understand the factors that affect growth and changes in trade

²⁸ The term trans-shipment refers to the movement of cargo from one ship to another.

and shipping, in order to develop effective policies that will influence Oman's participation in world trade and/or in the transportation industry that serves such trade.

The United Nations Conference on Trade and Development (UNCTAD) estimates that the operation of merchant ships contributes significantly in freight rates within the global economy, and represents about 5 percent of total world trade (UNCTAD 2011: 7-41). In terms of reduced shipping costs the introductions of containers have had the greatest impact. Containerization has allowed the benefits of economies of scale allowing containers to be transported around the world. For example, in terms of cost per mile, it is cheaper to freight goods by container from China to UK than to transport them from the UK port of entry by a ship to a destination within UK.²⁹

During the twentieth century the shipping industry boosted by technology witnessed an increase in total trade volume, as increasing liberalisation of national economies fuelled free trade and the growing demand for consumer products (Alderton 2004: 17). As with all developing countries, shipping can be susceptible to economic downturns especially if policies for such eventualities are lacking like the case for Oman. However, provided strong policies are implemented, the general outlook for the shipping industry in Oman remains promising, since the country's strategic location and maritime nature provide a sound environment in which this sector can develop. The world's population continues to expand, and emerging economies will continue to increase their requirements for goods (Nawaz 2004: 11-22). Omani shipping is well placed to participate safely and efficiently in the transport of such goods and materials and therefore should have plans for increased container traffic given the increase in container ports in Oman. Hence, as will be shown in the next section that shipping and commerce are becoming increasingly linked, and the health of the national merchant navy is therefore of great importance to Oman. All of these factors call for a maritime doctrine.

²⁹ Interview with David Blatchford (Director of Blatchford's International Shipping Company, Exeter UK), 10 April 2012.

2.4. Economic Significance of Oman's Maritime Trade and Shipping

This section examines the economic importance of maritime trade and shipping to Oman. In Oman and in other developing countries, investment in this sector has formed a significant part of national investment in recent years. Nevertheless such investment is rarely well developed, since it fails to take account of competing systems, changing technology, or markets. As a result it has often been unplanned, unprincipled, and opportunistic (Gabriel 1987: 111). Oman's investment in the shipping industry is an essential element in the diversification of the national economy. Wise investment will promote Oman's maritime and foreign trade and in turn, Oman will reap the benefits of running profitable shipping operations, providing employment, and ensuring adequate and reliable shipping services.

The existences of national flag vessels may well reduce the costs on particular commodities, or help avoid or modify freight increases, but the opposite is also true if, due to the absence of sound policies, national flag vessels are not operated efficiently. Modern shipping requires minimum manning to cut costs and thus employment at sea has been reduced over time as manpower intensive ships have gone out of service - the effect of containerization. However, although modern shipping provides little in the way of employment opportunities, it can have a good impact on employment through linkage effects with maritime trade (Anwar 1995: 16-18). The extent economic linkage depends on how far shipping industry is planned as an integral part of Oman's economy. Investment in national merchant marine under national flag could produce a multiplier effect of increased exports and increased job opportunities. This leaves a question of why OSC's fleet is flagged out and would this be solved by a maritime doctrine?

From a practical point of view, the fleet operated by the OSC should be reinforced as part of setting up and maintaining a national merchant navy/marine. Here, the US Merchant Marine offers a useful example from which to draw some lessons. Since its inception in 1775 to the conflict in Iraq, the merchant marine has maintained an authoritative presence (Waber 2008:1). However, the features of an Omani merchant navy should be designed specifically to meet national requirements.

The availability of a shipping industry to meet part of Oman's foreign trade needs in the event of natural emergencies (such as cyclones Gonu and Phet),³⁰ or war, should be another consideration for the development of a national merchant marine service.

As noted, developing countries are often forced to look for less expensive alternatives because of the need for capital, and in some cases this need can be reduced by using second-hand vessels, or vessels that are leased or chartered. However, day-to-day cash costs for old ships are more expensive, since ageing machinery requires constant maintenance, a rusty hull requires regular steel replacement, and fuel consumption is high. In fact, in a developing country like Oman where the shipping industry infrastructure is not yet completed, the operation and maintenance costs for merchant fleets of older ships will often outweigh their profit-earning margins. The potential comparative advantage in shipping that some developing countries enjoy may well be offset by open registry shipping that uses crews from other, often low-waged, developing countries (*Financial Times* (London), 12 and 22 December 2011: 23, 12). A further economic downside of older shipping less well manned is insurance costs. These ships attract higher insurance rates which are passed directly to the freight companies and in turn are added to the cost of goods purchased. This is particularly relevant to developing countries where poor hydrographic survey standard in ports and approaches is another significant upward driver of shipping insurance costs.

Taking a foreign example of annual spending on freight charges, it was estimated in 2003 that Pakistan spent around US\$1.5 billion in foreign exchange, which is approximately 2.2 percent of its yearly US\$68.6 billion GDP (Nawaz 2004: 11-12). In general terms shipping agents refer to container capacity, which is often expressed in Twenty-foot Equivalent Units (TEUs).³¹ Putting this into context, the freight charges for a twenty-foot equivalent container to be shipped from the UK to Oman would cost around US\$4-7 thousand.³² Although no supporting evidence is available for Oman's annual cost charges, subject to effective maritime policies, the country has the potential to benefit from shipping because

³⁰ These two tropical cyclones hit Oman (Gonu in June 2007, and Phet in June 2010), causing a number of deaths and considerable destruction to the country's infrastructure and services.

³¹ For full details on TEUs, see Chapter Four, section 3.3.

³² Interview with David Blatchford, (Director of Blatchford's International Shipping Company, Exeter/UK), 10 April 2012.

of the size and nature of its trade and resource situation. By establishing the OSC in 2003 the government was able to avoid the freight bill to foreign shipping companies which, given the size of Oman's economy, represented a considerable drain on the country's foreign exchange resources. The gross savings in the case of a national mercantile fleet can be significant, and the value to an economy like that of Oman of conserving the country's hard-earned foreign exchange cannot be overestimated.

The development and growth of a national merchant navy would revive Oman's maritime heritage while the shipping industry is also connected with the development of other service industries, such as marine insurance, ship-financing organizations, ship classification services, marine training institutes, marine telecommunications services, and ship chandlery. All these tend to be fairly labour-intensive activities, meaning increased employment opportunities for Omanis in these sectors. With the establishment of the International Maritime College and Naval Academy of the Royal Navy of Oman, the country has an ideal marine environment that offers many advantages, along with favourable conditions, for investment in the shipping industry sector. However, all these need a policy through which to manage the industry, and the associated economic links to facilitate the operation of a national merchant service.

Development of the ports of Sohar, Salalah, and now Al-Duqm offers further reasons for investing in Oman's national shipping industry. First, such investment has the potential to boost transit trade originating from overseas. Port Salalah for example has already attracted some of the world's biggest shipping lines and is now among the world's busiest trans-shipment ports (see Chapter Three: Ports). Secondly, the shipping industry can promote the potential for coastal shipping among these ports that somehow is currently absent or not sufficiently visible. Apart from its other potential benefits such as providing jobs this would generate the need for local and regional feeder shipping services. Oman can gain from such a prospect by developing its own merchant marine and shipping industries to capture this market in future. In the long term, Oman needs to plan for its shipping industries and major ports to make a substantial contribution to the national economy and to help diversify income sources by attracting massive investment and large-scale industries, as well as creating special economic zones.

In sum, development of the shipping industry and its diverse activities, described above, is important for Oman's economy and security. A shipping industry when properly managed can save foreign exchange (at present disbursed on freight charges), become source of revenues, provide employment opportunities and importantly promote domestic trade against unfavourable rises in freight and insurance costs (Nawaz 2004: 33-34). As will be examined in the next section, in national security terms, an Omani merchant marine service, along with robust maritime polices, will reduce dependence on foreign carriers that in cases of conflict may be unable to guarantee continuity of services (Menon 1998: 64-78). This is especially relevant for Oman, where the national merchant navy currently transports a very small percentage of the total cargo, and where the risk of future conflict in the Arabian Gulf and the Indian Ocean region remains a possibility. A maritime doctrine will no doubt address such issues.

2.5. National Security Issues in Maritime Trade and Shipping

This section considers how geo-political factors can affect security domestically as well as regionally if a country lacks adequate sea defences. The availability of shipping services to meet Oman's trade in time of need should be an important consideration by the government. Although national security considerations may fall outside normal economic evaluation, they have been very important in the development or expansion of a national merchant navy (Waber 2008: 1).

Oman's security obligations vis-à-vis its need to develop its shipping and maritime trade are related to its location and, to a limited extent, to the geo-political situation according to which it guards the Strait of Hormuz as a national, regional, and global interest. Its position at the crossroads of global trade is also important, since several nations are competing for resources and influence in the region and beyond. It is therefore necessary for Oman to look beyond its geographical borders, as events could well reflect the significant political contests that are taking place in the wider region, including the Arab-Israeli conflict, the Arab spring, and the international campaign to prevent Iran from developing nuclear weapons or blocking the Strait of Hormuz.

However, from the point of view of its physical location and geographical diversity (Kelly 1980: 104), Oman is better situated than the other Gulf States. Although it has some territory in the Gulf, including the port of Khasab, Oman's major commercial ports are located outside the Arabian Gulf. Short of war, any escalation of tensions in the Gulf region, or closure, or piracy in the Strait of Hormuz will be enough to affect maritime trade to and from the Arabian Gulf region; this will certainly increase marine insurance charges, as happened in the 1984-88 Tanker War between Iraq and Iran. Both scenarios are also likely to have a negative impacts on the economic growth and national security of all of the Arab Gulf states and Iran but less so for Oman.

Any disruption or discontinuity of foreign trade across the Strait of Hormuz will adversely affect the economies of the other Gulf States, but not the economy of Oman since its major ports are located outside the Arabian Gulf. Deteriorating political conditions in the Arabian Gulf or perhaps between India and Pakistan in the Indian Ocean region can unfortunately be a recurring phenomenon, and any state of tension, or the outbreak of war, between Iran and another country or between India and Pakistan, would seriously affect the maritime trade of the littoral states because of their heavy reliance on foreign shipping. Similarly, a war or a heightened state of tension in the region, or political unrest in Yemen or Somalia, could also deter neutral foreign shipping from operating in the region. Consequently, this might lead that essential services for transportation being denied in the maritime trade zones of the regional states, and insurance rates would most probably prove prohibitive.

The sea has always been a means of transport; therefore the links between naval power and merchant shipping have been very close. However, as a result of globalization and an absence of national maritime policies, there seems to be less synergy in Oman (and in some developing countries) between naval and merchant shipping. This raises familiar concerns about Oman's ability to charter essential foreign-flagged or foreign-owned shipping that can work efficiently with the Royal Navy of Oman (RNO) and the Royal Oman Police Coast Guard (ROPCG) in times of crisis. In contrast, when the Oman-UK Joint Exercise *Saif Sariaa'* (Swift Sword) was held in Oman in 2001, most of the military equipment belonging to the British forces was transported by Ships Taken Up From Trade (STUFT), and this did not seem to be a problem (Oman and UK *Joint Exercise Orders*, 2001).

Sea power (discussed in Chapter Six, sections 6.8 and 6.9) is a sign of a healthy maritime system that includes in addition to maritime trade and shipping; shipbuilding, dockyards, fisheries, ports and marine infrastructures that underpin the whole (Forbes 2002: 3-9). It is clear that merchant shipping is both a source of maritime power and something that Mahan came close to suggesting when he proposed that it was the main reason for having a navy in the first place (Forbes 2002: 153). He noted in this regard that “the necessity of a navy springs from the existence of peaceful shipping and disappears with it” (Mahan 1987: 26). Accordingly, maritime wars often saw small to major operations in which the attack and defence of shipping and maritime trade were major features (Forbes 2002: 185). The security of the Coalition’s Sea Lines of Communication (SLOC) for Desert Shield/Storm in 1990-91 was a concern since, although the threat was low, the political consequences of a successful attack might have been very serious (Till 2009: 172, 211-220). Nor should the importance of military protection be underestimated. In 1991, as a result of the outbreak of the Gulf War, a number of ships left the flag-of-convenience countries in order to re-register with the naval powers (Forbes 2002 : 185). Clearly the development and protection of shipping between ports must be pursued by having an armed maritime force, both naval and Coast Guard, capable of escorting and providing security to merchant shipping. This will help to develop coastal trade, as well as contributing to economic reform of the maritime sector.

The security of the flow of traffic through the SLOC is conditioned entirely by the geo-strategic importance of chokepoints. During the Cold War there were high levels of disquiet globally about certain chokepoints that were considered to be vulnerable to attack by the Soviet Union. Since 11 September 2001, they have again become a major cause of concern, as they are the most exposed element in the shipping lanes and are threatened by international terrorism and piracy. The security of shipping can also be affected by the interference of states in normal maritime traffic through the SLOC, and by the political conduct of certain nations which endanger international maritime passage through the chokepoints. An example is the Iranian Revolutionary Guard (IRG) interfering with general traffic passing through the Strait of Hormuz, while the Strait itself is also a very important example. During the Tanker War in 1987-88, anxiety levels about the Strait were high since it was considered susceptible to closure by Iran (Gause 2004: 45-86). During the war, both Iran and Iraq attacked and harassed international shipping. There were 450 ships

belonging to 32 countries were attacked (Till 2009: 290). Regrettably, 471 merchant seamen were killed (Till 2009: *ibid*) causing a reduction in traffic through the Strait of Hormuz. Since then the Gulf and the Strait have been a particular cause for concern. Unease was also expressed in March 2007 and January 2008, about either an Iranian attack on a US vessel or a US attack on an Iranian vessel. Closure of the Strait would block the access of Gulf oil to the international market.³³

An evaluation of possible situations involving Iran and the Strait of Hormuz would need much more than couple of paragraphs and is outside the scope of this chapter. However, for the purposes of this chapter, it is useful briefly to consider the following assessment. Because of the physical location of major Omani ports outside the Gulf (with the exception of Port Khasab), one can argue that the Strait of Hormuz is of regional and global interest. However, as an important element in Oman's national security, it merits some consideration as it is also located in Omani territorial waters. In acknowledging the strategic and economic importance of the Strait of Hormuz, possible scenarios should be examined, due to its critical significance for national, regional, and global security and stability, and because Iran has vowed that if it is threatened it will close the Strait (Gause 2004: 51-57).

First, the Strait of Hormuz as among the world's important chokepoints is a global interest. Much of the world's oil supply flows through this Strait to Japan, Europe, the US, and other Asian countries (see also Section 2.7). Therefore, any aggression by Iran or any other nation would disrupt a large part of the world's oil supply and economy. And even in the unlikely case that Iran might close the Strait over a period of time, such a move would not be in its own interests; it would interfere with its export of crude oil and import of refined oil, would anger China, and almost certainly provoke a confrontation with the US and the West. Secondly, such an action would, operationally speaking, need well trained naval mining capability in the Strait, something Iran would find very hard to achieve due to its limited capabilities and to the strength of the opposition. Third, merely to claim that mines had been laid would cause panic, while any interruption to this traffic would have a

³³ For a report assembled by Lehman Brothers Inc, on global oil choke points see, <http://www.deepgreencrystals.com/images/GlobalOilChokePoints.pdf>, accessed 16 December 2011.

devastating effect on the economies of developing as well as developed countries, and would worsen existing issues of global energy security.

During the Tanker War (1987-88), Iran attacked oil tankers and vessels using small, fast boats, to which the US responded by escorting mainly Kuwaiti oil tankers operating in the region. Intelligence assessments imply that because the military forces of the US, the West and the Arab Gulf states are superior to Iranian forces, Iran has given priority to acquiring and building a large number of small, fast-moving boats for asymmetric warfare missions. The IRG units are often seen disguised skirmishing with warships crossing the Strait of Hormuz. Appraisals based on the superiority of the US/Western military capability assisted by regional and extra-regional navies and the weakness of the Iranian air force also reinforce a belief that these forces together could paralyze the Iranian forces in the vicinity of the Strait of Hormuz. Furthermore, the capability of these forces to remove Iranian naval mines, and the fact that the waters are sufficiently deep and wide implies that it would be quite difficult to block the Strait (see Figure 2.5 below, and also Figure 5.2 in Chapter Five: Traffic Separation Scheme). These factors would enable the Strait to be re-opened to navigation within days. Even so, intelligence suggests that Iran is developing its conventional military capabilities able to cause disruption on shipping in the Strait of Hormuz, and is capable of restricting access to the Strait with its naval forces.

Moreover, if such situation develops into confrontation or more widespread war, questions arise regarding the ability of the US/West to contain and limit the campaign in time and space. In other words, it may be that concurrently with an Iranian blockade of the Strait there would be attacks on the Western shore of the Gulf, where strategic US/Western interests are located, including infrastructure facilities, oil and gas installations, port-based refineries, and desalination plants. Such action, reinforced by the threat of nuclear retaliation against regional countries, would devastate the global economy, affect energy security, and lead to regional disaster; at this point one would be into a regional war and the rules would change completely. These attacks would also have devastating environmental effects as Iran would probably attempt to set oil and gas infrastructures alight, thereby causing an environmental disaster like the one that occurred during the Iraqi invasion of Kuwait (which in the event proved less long-lasting than initially feared).

does not have the capability to block the Strait completely for any length of time and will therefore focus on alternative actions such as disrupting freedom of navigation in the Strait and its vicinity. It will therefore continue to threaten to close the Strait and uses the Strait's unique geographical position and sensitivity to tremors in the world's energy market to reinforce its intransigence.

The importance of the Strait of Hormuz issue for Oman is its own reputation and integrity – i.e., its ability to keep the Strait open for other nations' shipping. This represents a huge weight of responsibility with extremely serious consequences since, should Oman fail to guarantee freedom of navigation through the Strait of Hormuz, as it is obliged to do, then other nations – not least the US – will do so instead and this will undoubtedly result in loss of control. The impact of the Iran-Iraq conflict on ships seeking freedom to navigate those waters emphasised the importance of the Strait of Hormuz as a well-established international shipping route. Since the Strait of Hormuz and the approaches constitute an international waterway and are inside Oman's Territorial Waters (OTW), any interference by another state with shipping that is transiting those lanes implies conflict with Oman. Surveillance of the Strait therefore assumes a high priority for national security.

However, military operations in the Strait in times of tension or war require close cooperation and coordination between countries and would most likely involve other anti-air, surface, amphibious, and land forces, as well as Anti-Submarine Warfare (ASW) and Mine Counter-Measures (MCM) assets. It is likely that the Strait of Hormuz will continue to be of great strategic importance to Oman's allies, whereas for Oman the Strait and the approaches to key naval and commercial ports, the capital area, and the oil and gas terminals that are outside the Arabian Gulf are of vital economic significance.

Development of the shipping industry and its diverse activities (as described above) is important for Oman, in terms of both economic growth and national security. The next section looks at the domestic policy and its implementation in facilitating maritime trade and shipping.

2.6. Oman's Maritime Trade and Shipping Policy and Strategy

This section briefly examines the policy directives and authorities of the Ministry of Transport and Communications that underlie current government programmes affecting Oman's maritime trade and shipping. It outlines the existing policy undertaken by the Ministry, and the strategy followed (policy implementation), and assesses its ability to meet Oman's present commercial and security needs, especially with regard to its maritime trade and shipping industry.

2.6.1. Oman and the Law of the Sea

Covering almost 71 percent of the earth's surface, the sea provides a means of transportation for people and goods as well being a major source of the world's biodiversity and natural resources. Because of this it was important to ensure the legal aspect of the use of the sea, such as freedom of navigation, fishing and sustainable exploitation of its resources. To manage this, international regulations were introduced such as the United Nation Convention on Law of the Sea (UNCLOS I) in 1958, the second (UNCLOS II) in 1960 and the last one (UNCLOS III) in 1973-1982 which came into force on 16 November 1994 (Klein 2011: xxii-xxiii). The Law of the Sea and the UN Convention on the Safety of Life at Sea (SOLAS) are governed by the IMO, which Oman is a signatory of. Under IMO, there are a number of relevant conventions and issues, including the International Convention for the Prevention of Pollution from Ships 1973/78 (MARPOL 73/78), Port State Control (PSC), and various environmental concerns (Razavi 1997: 58-95, 288-301).

Oman oversees the management and operations of the marine sector as stipulated in the laws and maritime regulations in Oman, and interacts with other countries around the world through conventions, international treaties, and regional cooperation accords pertaining to maritime safety and security. This is to promote the maritime transport sector and the safety of shipping lines within Omani ports and maritime limits. Maritime affairs are administered by two directorates in the Ministry of Transport and Communication: Ports and Maritime Affairs. Both directorates regulate navigation and maritime transport

activities in accordance with the Maritime Law of Oman issued by Royal Decree No. (35/81), and the Law for Regulation of Navigation in Omani Territorial Waters issued by Royal Decree No (98/81).

To enable its functions in maritime matters, Oman has signed over thirty international conventions related to maritime affairs, especially agreements issued by the IMO, the International Hydrographic Organisation (IHO), and the United Nations Organisation, including, but not limited to: the SOLAS convention, the MARPOL convention, and the convention on Standards of Training, Certification and Watch-keeping (STCW), as well as the International Ships and Ports Security Code (ISPS code).

On 17 August 1989 Oman ratified the 1982 UNCLOS (Razavi 1997: 64), an action which, with Royal Decrees in July 1972 and February 1981, provided the definition of Oman's Territorial Seas and its Exclusive Economic Zone (EEZ) – the latter at 200 nautical miles from the shore encompasses a sea area of over 550,000 square km. This is more than double the total surface area of the Gulf,³⁵ and twice the extent of Oman's land area. Recognising its responsibilities Oman has also become a member of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA),³⁶ another part of the wider maritime picture. With the development of the UNCLOS, the delineation of maritime boundaries increased in importance. Maritime mineral wealth reserves could be determined by only a slight difference in the position of shore features or an interpretation of UNCLOS, whilst a clear definition of a nation's sovereignty over its sea area remains vital for national defence.

Oman's hydrographic capability has grown under naval guidance and Oman has become an international player in hydrography. Its acceptance as a member state of the IHO in July 1987 was a major step.³⁷ The delineation and negotiation of maritime boundaries rests on sound modern hydrographic data and often it is hydrographers who possess the detailed

³⁵ Arabian Gulf, often just termed the Gulf (Sheppard *et a*, 2010); Surface Area 248,320 km² (Blake 1982: 5); and Oman's Land Area 309,500 km².

³⁶ IALA International technical association established in 1957 to harmonize aids to safe navigation worldwide, see <http://www.iala-aism.org/iala/index.php> accessed 23 February 2012.

³⁷ IHO was established in 1921 to support safety of navigation and the protection of the marine environment; see, <http://www.iho.int/srv1/>, accessed 23 February 2012.

knowledge of the UNCLOS that is needed in preparing a nation's claims and subsequent negotiations, which may, for example, involve extension of EEZ. This is the situation in Oman, where naval hydrographers provide objective advice and support to the Ministry for Foreign Affairs with regard to maritime border requirements or international accords. Regionally, Oman is a member of both the North Indian Ocean Hydrographic Commission (NIOHC) and the Sea Area Hydrographic Commission of the Regional Organization for the Protection of the Marine Environment (ROPME), and plays a full part in the activities of both organisations. The next sections give an overview of: regional maritime policies, national legislation and the concept of Ocean Governance.

2.6.2. Overview of Regional Maritime Policies

Over 40 percent of the world's seaborne crude oil trade passes through the Strait of Hormuz across Oman's EEZ (Oxford Business Group 2010: 15). Although there are relatively few navigational hazards, the primary concern with regard to navigation in the region is the potential for collisions resulting from traffic congestion, particularly in the narrow Strait of Hormuz and in areas where oil loading and bunkering facilities are located. Traffic Separation Scheme (TSS) have been established (and adopted by the IMO) in the approaches to and within the Gulf. The average depth of waters in the Gulf is 35-40 metres, and the Gulf connects with the Sea of Oman via the Strait of Hormuz. Although the waters of the Sea of Oman are deep, the shallow water in the Gulf can create potential problems for deep draught tankers that have to steam for considerable distances with very limited keel clearance. In addition, winds like the *shamal*, well-known in the area, blow for long periods in a constant direction and can cause surges and significant changes in water depth that also create navigational problems (Razafi 1997: 2-95).

Although there is a coordinated contingency plan among the GCC states with regard to oil spills, there is still some uncertainty over the efficiency of the arrangements for co-operative search and rescue strategies and whether emergency response systems would work in practice. The Kuwait Regional Convention for Cooperation on Protection of the Marine Environment from Pollution (Kuwait Convention), established in 1978, provided the impetus for development of ROPME. The area covered by the Kuwait Action Plan was

designated as a special area under the MARPOL Convention (combination of two treaties adopted in 1973 and 1978). The Kuwait Convention, to which Oman is a signatory, aims to protect the marine environment from all sources of pollution and to promote regional cooperation in marine environmental protection and emergency response management (Razafi 1997: 2-95).

Oman is also a signatory of the Riyadh Memorandum of Understanding (RMOU) which looks at the security and safety of shipping in maritime jurisdictions in the Gulf region. First signed under the auspices of the IMO in June 2005 by the maritime authorities of the six Gulf nations, the RMOU is one of several regional agreements on Port State Control (PSC).³⁸ The significance of the secretariat and information centre, located in Oman, and this agreement is that the maritime authorities of the six Gulf monarchies are committed to a unified system of port state control measures, which further strengthens cooperation and information exchange on issues concerning PSC. Although there is no evidence that can be seen of unified practices among them, all the Gulf monarchies are dedicated to promoting maritime safety and protecting the marine environment in the region. Discussing new developments and supplementing existing agreements should increasingly promote collective efforts to strengthen the region's maritime capabilities (*Oman Daily Observer* 2 April 2012: 5).

2.6.3. National Legislation

As a maritime state, Oman's maritime policy is founded in large measure on its international responsibilities and commitments. These are mainly derived from the United Nations under the UNCLOS administered by the Division of Ocean Affairs and Law of the Sea, and the UN Convention on the SOLAS administered by the IMO. To effect legalisation, Oman has two types of legal instrument: Royal Decrees issued by the Sultan of Oman, and Ministerial Decrees issued by the relevant Ministry or Ministries. Generally, a Royal Decree provides general provisions relating to a particular area in need of statutory

³⁸ Port State Control (PSC) - Inspection of foreign ships in national ports to verify that the condition of the ship and its equipment complies with the requirements of international regulations. The inspection is carried out by officers representing the national Port State Authority in each country. See, www.dnv.com/binaries/Intro%20to%20PSC_tcm4-421835.pdf, accessed 23 February 2012.

control, whereas Ministerial Decrees provide more detailed regulations to enable implementation and enforcement of the Royal Decree provisions. The Ministry of Environment and Climatic Affairs is responsible for environmental protection in Oman including planning and permitting for new industrial activities, protected areas and nature reserves, marine pollution (including oil spill contingency planning), air and noise pollution, protection of fresh water resources, waste disposal and recycling, and hazardous substances (chemicals and radioactive materials). All environmental legislation comes under Royal Decree 114/2001 which replaced Royal Decree No. 10/82 and its amendments.³⁹

The MARPOL 73/78, to which Oman is a signatory, applies to all ships and drilling rigs/platforms and includes provisions regulating pollution from oil. This convention recognizes several special areas where stricter pollution controls apply, due to the importance of their oceanography and ecology. The 1974 Law on Marine Pollution Control (Royal Decree No. 34/74) brought Oman's early concern for the safety of its marine environment to the fore, and Omani rules on the environment are strict. The law prohibits the discharge or release of any pollutant from a ship, a shore location, or an oil transport facility in Oman's pollution-free zone, the belt of water around Oman's territorial waters that stretches for a distance of thirty eight nautical miles; therefore the government investigates any visible traces of oil in the vicinity of a ship or its wake. Any person violating the provisions of this law is subject to a penalty that may include being fined and/or deprived either temporarily or permanently of all environmental rights granted by the government.⁴⁰

In cases where there is no Omani national law covering certain aspects of marine environmental protection, the Ministry of Environment and Climate Affairs turns to the agreements and standards promulgated in the Kuwait Regional Convention for Co-

³⁹ Interview with Dr Barry Jupp, (Senior Consultant-Marine, GEO-Resources Consultancy, Muscat), correspondence, 23 February 2012.

⁴⁰ Interview with Dr Barry Jupp, *ibid.*

operation on the Protection of the Marine Environment from Pollution. The Kuwait Convention and the accompanying Protocols include:⁴¹

- Protocol concerning Regional Co-operation in Combating Pollution by Oil and other Harmful Substances in Cases of Emergency;
- Protocol for the Protection of the Marine Environment against Pollution from Land Based Sources;
- Protocol concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf.

Some of the agreements are administered by the ROPME set up in Kuwait in 1982 under the auspices of the Regional Seas Programme of the United Nations Environment Programme. Oman adopted the Kuwait Convention in 1979 on the basis of Royal Decree 8/79, and in accordance with the requirements of the Protocol, has established a National Oil Spill Contingency Plan, which is available from the Pollution Control Section of Ministry of Environment and Climatic Affairs.

As noted earlier in the chapter, the increasing importance of the sea has, of course, become a subject of global interest and as a result there have been progressive efforts to regulate and protect the marine environment. However, even with these efforts and regulations, there are still global concerns about the importance of the oceans. As a source of life they offer possibilities for sustainable development, and as a result international focus on ocean-related issues has increased significantly over the past several decades.⁴² The concept of Ocean Governance is examined briefly in the following section.

2.6.4. The Notion of Ocean Governance

With the increasingly global use of ocean resources, the world's oceans have fallen victims of pollution and depleted fisheries causing damage to the marine environment. This has called for close cooperation based on integrated ecosystem-based approaches to the

⁴¹ Further details can be found at, <http://sedac.ciesin.org/pidb/texts/acrc/ProtKuwait.txt.html> accessed 11 April 2012.

⁴² Interview with Dr Barry Jupp (Senior Consultant-Marine, GEO-Resources Consultancy, Muscat), correspondence, 23 February 2012.

management of ocean resources by promoting more effective governance (Till 2009: 309-321). A new philosophy of ‘Ocean Governance’ is emerging, which treats the oceans as a great source of food and resources that needs to be preserved (Vallejo 1994: 71-95).⁴³

This section outlines the importance of applying Ocean Governance and integrated national ocean policies at international, regional and national levels. One of the main reasons for the growing interest in this area, as noted above, is the increasing awareness of the dominant part played by oceans, seas, and coastal areas in supporting human life, and the corresponding imperative to develop these areas in a sustainable manner. This is made clear by the specific case of Oman, which depends on the sea for its security, prosperity and development and has therefore identified the need for an approach to development and regulation of its marine environment and coastal areas. At the same time, Oman, along with other maritime nations facing similar circumstances, recognises that this approach needs to be integrated and oriented towards prevision and precision (Till 2009: 309-321).

The legal element in ocean governance is made up of international and regional conventions, as well as agreements and programmes that establish provisions for the management of affairs. These must be incorporated and implemented by any state in and through its national legislation. The institutional framework includes the administrative mechanisms that are required to establish systems of coordination and cooperation between all the players who have a role in the management of the oceans, and the framework itself is established by the Law of the Sea conventions that look after the international seabed and the conservation of its resources, thus forming an integrated coastal management system. In implementing an ocean governance framework, mechanisms of coordination and cooperation should be constructed between national, regional and international levels, purely to avoid fragmentation of decision-making and exclusion of stakeholders.

This is directly relevant to Oman’s need to protect the environment for the benefit and enhancement of its future maritime policy; thus it is vital that the country responds positively to this new concept. If Oman is to gain from implementing an ocean governance

⁴³ Further details can also be found at, www.un.org/Depts/los/convention_agreements/convention_20years/presentation_ocean_governance_frbailet.pdf, accessed 30 March 2012.

framework, and in order to avoid negative outcomes, it must consider the mechanisms of coordination and cooperation between itself and its regional neighbours, as well as within its national agencies at all levels. This wide participation will lead to an effective decision-making system that will connect governments, scientists, industry and local communities.

The relationship between concepts of Ocean Governance and any maritime policy is that the latter represents an element of the governance of the oceans, and serves as a base from which to develop all the activities that are carried out within the maritime realm. Therefore the concept of maritime policy allows Oman to arrive at a clear vision of the direction that it should take in order to achieve effective management of this domain. The important step is to determine how an integrated national maritime policy is to be developed, taking into consideration the extension of the geographical area where the policy is applied and over which Oman exercises its rights of jurisdiction and sovereignty, and placing particular emphasis on the operational aspects of the RNO and other national security agencies. Integration of a national maritime policy requires the participation of all governmental institutions, the private sector, and security agencies. Another important element for the elaboration of a maritime policy is that Oman should establish national objectives and strategies, based on issues and interests that will be part of that policy.

An active role within the economy for the maritime industry is identified in the government's 'Vision for Oman's Economy 2020' report, which was adopted in 1995. This Vision plan charts the future path of Oman towards self-sustaining growth in a private sector-led and an export-oriented economy with diversified sources of national income (Kishtainy 2007: 58-64). In its economic concepts and practices, the government has pursued market-oriented policies and the development of a private sector, aware that a dynamic private sector can be the engine of prosperity and growth. While consecutive Five Year Development Plans have made relatively good strides towards the objectives outlined in the Vision plan, after some years of development effort, Oman remains at a crossroads where it must confront a host of challenges stemming mainly from the fact that the economy is still reliant on oil and gas – non-renewable and dwindling resources that are subject to a high degree of price volatility. Acknowledging this challenge, the government

has initiated a structural adjustment process that aims to lay the foundation for a diversified economic base led by the private sector.⁴⁴

One of the strategic goals is to make Oman an international commercial and financial centre so that it will benefit from its geographical location; however, is establishing a viable maritime policy. However, the future needs of the Omani economy are not enough on their own if there is no accompanying maritime doctrine to co-ordinate national efforts. Planners in Oman have yet to work out how to facilitate an international maritime transportation system and how to establish a merchant naval service that would enhance maritime trade and promote economic growth and development (see Chapter Seven for recommendations).

It is clear from the foregoing that Oman's merchant navy is an important national asset that can serve as an auxiliary force in times of war or national emergency by transporting goods or material needed by the armed forces and national security agencies. However, with the exception of the three national ferries, at present none of the Omani shipping fleet operates under the national flag. If oil and gas and other petrochemical products are excluded, the OSC's fleet in fact carries only a very small percentage of Oman's foreign trade, despite the increasing importance to the nation of maritime trade for economic development and national security. This is problematic for Oman, since a merchant navy should be concerned with much more than the transportation of cargoes and the manning of ships carrying goods for the purposes of trade and commerce across various locations.

Throughout history, merchant navies have played a far more exalted role than mere transportation of passengers and goods (Mahan 1987: 25-89). Overall, the absence of a maritime policy is the main obstacle hindering the coordinated and integrated management of Oman's national and international assets. The next section will assess Oman's maritime trade and shipping.

In summary, at the national level ocean governance is considered to be the nation state's integrated maritime space management processes. It follows, therefore, that all those agencies within government with a maritime function or responsibility have a duty to

⁴⁴For more details see, www.moneoman.gov.om/Eco_Money.asp, accessed 18 March 2012.

collaborate in a coordinated ocean governance programme. As ocean issues are usually low on the political agenda for a successful integrated ocean policy to succeed the highest political oversight and direction is required (Vallejo 1994: 71-95). It is suggested that the absence of a maritime doctrine for Oman prevents the effective development and implementation of an ocean governance policy for Oman.

2.7. Assessment of Oman's Maritime Trade and Shipping

The Five Year Plan that was initiated in 1976 was significant in Oman's modern development. It was seen as the first step towards self-sufficiency and sustainable development within the framework of a clear and specific vision. Based on the achievements already realized, the plan aimed to further improve the living standards of Omani citizens while maintaining Omani values and traditions; its importance would be determined as well by the inevitable changes in Oman's economy as the government's role shifted from one of dominance to one of strategic guidance of a financial system that would also depend on a dynamic private sector (Hamoudi 2006: 75-132).

The strategic transformation in Oman's development process needed the formulation of a clear vision for the beginning of the twenty-first century, i.e., a framework within which Oman's economy could move from being one that had relied on government spending and initiatives, oil resources, and expatriate labour as the main engines of economic activity, to one that would depend on private initiatives, a national labour force, and renewable resources. What is now needed is an economy that will achieve sustainable development and an improvement in the living standards of Omani citizens. This transformation means that concepts of, and approaches to, the role of development planning need to be adjusted, in order to shift from detailed planning of investment projects and programmes to moving instead towards addressing the main problems. This can be achieved by formulating policies and establishing the basic principles and programmes needed for achieving the desired outcomes and realising the aims of the Vision plan.

International experts and analysts may question whether Oman should invest in a national shipping industry and a maritime transport system to cater for its trade and economic

growth in a secure and competitive manner. To a certain extent the current thinking in Oman is not focused on the effective use of the sea as a whole. It does not seem to consider the role of international and domestic maritime trade and merchant shipping in creating national wealth; nor does it focus fully on maritime industry or maritime security needed to ensure that the anticipated volumes of future trade will flow smoothly through the national economy. However, developing a maritime doctrine may eventually lead to cooperation being encouraged among ministries, carriers, and other interested agencies in order to achieve their objectives. Such document will also provide general guidance in formulating programmes to achieve objectives based on understanding the needs of the need of national requirement.

As a national asset, a merchant navy is of great importance for Oman. Apart from oil, gas and petro-chemicals, such fleet would carry a good percentage of the country's foreign trade. The operating of fleets therefore represents a crucial component of the national economy and the maritime transportation system. In Oman's case, as this chapter has emphasised, foreign trade is at present transported via the maritime system, and other modes are not supported by the national fleet. A transportation policy for example will recognize that an efficient merchant navy will be connected to a widespread network of ports and inland transportation links, both internal and overseas, that will include boats and dhows for those living on islands, as well as roads and in due course railways (*IHS Global Insight 2009: 1-6*). International experts might also question whether Oman's maritime industry and the shipping fleet, as they both stand today, are capable of handling the large increase in the flow of goods that is expected to materialize in the next ten years or so.

Increasing public concern of environmental issues continues to create a demand for policies and strategies to mitigate adverse maritime environmental impacts. Today, the maritime industry has to comply with rapidly-evolving operating and design rules related to emissions, water treatment, and disposal of various materials (*IHS Global Insight 2009: 61-64*). There are mounting worries that regulation promulgated by the government is fragmented across various agencies and that it does not meet the standards required to combat or contain an oil spill caused by colliding oil tankers. The impact of such an event

would be enormous; in 2010, for instance, 36,100 vessels traversed the Strait of Hormuz.⁴⁵ With this huge volume of traffic, the transportation of the supply of energy without impediment becomes a major concern to global energy security, and a matter of huge environmental concern to Oman. In acknowledging the significance of the Strait of Hormuz to global economic trading, particularly of hydrocarbons, one notes that the flow of oil through the straits in the first half of 2010 was estimated at between 16 and 17 million barrels per day, which is equivalent to 20 percent of oil traded globally, and 40 percent of the crude oil shipped by sea (Oxford Business Group 2010: 15).

Overall, knowledge and awareness of the importance of Oman's strategic maritime location and other issues that benefit the country's economy, security and development are vital. Due to the changing security environment in the region and continual dependence upon the sea, it is essential to secure Oman's maritime trade and establish a national merchant marine/navy. Oman must not only consider its maritime interests must also consolidate its maritime development profile, focusing on meeting anticipated traffic growth and engaging in cross trades with other nations to earn revenues world-wide. The extent of its integration into the world economy suggests that it would not willingly put its international trade and its commercial shipping and maritime activities at risk or dislocate its own economy.

2.8. Conclusion

This chapter has examined the relevance of maritime trade and shipping to Oman's maritime doctrine. Maritime trade and shipping have been important activities throughout Oman's history, particularly when prosperity and security were primarily dependent on them (Till 2009: 35-37). Today, maritime trade and shipping are among Oman's important maritime interests, along with ports and offshore resources which will be addressed in the following chapters of this study.

⁴⁵ Interview with Captain Mohammed Al-Hinai, (Commanding Officer of Musandam Naval Base), 5 March 2011.

Maritime trade and the shipping industry are composed of a wide range of organizations and activities, such as maritime transportation, navies and their related industries, the logistics network and maritime education (public awareness, academies and training centres etc.) (Vassiliki & Katsoulakos 2008: 15-22). As an essential part of Oman's maritime interests, maritime trade and shipping demand intellectual thinking and planning to ensure long-term sustainability, all of which can only be achieved by establishing a maritime doctrine.

The maritime industry is of crucial importance to modern societies and specifically to that of Oman. Nevertheless, and due to the absence of maritime doctrine, the government in Oman seems to have a limited perception and appreciation of how much wealth that can be generated from using the sea in an efficient manner (ie maritime industry). In an era of globalisation world economies have become increasingly dependent on international trade (*IHS Global Insight 2009: 1-4*), with which Oman needs to become heavily engaged. Since the sea provides an efficient and cost-effective means of transportation, the role of the shipping industry is crucial in supporting the growth of national trade. Due to its own geography and to the region's geo-political situation, Oman is dependent on the sea for its international trade. The sea carries oil and gas, which are the backbone of Oman's economy and contribute around 46 percent (2010) to its GDP (MEED 2011: 12). Statistics for 2010 also indicate that over 72 percent of Oman's trade (export/import) by value and over 63 percent by volume is carried by sea. However, despite such reliance on maritime trade, Oman's investment in the shipping industry and related activities started relatively late. Most of the country's maritime trade came through Port Sultan Qaboos in Muscat until the opening of Port Salalah in 1998, establishment of the OSC in 2003, and the creation of the NFC in 2006.

As it stands at present (2012), Oman's shipping industry is not sufficient to meet the future demands of trade and the development of national ports. This is evident from the fact that there is still no declared policy issued by the government to establish a merchant navy or to reinforce the OSC which will then be in a position to support as well as promote trade that may be created by the development of domestic ports. Another factor contributing to this situation may be that, because of financial constraints and the capital-intensive nature of

the industry, the government cannot easily meet the requirements of the shipping industry sector by itself; nor has it encouraged the private sector towards any active participation. The efficient development of the shipping industry will depend upon the coordinated participation of the Ministries: of Transport and Communications, Defence, Oil and Gas, Agriculture and Fisheries Resources, Environment and Climatic Affairs and the ROPCG, along with the national security agencies and the private sector. However, without a maritime doctrine, the necessary synergy and coordination cannot be achieved, and is yet to happen. The government lacks a viable merchant navy and a shipping policy. Such policy should aim to attract investment to this important field through a predictable environment, and by offering concrete incentives and assurances, as well as flexible rules, regulations, and procedures.

As Chapter Three (on Ports) will suggest, the establishment of the OSC and the NFC, along with the expansion and construction of port infrastructures has been important for achieving any meaningful development in the shipping industry. Such initiatives have definitely been a step in the right direction but must be complemented by a national maritime policy that will protect the interests of Oman's business community and create a level playing field to attract private and foreign investors.

Development of international trade and exploitation of resources are often driven by global economic trends. With the increasing integration of the world economy and the impetus for globalisation, construction and development of ports, Oman's dependence on the sea is bound to increase further. The country will therefore need to factor its existing maritime interests into a framework based on a coordinated maritime policy. Its maritime interests dictate that, in addition to security from seaborne attack for its coastal infrastructure, there should be freedom of trade, including export/import of oil, gas and other materials, and with the growing importance of maritime trade, it must do more to protect its shipping and other maritime interests. It is a matter of pride in Oman that during the 1980s, despite its limited experience of policing roles, the RNO contributed enormously to the stability of the region during the Tanker War by carrying out effective surveillance and interdiction operations in Oman's EEZ in order to maintain peace and stability in the vital sea lanes of the Arabian Sea (Peterson 2007: 442-445).

It is essential for Oman's national security and the growth of its foreign and domestic trade to initiate a maritime policy and transportation system that will promote development and encourage the maintaining of a viable merchant navy designed to meet national requirements (Chapter Seven offers recommendations). The absence of a maritime policy means that the government's role in maritime trade and shipping becomes ambiguous. Oman's Ministry of Transport and Communications focuses only on general maritime affairs and does not regard a maritime transportation system/merchant navy as an essential national asset. On the other hand, independent maritime agencies play important roles in the development of maritime doctrine by interacting with one another and with the government to establish a balance between conserving offshore resources while ensuring that the Omani public will enjoy the many benefits of its maritime resources. At present this interaction is not regulated by a coordinated policy, which leads to inefficiencies in the system.

Although the national merchant navy is an important part of the maritime transportation system, it is only one element within the whole system, and must be approached within the broader context of maritime freight transport and the free flow of commerce throughout the economy. Oman's transportation options, including short-sea shipping need to be more fully exploited if the government is to achieve continued economic growth and provide for the safe and efficient movement of domestic and international freight (*IHS Global Insight* 2009: 63). To support the increasing volumes of maritime trade, a strategic policy must also consider the need for vessels that are suited to moving all kinds of cargo. This, in turn, requires an advanced network of ports and maritime infrastructure, trained personnel ashore and afloat, and support services to keep the entire transport network running efficiently.

Given congested road networks and the long-term trend of rising transportation costs, the government must encourage the introduction of short-sea shipping to enhance the planned rail network. As the volume of maritime traffic increases and as more shipping passes through the expanded ports infrastructure along Oman's coasts, cost-effective and efficient environmental compliance will become increasingly important and challenging. It is in

Oman's national interest to establish a maritime doctrine and have policies in place that will ensure the commercial viability of Oman's maritime trade and shipping.

CHAPTER THREE

PORTS

3.1. Introduction

Oman's ports, which are just as important as its maritime trade, shipping, and offshore resources, represent the crucial interface between land and sea (*IHS Global Insight 2009: 25*), where much of the country's trade activity takes place. Properly-designed ports consist of a terminal (or terminals), which is a section of the port consisting of one or more berths devoted to a particular type of cargo handling: thus there are container terminals, oil terminals, etc (Stopford 1997: 29-32). Ports and their terminals are administered either by a government body known as a 'port authority' or by a private organization responsible for providing the various maritime services required (*IHS Global Insight 2009: 25*). A private port organisation is often owned and operated by a shipping company that operates the terminal for its exclusive use. Before the twenty-first century, such activities were obvious, and ports were crowded with ships and with people loading and unloading cargo during their long port calls (Stopford 1997: 29-32).

This chapter discusses the importance of Oman's ports as elements of maritime interests. Following a brief introduction to ports in general and more specifically those of Oman, the chapter examines the economic importance of ports, asserting that with good facilities, a port can provide the link between land and sea transports system and generate economic activity in the surrounding region. It also contends that, in addition to the economic factor, ports play a significance role in national security, since they provide operating bases for naval and other military forces, as well as for national security agencies. The government of Oman's policies and implementation strategies with regard to environmental protection, pollution, tourism, customs and its police force are examined, and the chapter concludes with an assessment of these policies and strategies. The chapter now highlights the importance of ports in general.

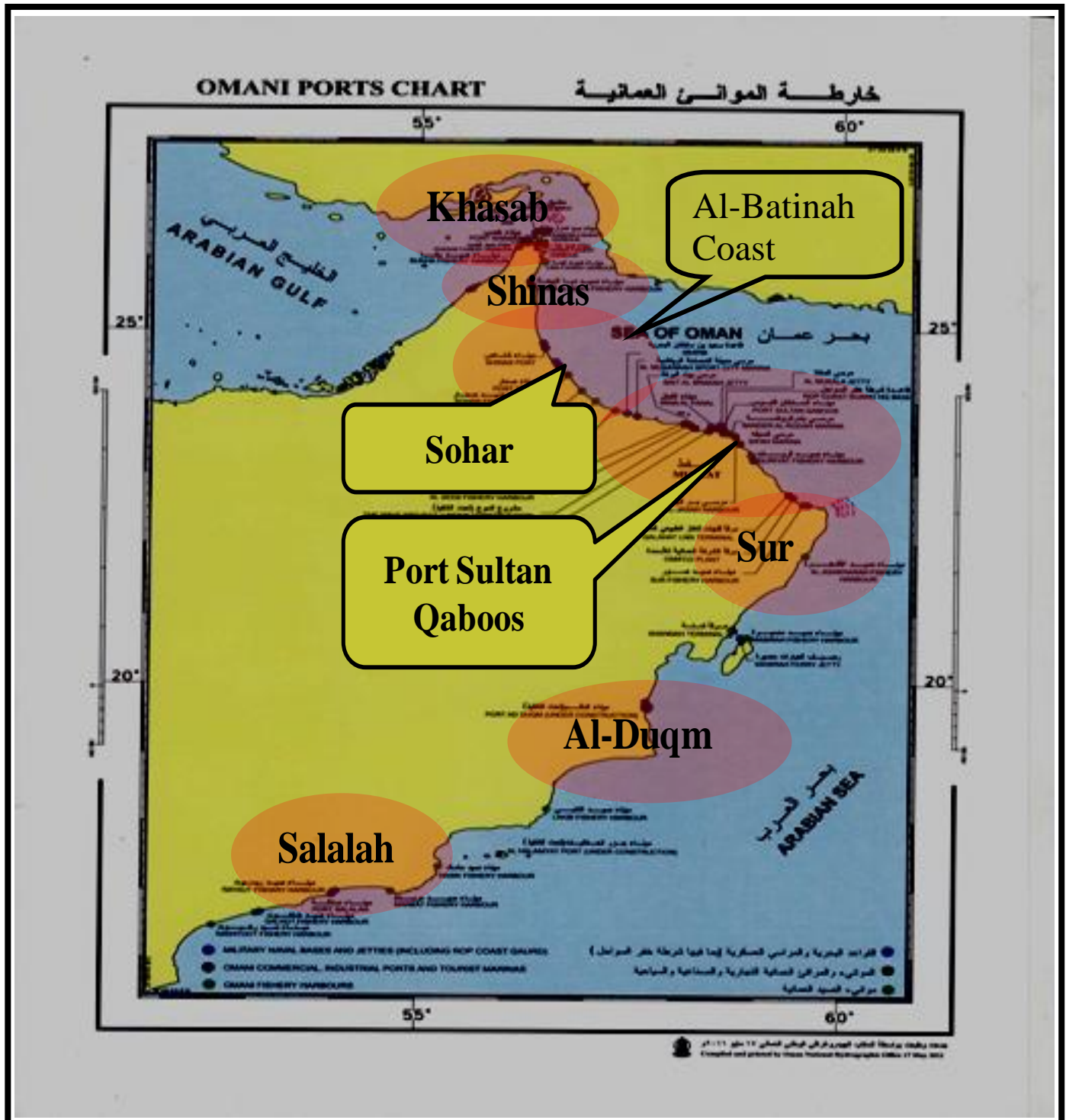
3.2. Ports in General

The modern ports of today, including those of Oman, are much more efficient, and ships now make fleeting calls at highly-automated and apparently deserted terminals, sometimes stopping to load or discharge their cargo for only a few hours, cargo-handling speeds having become many times faster than they were thirty years ago (Stopford 1997: 29). Oman's ports and harbours have long been an integral part of the fabric of the country's rich maritime past and have played a central role in facilitating the country's economic development. In antiquity they served as springboards from where intrepid Omani seafarers set out across the oceans on voyages of discovery, trade and adventure (Ministry of Transport and Communications, 2010: 1-5).

Ports are one of the key elements in maritime traffic and a focal point in the inter-modal logistics chain (*IHS Global Insight 2009: 25-26*). They are essential to the maritime system of trade and are as important as shore terminals for the exploitation of maritime resources (Hill 1986: 158). Despite its overwhelming dependence on maritime trade, until mid-1990 Oman relied on two ports only: Port Sultan Qaboos at Muscat, and in the southern region, the small port of Raysut – now Port Salalah. The rest of the country's extensive coastline (3,165 km in length) remained unused for any commercial activities and/or ports until November 1998, when Port Salalah became established as a hub and as a container terminal.

Realizing how successful Port Salalah had become, the government then took the initiative to develop an industrial port in the northeast, and Sohar was established in 2002. In 2007 the government stated to build the first phase of Port Al-Duqm, located approximately half way between Muscat and Salalah. The emergence of these ports has provided Oman with the opportunity to benefit from global trade, as well as to reduce its dependence on diminishing oil and gas reserves while at the same time generating economic growth. Figure 3.1 shows the locations of the country's commercial and industrial ports.

Figure 3.1: Oman's Commercial and Industrial Ports 2011



Source: Oman's National Hydrographic Office, 2011

In an era of economic globalization, ports generate important economic activity in coastal regions (Anwar 1995: 15-16). Over the past thirty years or so ports have developed tremendously and are still evolving. Their status has changed from being the between land and sea to becoming providers of complete logistics networks (Coulter 2002: 133). Developed ports are the catalysts for further coastal developments and can bring more benefits to the local and regional economy than those that are less developed.

Oman's major commercial and industrial ports represent a cohesive solution for industrial development and for cargo-ferrying services. They are important assets for Oman because they support the national economy by creating economic activities. In addition, they provide jobs and opportunities in related activities.⁴⁶ However, as most cargoes are now usually loaded and unloaded mechanically local employment has been affected and has declined from what it used to be 20 years ago when cargoes were loaded manually.⁴⁷

Apart from the economic benefits ports serve a strategic function by providing operating bases for military and police forces (Anwar 1995: 15-16). Possessions of such ports/bases offer greater flexibility for deployment to armed forces and national security agencies as well as friendly forces. Additionally, improving efficiency within ports contributes to the integration of transport modes within a single system, on the sole condition that there is both inter-operability and inter-connectivity between transport systems; at the same time ports also play an important role in coastal economies and provide crucial links between land and sea transport, along with their important social function of providing jobs, both directly and indirectly (Nawaz 2004: 37-39).

Because Oman's ports border the Arabian Peninsula and are also positioned along the trade routes between Asia and East Africa, they are close to a relatively substantial percentage of the world's population. Indeed, trans-shipment at Port Salalah accounts for more than 95 percent of global cargo movements, making it one of the busiest trans-shipment harbours in the world (Oxford Business Group 2010: 110-111). According to Coulter, a hub port,

⁴⁶ Interview with Peter Ford (Chief Executive Officer/CEO Port Salalah, Muscat), 17 August 2011.

⁴⁷ For more details on the Economic importance of ports, see, www.vliz.be/projects/sail/fiches/10.pdf accessed 10 April 2012.

should be able to collect numerous trades at a single concentrated point and distribute them efficiently (Coulter 2002: 133).

In economic terms, ports act as a focal point for economic activity and promote economic growth within a local region. To illustrate this point, Russia which has a huge land mass, has a shortage of ports relative to its size. Although the importance of the sea to Russia was emphasized in the 1970s by Gorshkov, Admiral of the Soviet fleet (Gorshkov 1976: 1-7), the poor state of most of Russia's sixty four seaports has substantially reduced their competitiveness on the international scene and thus their economic benefits, since they are unable to work with modern heavy-tonnage vessels (*Pacific Maritime Magazine*, 22 September 2011). Iraq, with a mere 10 nautical mile (18.5 kms) of coastline in the Arabian Gulf (Razavi 1997: 6), is also struggling for maritime economic survival, following Kuwait's formal announcement in summer 2011 that it intended to build the biggest harbour in the region. Thousands of Iraqis working across five ports in Basra fear they will lose their livelihoods if Kuwait pushes ahead with its plans to build a large harbour close to theirs (*Iraq Business News*, 10 November & 22 December 2011).

Although the development of ports in Oman has experienced a number of delays and made relatively slow progress during the last two decades, the situation has now changed radically. The government is now embarking on an ambitious plan to invest heavily on ports and improve the existing infrastructure in the coastal regions, and once all these major ports become operational, Oman's economy will be strengthened by its maritime trade (Ministry of Transport and Communications 2010: III). Therefore to prevent any disruption of the Sea Lines of Communications (SLOC) or port closures that would be detrimental to its economy, Oman requires a stronger naval presence than it currently possesses. The construction and upgrading of ports signifies the further expansion of Oman's maritime interests, and the government's efforts to expand port infrastructure throughout the country are an important step towards diversifying the national economy away from oil and gas. Section 3.3 examines the economic significance of Oman's ports.

3.3. Oman's Ports and their National Economic Significance

Ports are increasingly being differentiated by their ability to handle the latest generation of container ships coming into operation (McNicholas 2008: 29-45). With such recent developments in the port sector, the Omani government's intention/ambition is to make all its major ports highly competitive and capable of dealing with the super-large container carriers.⁴⁸ The globalization of trade is occurring not only because of the supra-national nature of the markets, but also because of the flows of foreign trade and investment and the strategies of multinational enterprises (*IHS Global Insight* 2009: 1-8). At the end of 2011, the combined GDP of the six nations constituting the Gulf Cooperation Council (GCC) had exceeded US\$ 1 trillion. Intra-trade between and among them had jumped from US\$20 billion in 2003 to US\$65 billion in 2010, and the value of their external trade was estimated to be in excess of US\$900 billion (GCC 2011). Although they were doing relatively well during a period of recession, an economist would still question the relatively low level of intra-GCC trade when compared with their individual global trading patterns. For instance, Oman's GDP increased from US\$75.8 billion in 2010 to a projected US\$85 billion for 2012,⁴⁹ and with the new developments in its maritime infrastructure and its dependence on maritime trade these figures seem likely to increase. Thus, with the use of containerization of global cargo (Till 2009: 26), the revenue-generation potential of ports has exceeded serving a particular country's domestic trade. This is especially true for the major trans-shipment ports around the world, which earn huge revenues for their host nations (Till 2009: 26-27).

In addition to their sources of income (dues on ships, cargo and for services), they provide employment, attract skilled artisans, and also offer ancillary services such as banking and insurance.⁵⁰ Hence, ports stimulate economic activity and the setting up of industrial estates and economic free zones in the vicinity. Other associated maritime functions include marine salvage and dredging services, etc (Till 2009: 31-37). However, by their very nature ports also attract criminal activities, such as organized crime, drugs, and

⁴⁸ Interview with HE Said Al-Harthy (Undersecretary for Ports and Maritime Affairs, Muscat), correspondence, 8 February 2012.

⁴⁹ For more details on Oman's economic statistics and indicators, see, www.economywatch.com/economic-statistics/country/Oman/ accessed 12 December 2011.

⁵⁰ Interview with Peter Ford (Chief Executive Officer/CEO, Port Salalah, Muscat), 17 August 2011.

smuggling (McNicholas 2008: 263-267; also Chapter Five below on the RNO and Policing).

Today a substantial proportion of the world's increasing trade levels is containerized. To accommodate this growth while also maximizing economies of scale and driving down shipping costs, container vessels are becoming ever larger, as are the ports that are needed to accommodate them (McNicholas 2008: 28-45). These indications confirm the prestige enjoyed both regionally and globally by Oman's ports (Rippenburg 1998: 146), especially as they have competitive features and are characterized by their strategic location, which contributes to the way they attract the attention of international shipping lines. Some might argue that, for a port to be strategically located it needs to be close to the markets and therefore to large numbers of people, which does not necessarily apply in the case of Oman. However, this aspect is achieved by the desirability of Oman's strategic location, since the proximity of its ports to the crucial trade routes from the region to the rest of the world has presented it with one of the region's vital export corridors (see Figure 3.2). Though not yet significant in terms of global trade, the Omani ports have the potential to become major hub ports, not only because of the region's natural resources but also because global trade may well translate into a much-needed economic opportunity that will contribute significantly to growth in national GDP (Rippenburg 1998: 146).

Having realized the importance of diversifying the country's economic resources, the government has dedicated significant funds to the ports sector (Pasha 1999: 55-70), sometimes at levels that critics have described as excessive and not economically viable. However, others are quick to point out that Oman's strong balance sheets and investment history indicate that its transport spending is part of a well-formed plan rather than an over-extension (Oxford Business Group 2011: 140-146). There is a strong argument in the fact that Oman's growing population means the country is at a stage that requires the development of a good transport network system to help realise its highest potential. Nor is Oman alone in dedicating large sums to the development of transport networks. It is estimated that across the states of the GCC, transport spending will be in excess of US\$11 billion over the next ten years, some US\$108 billion, or 90 percent, of which is due to be spent on rail transit (Oxford Business Group 2011: *ibid*).

In general terms, as noted, ports, shipping lines and shipping agents refer to Twenty-foot Equivalent Unit (TEU) containers⁵¹ as a measure of a ship's cargo-carrying capacity.⁵² Dubai's Jebel Ali port illustrates how a port, in conjunction with an associated free-trade zone, can create significant economic activity. The port, which began operating in the late 1970s, is currently investing around US\$850 million over the next three years to develop four million new TEUs to boost its capacity to 19 million TEUs by 2014 (*Khaleej Times*, 9 December 2011). In light of this fact, and in order for Omani ports to be competitive against other regional ports, it is important for Oman to invest in its transport infrastructure linking it with the GCC growing rail network, attract national and international investors, and pursue a sound maritime security policy. The political situation with regard to the Strait of Hormuz is likely to cause maritime insurance costs to rise as ships try to avoid the region's current hot spot. Since the Omani ports are outside the Gulf, they may well attract container ships to offload in Oman rather than in ports in the Gulf (Rippenburg 1998: 146).

A globalized economy has brought about a tremendous increase in the exchange of goods across the world. World trade has also accelerated since the invention of the container (Till 2009: 26), which has further revolutionised the process. Now over 95 percent of the world's trade is conducted by sea, and its volume has expanded over the past thirty years from 2.6 billion tons of goods in 1970 to 7.2 billion tons in 2005 (Till 2009: *ibid*). Due to the introduction of economies of scale and the development of shipping technologies, and also because of supply and demand which means there is tremendous over-capacity in the shipping industry, the cost of shipping has dwindled (Lorange 2009:1-14). To cope with this ever-expanding world trade, ports in every country will continue to play an indispensable role in providing the cheapest mode of transportation (*IHS Global Insight* 2009: 25-26). It is evident that the development of Oman's ports has paved the way for setting up industrial areas and special economic zones throughout the country. This, in turn, has spurred the growth of ancillary sectors such as logistics activities and other works

⁵¹ In general terms shipping agents refer to 20ft or 40 ft containers. Container capacity is often expressed in Twenty-foot Equivalent Units (TEUs), a unit of capacity equal to one standard (ft & Inches) 20' x 8' x 8' 6" (5.898 x 2.35x 2.391m) (length x width x height) container. Larger versions also exist (40 ft container).

⁵² Interview with David Blatchford (Director of Blatchford's International Shipping Company, Exeter, UK), 10 April 2012.

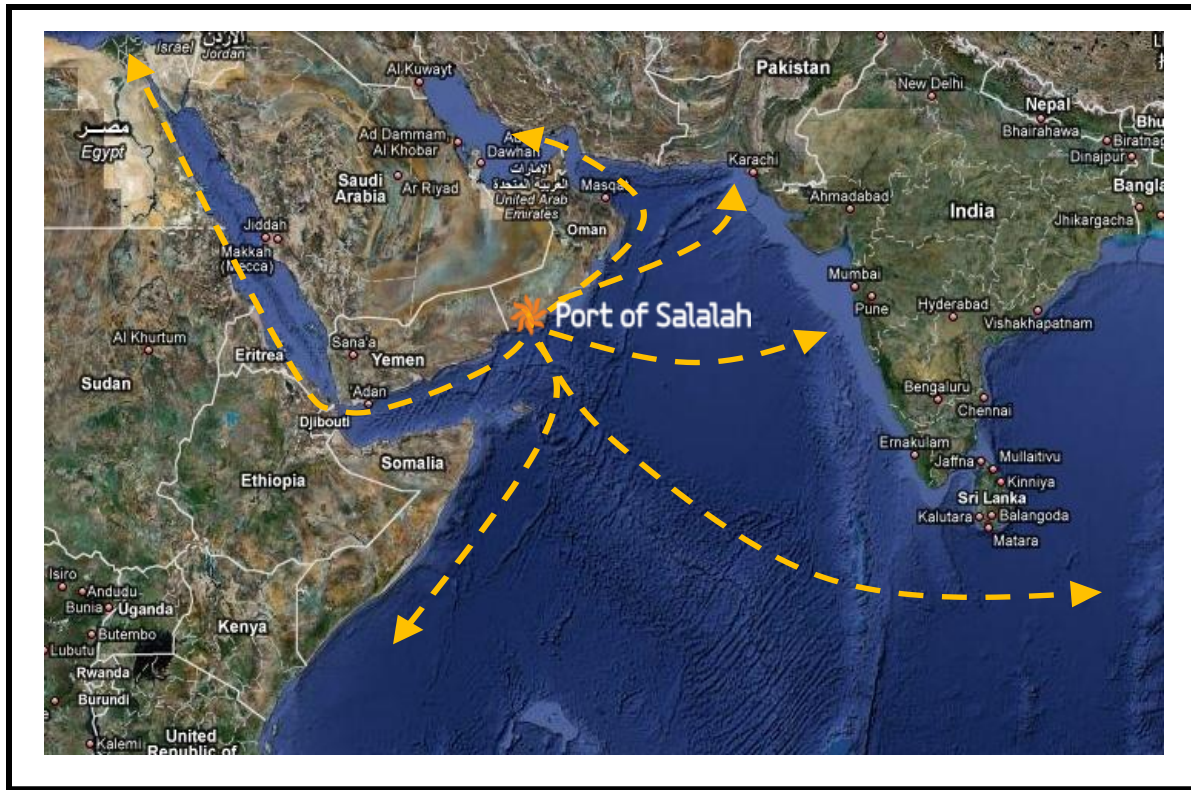
that are driving the national economy to achieve its goals, as outlined by the government in its Vision plan for 2020 (Pasha 1999: 34-70).

Located between Europe and Singapore, home of the world's second-largest port,⁵³ the Port of Salalah is ideally placed for accommodating the largest container vessel class, and provides easy access to the Gulf, the Red Sea, the Indian Ocean and the East coast of Africa. Despite the global economic recession, this port has registered improvements across the board in its overall performance and is the regional hub to access emerging markets worth more than US\$525 billion.⁵⁴ Because of Port Salalah's advantageous position, Oman has tremendous potential to become an important hub for cargo relay from the Middle East and East Africa to the main East-West ocean routes (Figure 3.2).

⁵³ For details on listing the world's top 50 container ports, see World Shipping Council, www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports, accessed 6 January 2012.

⁵⁴ Interview with Peter Ford (Chief Executive Officer/CEO Port Salalah, Muscat), correspondence, 9 April 2012.

Figure 3.2. Port Salalah and Global Trade Routes 2012



Source: CEO Port Salalah, April 2012

The port has attracted new generation giant container vessels and in 2009 achieved a growth of 14 percent in container activity and 7 percent in the handling of general cargo. With a throughput of 3.5 million tonnes TEUs in 2009, 6.25 million tons of general cargo and 3.5 million TEUs in 2010,⁵⁵ and with the on-going expansion, the Port of Salalah was ranked as second regionally and is at present the world's 32nd largest port;⁵⁶ it constitutes a vital link in the global supply chain that provides lower costs and improved service to shipping lines because of its location and service. The construction of a general cargo terminal adjacent to the Salalah Free Zone as well as a liquid jetty will further enhance the

⁵⁵ Interview with Peter Ford, (Chief Executive Officer/CEO Port Salalah, Muscat), correspondence, 9 December 2011.

⁵⁶ Ibid, 12 April 2012.

operational capability of the port. These plans are going hand in hand with the rapid development of other ports systems and an upswing in logistics services.⁵⁷

Oman's economic zones at Sohar and Salalah, soon to be joined by Al-Duqm, are attracting the attention of both regional and major international investors. With an investment of around US\$250 million, Sohar's industrial port has grown in size and importance through a joint venture between the Government of Oman and the Port of Rotterdam, and its successful development has attracted many leading international companies, including Air Liquide, Alcan, Hutchison Port Holdings, Larsen & Toubro, MAN Ferrostaal, Methanol Holdings International, Odfjell, Oiltanking, Shaded Iron and Steel, Steinweg, and Suez.⁵⁸

Due to such initiatives, Oman's economic growth is generating a tremendous amount of construction activity in the area and this is drawing in imported goods, to the benefit of those active in Oman's shipping business.⁵⁹ Another advantage for Sohar port is that, if necessary, petrochemical products brought from the region can be stored in the facilities there until transported to onward destinations, an activity that was formerly carried out chiefly at petrochemical hubs like Rotterdam (Netherlands), Houston (Texas), and Singapore. This opens up opportunities for added-value growth as downstream investors realise the cost advantages of establishing operations in the vicinity because of competitive access to all their feedstock requirements.⁶⁰

Meanwhile, operation of the Sohar Bulk Terminal generates opportunities for local companies to start mining and exporting minerals from the Batinah region, thereby creating jobs for the local Omani workforce (*Oman Daily Observer* 11 December 2011: 1, 21). Along with the bulk jetty, there is a dedicated terminal that can accommodate vessels of up to 16 metres of draught and is equipped to export and import a full range of bulk minerals such as limestone and clinker. Because of the use of modern handling equipment, the capacity of the permanent terminal will reach 10 million tonnes per annum at full

⁵⁷ Interview with Peter Ford, (Chief Executive Officer/CEO Port Salalah, Muscat), 17 August 2011.

⁵⁸ Further details can be found at, www.portofsohar.com/about-the-port, accessed 25 January 2012.

⁵⁹ Interview with Peter Ford, (Chief Executive Officer/CEO Port Salalah, Muscat), correspondence, 9 December 2011.

⁶⁰ Further details can be found at, www.portofsohar.com/about-the-port, accessed 25 January 2012.

production. A new deep-water jetty capable of accommodating vessels up to 23 metres of draught is now functioning and has enhanced the port's capability. The intention of such development was to upgrade the port and boost the national economy, and the port is one of the largest development projects in the world with investments exceeding US\$14 billion (*Oman Daily Observer* 11 December 2011: *ibid*).

With the conversion of Port Sultan Qaboos to a fully tourist-focused port, all commercial import, export, general cargo and container activities have been shifted to Sohar. The decision to make the shift was part of the government's efforts to diversify the activities of the ports sector and to attract international tourists by highlighting aspects of Oman's traditions and culture (*Oman Daily Observer* 17 July 2011: 1, 2). The strategy dictated that the port of Sohar would take over the bulk of the work of Port Sultan Qaboos, and expansion activities were carried out during 2010 in anticipation of the switch. However, despite the huge development at Sohar, at least part of Muscat's traffic was expected to move in the opposite direction to be handled at the new port of Al-Duqm which is approximately 600 kilometres southeast of the capital, Muscat.

The Indian Ocean is crucial to the region as means of transportation, not least of oil. China and India are developing into major maritime players, and 90 percent of the world's containers are manufactured in China (Till 2009: 323). The increasing volume and complexity of maritime trade in this region, accompanied by the growing technical sophistication of vessels and ports, has also resulted in the rapid development of land-based infrastructure at ports and in the form of land transport connections. The coastline between Muscat and Salalah was previously deserted but is now the base for a project costing some OMR1.6 billion (US\$4.1billion). The Al-Duqm Port in the Governorate of Al-Wusta, which is one of the strategic projects being implemented by the government of Oman, is aimed at boosting the national economy as well as reviving economic and industrial activities, both locally and regionally. As noted by the Minister of Transportation and Communication that Al-Duqm port and the facility of the dry dock are of great assets to the national economy. The port as he noted is characterized by its strategic location close to the international shipping routes that link East and West, as well as to the regional

shipping lanes that connect the international lanes with the Gulf states and the countries of the Indian Ocean Rim (Oman State TV, broadcast interview 9 June 2012).

Since Al-Duqm lies almost mid-way between Port Sultan Qaboos and the Port of Salalah, it will also serve the national shipping companies that operate between Oman's ports, as well as supporting cargo movements, industrial enterprises, and tourism activities (*Oman Daily Observer* 25 May 2011: 1, 3). The availability of a dry dock will add to its usefulness,⁶¹ as the port is capable of handling giant vessels with a capacity of up to 600,000 tonnes (*Oman Daily Observer* 9 June 2012: 1, 6). Since major ship maintenance and repair is new to Oman, new skills will be introduced into the labour market which will need the support of a maritime policy and doctrine to sustain it.

Another promising strategy in Al-Duqm's development is the agreement signed between Belgium's Port of Antwerp Authority with the Omani Government to form Al-Duqm Port Authority as a 50/50 joint venture. This new company has a mandate to coordinate, manage, and expand the business of the port, and in addition to the organizational experience that will be brought to the operation of Al-Duqm port, interest from the Port of Antwerp (the world's seventh largest port) indicates the high degree of international confidence in the viability of Al-Duqm (along with the fact that Antwerp itself may earn considerable revenue from the project) (Oxford Business Group 2012: 159). The Omani government's strategy is to enhance other industries for which the region has been known and on which it has depended, vast areas will be set up for fish-related industries, along with a centre for logistics services. In addition, a modern city with a tourism area will help to attract investors and will also serve as a model for modern urban planning by taking into account Omani architectural designs as well as environmental and health requirements. Significantly, Al-Duqm has also been provided with world-class utilities and infrastructure: the future railway project, for instance, will link the port with other regions in Oman as well as with neighbouring (*Oman Daily Observer* 6 December 2011: 1, 5).

⁶¹ Al-Duqm, dry dock was opened on 9 June 2012, (*Oman Daily Observer* 9 June 2012: 1, 6). The dry dock will also have floating dry dock facilities, to its world-class ship repair and maintenance yard. The facility will enable the Dry Dock Company to dry dock small and medium sized vessels and thereby free up the yard's two giant graving docks for larger ships, (*Oman Daily Observer* 10 June 2012: 1, 6).

At present the port is included among Oman's on-going mega-projects but will eventually make a major contribution to the national economy and help diversify sources of income by attracting massive investment and large-scale industries, as well as creating a special economic zone (Ministry of Transport and Communications 2010: 1). In a press interview, the Minister Responsible for Financial Affairs stated that the huge growth for Al-Duqm's economic zone was well thought out "...and that investment, which according to the initial plan was expected to touch US\$10-15 billion in the next few years, was likely to contribute 5 to 8 percent of GDP for the non-oil sectors by 2020." He added that "this would generate between 15,000 and 20,000 direct and indirect jobs during the next ten years" (*Oman Daily Observer* 25 May 2011: 1, 3).

It is hoped that the ports will continue to contribute to the national economy by attracting investments worth billions of dollars. Certainly the four major ports, Salalah, Sohar, Muscat (Port Sultan Qaboos) and now Al-Duqm, are benefiting from Oman's economic development. The overall quality of their transformation has put them among the most efficient ports in terms of the latest technologies, systems, equipment, and use by major shipping lines (Ministry of Transport and Communications 2010: I-III). Thus, while shipping industries, ports, and all related maritime activities are growing, Oman already has substantial port facilities and an expanding shipping industry that can bring in billions of dollars in investment.

The total volumes and value of export/import and re-export trade handled from 2008 to 2010 by all Omani ports, including: Sohar, Salalah, Port Sultan Qaboos, Khassab, Shinas and Sur, but excluding Al-Duqm, are given in Figures 3.3 and 3.4. As shown, some elements of the Omani economy rely directly upon the sea, while most rely indirectly on maritime links, if only for the cheap transportation of goods, since around 70 percent of imports by volume have come into the country by sea (see Figures 3.3, 3.4). This also indicates that there is more room for developing coastal shipping routes which must be exploited.

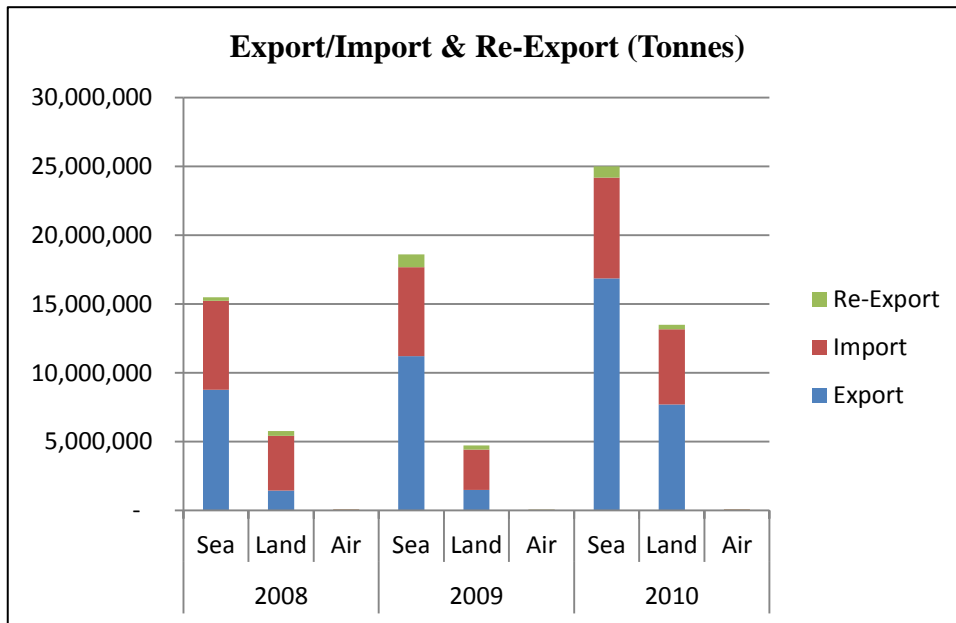
Oman's geography has been instrumental in allowing the tourism industry to grow and contribute to the national economy. The country is endowed with beautiful scenery, beaches, and numerous historical sites and nature reserves, while the sea and the coastline

offer marine leisure opportunities and provide ample space for resorts. Diving, ecotourism (e.g., at the turtle breeding grounds at Ras Al-Jins on the Eastern coast), and water sports (like those available at Sports City which hosted the Asian Games in 2010) are becoming important, and it is estimated that the contribution to the economy from tourism-related activity will increase from 7.6 percent of GDP in 2010 to 9.2 percent of GDP by 2020 (*Business Monitor International*, 1 March 2011). The maritime sector also contributes financially in the areas of marine and port services, amongst others.

Domestically, the ports contribute directly to staff salaries and indirectly provide jobs for truckers, freight-forwarding companies, shipping agents, taxi drivers, suppliers of spare parts, vehicle-leasing companies, and so on. It is estimated that all ports have a multiplier factor of 1 to 5 for jobs within the community,⁶² in addition to existing jobs among companies operating in the free zones and all other maritime-related activities, which would not be present if the ports were not there. Also, all ports contribute concession fees back to the government and dividends back to shareholders, including Omani government bodies. In sum, maritime trade is increasingly important for the continued growth of Oman's economy. Good infrastructure to handle trade through the ports is critical to the continued growth in Oman's trade. Any inaction or delay in developing trade-related infrastructures will have real consequences for the national economy. The following section highlights the facilities provided by each port.

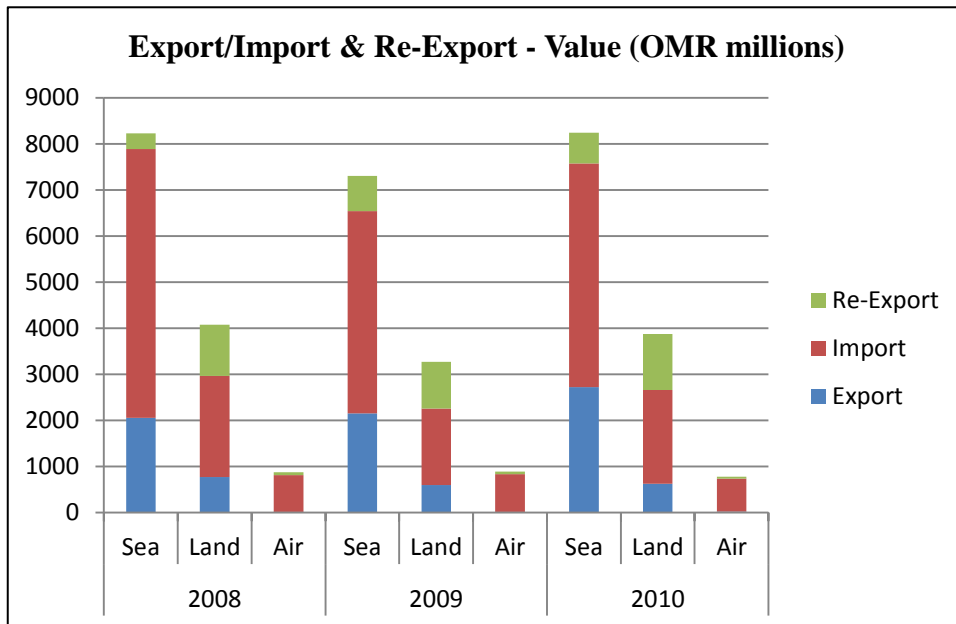
⁶² Interview with Peter Ford (Chief Executive Officer/CEO Port Salalah, Muscat), correspondence, 9 December 2011.

Figure 3.3. Export/Import & Re-Export by Volume 2008-2010⁶³



Source: Directorate General of Customs, Royal Oman Police, 2012

Figure 3.4. Export/Import & Re-Export by Value 2008-2010



Source: As for Figure 3.3

⁶³ Data provided to the researcher by the Director General, Directorate General of Customs, Royal Oman Police, Muscat 14 January 2012.

3.4. Port Facilities

As already noted, ports have several important functions which are of significance for the efficiency of the vessels that trade between them. Their main purpose is to provide an effective and secure location for ships to berth and load/discharge freight. A versatile port must have facilities for handling different cargoes, including bulk cargo, containers, vehicles, general cargo, and passengers, and ideally will have a mix of services designed specifically to meet the trade of the region it serves. It is, however, possible to generalize about the type of port facilities that can be found in different areas, and this section highlights the facilities provided by Oman's ports, which are examined in order of their importance and size.

3.4.1. Sohar Industrial Port

Oman's largest international port is Sohar Industrial Port is located just outside the Strait of Hormuz and positioned between Muscat and Dubai. Construction started in 2002, and since its opening in 2004, the Port of Sohar has developed into industrial port. There has been a steady increase in the number of vessels calling at the port since 2004, and in 2010, it handled more than 2,200 ships. The port accommodates three clusters: logistics, petrochemicals, and metals. Recently it has also begun to develop a special economic zone for downstream and logistics companies. With its components of industrial centres and adjacent locations for liquids, containers and general cargo, Sohar port has undergone major developments to meet the increasing demands of new industrial projects (Table 3.1).⁶⁴

⁶⁴ The petrochemical cluster consists of a refinery and production plants for aromatics, formaldehyde, methanol, polyethylene, polypropylene, urea, etc. The metal cluster includes a steel complex and a production plant for aluminium (for details see <http://www.portofsohar.com/terminals>, accessed 25 January 2012).

Table 3.1. Data for Sohar Industrial Port

Data	<i>Sohar Industrial Port</i>		
	Number	Length (metres)	Depth (metres)
Container berth	2	520	- 16
General cargo berth	2	700	- 16
Multi-purpose berth	6	1670	- 16 to - 19
Service berth	1	560	- 8
Liquid berth	6	1560	- 16
Special berth	4	1260	- 16 to - 25
Total	21	6270	
Land area (km ²)			20.6
Sea area (km ²)			24.5
Total area (km²)			45.1
Length of breakwater (metres)			5000
Depth of approach channel (metres)			- 19

Source: Ministry of Transportation and Communications, 2012

A dedicated terminal alongside the bulk jetty accommodates vessels of up to 16 metres of draught and is equipped to export and import a full range of bulk minerals, including limestone and clinker. The use of modern handling equipment means that at full production, the capacity of the permanent terminal will reach 10 million tonnes per annum. Another advantage of the Sohar port is that it also provides storage facilities for petrochemical products brought from the region before they are transported to onward destinations. This opens up opportunities for added-value growth, since downstream investors can see that competitive access to all their feedstock requirements means there are cost advantages in setting up operations in the vicinity (*Oman Daily Observer* 11 December 2011: 1, 21).

3.4.2. Port of Salalah

Oman's second largest international port is Salalah. Port Salalah first established itself as a container terminal in November 1998 by utilizing the major advantage of its location. Since then, and as a trans-shipment hub on the Arabian Sea, the port has drawn in trans-

shipment traffic that had previously been confined to Dubai and to Indian Ocean ports, and has also attracted some Red Sea trans-shipment traffic away from Jeddah.

The multi-purpose port of Salalah offers a number of facilities, including a container and general cargo terminal that is able to handle most other types of cargo (bulk oil and roll on/roll off cargo). It also caters to warships, cruise liners, yachts and sailing vessels. Though Port Salalah uses the latest techniques and most cargo is now handled mechanically, it is still considered one the largest employers in Salalah and the surrounding towns/villages and is a catalyst for that region's economic and social development.⁶⁵ It currently has the facilities to handle 6 million TEUs annually, with a forecast throughput of 4.2 million TEUs. With its on-going expansion and handling capacity, it is anticipated that the port will be able to handle 15 million TEUs per annum. The free trade zone located next to the port will also attract additional cargo, thereby allowing Salalah to develop as a gateway point, rather than relying on trans-shipment boxes.⁶⁶ Oman's neighbour, Yemen, is also served from Salalah via trucks.

In 2010 the port received 3,870 vessels, including 2079 general cargo and 1791 container ships (Figure 3.5), and handled 6.25 million tonnes of general cargo. Trans-shipment containers currently account for 98 percent of the cargo throughput recorded at Salalah Port's Container Terminal, which peaked in 2010 at 3.5 million TEUs. The 2 percent balance is linked to volumes generated by local industries and businesses.⁶⁷

In emphasizing this maritime gateway's reputation as the regional trans-shipment hub of choice for an increasing number of global carriers, the Port of Salalah has managed to secure business from some of the world's biggest shipping lines, including the first, second and fourth ranked global carriers, an achievement that confirms its strategic geographic appeal (*Oman Daily Observer* 8 October 2011: 18). As noted by Ford, the drive to promote Salalah as a distribution base, to encourage investors to capitalise on its connectivity and access to regional and global markets, and to engage with the Oman Shipping Company

⁶⁵ Interview with Peter Ford (Chief Executive Officer/CEO Port Salalah, Muscat), correspondence, 9 December 2011.

⁶⁶ Further details can be found at, <http://oman.tpg-media.com/2011/ongoing-expansion-at-the-port-of-salalah/>, accessed 10 April 2012.

⁶⁷ Interview with Peter Ford (Chief Executive Officer/CEO Port Salalah, Muscat), correspondence, 9 December 2011.

(OSC) as a common feeder service out of Salalah, have been key factors in attracting other shipping lines. This is contributing to local employment generation and socio-economic development and to more domestic cargo business for the port, which is seeing a capacity increase on the general cargo side and is now moving towards a 40 million ton capacity expansion. Due to its competitive facilities, the port has continued to provide a vital link in the global supply chain that offers lower costs and improved service to shipping lines because of its location and service (see Table 3.2).⁶⁸

Table 3.2. Data for the Port of Salalah

<i>Data</i>	<i>Port Salalah</i>		
	<i>Number</i>	Length (metres)	Depth (metres)
Container berth	7	2428	- 16 to - 18
General cargo berth	10	1827	- 3 to - 16
Service berth	2	175	- 3 to - 10
<i>Total</i>	19	4430	
Land area (km ²)			4.76
Sea area (km ²)			5.95
Total area (km²)			10.71
Length of Breakwater (metres)			2850
Depth of approach channel (metres)			- 18.5

Source: Ministry of Transportation and Communications 2012

3.4.3. Port Al-Duqm

Oman's third largest international port is Al-Duqm. Characterized by its location, this port has facilities to serve national, regional, and international shipping lines and to support cargo movement as well as to support industrial and touristic activities. Al-Duqm has the biggest dry dock in the Middle East and North Africa (MENA), and the availability of such facilities in the MENA region adds to the port's significance (Oxford Business Group 2011: 140-146). The size of the dry dock enables it to repair up to 10 multi-purpose vessels

⁶⁸ Interview with Peter Ford (Chief Executive Officer (CEO) Port Salalah, Muscat), correspondence, 9 December 2011.

at the same time; its docking facilities mean that it is capable of handling vessels of up to 600,000 tonnes (Oxford Business Group 2012: 159); while an oil export terminal, a 1,000 megawatt power station powered by natural gas, and an oil refinery form the backbone for an industrial zone. The 42 berths at depths of 18 metres provide ample facilities for all types of vessels, and the harbour basin is well-protected and sheltered against climatic conditions by big breakwaters. The main wave breakwater runs for 4.1 kilometres, while the length of the minor breakwater is 4.6 km (Table 3.3). The port facility includes oil export terminal and strategic storage facility, a free trade zone, and a downstream industrial area; there is in addition an airport, various five-star hotels, and several commercial and industrial areas. It is anticipated that by 2020 the city will be a metropolis of between 80,000 and 100,000 inhabitants, with all facilities (*Oman Daily Observer* 6 December 2011: 1,5).

Table 3.3. Data for Port Al-Duqm

Data	<i>Al-Duqm Port</i>		
	Number	Length (metres)	Depth (metres)
Container berth & general cargo berth	8	2250	- 18
Dry dock berth	6	2800	- 10
Service berth & government berth	4	980	- 10
Total	18	6030	
Land area (km ²)			60
Sea area (km ²)			75
Total area (km²)			135
Length of breakwater (metres)			8700
Depth of approach channel (metres)			- 19

Source: Ministry of Transportation and Communications 2012

3.4.4. Port Sultan Qaboos

The ports of Muscat and Mutrah are known collectively as Port Sultan Qaboos, which is Oman's fourth largest international port. Despite the global recession, the importance of maritime trade indicates that all Oman's ports are undertaking significant expansion activities. This fact was clearly understood by the Omani government when it changed Port

Sultan Qaboos from a commercial port to a tourism hub (*Oman Daily Observer* 17 July 2011: 1, 2). The decision came as part of the government’s efforts to diversify the activities of the ports sector by highlighting aspects of Oman’s culture and traditions to attract international tourists. Following its foundation in 1974 Port Sultan Qaboos was the country’s main commercial port, but due to its congested location, it has undergone a series of expansions to keep pace with the requirements of maritime trade. Currently it has the capacity to handle approximately 350,000 containers per annum, and can still facilitate a container terminal, as well as break bulk, roll on-roll off, cruise, and anchorage services (Table 3.4).

Table 3.4: Data for Port Sultan Qaboos before its conversion

Data	<i>Port Sultan Qaboos</i>		
	Number	Length (metres)	Depth (metres)
Container berth	2	366	- 10,9
Multi-purpose berth	2	470	- 13
Government berth	4	842	- 4
Service berth	1	122	- 4
Passenger berth	1	198	- 9.6
Total	13	2592	
Land area (km ²)			1.2
Sea area (km ²)			25.5
Total area (km²)			26.7
Length of breakwater (metres)			1200
Depth of approach channel (metres)			- 13

Source: Ministry of Transportation and Communications, 2012

3.4.5. Port Khasab

Oman’s fifth largest port (and the country’s second largest domestic port) is Port Khasab; a secondary port in the Governorate of Musandam in the north of Oman and in the eastern approaches of the Arabian Gulf, it was opened in 1983. Because of its location on the Musandam Peninsula, which provides good shelter, the port was expanded to cater for the growing demand for its facilities. Under the expansion scheme two breakwaters were built with an overall length of 1,015 metres, the harbour basin was dredged to a depth of 10

metres, and the entrance channel to a depth of 10.5 metres. A 300 metre-long commercial jetty was added, as well as a fixed fishing jetty that is 100 metres in length, seven floating jetties, a floating bridge, and high-speed ferry handling facilities. The port facilitates the operation of cargo vessels and cruise liners, as well as pleasure craft, yachts and fishing boats.

3.4.6. *Port Shinas*

Port Shinas benefits from its close proximity to Sohar Industrial Port and is in effect a secondary harbour able to handle commercial and coastal shipping and receive coastal vessels with draughts of up to 3.5 metres. It is also Oman's sixth largest domestic port. The port was upgraded in 2010 and a floating jetty was installed to receive high-speed ferries, as part of efforts to improve sea transport services between the regions of Oman.

3.4.7. *Port Sur*

Port Sur is a small harbour and town located in the north-eastern region of Oman, and as Oman's seventh largest domestic port it mostly handles small coastal vessels and fishing dhows. In the vicinity of the harbour, the water becomes deeper further away from the shore, and depending on a ship's draught is therefore suitable for anchorage.

Overall, the Omani government, having understood the global position with regard to maritime trade, has succeeded in transforming the network of Omani ports, so that the facilities they now offer and the services they provide has made them competitive with regional ports. For this reason, Oman's ports are attracting major shipping lines and investors, and thus are contributing to the national economy. This of course brings other factors into play, such as the relationship between ports and national security, which the chapter now examines.⁶⁹

⁶⁹ Interview with HE Said Al-Harthy (Undersecretary for Ports and Maritime Affairs, Muscat), correspondence, 8 February 2012.

3.5. Ports and National Security

This section examines the significance of ports to Oman's national security, since in addition to their usual functions they also provide operating bases and operational flexibility for the armed forces and national security agencies (Nawaz 2004: 37-39). Other threats and challenges to these ports are also looked at.

It is not surprising that a country like Oman, whose history is so closely interconnected with the sea, can claim to have been one of the world's first international trading nations (Till 2009: 31-37). Throughout most periods of Oman's history, traders skilfully exploited the strategic Indian Ocean location of Oman's ports. In the early 1500s, the Portuguese, recognizing the value of the location of Oman's ports for controlling the Strait of Hormuz, occupied the country and for more than a century established jurisdiction over most of the Omani coastline until the balance of power shifted back to local Omanis and eventually led to the emergence of the Al Bu Sa'id dynasty in the mid-eighteenth century (Rippenburg 1998: 2-30). Wealth moved by sea, and until the nineteenth century a secure maritime environment was essential for the economic well-being of the sea-based empire. During that time the Omani fleet became a defender of commerce, which was essential for the growth of the country and more importantly for the wealth of its empire (Till 2009: 31-37).

In the modern age the importance of maritime trade and the sea routes along which such trade passes was clearly demonstrated during the Gulf Wars of 1980-88 and the Gulf conflict of 1991. The Tanker War (1987-88) was an attempt to break the stalemate of the Iran-Iraq war. Over a four-year period the situation escalated, and many oil tankers, some merchant shipping, and various important maritime trade links were attacked, damaged or destroyed, while the economies of the regional states and the energy markets were also adversely affected. Although Oman's own maritime trade was not seriously disrupted, the country had a critical situation on its hands since most attacks took place in the vicinity of the Strait of Hormuz (Peterson 2007: 442-445).

Because of the nature of its territory, several aspects of Oman's strategic infrastructure were initially developed along the coastlines and in the open sea where their location was

influenced by ease of access. Yet the original reason for their success, which was to facilitate the supply of materials, is also the one that has inevitably made elements of the strategic infrastructure, such as ports, relatively difficult to secure. Several of the ports represent critical parts of the national infrastructure, so that not only would the immediate impact of an attack produce an adverse effect, but the downstream consequences for Oman of the loss of such infrastructure would produce even greater economic and security impacts.⁷⁰

As noted by Mahan that ports constitute an important element of sea power (Mahan 1987: 29-58) and therefore are essential in the national security calculation (Vego 1999: 61). Reliance on logistic and technical support from a single base limits a country's flexibility and simplifies an enemy's problems, whereas possession of large numbers of bases offers significant advantages for the deployment and manoeuvre of forces. However, this will only be effective if the ports in question are geared up to cater for naval vessels, and this entails thinking in terms of supplies, ammunition, dedicated secure facilities, and port protection (see Chapter Five on the Royal Navy of Oman and Policing). Tactically, the enemy can operate with relative ease against a fleet that uses a single major naval base in a given area of operations (Vego 1992: 297-301), as shown by the successful Indian Navy attack on naval and merchant shipping and port installations at Karachi (Pakistan) during the war between India and Pakistan in 1971 (Till 2009: 171, 336-337). Therefore, the developing of ports offers strategic advantages in relation to a country's national security since, by providing added flexibility to naval and military forces and to security agencies, it enables them to operate from different locations and to reduce their dependence on a single port facility.

In the aftermath of incidents of piracy in the Arabian Sea that have occurred rather too close to Omani ports, and in light of other global security issues pertaining to maritime safety, a sense of urgency must be communicated sooner rather than later, since these are matters that require institutional awareness and a paradigm shift in how Oman needs to

⁷⁰ Interview with Charles Le Gallais (Serco Defence, Science and Nuclear; also consultant to Oman's ports security, Exeter UK), 7 February 2012.

handle the security of its ports and maritime trade in its territorial waters and throughout its Exclusive Economic Zone (EEZ).⁷¹

In reviewing Oman's maritime legacy, one can say that in the eighteenth and nineteenth centuries Oman's relationship with the sea was relatively simple. The country was kept safe from external threats by the Omani fleet, while its economic wealth was derived from its ability to trade with other nations (Pasha 1999: 110). Discovering new resources and establishing new markets became an incentive for an insatiable breed of traders and so Oman found that its ports and the sea were essential to its economic lifeblood. In the twenty-first century, the picture has become more complex. The country's economic wealth continues to be dominated by depleting hydrocarbon resources as over 40 percent of GDP and 75 percent of state revenues are still linked to oil and gas.⁷² Oman must remain connected with the sea more than many other nations, but is also at greater risk of threats to and from the sea and those who move upon it.

Potential environmental threats are numerous, and include the obvious dangers of pollution from stricken large vessels, especially if they are transporting oil or other toxic cargoes. Such large-scale incidents can also affect adjacent countries, and all will require significant efforts, both to limit the impact of the events, as well as to clear up in the aftermath of any such disasters. Hypothetically the biggest issue is maritime contamination and/or pollution from a nuclear incident involving either Iran's nuclear facility,⁷³ or the UAE's in the future, since severe damage would be done to desalination plants which, in any case, are major terrorist targets. The fact that Oman has a long coastline which faces both the Arabian Sea and the Indian Ocean leads to extensive responsibilities and requirements, including the need for patrolling and securing the ports and offshore infrastructures. This includes monitoring and regulating any illegal exploitation of resources, such as fishing or the dumping of waste, while simultaneously maintaining arrangements that will allow for the prevention of incidents and for any necessary steps to be taken to mitigate their

⁷¹ Interview with Charles Le Gallais (Serco Defence, Science and Nuclear; also consultant to Oman's ports Security, Exeter UK), 7 February 2012.

⁷² Interview with Dr Qais Al-Yahyai (Central Bank of Oman, Muscat), correspondence, 6 December 2011.

⁷³ Interview with Charles Le Gallais (Serco Defence, Science and Nuclear; also consultant to Oman's ports Security, in Exeter UK), 7 February 2012.

subsequent effects, as well as enabling action to be taken against more traditional nefarious uses of the sea.⁷⁴

While Oman's economy gains positive benefits from its ports and the links to the sea, as discussed here and in the previous chapter, crime and illicit activity also transit by sea and duly arrive at the country's ports. Illegal immigration has received much publicity, although people smuggling is believed to be more prevalent than human trafficking. Efforts to gain illegal entry into Oman continue to be detected at various places along the coast, with the majority of attempts occurring particularly in the northeast, on the Al-Batinah Coast (see Figure 3.1),⁷⁵ while drugs from a variety of ports of origin also enter the country. Most, particularly cannabis and cocaine, appear to be smuggled in by container and although exact quantities are obviously unknown, it is believed that the largest proportion transits by sea, entering Oman through its ports.⁷⁶

What is perhaps the most-publicized threat to Omani ports today does not involve traditional maritime crimes, but in fact consists of piracy and maritime terrorism (Enders and Sandler 2006: 203). Closer to Oman, an example of such incidents includes the suicide attack, the most widely-known form of attack against military and civilian shipping. In 2001 the destroyer USS *Cole* was hit while it was alongside in the port of Aden for refuelling (Till 2009: 227), and in October 2002 the French tanker *Limburg* was attacked in the Gulf of Aden while preparing to receive an additional cargo of crude oil from an offshore terminal (Enders and Sandler 2006: 203). The lesson to be drawn by Oman from these incidents is that, despite Aden's ideal location as a Middle Eastern port bordering on both the Red Sea and the Arabian Sea, Yemen's shipping industry was quite crushed by these two assaults. As a result, and due to a 50 percent decrease in import activity, Yemen expected to lose US\$3.8 million per month because of the attacks. The port of Aden itself suffered dramatically in the aftermath of the attack. The global marine insurance market more than tripled the war risk premiums for ships calling at the port, which had a hugely

⁷⁴ Interview with Major General Mungo Melvin, (British Army ret'd), 17 February 2012, Tisbury UK.

⁷⁵ Interview with Lieutenant Commander Ahmed Al-Mujaini (RNO Staff Security Officer, Muscat), 15 July 2011.

⁷⁶ Interview with Lieutenant Commander Ahmed Al-Mujaini, *ibid*.

negative impact on maritime trade and on the agreement between the Port of Aden's commercial partner and the Yemeni government (Enders and Sandler 2006: 203).

In the case of Oman, it would be relatively easy to choose a target for attack (see also, Chapter Five, sections 5.7-5.8; on critical infrastructure and nature of threat). Clearly it is simple to obtain and establish a list of strategic ports, and once the types of cargoes handled are also taken into account, it becomes obvious where an attack would have the greatest strategic impact.⁷⁷ This would include all the ports, as well as offshore installations which are equally vulnerable (as discussed in Chapter Four on Offshore Resources). Evidence would suggest that an attack on any port would have severe economic and political repercussions. The same attack would also cause severe loss of international confidence in the RNO, and this loss of reputation might well have an adverse effect on the Navy's deterrent value and/or its credibility.

Oman is one of the growing economies in the region (Pasha 1999: 39), and remains a major trading nation with the essentials of its economy transported by sea. At the beginning of 2012, the shadow of war and Iran's threat to close the Strait of Hormuz dwarfed the threat from piracy, which, although a matter of great alarm to general maritime traffic, can often be a somewhat over-dramatized danger. The areas currently at the greatest risk from piracy include the Gulf of Aden and the Horn of Africa; however such violence can now happen anywhere in the Arabian Sea.

Legally, piracy is a crime that takes place upon the high seas, whereas raids of the kind that happen inside territorial waters are not piracy; thus, even though it is within these waters that the majority of attacks against shipping occur, they are regarded technically as armed robbery (Till 2009: 291), kidnapping and hijacking (UNCLOS 1982: Article 101). With the situation in Yemen, Somalia, and the Strait of Bab-Al Mandab, the Omani ports are particularly vulnerable to attacks from piracy and maritime terrorism. An increase in the number of incidents/attacks in the vicinity will eventually mean higher insurance premiums, leading in turn to a dramatic rise in the price of goods. With pirates extending

⁷⁷ Interview with Charles Le Gallais (Serco Defence, Science and Nuclear; also consultant to Oman's ports Security, Exeter, UK), 7 February 2012.

their activities closer to Port Salalah, there are real fears that this might have a negative impact on the port's operation and lead to loss of reputation. If this were to occur, some traffic using the port would be forced to sail on, bypassing Salalah for other competitive regional ports. On the shipping side, this would rapidly use up excess shipping capacity, and increase journey times and fuel costs, inevitably leading to an increase in freight rates locally, regionally and then probably worldwide, with the subsequent dramatic impact on global trading systems and economies.

In recent years the incidence of piracy attacks, i.e., “acts in waters outside the jurisdiction of a state and within territorial waters [that] are described as robberies” (Till 2009: 291), has risen worldwide. Piracy is an emotive issue which suffers from media hype, but it is not “life threatening” to Oman’s seaborne commerce, although failure to address acts of piracy and to prevent further incursions does impact on the reputation and professional status of the Royal Navy of Oman (RNO), and in extreme circumstances could cause other nations to come to mistaken conclusions about Oman’s maritime capabilities and intentions. On the other hand, one could even go so far as to say that anti-piracy patrolling is an excellent form of training for seamanship, naval tactics, and so on, since operating under real-time threats adds a certain zest to the training manuals.

During 2011, 237 ships were attacked by pirates, with 28 vessels being comprehensively hijacked. Such incidents impact on multiple stakeholders and leave disturbing and negative effects on the seafarers attacked (Bowden and Basnet 2011: 8). A report on the economic cost of piracy estimated the cost of Somali piracy at around US\$7 billion in 2011. Over 80 percent of these costs are borne by the shipping industry, while governments account for 20 percent of the expenditures associated with countering piracy attacks (Bowden and Basnet 2011: 1).⁷⁸ As was seen in the latter part of the twentieth century, other threats to the world’s ports and maritime trading system also exist; these have ranged from missile threats against oil tankers transiting the Strait of Hormuz during the Iran-Iraq war of the 1980s, to threats of mines in the Red Sea in the late 1980s. All such threats combine to put pressure on the globalised system of mercantile trade that ultimately fuels national and global economies (Tracy 1991: 224-230).

⁷⁸ Further details can also be found at, oceansbeyondpiracy.org, accessed 11 April 2012.

For Oman, as for many other nations, the sea represents a lifeline, but this lifeline is also a supply route for a variety of threats, from the criminal to the less-traditional and doubtless to as yet unimagined forms of terrorist attack. As long as trade continues and goods arrive without interruption, this maritime lifeline is taken for granted, and this has remained the case, apart from a few notable periods of history. As Tracy notes, there have been a few well-publicised incidents, but most threats to international maritime trade since the end of the Second World War have been from accidents, most notably those involving oil tankers, when the results have not only caused environmental disasters but have also led to interruptions in the required flow of materials into the country. While this is true in the Omani Sea Area, there have been real threats further afield to supplies for Western and Asian countries, notably during the Iran-Iraq war in the 1980s when attacks on neutral shipping came from both sides (Till 2009: 290). The US navy and the RNO were involved in protecting trade transiting the Strait of Hormuz, and although the effect on oil supplies to the West was limited because of a glut occurring at the same time on the world market, insurance rates and crew costs both increased (Tracy 1991: 224-230).

Altogether, these various dangers in the waters surrounding the ports of Oman represent a direct threat to the national maritime infrastructure and maritime industries, and may indirectly affect the country through increased costs and a slowing down in the global trading system. As a maritime nation with an economy so closely affected by the sea, Oman needs to promote and protect its maritime interests from such threats. The chapter now considers official directives with regard to protection of the environment, pollution, the use of ports as tourism hubs, and the Customs and police forces.

3.6. Policy Issues

This section looks at policy issues pertaining to the ports sectors, such as the future prospects for their commercial viability and security, protection of the marine environment and pollution control, and national, regional and international obligations.

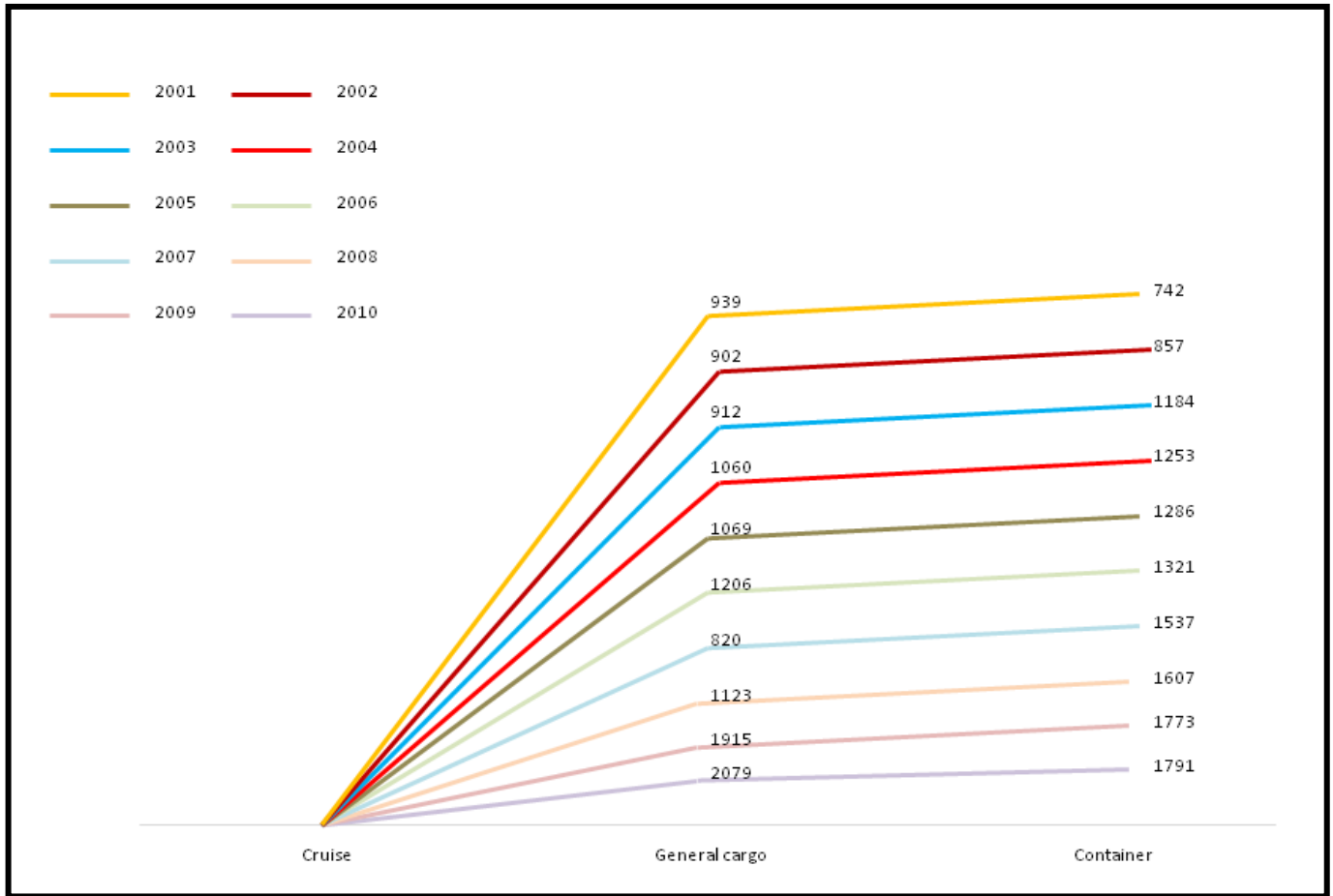
As discussed, Oman has embarked on its ambitious Vision 2020 plan with the aim of strengthening its economy (Pasha 1999: 34-70). Establishing new ports and upgrading port facilities is seen as an essential requirement for enabling the country's natural resources to

be developed sustainably. The government's policy for the contribution of maritime transport and port services to GDP foresees an increase of around 8 percent by the year 2020. It is also believed that the policy will produce an increase in value added at an annual rate of about 5.9 percent on average, by pursuing the following approaches:

- By utilizing Oman's strategic location, the government aims to make Oman an international commercial and financial centre.
- Upgrading and maintaining the efficiency of the ports and maritime infrastructure, preserving a clean environment, enhancing security, and providing streamlined rules for customs, will enable the future needs of the Omani economy to be met.
- Sources and centres of information must be networked as well as connected to the international information infrastructure, to develop a national information system.
- Use of technology, and expanding and upgrading existing telecommunications networks will enable various high quality services related to the maritime industry to be provided.
- The private sector must be urged to invest in maritime industry projects and to promote tourism while preserving the identity of Oman, and partnerships should be established between the public and private sectors to develop these zones, thereby achieving wellbeing and prosperity for the whole country.

Regarding ports, environmental protection, and pollution control, government policy is to put Omani ports amongst the world's leading harbours and best-equipped facilities. With their location on the open sea, their hub and terminal services (Port Salalah), dockyard facilities (Al-Duqm), and petrochemical and oil storage facilities (Sohar Industrial Port), they will operate as a major channel for national and Arabian Gulf oil exports (Al-Duqm). In times of crisis they can play a major role in the Arabian Gulf's commodities exports and imports. However, growing concern about environmental issues is creating demand for a policy to mitigate environmental impacts (*IHS Global Insight 2009*: 46). As the volume of maritime traffic increases and more vessels call at Oman's ports, cost-effective and efficient environmental compliance will become even more imperative and challenging. Figure 3.5 below shows the vessels visiting Port Salalah between 2001 and 2010.

Figure 3.5: Vessels Visiting Port Salalah, 2001-2010



Source: Ministry of Transportation and Communications, 2011

It is very important that Oman has policies in place that can coordinate the maritime activities and ensure the commercial viability of the marine system. Such policies will mitigate adverse impacts on the environment while complying with the modern environmental legal framework. As discussed in Chapter Two, Oman is a signatory to international treaties related to environmental protection. However, though Oman has ratified these treaties, their effectiveness must be physically scrutinised. This needs to be done through effective policing of the maritime zones with appropriate equipment and resources and with the carrying out of coordinated strategies.

Oman's early concern for the safety of its marine environment is clearly indicated by its 1974 Law on Marine Pollution Control (Royal Decree No. 34/74), which expressly prohibits the discharge or release of any pollutant from a ship, shore location, or oil transport facility into Oman's Pollution-Free Zone, the 38 mile-wide belt of water which stretches around Oman's territorial waters.⁷⁹ In 1982, the country issued the Law on Conservation of the Environment and the Prevention of Pollution (Royal Decree No 10/82), which addressed a wide range of environmental protection measures; including the requirement that all development projects should undergo environmental scrutiny prior to the issue of a mandatory environmental permit. It then became the task of the RNO and the Royal Oman Police Coast Guard (ROPCG) to police this law, but because of such a vast sea area and insufficient assets in the form of ships, Maritime Patrol Aircraft (MPA) and coastal radars, surveillance of the EEZ has not been as effective as it should be. This is evident from the patches of oil and other signs of pollution in the sea area that are sometimes reported by ships during normal patrols.

Currently the legal framework of Oman's environmental regime is mainly regulated primarily by the Law on the Conservation of the Environment and Combating of Pollution, which was issued in 2001 (Royal Decree No. 114/0) Although its forerunner of the same name (Royal Decree No. 10/82) now stands repealed, it did enable the enactment of a string of environmental legislation, most of which continues to be in force today (see section 3.7 on policy implementation).

The tourism sector which currently (2012) contributes 2.6 percent, represents another cornerstone of Oman's economic diversification strategy (Oman State TV, broadcast interview 6 June 2012). Since the launch of the 2020 Vision plan in June 1995, the Omani Government has invested almost US\$30 billion in tourism infrastructure, and an annual growth target of 7.6 percent between 2006 and 2010 was established for the sector (*Business Monitor International* March 2011). From the mid-1980s, the Government gradually opened up the country's forts, beaches, mountains and deserts etc, to foreign tourists, and the Ministry of Tourism participated in various international tourism forums

⁷⁹ For more details on Oman's Law, see, www.omanlawblog.curtis.com, accessed 2 December 2012.

and exhibitions to introduce Oman to the world tourist market (Oman State TV, broadcast interview 6 June 2012).

Port and shipping protection is always one of the highest priorities for the national security agencies, i.e., Customs and the ROPC/Police. Although the International Ship and Port Security Code is adequate, in addition to meeting its requirements Oman's port authorities also need to bear in mind the complex balance between imposing extra security measures and trying to avoid excessive precautions, especially when such actions might hinder the flow of trade. Therefore security plans have constantly to be reviewed as part of national policies for port security. The port authorities must also identify the safety and security aspects that are in place within each port, and the facilities that are considered vulnerable.⁸⁰

The Royal Oman Police, which runs the Coast Guard and Customs, is responsible for the on-going implementation of all passport requirements, customs policy, and ports security measures, as well as guarding the access points and exits of the ports at all times (Oman State TV, 8 January 2012). Whenever a situation demands additional strength, this security policy is enhanced by the RNO, along with other units from the Sultan's Armed Forces (SAF) and the security agencies. However, this reactive plan does not normally work, and if it does it requires accurate intelligence updates. An example of security shortfalls is the hijacking of the Indian chemical tanker MV *Fairchem Bogey* on 20 August 2011 while at anchor in the vicinity of Port Salalah; the vessel was boarded by pirates and the crew taken hostage.⁸¹

A brief examination follows of the government's management strategy (policy implementation) in dealing with the above aspects.

3.7. Strategy Management and Implementation

The period of rapid change and development undergone by Oman since 1970 has demanded a firm strategy to meet the needs and aspirations of its growing population and

⁸⁰ Interview with Charles Le Gallais (Serco Defence, Science and Nuclear, also consultant to Oman's ports security, at Exeter UK), 7 February 2012.

⁸¹ After five months in captivity and the payment of a substantial ransom, the tanker and its crew were freed by the Somali pirates on 12 January 2012. For more details see, www.oceanprotectionservices.com, accessed 13 May 2012.

to deal with environmental protection and pollution control. Thus the law on the Conservation of the Environment and Combating of Pollution states that ships and vessels are barred from discharging oil and other environmental pollutants into Oman's EEZ and imposes strict penalties against violators. As noted above, with such a big sea area, insufficient policing assets, and the volume of marine traffic using Oman's maritime zone, this law will only work if and when the violator is caught and the case is justified.

3.7.1. Environmental Protection and Pollution Control

Most of the legislation included in the 1982 Law on Conservation of the Environment and the Prevention of Pollution (Royal Decree No 10/82) and its 2001 successor, the Law on the Conservation of the Environment and Combating of Pollution (Royal Decree No. 114/01),⁸² remains in force. Since 2001 the implementation of Decree 114 (and its later amendments) has been considerably strengthened; nowadays it provides better protection for ecosystems and wildlife habitats, and is also intended to prevent water, soil and air pollution. All ports authorities are now required by government regulations to put environmental issues at the heart of their operations. Extremely strict policies are applied when vessels are in port, and stern measures are taken against any offenders (Oman State TV interview DG Customs, 8 January 2012). Again, as already explained, such policies will only work if they are backed up by maritime surveillance, and if policing assets and tasks are properly coordinated.

3.7.2. Tourism

There is no doubt that tourism, which is frequently referred to as the "world's largest industry", represents big business (Sharpley and Telfer 2002: 1). Tourism is just as important to Oman as it is for any other country in the world because it brings in income and job opportunities. As Oman seeks to diversify its economy away from its depleting oil and gas reserves, it is anticipated that a tourism-based economy will attract business and commerce to the country. Oman is therefore putting great emphasis on marketing its natural resources and national culture in an attractive tourism package, and in a way that will preserve the country's Islamic-Arab values and sustain its natural environments.

⁸² For more details see, www.omanlegal.net accessed 29 December 2011.

Environmental issues are of major interest to the government which, with assistance and consultancy from several multinational bodies, has gained international recognition for its initiatives and projects aimed at safeguarding the country's wildlife and ecosystems (Oman State TV, broadcast interview 6 June 2012).

A national conservation strategy for sustainable development was drafted in 1992, following extensive consultation among the ministries and organisations responsible for biodiversity conservation, or whose development projects might have threatened the habitats of flora and fauna. In an effort to enhance its environmental protection strategy and preserve natural resources, Oman has also celebrated an annual "Omani Environment Day" every 8 January since 1997, which aims to restore and preserve the health and richness of coral reefs and give a major boost to their popularity. However, the government's careful efforts, a great diversity of tourism planners, and lengthy routine procedures intended to protect Oman's unique character have tended to slow down tourism development.

With the current strategy, building up the sector is carried out by the government, as the main operator in developing areas, which undertakes core projects to attract tourists, while the private sector is encouraged to carry out complementary projects. According to the Tourism Minister, developments are to be undertaken in accordance with a long-term strategy that will be drafted with the assistance of a community of experts (*Oman Daily Observer* 16 April 2012: 6). The strategy adopted will, however, need to prove its transparency and efficiency by providing a clear vision that reflects the special nature of Omani society and avoids bringing in undesirable or inappropriate features. Moreover it will have to prove its worth by making a worthwhile contribution to the country's GDP.

3.7.3. Passports and Customs

The Royal Oman Police, who manage the Coast Guard and Customs, carry responsibility for the policy implementation of all passport requirements, customs policies, and security measures for ports, as well as for guarding the ports at all times. They are supported in their role, whenever a situation requires it, by the military (Oman State TV, broadcast interview 8 January 2012).

Through the ROPCG and Customs and the Port authorities, the Royal Oman Police also conduct regular assessments of port security to determine vulnerabilities, while additional precautionary exercises and training are also part of on-going efforts to ensure port security. Depending on the type of threat and to guarantee the availability of protective security measures when these are deemed necessary, there are layered security systems in place from one end to the other of any sea-based journey (*Oman Daily Observer* 16 April 2012: 6). However, securing national assets and ports is a team effort for which all must share responsibility; therefore everyone plays an important role in ensuring that Omani ports remain open for business. One of the issues, for example, is that with regard to passports and customs the maritime industry has no published policy for effective security procedures. In the early stages the RNO and other national security agencies will need a firm policy from which directives can be drawn that will then set down procedures in pre-planned responses. However, there seem to be no major issues with regulations for visas and customs, although these may vary by country; for example a UK citizen can buy a visitor's visa at the port of entry. This practice is more or less the same as it is for entry to most of the GCC countries except Saudi Arabia. Although the Saudis were quite relaxed about issuing visas to Muslim people visiting *Makkah* and *Madinah*, the system was open to abuse, and since 2010 the Saudis have applied a strict approach to the issuing of visas at the port of entry.⁸³

As will be shown in the next section (assessment of the ports), ports authorities and other stakeholders will need to be constantly aware of any security measures in place, whilst other forces such as the RNO and the ROPCG need firm as well as close cooperation in dealing with challenges. The aim of any security effort is to find the appropriate balance between security and freedom or, in more practical terms, between inspecting every container and keeping trade moving, which should be the actual measure of success.

3.8. Assessment of the Ports

This section offers an assessment of Oman's ports. The various developments that have been taking place with regard to Oman's ports have made them competitive with regional and international ports so that they are now attracting major shipping lines and

⁸³ Interview with Captain Kamel Al-Juhani (Kingdom of Saudi Arabia Navy ret'd, Jeddah), 14 May 2012

international investors. The international maritime transport sector has recently witnessed significant challenges but despite the global economic recession, Oman has been putting considerable effort into enlarging and modernizing the infrastructure of its ports and therefore is preparing to capitalize on the eventual resurgence of world maritime trade. Expansion of the Port of Salalah, for example, is aimed at making it one of the main ports for container ships in the Indian Ocean by meeting the requirements for an increasing volume of international cargo containers. Despite a recent decline in activity in the maritime transport sector in the Middle East as a whole, Oman's Port Salalah has attracted a new generation of giant container vessels (see section 3.3).

Similarly, while construction work on the port and dry dock was continuing at Al-Duqm, Sohar Industrial Port with its components of industrial centres and road corridors for liquids, containers, and general cargo, witnessed major developments to meet the increasing demands of new industrial projects. In 2009, Sohar Industrial Port reached a milestone, having dealt with 1,000 ships since the start of handling operations in 2006. The popular protests in Sohar Port in 2011 were due to the lack of jobs and employment opportunities offered by the port. Therefore it is critical that the development projects at Sohar Industrial Port are able to generate business opportunities for local companies working in Al-Batinah region so that they can provide jobs for the local Omani workforce. In fact, the Sohar and Al-Duqm ports development is regarded one of the largest development projects in the world, with combined investments exceeding US\$30 billion (*Oman Daily Observer* 25 May 2011: 1, 3). Oman has also made big strides in entering into partnership with the private sector in the management and operation of the ports, and this too has contributed to achieving the desired goals (Ministry of Transport and Communications 2010: 1-3).

Because of the scarcity of investment capital available from experienced national companies, and since the global economy has internationalized ownership and investment patterns for all economic activity, the development and management of Omani ports and their related infrastructures has offered opportunities for foreign entry into what were traditionally regarded as sensitive strategic arrangements. One characteristic that distinguishes ports from other sectors of the global economy, including shipping, is their

geographic constraints. An investment made in a particular port is not movable, in contrast to moveable assets like petroleum tankers, which can be used as floating storage devices. Competition for business between regional, international or even national ports is fierce, and the government of Oman needs to be more proactive and competitive, given its limited national revenues.

With the great developments that have so far occurred with the ports, what will Oman's ports need for the future? In order to compete, Omani ports will need to adopt and monitor the right set of policies and economic incentives for attracting shipping companies, initially at the cost of their own profit margins. The most important attribute that carriers look for in a port is the location relative to their origin and their final destination. Beyond the matter of location, other attributes include a port's ability to accept large ships safely, the extent of its terminal facilities, its efficiency of container handling operations, its provision of frequent feeder services with an appropriate geographical coverage, and the pricing of its cargo-handling charges (Hassan 2005: 21-25). The capacity of a port may be measured by its capacity to handle the loading and unloading of ships, to transfer cargo in and out of the port area on the land side, and to store cargo within the port area itself. Thus, port and onshore infrastructure, along with skilled manpower, will contribute significantly to the success of any port operations. Compared with regional ports, although Port Salalah is ranked 32nd globally, Dubai's port is ranked 9th on the same scale. Hence, Oman must work out sensible policies and implement sound strategies that will be more attractive to investors and draw in global business. However, these strategies will have to be wisely monitored by the government to avoid sliding into a situation where national identity is weakened or lost. This has been the case in Dubai where the predominance of expatriates over nationals is becoming a much-discussed issue as is evident when talking to local Dubai residents.

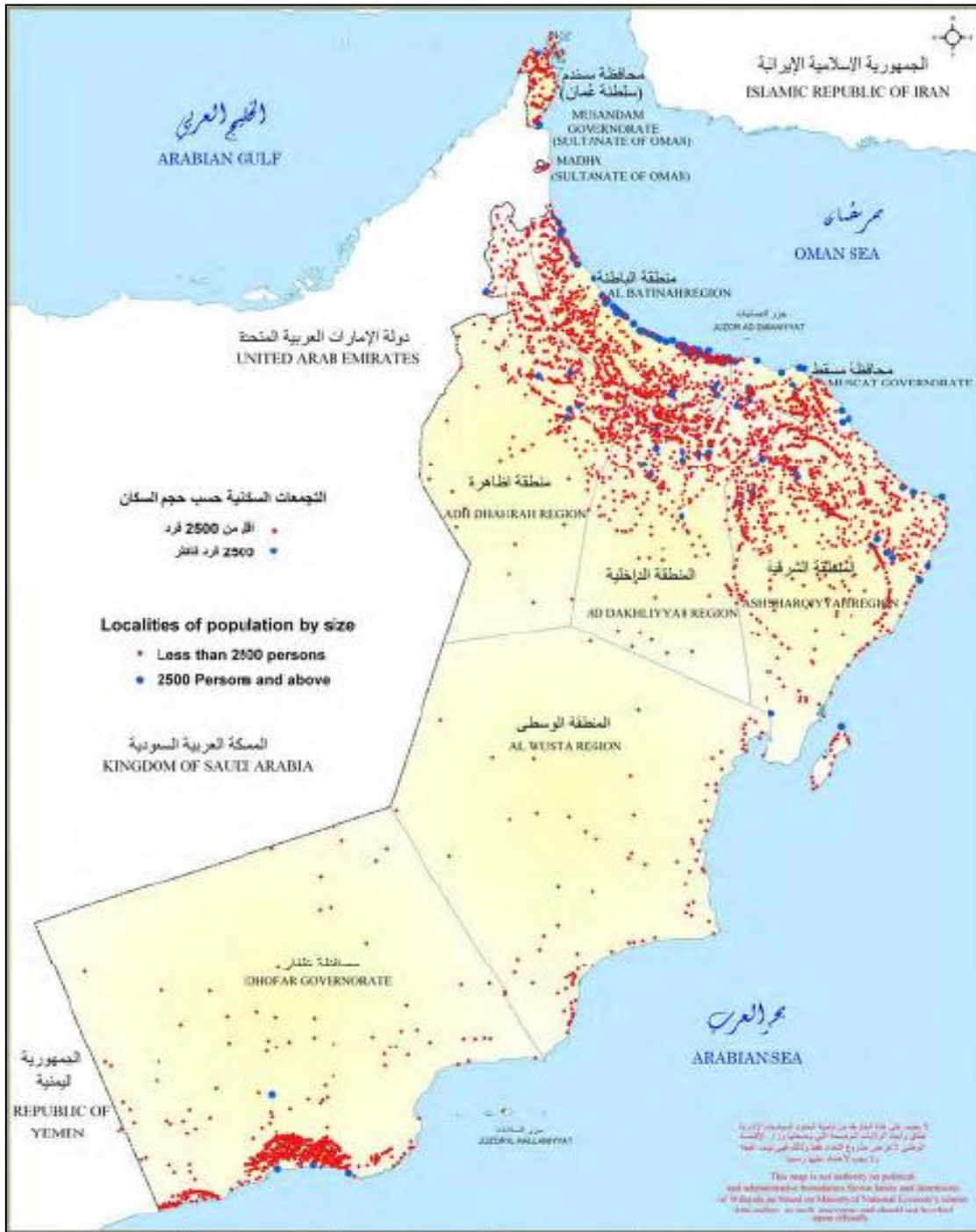
Port efficiency remains the pillar of maritime trade and hub ports are designed to operate at optimum efficiency, thus becoming a value-added component in the economy of the state (Hassan 2005: 21-25). Many countries have created free trade zones, in combination with their ports, as engines for economic growth, an aspect which Oman needs to augment but based on optimum policies.

One key area for improvement in Oman's port system has been the Customs process. Although the World Bank's Logistics Performance Index recognised Oman's Customs records as a strong point (Oman TV, interview, 8 January 2012), they often needed to be carried around between offices for various permits, which frequently led to delays. However, procedures have now been streamlined and it is agreed that in any case newer port developments tend to have more efficient administrative systems. The Muscat Inland Container Depot, for example, handles Customs clearances, inspections, payment of duties on import cargoes, and the completion of re-export documentation under one roof, thereby helping to ease the passage of container transport between the Port of Sohar and Muscat, a notable improvement from just a few years ago.

In the past, Oman's location was an attraction for invaders such as the Portuguese and the Persians. However, its location today is of little use without economic stability and a comprehensive inter-modal transport system. The on-going overhaul and expansion of land, sea and air travel options is laying the foundation for a truly competitive economy, both for Oman and for the region as a whole. For some years the highlights of Oman's regional diversification plans have been the expansion of Salalah and Sohar ports, both of which have grown into sizeable transport hubs, but the country's most ambitious and potentially challenging development is the current industrial port project in Al-Duqm. With this project the government's aim is to turn the country's sparsely-inhabited central region into a dynamic province based around a major industrial port. A statement by the Council of Ministers suggests that this development will attract people away from the increasingly populous northern region (*Oman Daily Observer* 6 December 2011: 1, 5). Currently, over half of Oman's population,⁸⁴ is concentrated in the stretch of coastline between Muscat and Sohar in the Batinah region, whereas less than 1 percent lives in Al-Duqm region, an area that accounts for nearly 25 percent of the country's total land mass and also provides a link between Muscat, the capital, and Salalah. Figures 3.6 and 3.7 show population density/size in Oman's localities in 2010.

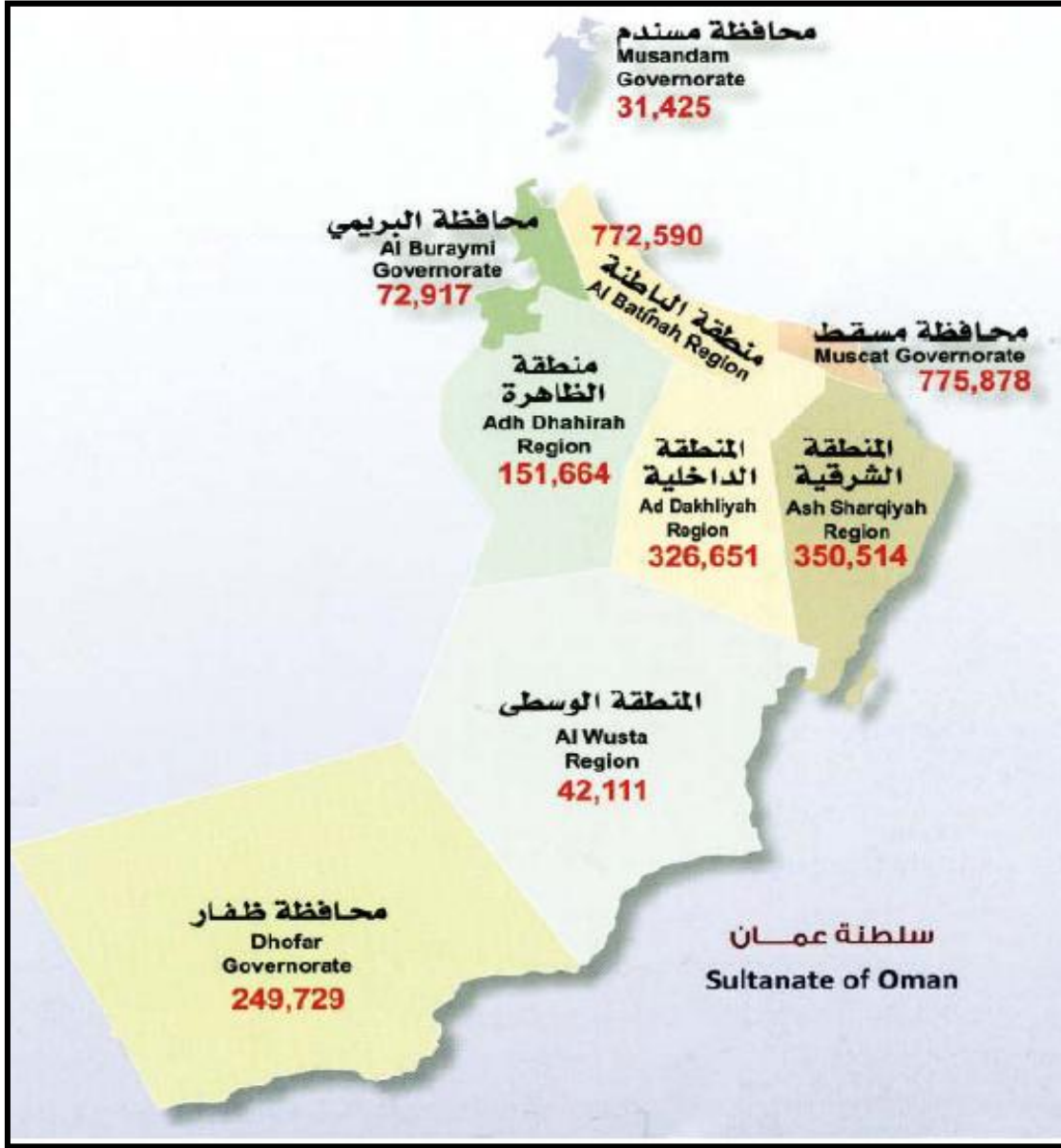
⁸⁴ Oman's total population (latest survey in 2010) is 2,773,479: out of which 1,957,336 are Omani and 816,143 are expatriates representing 29.4 percent (*Oman Daily* newspaper (Arabic) 12 June 2011: 10).

Figure 3.6: Population Densities of Oman 2010



Source: Ministry of National Economy, 2011

Figure 3.7: Oman: Population Totals by Governorate/Region 2010



Source: *Oman Daily* newspaper (Arabic), No. 10967, 12 June 2011

With regard to large marine industrial projects, one would argue that in a region that favours large-scale projects, Oman has gained a reputation for undertaking measured and pragmatic expansion, even though the developments at Salalah, Sohar and Al-Duqm are, in marked contrast, grand, expensive and progressive. Yet Oman has a relatively high completion rate for its schemes, most of which eventually reach functionality, even if they

have taken slightly longer to complete than might be the case in some neighbouring states. Evidence suggests that despite global economic contraction in 2008-09, Oman was able to continue its development projects due to prudent planning. When the project was first announced people voiced doubts about Al-Duqm, and wondered whether it was realistic to expect people and companies to risk moving to this relatively uncharted part of the country (Oxford Business Group 2011: 159-163). However, because it is being backed by the government, Al-Duqm is being carefully planned and managed and on closer inspection seems to have more to offer investors than may initially have appeared. Its location between Muscat and Salalah means that it can profit from any transport network constructed between the two cities (including the existing road and the future rail link), as well as from short-sea shipping. But its most interesting overland link may well be with Saudi Arabia's mineral-rich southern region and the shipping lanes of the Arabian Sea (*Oman Daily Observer* 16 May 2012: 1,3).

Omani ports need the ability to be flexible and to respond to business needs. A clear view is also needed of economic markets, both internally and regionally, and of how the Omani transportation infrastructure can take advantage of significant trends. Currently, investments have to pass through the Ministry of Transport and Communications and the tendering board, a process that hinders possibilities for investing appropriately.⁸⁵ Understanding of the markets could be greatly improved, which would be to Oman's benefit since it would enable advantage to be taken of opportunities that are currently not fully exploited. Further, some specific structuring should be implemented on the labour side, since the '24/7' nature of employment and lower skill requirements do not match the Omanization goals that have been set by the Ministry of Manpower. Ports need flexible manpower, and in places where they are competing against ports in the wider region, they also need low-cost labour which might increase the number of expat workers from the Indian subcontinent.

On the environmental protection side, diversification of the economy away from dependence on oil revenues has put further pressure on habitats, since more sea and land

⁸⁵ Interview with Peter Ford (Chief Executive Officer/CEO Port Salalah, Muscat), correspondence, 9 November 2011

areas are needed for new types of development activity. Measures are being taken to address the serious threats caused by over-exploitation of seas and rangelands. A National Conservation Strategy has been drawn up and ratified, environmental scrutiny of development projects has been improved, protected areas have been designated, and management planning and implementation is progressing.⁸⁶ However, by their nature, regulations must often focus on a very narrow geographic area or ecosystem, a particular pollutant or species of marine life, or on a particular segment of the maritime industry, which is why the current environmental policy is fragmented across several agencies as well as geographic jurisdictions.

The mobile nature of the maritime industry and the high level of activity across jurisdictions and functions need coordination at both the national and international level (*IHS Global Insight 2009*: 1-8), while the global nature of maritime trade requires harmonization of standards regardless of the origin or registry of vessels. To provide such coordination and to assist the maritime industry in complying with environmental regulations, the Ministry of Transport and Communications must advocate uniformity in national and international laws and standards. Together with the RNO, ROPCG, the Ministry of Transport and Communications must also ensure Oman's representation at the international Maritime Organisation (IMO), whose role is to set international standards pertaining to the environment, safety and security of maritime transport (*IHS Global Insight 2009*: 1-8). Overall, the potential of Oman's ports to serve national, regional and global trade can only be facilitated if proper policies and strategies are pursued and that there is a common body to coordinate them which is underpinned by a maritime doctrine.

3.9. Conclusion

This chapter has examined the importance of ports as national maritime interests for all nations and for Oman in particular. This importance is derived from economic interests. Oman's ports, with their potential to serve national, regional and global trade can facilitate economic growth and developments, but only if proper policies and strategies are pursued

⁸⁶ Interview with Dr Barry Jupp (Senior Consultant-Marine, GEO-Resources Consultancy, Muscat), correspondence, 23 February 2012

through coordination, cooperation and input at various levels among the appropriate governmental agencies and the private sector.

Between 1970 and 1998, Oman relied on the adjacent ports of Muscat, Mutrah and the small port at Raysut (now Port Salalah). Government thinking regarding the country's infrastructure then underwent a radical shift and since then the authorities have embarked upon ambitious programmes for the development of new ports and the expansion and upgrading of existing facilities and services (Ministry of Transport & Communications 2010: I-III). As a result of the increasing containerization of world trade, ports like Salalah and Sohar have assumed the even more significant role of serving global trade and have thus become a great source of revenue for Oman. However, a robust policy is needed to sustain this role. Boosted by multi-billion dollar investments, Oman's port and maritime sector is currently a powerful motivator for the country's future economic growth but this impetus may weaken if it is not firmly integrated into the bigger picture of Oman's national interests.

The industrial port of Sohar on the Batinah coast has attracted more than US\$14 billion for investment in infrastructure and industrial projects, and it seems that Al-Duqm on the country's south-eastern seaboard is also likely to draw in equally staggering levels of investment. As a successful trans-shipment terminal on Oman's southern coast, the Port of Salalah, too, is rapidly increasing its capacity in a move to retain its pre-eminence in the region. These upbeat developments attest to the pivotal importance of ports and maritime hubs in supporting the nation's overall economic growth and on-going modernisation. They are national gateways that will undoubtedly serve as major catalysts for socio-economic development, not only in the immediate vicinity of their geographical location, but across the length and breadth of the country. This prospect urgently demands a framework that will sustain such developments.

Al-Duqm Port, for example has been envisioned as an international, multi-purpose, integrated and strategic commercial facility that will connect the area with the Gulf States, the wider region, and the rest of the world. According to officials overseeing the Al-Duqm venture, investments ranging from US\$10-15 billion in value are expected to be ploughed into a diverse range of industrial and petrochemical schemes over an initial ten-year period

(*Oman Daily Observer* 11 December 2011: 1, 3, 21). However, in the absence of a maritime policy that can coordinate national policies and strategies, such projects may at any time become less meaningful if not supported in the long term by clear vision and sound strategies.

From the national security perspective, developing ports is an economically-viable activity since it generates business opportunities for national, regional, and international companies and, through them, creates employment opportunities for the local Omani workforce. The ports also provide strategically important bases along the coastline from the Arabian Gulf in the north to the border with Yemen in the south, for the RNO, the ROPCG, national military units and security agencies, and for friendly and allied forces.

Nevertheless, the success and development of Oman's ports as major multi-purpose facilities for both commercial and industrial use is not without its challenges, the most important of which is undoubtedly the maritime security in the region and concerns about the activities of pirates. With such a globalised economy, the chances of world cooperation through economic integration are, in theory, greater than ever before. But the political, economic and military importance of one region to another, such as the Gulf and the Indian Ocean, has produced a theatre of rivalries. As discussed in Chapter Two (Maritime trade and Shipping), considerable global attention is focused on this region, with the primary concern being to protect economic interests in the form of a free flow of oil from the Gulf. However, the maritime world faces a number of threats including, inevitably, those from nature, weather, and other adverse environmental conditions (such as hurricanes), from human error (incidents at sea), and from criminal and terrorist elements (piracy and maritime crimes). Further, although the difficulties of mounting large-scale terrorist attacks against the maritime infrastructure or offshore installations would be sizeable, the potential for real catastrophe from such an event remains great. At the present time, the resources of the RNO and ROPCG are inadequate to protect Oman's ports from all maritime threats – a situation that needs to be addressed urgently.

Ports have had a crucial role in facilitating Oman's international trade as well as generating economic activity in their immediate vicinity and the hinterland (Ministry of Transport & Communications 2010: 1-5). However, a prerequisite for the smooth functioning of any

port is a multi-modal system that uses the most efficient method of transport from origin to destination. Ensuring good connectivity between port and hinterland will involve an effective national policy for coordinating and integrating rail and road networks with the appropriate ports. Substantial capital will also be required for financing additional infrastructural development to enable ports, national maritime enterprises, and export- and import-dependent sectors to remain competitive. To a large extent, opportunities and challenges for port development go in tandem with developments in the wider shipping industry, including all maritime activities.

Finally, with increasing global trade and the influences of globalization, the Omani economy is becoming even more reliant on the sea – or at least on the goods transported by sea. In discussing the relevance of ports as elements of the national maritime interest, this chapter has concluded that Oman's ports are an important source of revenue. They constitute an essential element of sea power and therefore provide operational flexibility to armed forces. Construction and developments of sea ports along the Oman's coastline and the ongoing efforts for exploration of offshore resources in Oman's sea area, which are discussed in the next chapter, indicate an expansion of Oman's maritime interests. Since interests and vulnerability are correlated, expansion of interests at sea and on land will require even greater emphasis on a national maritime doctrine that will oversee the viability of these resources and their safety. Without a maritime doctrine Oman's security forces will operate under constraint to protect effectively the country's maritime industry, including its ports, and as a consequence may jeopardize its economic growth and endanger national security.

CHAPTER FOUR

OMAN'S OFFSHORE RESOURCES

4.1. Introduction

As one of Oman's major natural resources, the sea occupies an important place in the history of Omani civilisation, and has sustained the people since the country was first settled in ancient times (Kelly 1980: 104-107). The coastline encompasses an economically exploitable area of water mass containing natural resources (oil, gas, minerals) and featuring an aquatic diversity (fish and other marine organisms) (Riphenburg 1998: 1). These resources and their exploitation are significant for Oman and its national economy because of their great economic potential, but they have not yet been fully explored or developed, due to the absence of a common maritime policy and strategy that would align the economic importance of the offshore resources with Oman's other national maritime interests.

This chapter examines Oman's offshore oil, gas and fish resources. Initially it explores their economic importance as national interests, since each of these elements has its own significance for the country's economic growth and national security. The discovery and exploitation of offshore energy resources (oil and gas) is both economically and strategically important because they provide good revenues and can reduce reliance on imported energy supplies; while optimum exploitation of renewable offshore resources (fish) also contributes substantially to economic growth and generates employment opportunities.

Secondly the chapter looks at the policies through which each of these resources is managed, and the strategy that puts the policies into practice for implementation. It makes the point that because Oman's vast sea area is under-used, the contribution made by offshore resources, both renewable and non-renewable, is consequently not significant, and that Oman's offshore resources are not properly managed or exploited at present, even

though they have great potential to increase the country's revenues and employment opportunities. According to recent figures, Oman's GDP by sector for 2010 included 46 percent for oil and gas, 36 percent for the services sector, 17 percent for industry and only one percent for agriculture and fisheries (*MEED* 2011: 12). The resources of Oman's maritime zones, characterized by distinctive oceanic phenomena that produce hydrocarbon resources, minerals, and rich fisheries, are considered as a maritime strength that influences the national economy and security, and enhances the country's growth and development.

It is one of the great worldwide commons that bestows its many advantages on states, corporations and individuals. Trade is carried by sea, shipping moves across the surface, ports and harbours function along the coastlines, economic resources are gathered from the seabed, and naval forces are a sea-borne presence, with all contributing in their way to a nation's economic, political and military power (Anwar 1995: 166). Oman, with its geo-strategic maritime location, has been connected to the sea and its resources since ancient times. Today, however, due to the absence of a maritime doctrine that enhances the effective use of the sea, Oman has lagged somewhat in managing all its maritime assets.

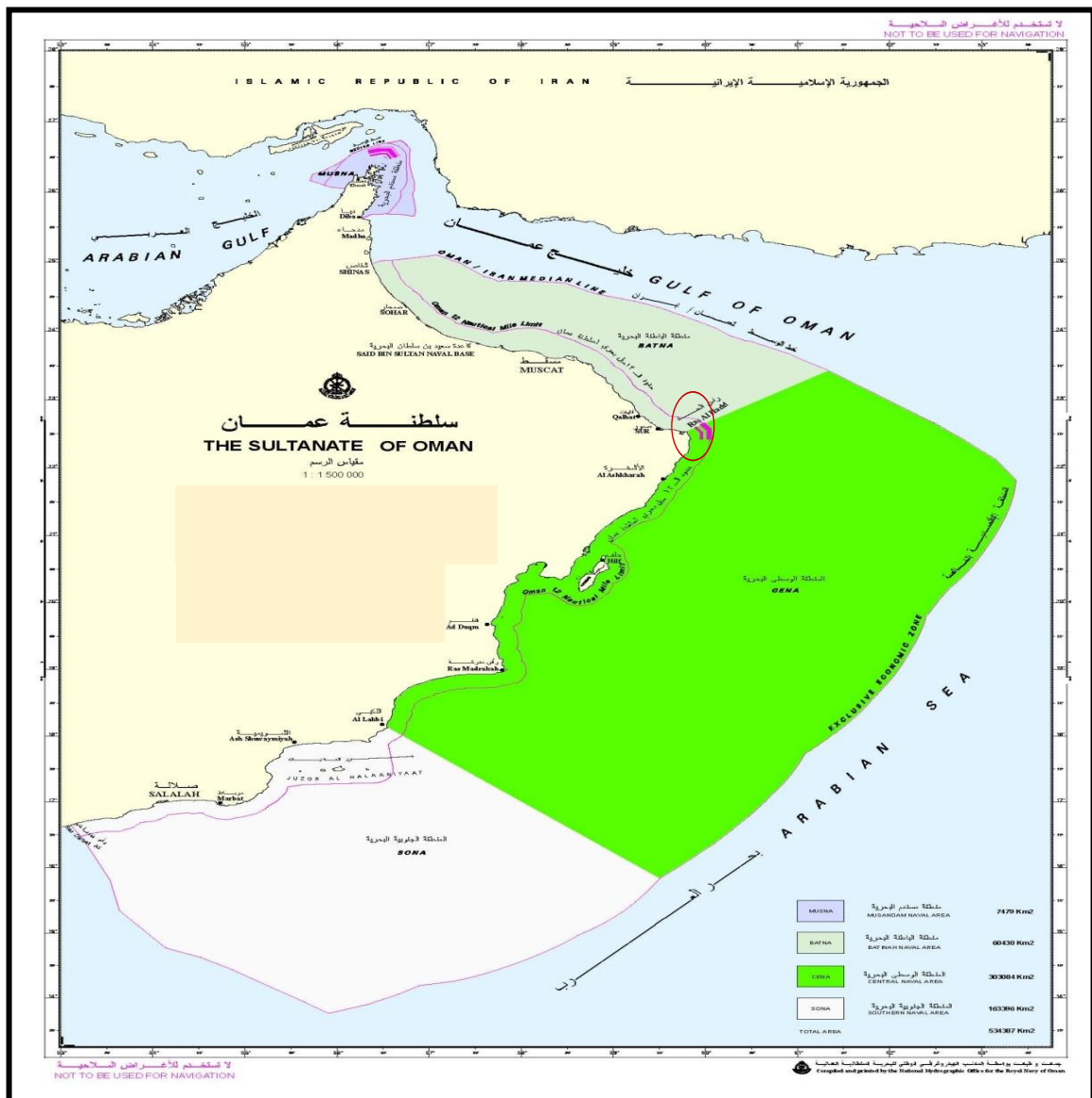
The UN Convention on the Law of the Sea (UNCLOS) and its amendments, which were adopted between 1958 and 1982, are recognized as universal legal documents concerning the seas (Razafi 1997: 55-67). They contain provisions for the recognition of maritime zones that can be established by coastal states.⁸⁷ The 1982 convention (UNCLOS III) in particular recognized increasing demands for the use of the sea for the economic well-being of the littorals, and since May 2009 UNCLOS has offered extended Exclusive Economic Zones (EEZ) and seabed resources from 200 nautical miles out to as far as 350 nm (Parry 2010: 19).

Oman's EEZ (see Figure 4.1) extends for up to 200 nautical miles, encompasses an area of over half a million square kilometres (550,000 sq km), and has scope for further extension

⁸⁷ Maritime zones include: internal waters, territorial seas, contiguous zones, exclusive economic zones, continental shelves, and archipelagic waters.

to 350 nautical miles.⁸⁸ Within this zone Oman has an exclusive right to explore and exploit maritime resources, although such exploitation has escalated sharply since UNCLOS III in 1982 (Blake 1982: 2-16).

Figure 4.1. Oman’s Exclusive Economic Zone and Sea Borders 2011



Source: Oman’s National Hydrographic Office Muscat, 2011

⁸⁸ Interview with Commander Thani Al-Mahrouqi, (Head of Oman’s National Hydrographic Office, Muscat), 21 June 2011.

According to Rear Admiral Chris Parry, “as states seek to exploit and sustain existing maritime sources of wealth and influence, the near future at sea is likely to be defined by three main features: littoral complexity, sustainable development, and oceanic competition over resources” (Parry 2010: 18). Hence, Oman must work on establishing a maritime policy that will embrace the richness of these resources, which need to be properly managed for Oman’s own economic and strategic advantage. Technology not only provides a means of exploiting these ocean resources but also helps in structuring powerful and effective naval forces for the security of the maritime frontiers.

Among countries with maritime borders there is growing interest in the offshore exploitation of resources (oil, gas fish minerals). The greater are a nation’s interests in its EEZ, the higher becomes the requirement to provide security against external threats. For Oman, as for other coastal states, the sea has contributed significantly to the prosperity and security of the lives of its population (Till 2009: 35-37). Its offshore oil, gas and fish resources are important national maritime interests that involve the maintenance of territorial integrity and political independence and include trade, access, economic exploitation of resources, overseas commitments, and stability (Hill 1986: 157-158). Oman’s sea area has potentially vast mineral deposits and fish stocks, and the successful exploitation of these significant components will have an important impact on the country’s economy and development. However, regardless of the strategic orientation of a maritime nation, a form of policy and strategy is needed to explore, exploit, manage and secure these resources (Gray 1992: 28).

The first theme in this chapter examines the economic potential of Oman’s offshore oil and gas and assesses the policy and strategy that these interests entail. In terms of oil and gas these offshore resources remained unexploited until the mid-1990s, after which exploration for offshore resources progressed very slowly. Although oil and gas fields in the Musandam region have been exploited since 1994, concerted geophysical research efforts are still required to assess the real potential present in the whole of Oman’s EEZ. This could represent a challenge to Oman’s development in this sector, as the scientific research and technology used for exploratory operations requires foreign expertise and a certain degree of monitoring.

A second theme looks at renewable offshore resources. As a non-oil and gas source of export revenue, fishing represents one of the most promising sectors, having provided employment opportunities to over 36,000 registered fishermen in 2011(*Oman Daily Observer* 11 December 2011: 1,3). Historically, fishing was second only to farming as an economic activity in Oman's pre-oil era. The Sea of Oman and the Arabian Sea together offer a variety of catch that includes over 1,000 species of fish, crustaceans and molluscs.⁸⁹ The fishing sector is considered a promising field for commercial attention, and if properly managed can account successfully for a large part of non-oil export revenue. The chapter now examines offshore oil and gas resources, as part of the national interest and with regard to their economic importance.

4.2. Oil and Gas and the National Interest

In exploring the economic importance of Oman's offshore resources as important national interests, it is noted that each of these elements has its own significance for the country's economic growth and national security. The discovery and exploitation of offshore energy resources (oil and gas) is both economically and strategically important because they provide good revenues and can reduce reliance on imported energy supplies; while optimum exploitation of renewable offshore resources (fish) also contributes substantially to economic growth and generates employment opportunities.

4.2.1. The Economic Importance of Maritime Resources

This section looks at the economic uses of the sea which, apart from providing seafood and cheaper means of transportation, include trade and commerce across its surface and resource exploitation in its deeper waters and on the seabed. As noted above, because of its physical location and the provisions of UNCLOS, Oman has a large area of the sea, i.e., its EEZ and part of the continental shelf. Without a maritime doctrine the country will face certain constraints in controlling and managing its sea area.

⁸⁹ Interview with Dr Lubna Al-Kharousi (Director of the Marine Science and Fisheries Centre, Muscat), 21 June 2011

One third of the world's hydrocarbon reserves are at sea (Till 2009: 287). Evolving technology has made it easier for humans to utilize the abundant economic resources that are available in the world's oceans. For centuries the only economic marine resource recognised by all coastal and island states was fish, but new scientific and technical advances have opened up possibilities for exploring the depths of the seas and extracting vast wealth, since the sea now offers oil, gas, and various types of minerals, in addition to fish (Anwar 1995: 18-19). This emerging scenario has undoubtedly raised the level of attention paid to maritime questions by the general public as well as by special interests. In exploring their EEZ, Oman needs to be aware that in addition to oil and gas, its EEZ contains other lucrative items and mineral materials that can be exploited such as cobalt, tin, and manganese for which there is increasing demand (Oxford Business Group 2010: 156-157).

Since the first commercial onshore oilfield was discovered between 1962 and 1964 and the first consignment of crude was exported in 1967 (Valeri 2009: 72), Oman's economy has been dominated by oil which, since the late 1960s, has contributed approximately 43-45 percent of GDP. The government's heavy reliance on oil export revenues to maintain its income and political stability has made continued development of this sector a priority. In addition, government expenditure, mainly current spending, is highly dependent on oil revenues, although the government also pays attention to investment. Though the oil and gas sector has a low national workforce compared to the fishery sector (see section 4.2.4), the emphasis placed on this expenditure indicates the importance to the government of its civil administration. Public cooperation and the relevant national agencies and ministries have provided an apparatus for income distribution and the formation of a salaried middle class. Within the GCC states and particularly in Oman, through public sector cuts to reduce expenditures is regarded as politically unacceptable and has therefore been avoided (Rippenburg 1998: 36-37), even after the collapse in oil prices in the mid-1990s and the associated loss of income (see Figure 4.4 below).

Natural gas is another national asset, and is a source of national revenues that needs to be explored and its utilisation managed for the benefit of the country's development. Although Oman, with only 2 percent of the world's reserves (see below for gas reserves),

is not ranked among the top twenty countries for gas reserves (Riphenburg 1998: 139), all recent estimates indicate that it can be a significant exporter of liquefied natural gas and that it is also able to support a petrochemical industry. During the 1990s, Oman produced less than 200 billion cubic feet of gas, which at that time provided only 3 percent of the government's revenues, compared with 77 percent of revenues for oil. Since then, however, Oman has made huge efforts and as a result of an extensive exploration programme has been able to increase its production considerably (see Figure 4.5).

With its on-going investment in Musandam, in the north of Oman, and its exploration policy in the offshore blocks assigned to oil and gas in the north-eastern and southern regions, the government has also managed to attract some foreign investment, such as the South Korean Hyundai Engineering Co Ltd (Republic of Korea). In 2011, the Oman Oil Company Exploration and Production⁹⁰ invested around US\$600 million in the development of oil and gas field at Bukha in the Musandam Governorate (*Oman Daily Observer* 6 December 2012: 21). The Musandam project, which is budgeted at OMR230.7 million (US\$600 million) and which has signed up the South Korean Hyundai Engineering Company as the prime contractor for the implementation of the project, is a part of a sizeable integrated development that is centred on the offshore West Bukha field. This scheme has the potential to spur economic growth in this important Omani enclave of Musandam (*Oman Daily Observer* 6 December 2012: 21). The gas produced provides energy feedstock for the power project, and the scheme also serves as a useful example to spur investments in other areas, including industrial projects.⁹¹ Currently (2012) Oman has two offshore oil- and gas-producing fields adjacent to the Musandam Peninsula, and five offshore oil blocks that are yet to be explored and exploited.⁹² The Bukha field has been in

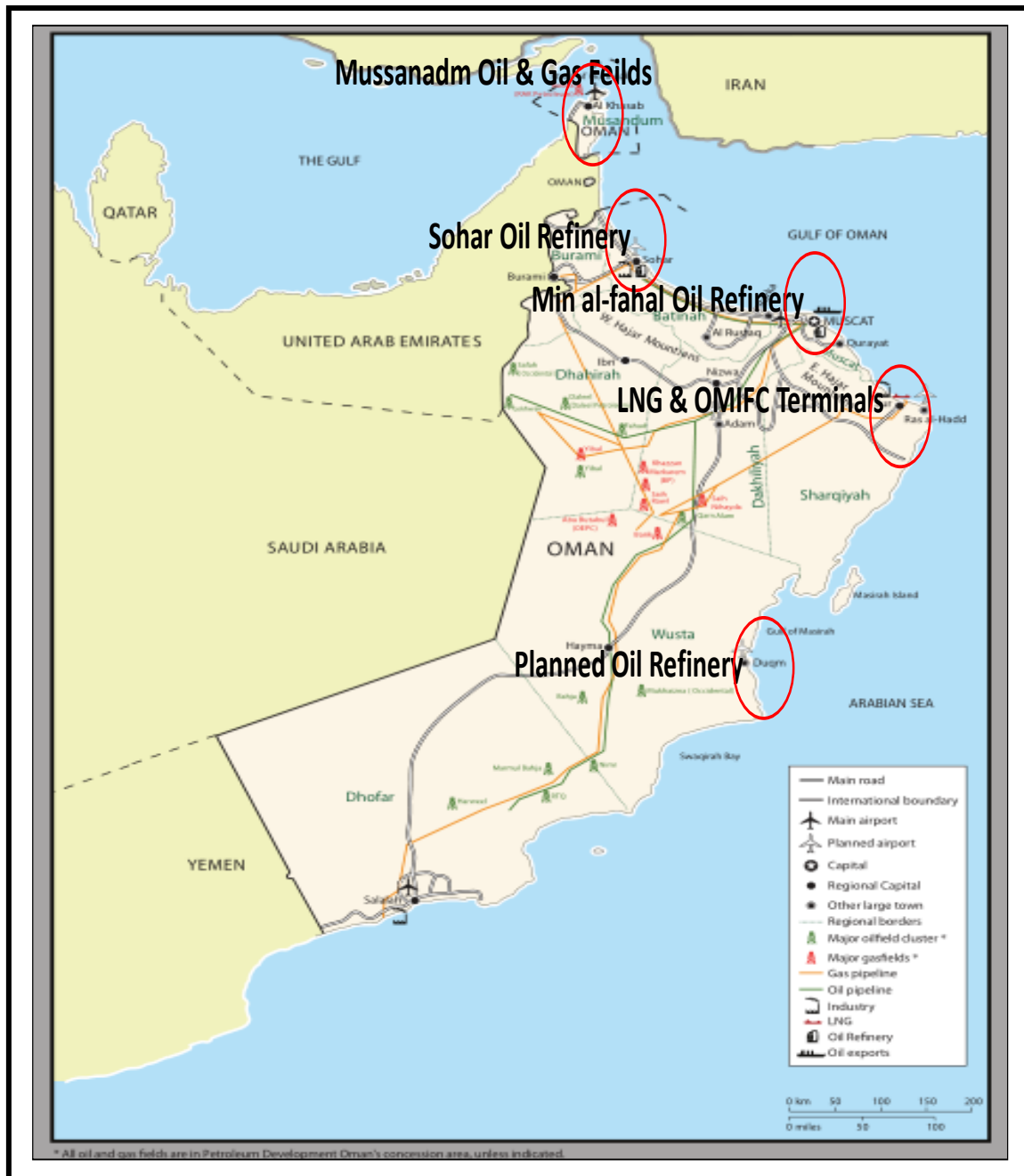
⁹⁰ The Oman Oil Company Exploration and Production is a subsidiary enterprise of the government-owned energy investment firm, the Oman Oil Company (OOC).

⁹¹ Further details can be found at, www.zawya.com/story/ZAWYA20111207034757/?relcontent=ZAWYA20111105070426/, accessed 6 January 2012.

⁹² Interview with Bader Al-Jabri (Geologist, Occidental Oil Company, Muscat), 8 October 2011.

operation since 1994, while the West Bukha field came on stream in 2008,⁹³ (see Figure 4.2).

Figure 4.2: Oman’s Oil and Gas Installations and Infrastructure April 2011



Source: Qatar National Bank (QNB), 2011

⁹³ For details on Oil production from Oman’s first offshore block, see, www.ameinfo.com, accessed 14 January 2012.

Recognising the potential of the gas sector in Oman, the oil giant British Petroleum has lined up a US\$15 billion investment, since the company estimates that, as distinct from proven recoverable reserves, there may be up to 100 trillion cubic feet (tcf) of gas in place within its allocated Block 61 concession,⁹⁴ (Figure 4.3). Although this is not an offshore field it will be connected to the pipeline extending to the offshore gas-exporting terminal. Most of Oman’s oil and gas fields are on land, but this source of revenue has begun to play a dominant role in the national economy, though outcomes from this national interest have met with highs and lows in both production and value (Table 4.1).

Table 4.1. Oman, Oil Production and Exports, 2006-2010

Oil Production & Exports (Million Barrels)				
Year	Production	% Change	Exports	% Change
2006	269.2	-4.7	233.2	-11.0
2007	259.3	-3.7	222	-4.8
2008	277.0	6.8	216.7	-2.4
2009	296.6	7.1	242.9	12.1
2010	315.6	6.4	268.7	10.6

Source: Central Bank of Oman 2011: 35

With current (2012) expenditures on oil production of OMR250 million (US\$650.20) and investment on production expenditure of RO650 million (US\$1.691), oil revenues in 2012 are estimated to be OMR 6.1 billion (US\$15.86), hence strongly enhancing the national economy (*Oman Daily Observer* 3 January 2012: 23). The government continues to follow a developmental and economic diversification strategy, in which more and more

⁹⁴ Further details can be found at, www.oilstockinvestment.com, accessed 13 April 2012.

hydrocarbon resources are being utilized to develop value-added hydrocarbon-based industries in the country, including petrochemical and energy-intensive industries such as the Sohar Aluminium factory and the Oman India Fertiliser Company (OMIFCO).

Oman's investment in Liquefied Natural Gas (LNG) has been successful, since this energy source, which relies increasingly on this clean and abundant fuel, is moving to the forefront of power generation at all levels. Along with other countries in the Gulf region, Oman is displaying its modest credentials as one of the world's sources of LNG supplies, although it is a much smaller player with only around 2 percent of the Middle East's proven gas reserves (Rippenburg 1998: 139).

Nevertheless, it has made considerable efforts and has had some useful success in the LNG field. Following the discovery of gas reserves in 1989, the government decided to set up a liquefaction plant. A domestic offshore LNG company, Oman LNG, was established in 1994 (see Figure 4.2), and exported its first cargo to South Korea in April 2000.⁹⁵ This project, which had been intended to play a leading role in Oman's attempt to diversify its economy away from oil production, bolstered the state's revenues by providing 12-15 percent of Oman's GDP. Despite a relatively low employment impact, Oman LNG today brings a number of advantageous opportunities to parts of Oman's eastern region.

The gas sector is expected to contribute to around 15 percent of GDP in 2020, compared with 1 percent in 1995 (Pasha 1999: 66-67), and natural gas is becoming increasingly important for the Omani economy as the government pursues its economic diversification policy. Several energy-intensive industries have come on stream, such as the OMIFCO at Qalhat near Sur, where urea and ammonia are exported via an offshore terminal (Figure 4.2). As the economy continues to grow, demand for natural gas is expected to rise along with increasing demands for power consumption. The Oman and Qalhat LNG projects, which are the main source of natural gas exports from Oman, ship around 1.285 billion

⁹⁵ Further details can be found at, oilandgasinvestor.com/pdf/OmanSR.pdf accessed 10 April 2012.

cubic feet per day, with the gas for these projects sourced from inland fields. This LNG is destined for Asian markets, principally China, South Korea and Japan.⁹⁶

Oman's total national reserve is reckoned at 30 trillion cubic feet of natural gas with proven reserves, (Katzman 2012: 1). With investment in the Bukha oil fields, however, the inlet capacity of the plant is rated at 20,000 barrels of oil per day and 45 million cubic feet of gas per day (*Oman Daily Observer* 6 December 2012: 21).

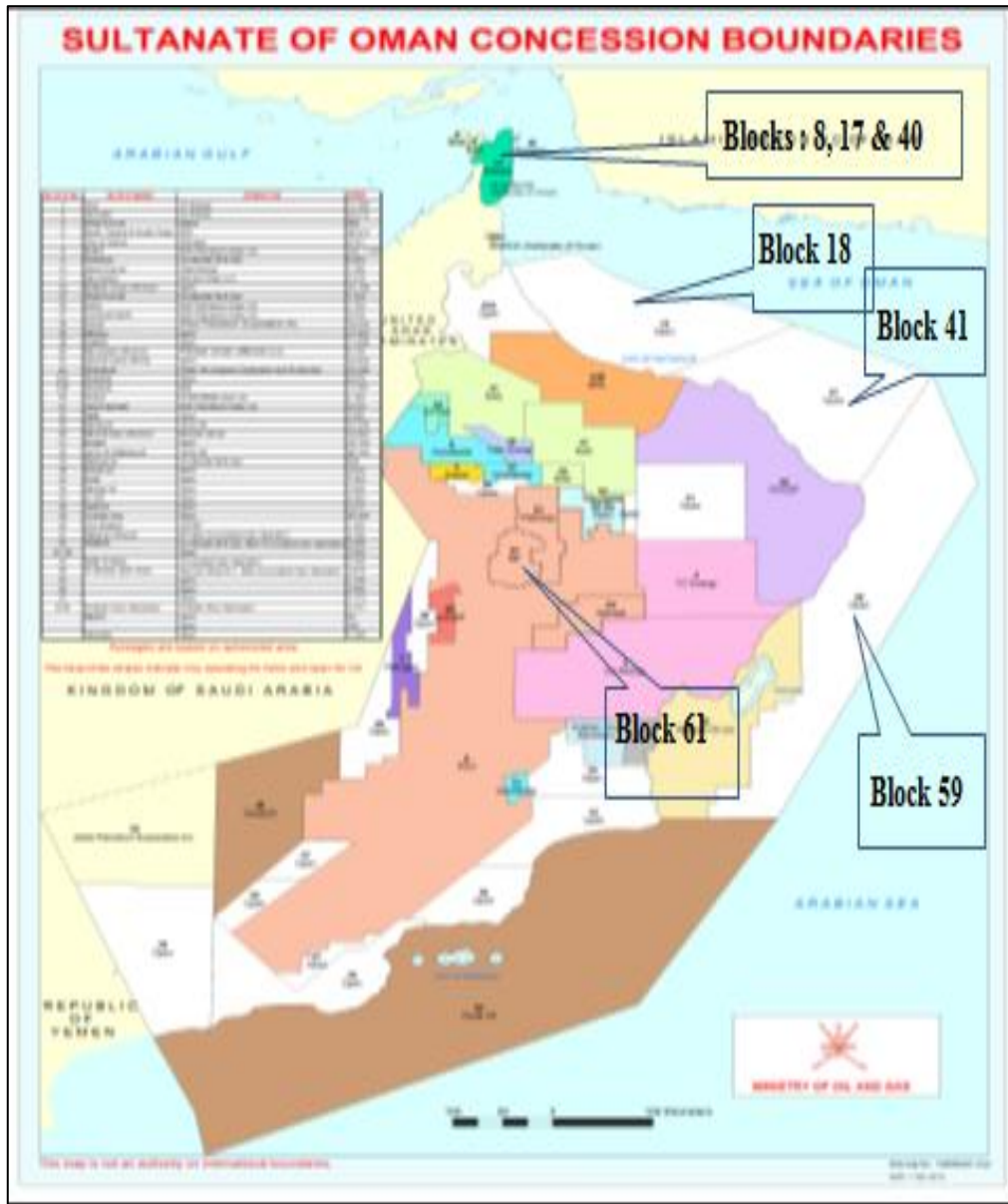
Gas export in 2010 consisted of 8.9 million metric tons of LNG, and 0.251 million metric tons of the LNG by-product, Natural Gas Liquids (NGL). The Oman LNG Company exported a total of 5.6 million metric tons and the Qalhat LNG Company exported 3.3 million metric tons (Figure 4.5 below gives details of gas production, 1990-2010). Marketing and distribution of the national gas is dealt with by two national companies.

The Oman Gas Company (OGC) was established as a closed joint stock company in August 2000 by Royal Decree 78/2000, which granted concession rights to OGC for 27 years to own, maintain and operate gas pipelines in Oman. As a major gas transportation company, it provides natural gas to several key sectors in the country, such as power plants, desalination plants, the Sohar aluminium smelter, Salalah's methanol plant, and other major industrial clusters and customers. The second company is Oman Liquefied Natural Gas (Oman LNG), established in 1994.⁹⁷ Oman LNG Company produces, sells and deliver LNG to international customers. The company currently operates a three-train liquefaction plant with a nameplate capacity of 10.4 million tonnes per annum at Qalhat, near the town of Sur in the eastern region of Oman. Figure 4.3, shows Oman's Oil and Gas Concession Blocks, 2012. Having looked at the economic importance of oil and gas the next section will outline the country's oil and gas policy and strategy.

⁹⁶ Further details can be found at, www.eia.doe.gov/emeu/cabs/Oman/pdf.pdf, accessed 10 April 2012.

⁹⁷ Oman LNG LLC is a joint venture limited liability company between Oman (51%), Royal Dutch/Shell Group (30%), Total (5.54%), KOLNG (5%), Partex (2%), Mitsubishi (2.77%), Mitsui (2.77%), and Itochu (0.92%). Details about the company are at <http://www.omanlng.com/>, accessed 21 January 2012.

Figure 4.3. Oman’s Oil and Gas Concession Blocks, 2012



Source: Ministry of Oil and Gas: 2012

4.2.2. Oil and Gas Policy and Strategy

This section briefly outlines Oman’s oil and gas policy and strategy. As an oil and gas producer, Oman has an economic structure similar to that of other GCC countries and is an oil-dependent, open economy with liberal exchange and trade systems and a currency that is pegged to the US dollar. Although the share of the non-oil and gas sector in GDP varies considerably among the GCC members, the average expansion rate of the non-oil sector as

well as production, tends to be similar (Mansur and Treichel 1999: 14-16). Oman's Ministry of Oil and Gas looks after the hydrocarbon sector (oil, gas) and all downstream operations related to it. The implementation of oil policy is carried out through an integrated company in which the government owns majority stakes. Oman also has an open door policy for any foreign investment, provided it serves Omani nationals and contributes positively to the national income.⁹⁸

4.2.3. Description and Assessment

The section briefly describes and assesses Oman's oil and gas production, and reviews several aspects relating to practical as well as policy and infrastructural matters. On the oil side, Petroleum Development Oman (PDO), Oman's principal hydrocarbon exploration and production company, is responsible for more than 90 percent of Oman's oil reserves (5.5 billion barrels),⁹⁹ and for 70 percent of its production and nearly all of its natural gas supplies (Oxford Business Group 2012: 97-98).¹⁰⁰ In addition to reducing dependence on oil and gas revenues, the government's policy is to improve production by investing in offshore exploration and exploitation of the oil and gas fields. To boost its production, in 2002, PDO implemented an Enhanced Oil Recovery (EOR),¹⁰¹ programme (EIU 2011: 8), and near-term oil production should reach 920,000 b/d in 2012 (*Business Monitor International* Q2 2011). Oman's crude oil production and prices are shown in Table 4.1.

Oman's pipeline system delivers crude oil to the country's only offshore oil export terminal at Mina al-Fahal, (Muscat). With regard to oil refining, in 2010 Oman had a refining capacity of 222,000 bbl/d, split between its two coastal-built refineries at Mina al-Fahal (Muscat) and Sohar (Oxford Business Group 2012: 101). Oman continues the construction of its large refinery and petrochemical complex at Al-Duqm in the south-

⁹⁸ Interview with Khalid Al-Kalbani (Director of Oil Marketing, Ministry of Oil and Gas, Muscat), correspondence, 11 April 2012.

⁹⁹ Estimates are according to BP Statistical Review of World Energy (Oxford Business Group 2012: 98).

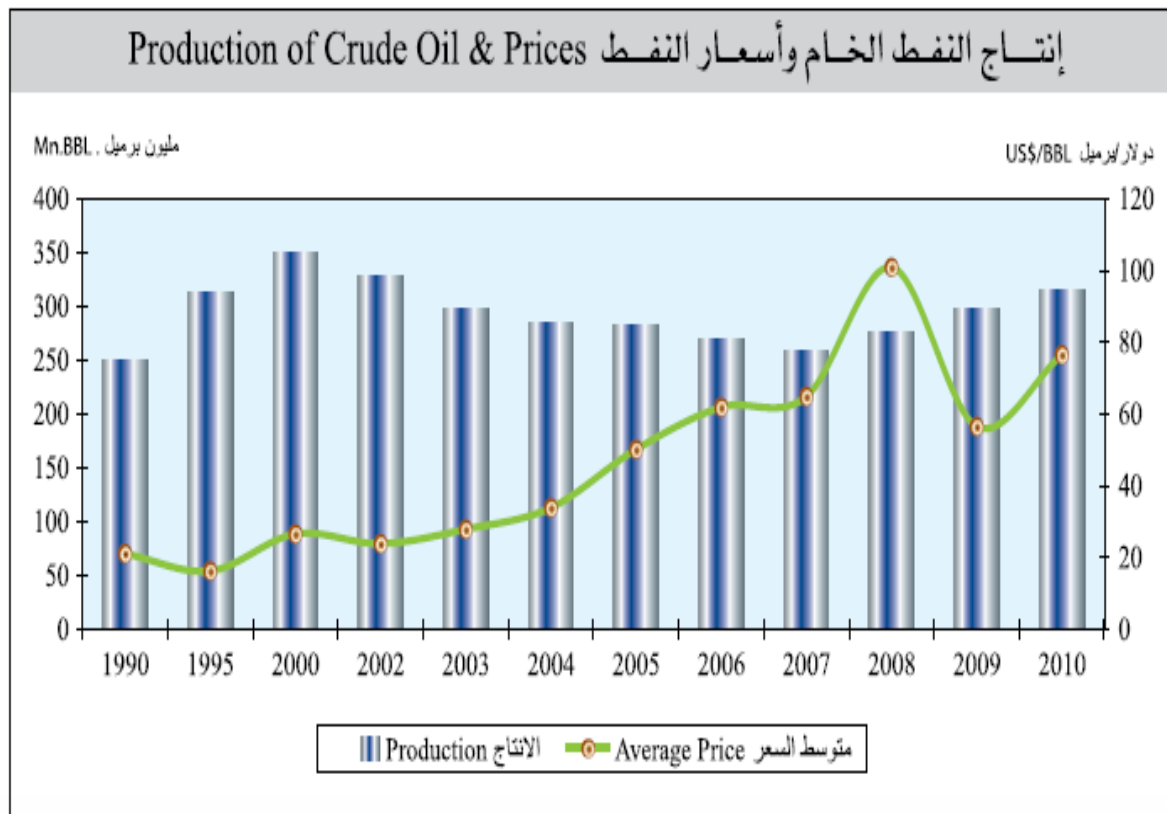
¹⁰⁰ Government owns 60 percent share, Royal Dutch Shell owns 34 percent, Total has 4 percent and Portugal's Partex holds a 2 percent stake in PDO (Oxford Business Group 2012: 97). Other international companies include: US Occidental Petroleum, UK's BP, China National Petroleum Corporation (CNPC), Korea Gas (KoGas), Spain (Repsol) and Sweden (Tethys Oil), and some others (For more details see, <http://www.eia.gov/cabs/Oman/Full.html>, accessed 13 April 2012).

¹⁰¹ EOR; a technique applied to extract oil that uses solar energy to heat water and generate steam for injection into oil reservoirs. This technique is used by PDO (*Oman Daily Observer* 17 April 2012: 1, 6).

eastern region (for the locations of oil refineries see Figure 4.2) which will include several large petrochemical facilities and a crude-oil terminal that is expected to handle 200,000–300,000 bbl/d; like the Mina Al-Fahal and Sohar terminals, Al-Duqm too will be geared towards export markets (EIU 2011: 14)

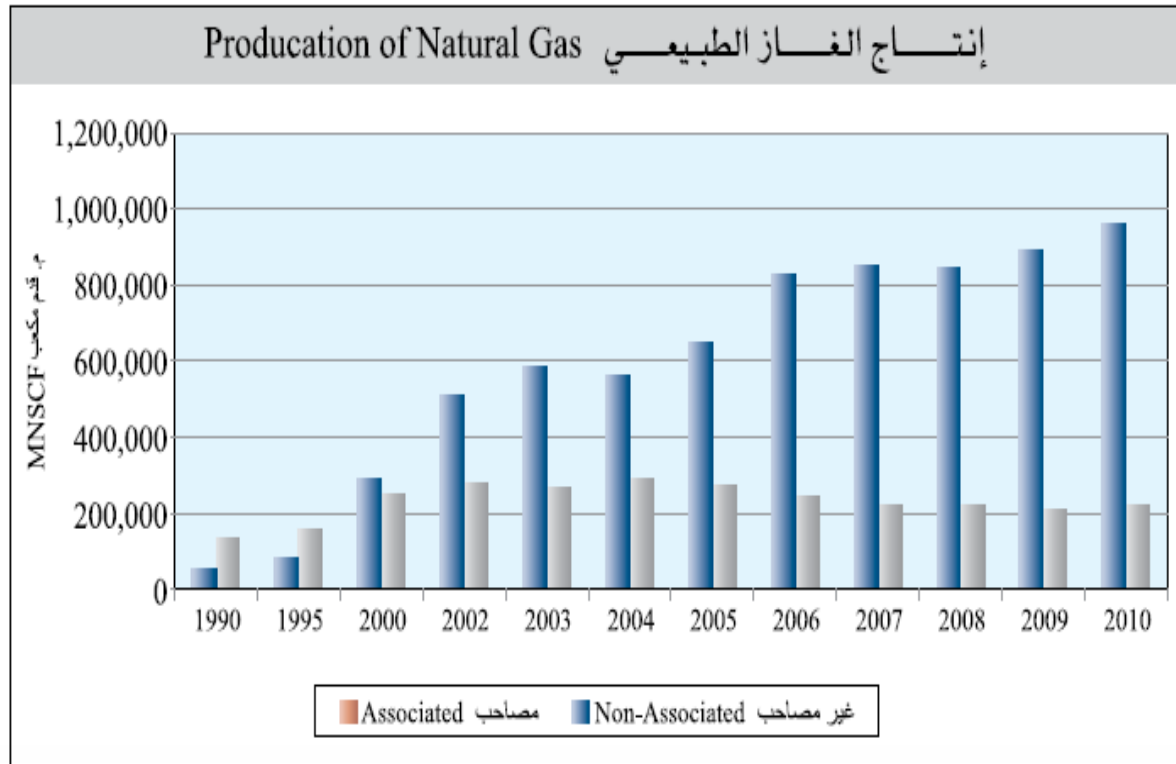
On the gas side, according to *Oil and Gas Journal*, as at 1 January 2011, Oman’s proven reserves of natural gas amounted to 30 trillion cubic feet (Katzman 2012: 1). Due to growing domestic gas consumption and its export obligations, Oman requires increasing volumes of natural gas (Figure 4.5).

Figure 4.4. Production of Oman’s Crude Oil and Prices, 1990-2010



Source: Ministry of National Economy 2011

Figure 4.5. Natural Gas Production in Oman, 1990-2010



Source: Ministry of National Economy 2011

4.2.4. Environmental, Development, and Employment Issues

This section looks at the issues of environment, development and employment in oil and gas sector. Rising world populations and increasing human use of the sea are putting additional pressures on existing maritime capital, and the search for new resources is an unending process. The total number of employees in the oil and gas exploration and production companies is 11,519 out of which 2,836 are expatriates.¹⁰² Although Oman's current population is just under three million in a country that is the second largest state in the GCC in land area (Kelly 1980: 104), the question remains as to the extent to which the sea can provide the means for employment and resources in the absence of an integrated maritime doctrine.

¹⁰² Interview with Khalid Al-Kalbani (Director of Oil Marketing, Ministry of Oil and Gas, Muscat), correspondence, 8 April 2012

The diversification of economy is important for Oman because oil and gas account for over 70 percent of the nation's export earnings and around 50 percent of national GDP. The Omani government's development policy puts emphasis on other sectors (trade, industry, foreign tourism etc.), in order to expand the economy and lessen its dependence on oil and gas exports. However, the search for offshore oil and gas remains active, and the government is keen to explore opportunities offshore. In August 2011, US-based Petro Tel won the rights to explore for hydrocarbons in Block 40 (Figure 4.3) (Oxford Business Group 2012: 97). The sector is also attracting investment for projects such as development of the Bukha (Musandam) oil and gas fields in the Gulf (*Business Monitor International* Q2 2011: 11-13).

It is also a matter of national pride that protection of the environment plays a prominent role in any national policy that involves exploitation of the country's resources. However, the search for offshore resources and protecting the marine environment need a maritime policy and doctrine to coordinate such activities. Since the Gulf is a semi-enclosed area, its waters, and therefore the seas beyond, are highly susceptible to the effects of oil spills and other discharges (Razavi 1997: 6-95), and the marine environment, particularly the more sensitive coastal communities of coral reefs and mangroves, is seriously compromised by a chronic oil pollution stress.¹⁰³ There is an urgent need to increase public awareness of the importance of the marine environment and its resources, since degradation of marine ecosystems constitutes a serious threat to renewable maritime resources.

Oman's EEZ of 200 nautical miles encompasses an area of over half a million square kilometres.¹⁰⁴ Along with its extensive fish stocks, this sea area is likely to have mineral deposits and the successful exploitation of these significant components could have a significant impact on Oman's economy and development. Thus the sea presents the prospect of wealth and prosperity but may also contain the seeds of future conflict (Nawaz 2004: 55-59). As a coastal state, Oman is dependent on the sea and its resources although, as discussed in Chapters Two and Three, the maritime sector has been underdeveloped and

¹⁰³ Interview with Dr Barry Jupp, Senior Consultant-Marine, GEO-Resources Consultancy, Muscat, correspondence, 23 February 2012.

¹⁰⁴ Interview with Commander Thani Al-Mahrouqi (Head of Oman's National Hydrographic Office, Muscat), 15 June 2011.

its contribution to national economic growth has been considered relatively insignificant. Since sustaining Oman's economic growth must be considered as a major national security objective, this will require an effective national presence to protect the maritime component, with all its potential. This would become the responsibility of the RNO, the ROPCG and the Royal Air Force (RAFO) of Oman, with consistent economic and political resolve and backing from other national stakeholders.

The Ministry of Oil and Gas markets concession areas for exploration, although investment in the Musandam project of OMR230.7 million (US\$600 million) for the offshore oil and gas fields is so far the only offshore scheme for exploiting marine oil and gas resources. The aim was to join additional oil and gas reserves to existing reserves and subsequently to increase production (Central Bank of Oman 2011: 37). The strategy to increase Omani crude oil exports witnessed in 2010 was driven primarily by rising global demand (mostly from the emerging economies as they recovered from the previous year's downturn), as well as by increased production. With the exception of Japan, which imported 37.9 million barrels of Omani crude oil in 2010, most of the remaining exports were destined for various emerging Asian economies, with China receiving the largest share of Omani crude oil exports that year. Within the region's littoral waters, India received 36.6 million barrels in 2010. As a booming global economy, India is an active trade partner with Oman and energy security is among India's strategic objectives (Table 4.2).

Although its hydrocarbon wealth is quite restricted, Oman aims through its policies and strategies to become important regional centre for oil and gas. Much of the growth in these sectors has come from the success achieved by international firms. The policy offers foreign investment a wide range of opportunities. Increased exports also reflect an increase in production, which in turn has become possible because the rising price of a barrel of oil allows for oil extraction in areas where previously it was uneconomical to do so; this appears to be an increasing trend. Limited oil reserves mean that the government will have to find other sources of revenue, such as exploiting the sea and its resources, and this will have an impact on the maritime policy that needs to be shared with national agencies.

Table 4.2. Direction of Oman’s Oil Exports, 2006-2010

Direction of Oil Exports (In Million Barrels)					
Country of Destination	2006	2007	2008	2009	2010
Japan	22.7	29.0	30.4	40.6	37.9
China	92.0	99.3	105.9	77.6	111.4
Korea, South	34.2	15.6	23.5	25.2	15
India	-	3.8	3.2	26.9	36.6
Taiwan	11.2	8.1	10.7	17.3	12.1
Thailand	43.2	39.3	25.2	32.7	28.8
Singapore	5.3	2.1	3.5	4.1	10.3
USA	10.5	6.1	5.3	14.7	7.5
Others	14.1	18.7	9.0	3.8	9.1
Total	233.2	222.0	216.7	242.9	268.7

Source: Central Bank of Oman 2011

Oman Polypropylene, a grassroots facility that started up in 2006 with an annual output of 340,000 tonnes, was the first of several petrochemical projects under development at the ports of Sohar, Salalah and then Al-Duqm, which the government hoped would become a key element in its diversification drive (*Business Monitor International Q2 2011: 11-13*). While currently high oil prices have allowed some cautious optimism, Oman has finally pressed ahead with an ambitious diversification programme. However, this points to another trend that the government needs to consider, since the fact that all such diversification rests on oil and gas as the raw material, means that it is therefore only a partial diversification: when the oil or gas runs out these operations cease as well.

Because its hydrocarbon wealth is rather limited compared with what can be observed in neighbouring countries like Saudi Arabia (oil) and Qatar (gas), Oman is trying hard to develop its oil and gas resources (*Oman Daily Observer 17 April 2012: 21*). A regional power grid is being constructed between all GCC member countries, from which Oman could benefit since the grid creates the possibility of importing electricity, especially from

the UAE whose planned nuclear plants will begin to come on-line in 2017. Whether this plan will be successful remains to be seen, but in terms of energy security, Oman should consider having its own policies for investing in and developing alternatives, such as solar energy, which shows considerable promise.

The interconnection between the Oman gas grid, (Musandam) and the UAE grid via Ras al Khaimah, will form a gas interlink between Oman, UAE and Qatar (Dolphin Project) (*Oman Daily Observer* 6 December 2011: 21). However, Oman still requires increased natural gas supplies to meet the growth in its domestic consumption as well as its export obligations. As noted above, as at 1 January 2011 Oman had proven reserves of natural gas of 30 trillion cubic feet (Tcf), (Katzman 2012: 1). Therefore it is not constrained from securing new projects for the gas supplies required by most industries today: this will strengthen confidence among foreign industrial investors as there will also be a strong secure supply drawn from the Dolphin Gas Project, the natural gas project of the UAE, Qatar and Oman. Dolphin was the first cross-border refined gas transmission project of the GCC countries, and represents the largest energy-related venture ever undertaken in the region (Oxford Business Group 2012: 98).

In response to the global economic recovery in 2010, driven in most part by the emerging and developing economies, the demand for energy increased, pushing oil prices higher than the previous year; this was to Oman's benefit (Central Bank of Oman 2011: 33). Higher oil prices were also influenced by such factors as a weaker US dollar against a number of major currencies and a production moratorium by members of Organization of Petroleum Exporting Countries (OPEC) to minimize a glut in global reserves; this was also in Oman's favour. Depreciation of the US dollar against other major currencies often translates into higher prices for crude oil so that traders can offset the shortfall in real revenues. However, the energy world continued to face uncertainties following the global economic crisis of 2008-09 and the slow pace of global economic recovery in 2010, while continuing uncertainties since then have had a positive effect on Oman's economic growth.

Evidence suggests that these challenges, along with the issue of Iran, the US and the West over the Strait of Hormuz, continue to provide little incentive to oil-producing countries to invest heavily in upstream activities to enhance their production capacities. Additional

energy demands from anticipated reconstruction in Japan following the disastrous earthquake and tsunami in 2011 may add even more pressure to crude oil prices, which will also impact positively on Oman's national economy, and it is expected that Oman's crude oil price will increase, since the per barrel price was quoted at US\$109.85 at the end of March 2011, compared with the 2010 price of US\$79.45.

Despite adverse international developments, such as the economic crisis and financial down-grading of certain countries in the Euro-zone, and the potentially heated issue involving Iran, US and the West over the Strait of Hormuz, Oman, along with other developing countries, may be able to sustain growth because of strong domestic demand, provided the oil markets continue to respond. In terms of demand, the stability of oil prices is supported by strong growth among the emerging economies, especially India and China who are both buyers of Omani crude oil (Table 4.2 above). However, following the Japanese earthquake and tsunami and the damage inflicted on the Fukushima nuclear power station, a number of states are re-evaluating their nuclear energy programmes (e.g. Germany), in which case the likely effect on future fossil fuel projections remains to be seen. In terms of oil supplies and the risks caused by political turmoil in the Middle East and North Africa (MENA) region and the issue of the Strait of Hormuz, the impact would undoubtedly be felt in Oman. In terms of distance, Oman's oil and exporting facilities are a long way from North Africa and, with the exception of its Gulf fields, reasonably far from the Strait of Hormuz. However, if problems of Hormuz did escalate, the Sea of Oman might find itself declared a war zone, with implications for the tanker trade, insurance rates, and so on.

The government's Omanization strategy of promoting the growth and use of Omani manpower is a major challenge for the country in general, and for the oil and gas-related industries in particular. Since it was commissioned in 2000 the LNG plant has been operating smoothly and is expanding to contribute to the national income.¹⁰⁵ Gas is providing a larger share of the country's revenues through the government's strategy for

¹⁰⁵ **Gas contribution** is the use of gas as a feedstock into projects such as methanol and fertilisers, and other power-hungry schemes like the aluminium smelter.

the total direct and indirect contribution of gas to Oman's GDP. Oman has always supported the concept of linking the Gulf countries with pipelines, so the strategy will also benefit from the Dolphin project which will now link Oman with the UAE and Qatar. This marks the development of a new regional network, since it is intended that production from the Bukha offshore oil and gas fields in the Musandam governorate will interlink with the Dolphin grid when required (*Oman Daily Observer* 6 December 2012: 21).

Oil and natural gas exploration has increased as demand has risen, suggesting that exploration plays an increasing role in the energy sector. Since overall employment in the country is related directly to the export and import of goods, employment in this sector is intrinsically linked with trade. Although exploration of non-renewable offshore resources has progressed slowly, the on-going projects in Musandam and exploration policies for offshore oil and gas in the north-eastern and southern regions has enabled the government to attract foreign investment in this sector. The turnaround in crude oil production in 2008 was sustained in 2009 and 2010, and as production increased, nominal GDP originating from the hydrocarbon sector went up by 41.2 percent to OMR10.3 billion in 2010. From the early 1990s Oman was keen to have a petrochemicals industry, but because of the huge costs, low employment levels, and market risks, as well as feedstock limitations, the government remained cautious about investing. However, the scale of investment in the petrochemical industry has been increasing, due primarily to the government adopting policies that take a wider perspective and look for local as well as overseas investment, with the Oman Oil Company taking the lead. The chapter now looks at the oil and gas from the national security perspective.

4.2.5. Oil, Gas and National Security

This section discusses the importance of exploitation of offshore oil and gas resources as elements of the national interest. This national asset has its own significance for the country's economic growth and national security, since, as noted earlier in the chapter that, optimum exploitation of these resources can contribute substantially to Oman's economic growth. Successful exploitation of the vast resources in the EEZ will have an important impact on Oman's economy and development (*MEED* 2011: 12). However, the greater the

interests in this zone, the higher the requirement will be to provide security against external threats. With its large EEZ, Oman has a buffer zone through which to detect, identify, and deal with any potential offshore threat before it comes too close to the coastline. Hence, the EEZ dictates the demand for a maritime strategy and doctrine able to participate in maintaining local, regional and global security.

Recognition that maritime trade, ports, offshore resources and global security are connected and inter-related in highly complex ways is fundamental to understanding the challenges such as piracy or maritime terrorism that are faced today. Over the years, dependence on the sea as an economical and efficient means of transportation has increased (Till 2009: 23-35), and has resulted in greater concern for the safety of the Sea Lines of Communication (SLOC), which are effectively the arteries of a region's economy. This strategic geographical feature plays a dominant part in Oman's security policy, as the country needs to develop an infrastructural strategy to protect its SLOC. This infrastructure varies from the oil and gas pipelines that come to offshore terminals located on the coast, or that are close to oil and gas fields a few miles inland. It also includes refineries and water desalination plants along the coastline, electrical power stations situated on the coast to process the vast uninterrupted quantities of water required for both, and various plants, oil refineries and LNG terminals. Several of these are critical parts of the national infrastructure, where the immediate impact of an explosion would be serious, but the downstream result of losing such infrastructure would have catastrophic economic consequences for the country.

Maritime security in the region (discussed in greater detail in Chapter Five) becomes an issue when ships in general and oil and gas carriers in particular transit Bab el-Mandeb and pass through the waters of the Gulf of Aden and the Horn of Africa, leaving no options other than that such shipping is escorted or, where possible, follows longer deep-sea routes once they are out of the Red Sea. Because of their size and shape, oil and gas tankers on the high seas can easily be identified by pirates: therefore they become vulnerable. Offshore resources, such as oil and gas installations and terminals, are other sensitive areas open to being targeted by an adversary.

With its geography and vast sea area, Oman is maritime in nature, and the influence of the sea over its population and over the land becomes inevitable. However, this gives rise to

some vital issues that need to be addressed, including political and economic developments within the region, environmental threats that could result in diplomatic policing and enforcement, or even high seas operations that might involve not only national security units but also regional foreign forces. Arising out of Oman's international responsibilities is the major issue of policing and protecting the Strait of Hormuz to permit the safe passage of traffic. Energy exports from the region remain important to the world economy, and particularly for China, India, Japan and South Korea, although the US has reduced its dependence on regional oil and gas, as have the European countries, albeit for different reasons including economic recession. Even so, the political and economic interests especially of certain powerful states are likely to increase, thereby influencing the legal complexities of maritime jurisdiction in the region. To a certain extent this is not a global issue, but it is very much an Asian one and needs to be reflected in current maritime issues, not least maritime policy.

In view of Oman's geostrategic situation, its sea power, as embodied in the RNO assisted by other services and security departments, will frequently be the most effective means of applying force in time of need. The RNO also represents a substantial deterrent force which helps to prevent illegal activities in maritime areas (*EIU* 2011: 14) while carrying out its maritime obligations, as laid down by international laws and conventions covering the passage of ships through the Strait of Hormuz and its territorial waters (see Chapter Five: RNO and Policing).

For a would-be attacker, choosing a suitable Omani target would be relatively simple since establishing a list of strategic targets such as offshore terminals and oil and gas tankers is easily done, and once the types of cargoes handled are also taken into account, it would rapidly become obvious where an attack would have the greatest strategic impact (see Chapter Three: section 3.5). In addition to strikes on oil and gas carriers, all offshore installations from oil and gas terminals to water desalination plants would be vulnerable. Water desalination plants are crucial to the state and its people, but also crucial to any attacker as their destruction would have a negative effect on the economy, national morale, the government's reputation, and therefore the credibility of the state. An attack against the petroleum and gas infrastructure would have a major impact, not just because of the

devastation from probable explosions and fires, but also from the damage to the energy infrastructure.

Apart from maritime trade, it has been estimated that up to 40 percent of the world's energy supplies, particularly oil and LNG, pass through the Strait of Hormuz and through Omani waters (Oxford Business Group 2010: 15). Not surprisingly, while piracy is a cause for great alarm to general traffic, including oil and gas tankers, it can often be an over-dramatized danger. LNG is a particularly volatile fuel, and concerns existed about the safety of the handling and transporting of such dangerous cargoes long before the perceived risk of terrorist attack arose. Worst-case theories suggest that if a leak started in an LNG carrier berthed at a terminal the explosion caused could lead to a fire that might spread far inland, while the damaging thermal radiation from such an intense fire could devastate the surrounding areas.¹⁰⁶ Although modern shipping design ensures that vessels are intrinsically safe, the difficulties of attempting a successful attack against shipping should not be underestimated. Therefore, the potential for a maritime incident to cause disaster is immense, even without the assistance of terrorists. To deal with such incidents requires a contingency plan and collective strategies to be in place sooner than later.

Overall, Oman has exclusive rights in its sea areas to existing and potential resources such as fish, oil and gas, offshore minerals, and renewable (such as thermal, wave and tidal energy, and wind farms). The requirement to provide security against external threats to the EEZ therefore increases exponentially. As is shown in the following section, renewable (fish) and non-renewable (oil, gas and minerals) resources in Oman's EEZ can be considered as an extension of those on land and therefore need to be viewed from the same security outlook (Nawaz 2004: 54-59). With current naval assets and the large sea area and the absence of maritime doctrine the RNO struggles to provide cover and protection. Certainly the size and shape of the naval power required needs to be commensurate with Oman's maritime interests and the nature of current threats. Changes in the global security environment since 11 September 2001 have reduced the likelihood of a direct military threat to the region (Hasan 2005:41-60). Nevertheless, the potential for a confrontation at

¹⁰⁶ For more details on, Energy Security and Liquefied Natural gas, see, www.iags.org/n0929034.htm accessed 1 February 2012.

sea between the US/West and Iran, or the possibility of a military strike on Iran's nuclear facilities by Israel and/or the US, are in fact major areas of concern for Oman's maritime policy, doctrine and strategy.

4.3. Fish and the National Interest

Historically, fishing came second to farming as an economic enterprise, and because of the country's maritime nature and the character of its people, fishing became a well-established tradition in pre-oil Oman. This section examines fish and the national interest. Along the Indian Ocean, Arabian Sea and the Sea of Oman the shorelines provide a variety of catch that includes over a thousand species of fish, crustaceans and molluscs, notably sardine, bluefish, mackerel, shark, tuna, kingfish, abalone, lobsters, shrimp, crayfish and oysters, and hundreds of others.¹⁰⁷ As this section demonstrates, the contribution to GDP of Oman's export of fish and fishery products is improving. However, the margin of profit that this viable resource is making will be considerably greater when collective efforts are applied; hence maritime policy.

A review of fishing activity indicates that until 1977, the principal fishing method was gill-netting from dhows that ranged in size from 30 to 50 feet. Smaller versions of the dhow, known locally as *houris*, were also used extensively for gill netting as well as for hook and line fishing (Maynard 1988: 1-3). Closer in-shore fisheries used a small boat made from reeds called a *shasha* (Ministry of National Heritage and Culture 2005: 117-153).

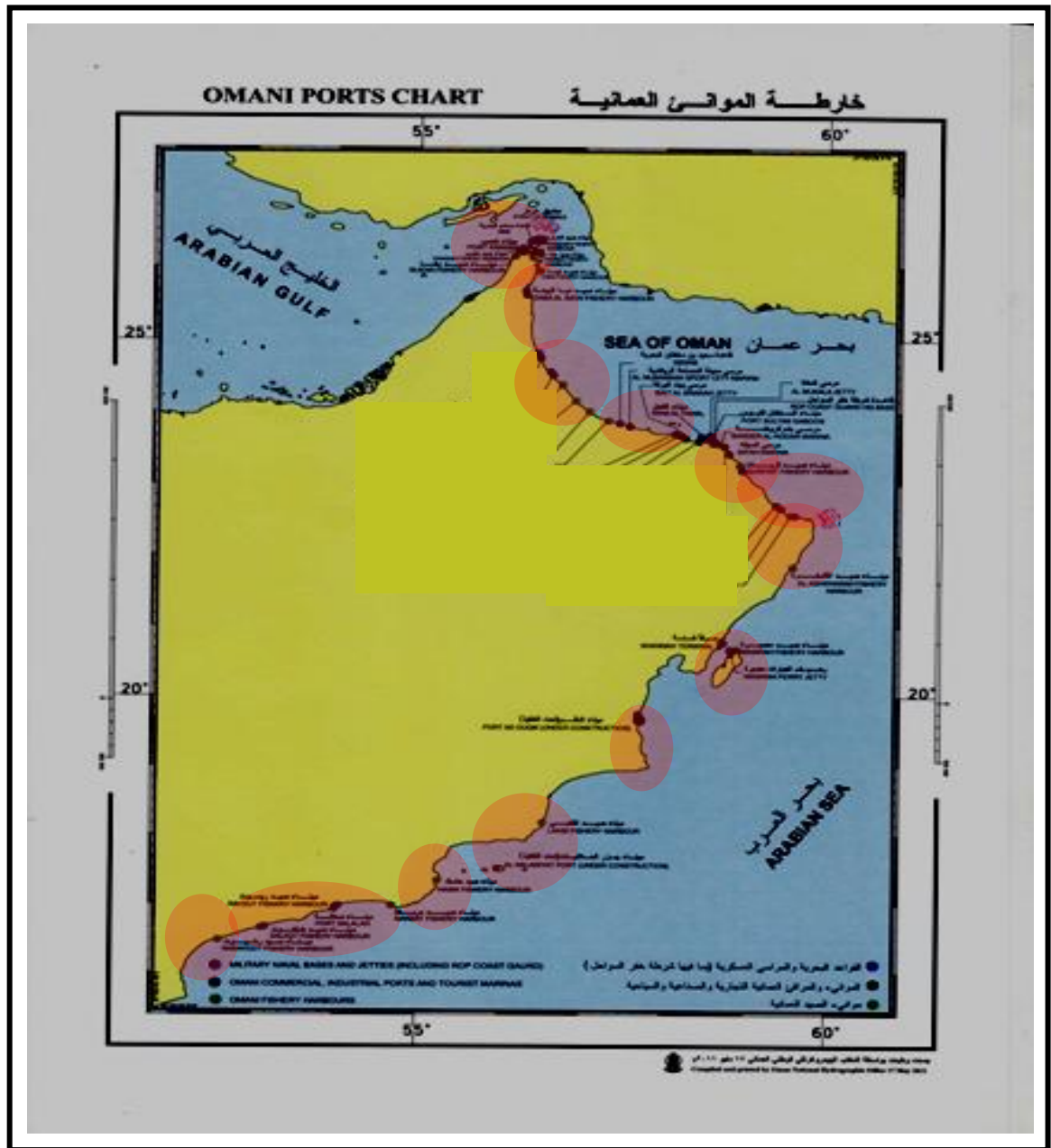
Until 1970 Oman had essentially a subsistence economy based mainly on agriculture and fishing. The coastal populations were traditional fishermen with the basic skills for a working life at sea (Maynard 1988: 1-3). Since no facilities existed for the freezing, storage or transportation of fish, the fishermen's catches were kept for consumption by their own local communities. Some petty local trading did exist, whereby *bedu* tribesmen carried dried fish on camel-back from the coast to the towns of the interior in exchange for dried dates.

¹⁰⁷ Interview with Dr Lubna Al-Kharousi (Director of the Centre for Marine Science and Fisheries, Muscat), 21 June 2011.

Aside from the fishing agreements signed with Japan in 1976 and 1977 and with South Korea in 1978 to operate their own ocean-going fishing fleet in Oman's waters (Blake 1982: 14). In the early 1970s, the greatest advancement in the sector was the introduction of the motorized fibreglass boats (Maynard 1988: 1). This improved the fishermen's activities and provided a means for profitable day fishing in the resource-rich coastal waters as opposed to using the traditional *dhow* and *hour* (Ministry of National Heritage and Culture 2005: 117-153 and Maynard 1988: 2-8). Consequently, boats replaced the traditional vessels as the most important production units. Since the government has started to focus on the fishery sector and its economic importance, as will be discussed in the following section, it has become better regulated and conditions are improving. (Fishing ports and harbours are indicated in Figure 4.6).

According to the objectives for the fisheries sector in Oman's 'Vision 2020' plan, its contribution to GDP is expected to grow. The target set for this sector was to raise its contribution to about 2 percent of GDP by 2020, with an annual growth of 5.6 percent (Central Bank of Oman 2012: 19). Oman has identified its fishery as a key pillar in the diversification of its economy beyond the hydrocarbon sector. Currently Oman is considered self-sufficient in fish and fish products. The Eighth Five Year Plan (2011-2015) envisages ambitious goals for production and export capacity for this sector (Ministry of Agriculture and Fisheries Wealth 2011: 20).

Figure 4.6. Fishing Ports and Harbours, 2011



Source: Oman's National Hydrographic Office 2011

4.3.1. The Economic Importance of Fish

Fish is an important natural resource worldwide (Johnson and Starchild 2004:5) and especially so in Oman. Oman's Vision 2020 plan predicts that today's fishing industry will start to expand, especially into the export market. Oman's fisheries currently produce less

than 200,000 tons of fish annually (see Figure 4.8), but experts believe this amount could be doubled without depleting fish stocks. Although some types like crustaceans, abalone, and rock tail lobster may have been overfished during the 1980s, the government now regulates the types and numbers that may be harvested. Sales in 1990 totalled OMR17.3 million (US\$44.99 million), greatly overshadowed by oil export earnings of OMR1.9 billion (US\$4.95 billion) (Riphenburg 1998: 133-134). The potential for fish in Oman is evident in the coastal areas, particularly around the Halaniyat Islands and Masirah in the south and south-east regions, the Al-Batinah coastline in the north-east, and Musandam in the north. At any regional border with the UAE, for example in the Musandam region, dealers from the UAE can be observed purchasing truckloads of fresh fish from local fishermen. Ambitious nationals can earn sizeable profits by investing in a fleet of refrigerated trucks to transport fresh fish daily to markets in the interior, to towns at the border with the UAE, and to other GCC states.

In 1990, the fishing sector provided employment opportunities to 19,296 registered fishermen¹⁰⁸ (Riphenburg 1998: 133). By 2011 the number had risen to a still modest 36,320, a figure that had barely doubled over a 21-year period. Since increasing numbers of fishermen are now seeking more lucrative government employment, there has been a gradual decrease in the amount of fish caught. Oman's abundant marine fishery resources are exploited only marginally, mostly by traditional fishermen who use small vessels and simple fishing gear techniques (Maynard 1988: 1-8). The traditional fishery consists of over 18,031 fibreglass boats (5-9 metres in length) and 728 wooden dhows (12-22 metres in length) (Ministry of Agriculture and Fisheries Wealth 2010: 30, 50), collectively manned by 36,000 or so Omani fishermen (*Oman Daily Observer* 11 December 2011: 1, 3) whose production was supplemented by a commercial fleet of 38 deep-sea trawlers that belonged to private sector owners and carried foreign crews. However, because of revised regulations for fishing permits and in order to protect marine capital, operation of these trawlers was stopped in 2011, (Oman State TV, broadcast interview 19 February 2012).

Although there was no supporting evidence for the suspension of the commercial trawlers, the reason may well have been the dwindling quantities of fish landed by local boats, and

¹⁰⁸ In 1990, there were 18,546 fishermen employed in traditional fisheries and 750 in industrial fishery.

the move can be regarded as a positive step towards protecting the fishing grounds. However, fishing operations need to be more tightly regulated and the lack of coordination between national agencies concerned with protecting this viable resource is evident in the declining fish catch observed by the fishermen. The marine harvest (fishing) consists of many types of fish. Experienced fishermen mainly look for valuable fin fish species, crayfish (spiny lobster), and cephalopods (squid and cuttlefish). Among the demersal¹⁰⁹ species landed are highly valued groupers, snappers, bream and emperors (Maynard 1988: 1-10). A survey in 2008 by the Ministry of Agriculture and Fisheries Wealth estimated that the national fish stock was over 5,000,000 tonnes of various types. This wealth must be protected for its strategic, economic and socio-economic importance.¹¹⁰ Figure 4.7 below shows the number of commercial fishing vessels and average production from 2006 to 2010.

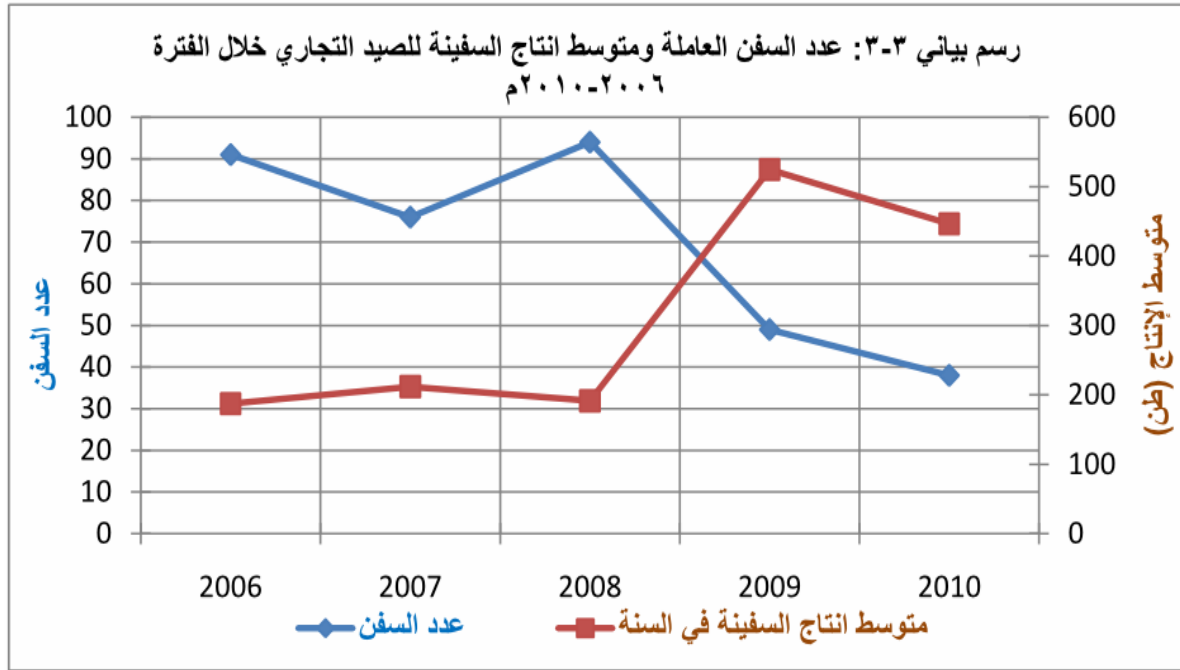
The climate and the surface water oceanography of the Arabian Sea region are dominated by the seasonally-reversing Asian monsoon. A strong south-west airflow in summer (the SW monsoon) alternates with a weaker, dry and more variable north-east airflow in winter (the NE monsoon). The SW monsoon in particular has widely recognized climatic, oceanographic and socio-economic significance (Ministry of National Heritage and Culture 2005: 89-96). Hence, the prevailing rough weather and stormy sea conditions present significant hazards to fishermen, fishing vessels and boats. Since 1970 there have been considerable changes in the Omani fishing fleet; for example the government inaugurated a subsidised boat and outboard motor scheme, known as the “Fishermen’s Encouragement Fund” that provided funds for the purchase of fishing boats as well as interest-free loans (Maynard 1988: 1-13), and the state’s general budget for 2012 has also dedicated around OMR40 million (US\$104.03 million) for building and developing fishing ports at Barka, Al-Musanaa in Al-Batinah region, at Diba in Musandam and Al-Ashkharah in the eastern region (at a cost of OMR14 million/US\$36.41 million); while a commercial fishing port is being built at Al-Duqm (cost at OMR35 million/US\$91.03 million). This is

¹⁰⁹ Demersal fish live on or near sea beds, which usually consist of mud, sand, gravel or rocks, and feed on bottom-living organisms and other fish.

¹¹⁰ Interview with Dr Lubna Al-Kharousi (Director of the Marine Science and Fisheries Centre, Muscat), 21 June 2011.

in addition to subsidies of OMR10 million (US\$26.02) paid to both farmers and fishermen (Oman Daily Observer 3 January 2012: 1).

Figure 4.7. Number of commercial fishing vessels and average production 2006-10

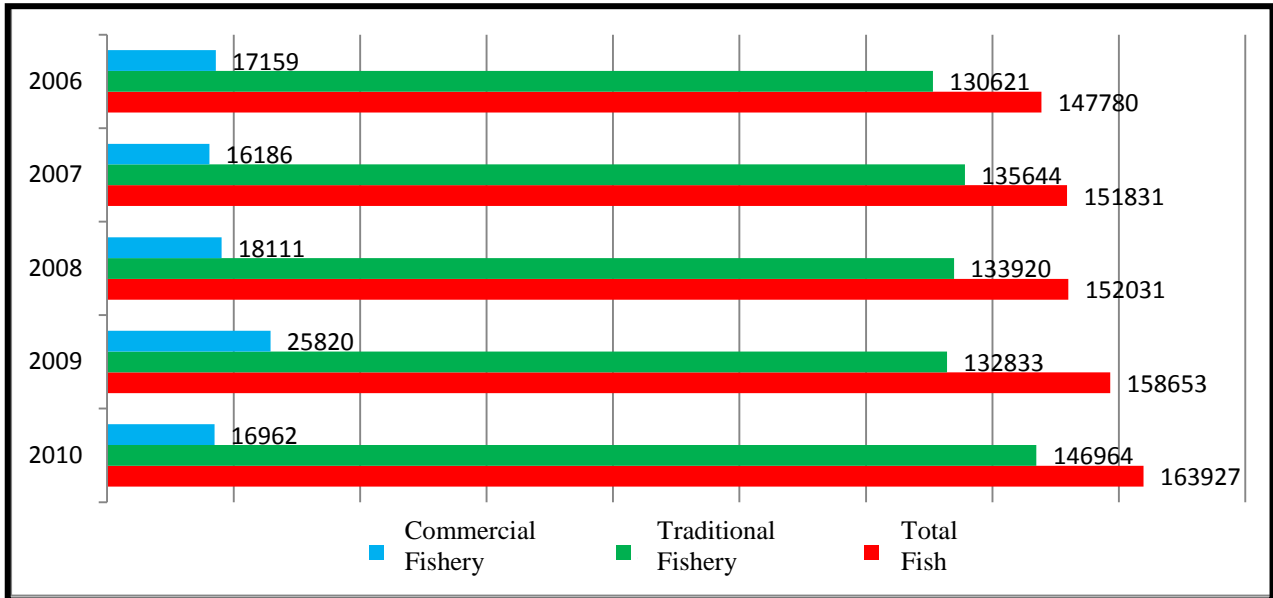


■ represents trawlers; ■ shows average production by trawlers

Source: Ministry of Agriculture and Fisheries Wealth 2010

All the re-developed fishing ports have enhanced processing and cold-storage facilities, work on which is almost completed. In the Musandam governorate, which is almost totally dependent on fishing, special government assistance has been provided to the local fishing communities, and much of the catch from this region is exported to the UAE and other GCC States. Figure 4.8 shows the total of fish landed by traditional and commercial fishing, 2006-2010.

Figure 4.8. Total fish landed by traditional and commercial fishing 2006-2010



Source: Ministry of Agriculture and Fisheries Wealth 2010

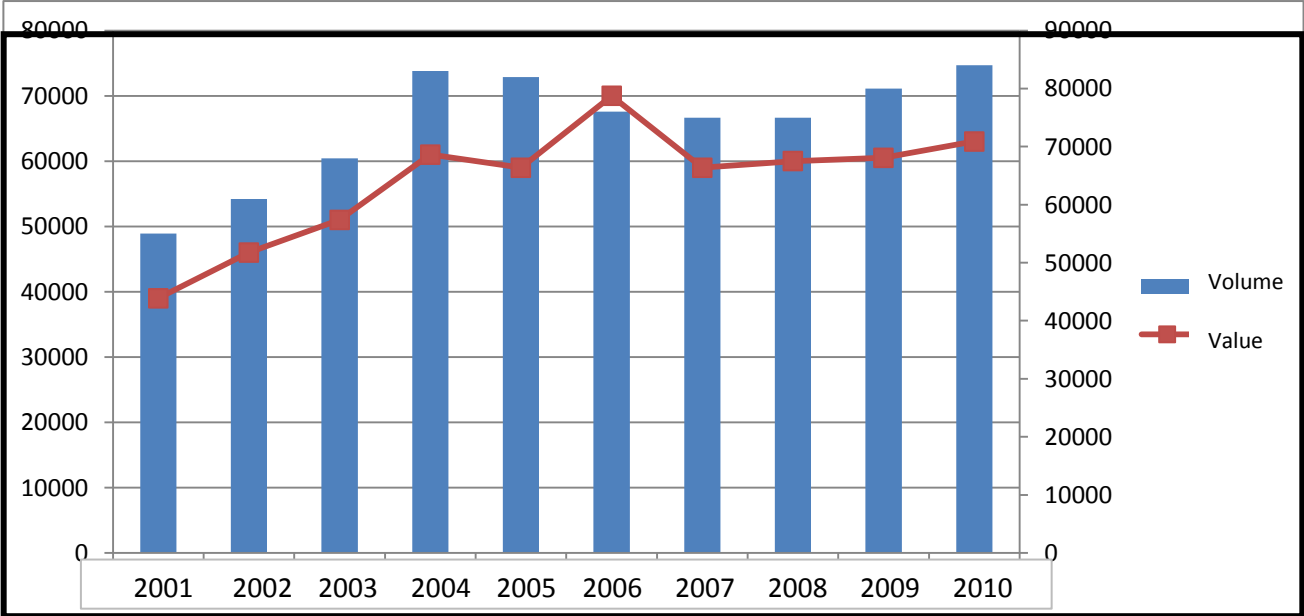
In 2005 fish production accounted for 0.5 percent of Oman’s GDP, a figure that has not risen very much since then, although following recent government efforts, it is projected to contribute 5.37 percent to national GDP by 2020 (*Oman Daily Observer*, 11 December 2011: 1, 3). Even so, the fishery industry contributes 0.6 percent of GDP and is regarded as one of the most important economic activities for coastal residents. Oman exports its fish and fishery products in raw, frozen, or chilled form.

The low percentage of fish contribution to GDP means that the government needs to impose strict policies to preserve fish resources, with the aim of achieving higher growth rates and raising the fishery sector’s share of GDP. Such measures would involve establishing a maritime policy through which the efforts of all the relevant national agencies would be coordinated, such as, for example, reviewing policies related to the issuing of commercial fishing licences with the objective of increasing the value of locally landed fish. Utilizing modern technologies in the development of traditional fishing boats and fishing methods, and establishing the infrastructure necessary for the fishing industry (fishing ports, fishing-related industries) will have a positive impact on improving the composition and quality of the catch. There are a number of fishing ports and harbours

spread along the coastline from Bukha in the north to the maritime borders with Yemen in the south (see Figure 4.6). Construction and upgrading of ports in general and fishery ports in particular, and the on-going efforts towards exploring offshore resources indicate of the expansion of Oman’s maritime interests. The government’s efforts to expand port infrastructure throughout the country are seen as a step forward that needs to be further enhanced.

In 2010, total fish landed was 163,922 tonnes (traditional fishing 146,964 tonnes; commercial fishing 16,962 tonnes) with an estimated value of over OMR117 million (US\$304.29 million) representing a 3 percent increase in volume and a 13 percent increase in value over the previous year (Ministry of Agriculture and Fisheries Wealth 2010: 16). The value of the 87,000 tonnes of fish exported to the GCC states, Europe, the US and others was worth a total of OMR63.5 million (US\$165.15 million), representing a 7 percent increase in volume and a 4 percent increase in value over 2009 (Figure 4.10). As indicated above, this important sector is a vital factor in Oman’s economic well-being; therefore, policies and strategies (discussed in the next section) and careful access to and management of the resources involved remains crucial.

Figure 4.9: Fish export by volume (tonnes) and value (OMR 000), 2001-2010



Source: Ministry of Agriculture and Fisheries Wealth *Statistics Book*, 2010

4.3.2. Fish-related Policy and Strategy

This section summarises the government's policy and strategy in the fish sector. The Ministry of Agriculture and Fisheries Wealth is responsible for managing the exploitation and conservation of living marine resources and for developing policy.¹¹¹ For this the main law is the 'Fishing and Protection of Living Aquatic Resources' (Ministry of Agriculture and Fisheries Wealth 2011: 15-30). Particularly relevant to aquaculture are two bye-laws; one on fish quality control (Ministerial decision No.136/1998), and the other on aquaculture and quality control of cultured organisms (Ministerial decision No.36/2004).

In addition to the main law on Fishing and Protection of Living Aquatic Resources there are several environmental laws and regulations that relate to the aquaculture sector and that are managed by the Ministry of Environment and Climatic Affairs. The Ministry of Agriculture and Fisheries Wealth, delegates the implementation of policy and enforcement of fishery laws and regulations to the Directorate General of Fisheries. This directorate is also responsible for all regular administrative tasks, such as collection and analysis of industry-generated data, and licensing of fishermen and fishing vessels (Ministry of Agriculture and Fisheries Wealth 2011: *ibid*). This basic infrastructure has facilitated developments that have led to increased demand (domestic and export) for fish. However, the exploitation of this sector is an evolving process that requires proper and effective co-ordination with national stakeholders.

For centuries Oman has maintained a fleet of sea-going vessels based in small coastal fishing communities. The combination of open seas and high productivity led to a varied fishing industry and to trade in a wide variety of commercially important species. Since the early 1970s the fleet has been modernised and the fisheries sector has expanded, and the Ministry of Agriculture and Fisheries Wealth has taken a number of steps to develop the commercial and traditional fisheries sectors, since fishing is now considered to be the most important economic activity following oil.

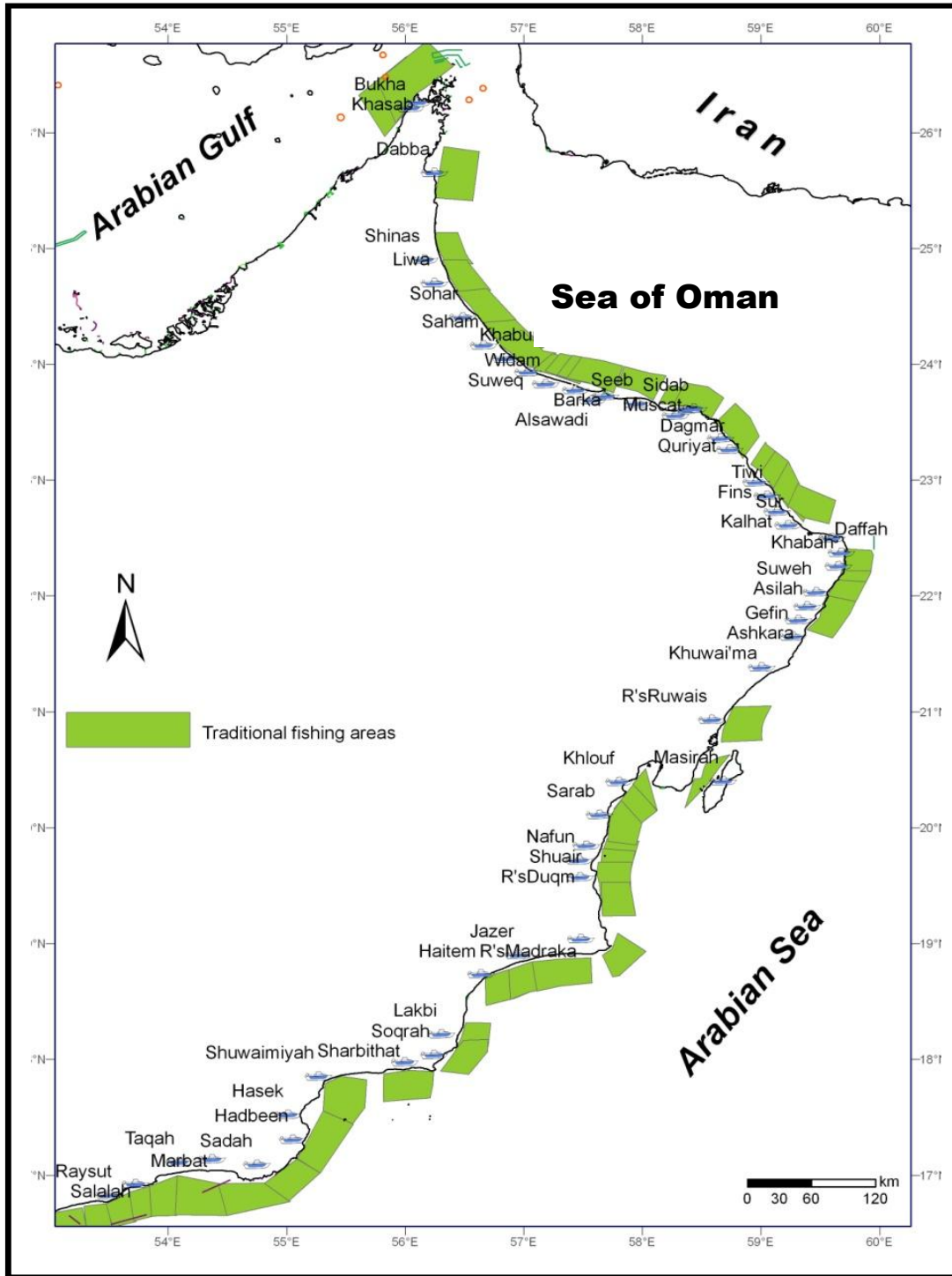
¹¹¹ Law governing Aquaculture, Fishing and Protection of Living Aquatic Resources, first issued in 1982, amended in 1993. For more details see, <http://www.mofw.gov.om/tabid/363/Default.aspx>, accessed 18 March 2012.

4.3.3. Description and Assessment

This section offers assessment of the fishery sector. It is estimated that in the traditional fisheries sector, there are 36,031 fishermen using 18,031 boats, which land at 20 fishing ports and harbours and over 45 landing sites located within ten nautical miles of the coastline (Ministry of Agriculture and Fisheries Wealth 2010: 30, 50). The traditional fishing areas are located less than ten nautical miles from the shore, and are not restricted by either fishing area or catch quota. The contribution of these areas to total catch is dominated by the eastern region, which supplies the highest portion of the total catch, possibly because this region has the highest number of fishing dhows, which are relatively large and therefore make it possible for the fishermen to spend longer periods at sea. In specific areas, oceanographic conditions such as water temperature, currents and water salinity, as well as human pollution, can be used to derive useful variables and analysis for understanding the marine environment. Relationships among such variables as temperature, salinity and currents can be influenced by factors connected to ocean conditions, such as ocean circulation (currents and winds).

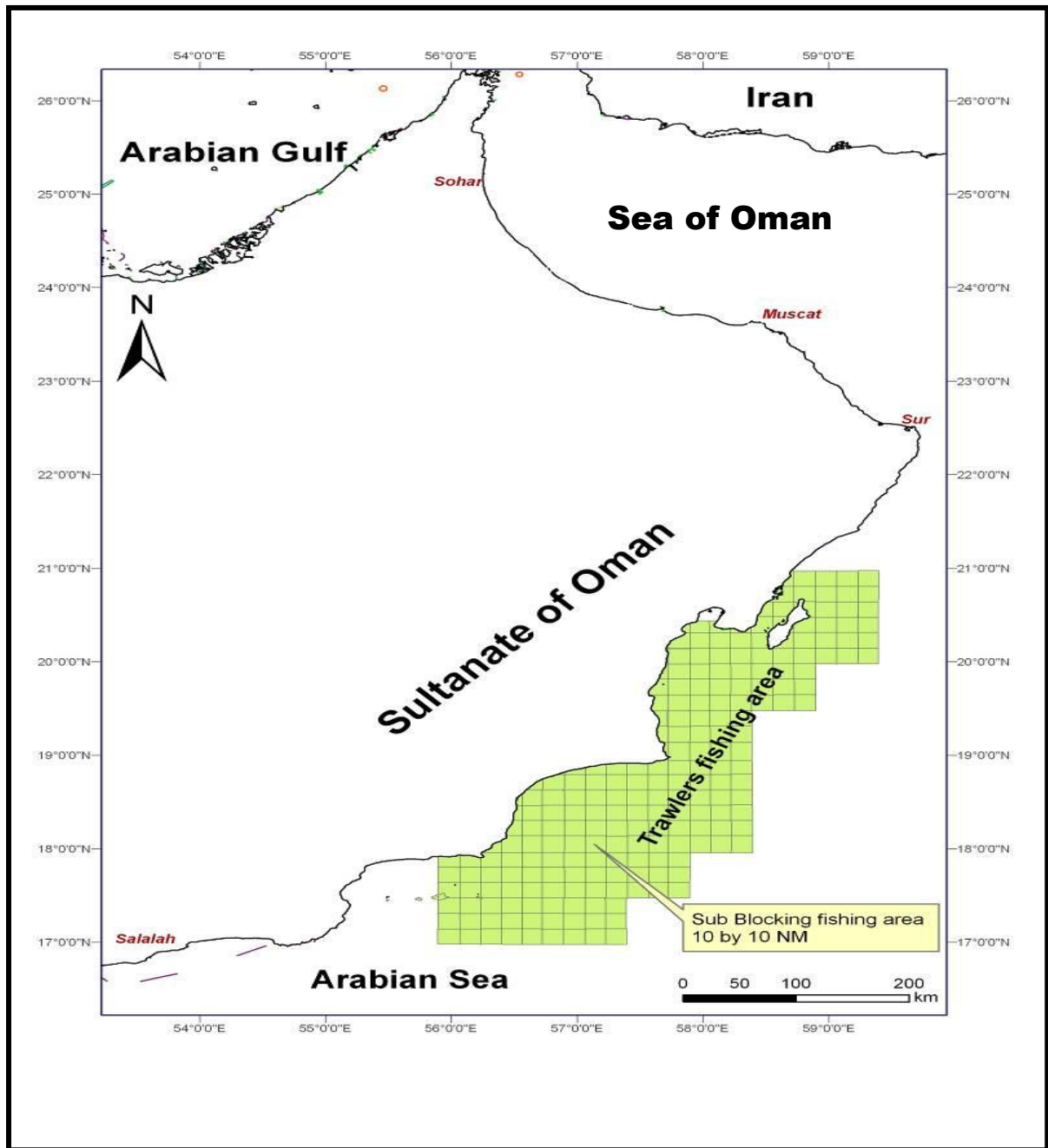
The Ministry of Agriculture and Fisheries Wealth sets the rules for the industrial fishing vessels. These vessels are chartered by Omani fishing companies which hold licences for industrial fishing allowing them to operate in Omani waters within specified quotas. In 2010 there were 38 industrial vessels categorised into two types according to their fishing methods: 25 trawlers, which use trawl nets to catch the species living on the sea bed of the continental shelf (demersal species), and 13 long-liners, which catch large pelagic species (especially yellowfin tuna). They both operate beyond 10 nautical miles from shore, which the ministry has divided into a series of blocks denoting fishing areas (Figure 4.10). The minimum fishing depth at which vessels may operate is 50 metres, and vessels must not operate in the same area for more than three consecutive days. Figure 4.11 focuses on trawlers only within the marked industrial sector, since the preferred catch is emperor, a demersal species that is not fished using long-lines (Ministry of Agriculture and Fisheries Wealth 2010: 150).

Figure 4.10. Traditional Landing Sites and Fishing Areas off Omani Coast



Source: Marine Science & Fisheries Centre, Muscat, 2011

Figure 4.11. Trawler Fishing Areas off the Omani Coast



Source: As for Figure 4.10

Concerned about the shrinking number of employment opportunities within the sector, the government is now focusing on developing this sector by modernizing and expanding the fishing industry. This strategy is aimed at developing the industry economic prospects through exports.

As noted, although there are no supporting statistics for fish reserves, it was observed in 1990 that fish stocks were declining, because the total catch by local fishermen was notably less good than it had before 1990 (Rippenburg 1998: 133-134). In 2008 stocks were estimated at 5,000,000 tons, mainly in the Arabian Sea and the Sea of Oman.¹¹² This alarmed the government, which recognized that this wealth is of vital importance to the national economy and security of Oman (Maynard 1988: 1-13).¹¹³

In its bid to diversify the economy, the government's economic development policy and strategy emphasized expansion of the fishing industry, the aim being to establish a sustainable economic base. The government duly launched several economic campaigns, naming 1988 and 1989 as Years of Agriculture, and 1991 and 1992 as Years of Industry. Since then the government has funded and encouraged private sector investments. For example, the Oman Bank for Agriculture and Fisheries, which was created in 1981 and is subsidised by the government, extends loans at concessionary rates to individuals for whom farming or fishing is the principal activity.

The government has also emphasized the modernization and expansion of the fishing industry, as well as development of its export potential, in an effort to increase private sector confidence in the fishing industry. In the long term, such policy will create developments in the industry that will encourage the private sector to take part in the development of the national economy. Therefore the fishing industry is organized in terms of ownership between the private sector and the ministry, since this enhances the operations and the role of trading facilities as well as the single dhow owners/operators. The current (2012) government's plans for the development of the fishing industry involve the creation of a largely-integrated fishing company with an exclusive mandate to develop

¹¹² Interview with Dr Lubna Al-Kharousi (Director of the Marine Science and Fisheries Centre, Muscat), 21 June 2011.

¹¹³ For a further historical overview of fishing see, http://pdf.usaid.gov/pdf_docs/PNABC046.pdf November 1988, accessed 16 April 2012.

and exploit offshore fishing. Planning for this operation is currently proceeding smoothly, and funds of OMR15 million (US\$39.01 million) are being made available for the project (*Oman Daily Observer* 3 January 2012: 23).

In emphasizing the modernisation and expansion of the fishing industry as well as the development of its export potential, the government is also following a domestic strategy to improve the overall ability of the fishing sector, and to provide incentives for fishermen to maintain their occupations through training centres and technical colleges. The government offers subsidies for the purchase of fibreglass boats, outboard engines and fishing gear, for training, and for building workshops and cold-storage facilities, constructing fishing ports, harbours, and jetties along the coastline, and for setting up companies to market fish, both domestically and internationally (*Oman Daily Observer* 11 December 2011: 1,3). The government has also established an infrastructure that helps fishermen to engage in their occupations. The fishing ports and harbours provide shelter and protection for boats and fishing equipment, in addition to facilitating the landing of fish catches. The ports also provide key services and other facilities for fish handling, including ice plants, marine workshops, and stores for fish preservation, as well as tools, fishing equipment, and fuel stations. Development of fish markets in the ports is also encouraged (*Oman Daily Observer* 25 November 2011: 1, 2).

In addition to port improvements, fisheries training centres have been established in Al-Khabourah (Al-Batinah coast) and Salalah (in the south), and data and statistics on the fishing industry have been upgraded. The training centres offer education and training to fishermen about the use of correct and safe fishing methods, safety procedures in an emergency, using the proper nets and tools, etc. Under previous five-year plans, total public investment on fishery in the Seventh Five Year Plan (2006-2010) was around OMR62 million (US\$161.2 million) (Ministry of Agriculture and Fisheries Wealth 2011: 1-24). All these represent positive features in exploiting the sector; however, correct initiatives, efforts and policies remain the best factors for success.

Between 2005 and 2009 the combined total catch of fish was 1,013,000 tonnes with a decrease of 7 percent compared with the same period of time in previous years.¹¹⁴ Aware that the fishery sector is a promising source of revenue, the government gives priority to developing and enhancing the quality of fish production by investing on fish farming (Figure 4.12).¹¹⁵ Marketing operations have also been streamlined across the country and exports are now better regulated, particularly with regard to certain types of rare, high-value fish. The next section will look at the marine environment.

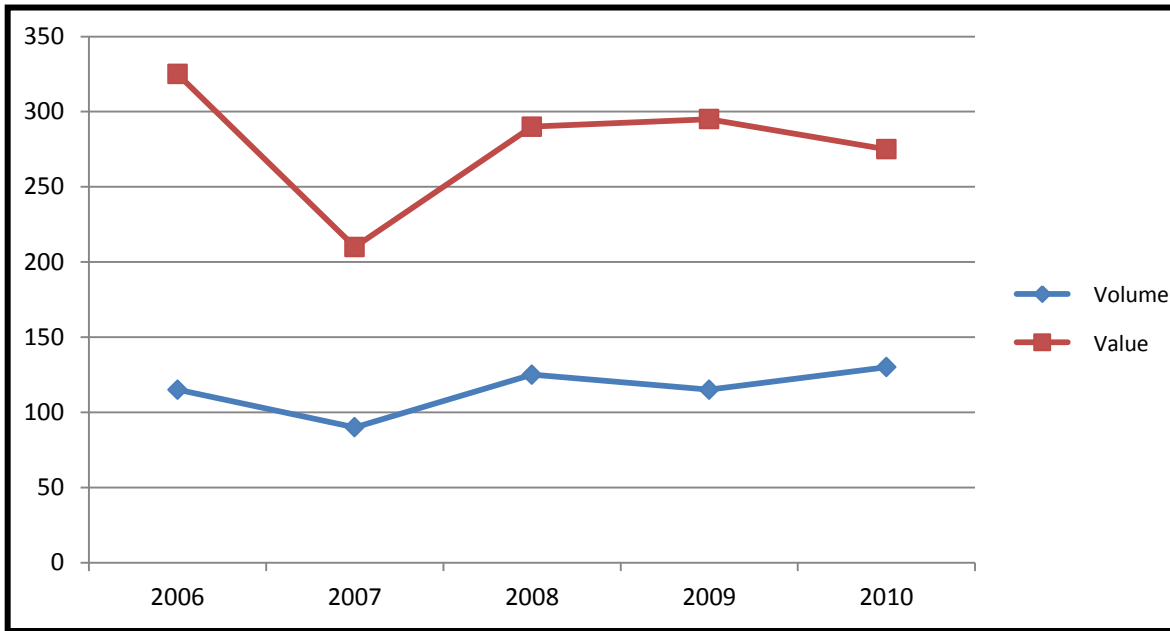
4.3.4. Environmental Impact and Research

This section looks at the environmental impact of fishery development and sustainability and at the types of research that support the practical application of techniques and best practice in the industry. With regard to the government's strategy for protecting the marine environment, the Ministry of Commerce and Industry made an agreement in 1986 with the International Union for the Conservation of Nature (IUCN) on the basis of which the IUCN was requested to conduct ecological surveys of the shores and coastal waters between Quriyat and Ras Al-Hadd (IUCN 1988: 1-2). The surveys aimed to develop management options for different uses in the area's coastal zone. The work undertaken by the IUCN identified a number of critical management issues, including ad hoc settlement and development of coastal properties and careless recreational and fisheries activities. As a result of a lack of suitable coordination with the appropriate government agencies, many of the issues that arose at that time probably still exist.

¹¹⁴ Interview with Dr Lubna Al-Kharousi (Director of Marine Science and Fisheries Centre, Muscat), 21 June 2011. (Also in *Oman Daily* newspaper (Arabic version), 21 May 2011, p. 7)

¹¹⁵ Interview with Dr Lubna Al-Kharousi, *ibid*.

Figure 4.12. Fish Farm production by volume and value (tonne/OMR000) 2006-10



Source: Ministry of Agriculture and Fisheries Wealth 2010

However, the Seventh Five-year Development Plan (2011-2015) seems to be committed to developing and maintaining Oman’s marine resources, as well as ensuring that the fishing grounds and coastal areas – the complete spectrum from inshore/territorial waters to the outer limits of the EEZ – are properly managed, regulated and monitored. At the regional level, the Fisheries Support Unit of the Indian Ocean Rim Association for Regional Cooperation (IORARC)¹¹⁶ is based in Oman, and promotes cooperation between member states in the management of renewable resource. Such cooperation looks at the protection of the marine environment and works to identify regional solutions that are directed towards the fisheries sector, since, if preservation of the marine environment is carried out with effective management, it becomes a renewable source able to be developed and to contribute to the economy. The policy of preserving the marine environment in the Gulf region in general is particularly challenging, as illustrated below.

¹¹⁶ The Indian Ocean Rim Association for Regional Cooperation (IOR-ARC), established in 1997, was known initially as the Indian Ocean Rim Initiative, with 19 member states including Oman. The Association disseminates information on trade and investment regimes. See, http://www.dfat.gov.au/geo/indian_ocean/regional_orgs/ior-arc.html, accessed 17 February 2012.

The waters of the Arabian Gulf and Oman Sea are environmentally unique with an unusual collection of creatures. The Gulf, a semi-enclosed body of water, is connected to the Sea of Oman through the Strait of Hormuz and its average depth is 35 metres (Blake 1982: 2-16). The Sea of Oman with depths reaching 3,200 metres, connects the Arabian Gulf to the Indian Ocean through the Arabian Sea. The Arabian Gulf and Sea of Oman are in the same subtropical zone with low average of annual rainfall. The dominant large-scale current in the region is a counter-clockwise movement, whereby less saline and less dense water from the Sea of Oman enters the Strait of Hormuz at the surface and more saline and denser water from the Gulf leaves the area at the bottom and the entire water column is well mixed (Valinassab et al., 2006: 1455-1462).

A review of fishery statistics during the last decade shows a trend towards increasing fishing efforts in the Gulf and the Sea of Oman. The number of fishermen grew from 19,296 in 1990 to over 36,000 in 2011, while the combined total catch of fish between 2005 and 2009 was 1,013,000 tonnes. This, as noted above, represented a decrease of 7 percent over the same period of time as in previous years, the basic reason for which has been a simple matter of taking fish at a faster rate that can be replaced naturally. Therefore, the varieties of fish in this ecological region are now classified as over-exploited.

Regionally, as can be seen, the marine environment is changing rapidly, particularly because of major and unregulated construction and developments in the coastal zones of the Gulf. Such substantial alterations to the coastline cause habitat loss (Sheppard et al, 2010: 13-38). For example, where Oman borders the Emirate of Ras Al Khaimah (UAE) the vast scale of development activities compared with the relatively small and shallow reaches of the water body is a particularly important issue for Oman, especially as the lack of co-operation in such “a small, biologically-interacting sea” simply exacerbates the overall deterioration, which then extends to the Sea of Oman (Sheppard et al, *ibid.*).

An overarching problem in assessing development impacts is the lack of cooperation for a synergistic or strategic approach. There is limited exchange of information among neighbouring countries. Oils spills have been a serious source of pollution, and have badly affected the marine environment by killing seabirds, sea turtles, and other marine life

species.¹¹⁷ The region has experienced a rapid rise in industrialization, population growth and urbanization: thus another major source of pollution comes from land-based activities (Sheppard et al, 2010: 13-38).

Evidence suggest that one of the most devastating impacts of human activity on marine, particularly coastal, environments, is the introduction of foreign species which can severely alter local biodiversity. Nor would it be exaggerating to say that a major concern in terms of pollution is the threat of nuclear radiation. A Chernobyl-type incident at the Iranian or the future UAE nuclear facility would have a devastating and unending impact. Regionally various Gulf countries are undergoing massive construction activities involving extensive sea and coastline alterations, (dredging, creation of artificial islands, reclamation of coastal areas). All of these processes cause coastal erosion and severe damage to the marine environment, which means that marine habitats and ecosystems are facing serious environmental challenges. Oman has always maintained a self-sufficient fishing industry. Recently, however, many fishery authorities in Oman and the Gulf countries have reported a loss of fisheries potential, which they ascribe to human activities such as the use of certain fishing methods along the coastal areas that cause environmental harm. Such activities have negatively influenced biodiversity, habitats and fish stocks; remedying the damage represents a tough challenge for the authorities

4.3.4.1. Marine Research

Established in Muscat in 1986, the Marine Science and Fisheries Centre (MSFC) conducts important marine research. Its role includes the study of different resource stocks and the future development of the vast range of marine species to be found in Omani waters. As noted by Al-Kharousi (Director), the centre also takes a more academic role in studying the general ecology of the marine environment, with particular emphasis on the conservation of ecosystems including turtles. The Centre has already carried out a number of important fisheries research projects and programmes in many areas. These projects have recently

¹¹⁷ Interview with Dr Barry Jupp (Senior Consultant-Marine, GEO-Resources Consultancy, Muscat), correspondence, 23 February 2012.

been re-oriented in light of the priority given to studying the problems facing both the artisanal¹¹⁸ and the industrial fishing sectors.¹¹⁹

In order to achieve the development objectives of fishery, special research projects have also been undertaken on fisheries by the Ministry through the MSFC, and in the department of Fisheries Science and Technology at Sultan Qaboos University.¹²⁰ An example is the study conducted in 2007 that identified the heightened level of concern over the dramatic increase in commercial shark fishing during the previous decade (see Figure 4.13). This concurs with the scientific evidence in several areas of the world indicating that sharks are particularly vulnerable to over-exploitation, with certain species having already been fished almost to extinction (Henderson et al., 2007: 159-168).

Other projects relate to maintaining the quality of fish and marine products until they reach the consumer, as well as monitoring for levels of pollutants from chemicals and heavy metals.¹²¹ Such research can produce useful solutions and effective methods for preserving the fisheries. The necessary rules and regulations should be based on scientific research, and in addition it is necessary to confirm the accuracy of all aspects of the dilemmas that the research presents. Research undertaken on fisheries is considered to be the first step for making policies and implementing the solutions required for preserving fish stocks.

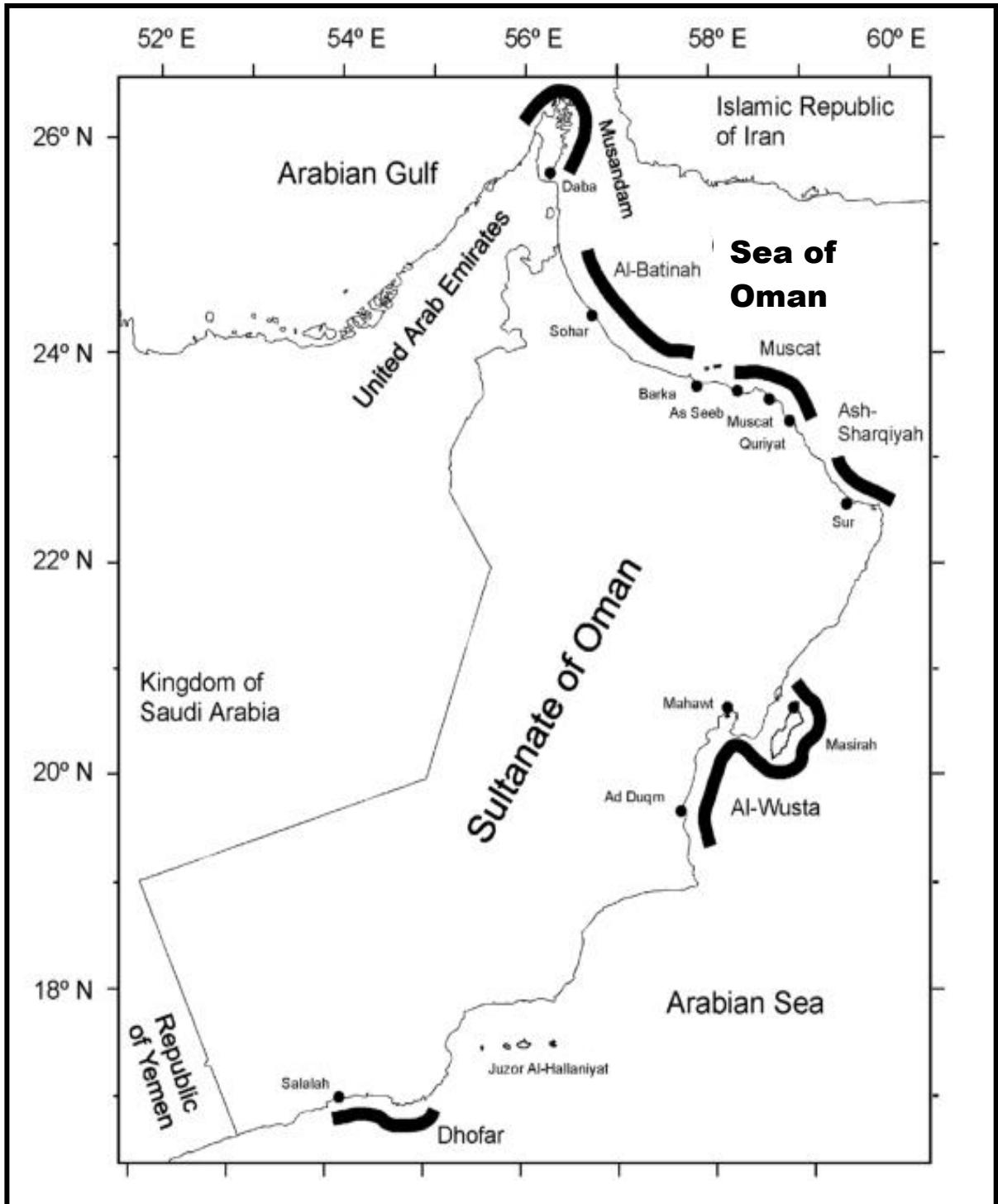
¹¹⁸ 'Artisanal fishing' is a term used to describe small-scale low-technology fishing.

¹¹⁹ Interview with Dr Lubna Al-Kharousi (Director of Marine Science and Fisheries Centre, Muscat), 21 June 2011.

¹²⁰ Interview with Dr Lubna Al-Kharousi, *ibid*.

¹²¹ See MOAF website, at <http://www.mofw.gov.om/tabid/363/Default.aspx>, accessed 25 January 2012.

Figure 4.13. Primary Data Collection Sites for the 2007 Shark Study 2007



Source: Henderson et al 2007: 159-168.

The government maintains a generally favourable attitude toward foreign investment, depending on the importance of the project to the national economy. For example, in partnership with British companies experienced in the fishery field, the Ministry of Agriculture and Fisheries Wealth is making use of Fisheries Aggregation Devices (FAD).¹²² By implementing a national pilot programme for an aggregation devices fishery, it is expected that the Omani fishing community will benefit from increased productivity, increased earnings for the fishermen, diversification of the fishery, and improved safety at sea. The programme is an important tool that offers many benefits, such as enhancing the sustainability of the traditional fisheries in Oman by increasing the landing of high-quality fish. It also reduces pressure on the inshore zone and encourages fishermen to use new fishing methods. It therefore has a significant impact on the industry, providing sustainable fishing for local fishermen when monitored and managed (*Oman Daily Observer* 11 December 2011: 1, 3).

Oman recognises that environmental protection and marine conservation are vital, and has established a dedicated ministry for the protection of the environment (Ministry of Environment and Climate Affairs). The government has adopted a new planning approach that harmonizes the development process with the protection of the environment and the conservation of natural resources in order to achieve sustainable development. Basically, the Five-Year Development Plans, in use since 1976, express the basic principle of a natural link between development and environmental protection, and embark on a new vision for Oman's economy based in the preservation of non-renewable natural resources. The National Conservation Strategy for Oman, issued in 1996, defined the objectives and procedures for creating a balance between development and environment, stressing the incorporation of environmental considerations at all stages of planning with the necessary administrative, institutional, political and legal frameworks. These efforts were crowned in 2001 and 2002 when these were designated by Sultan Qaboos as consecutive Years of the Environment in Oman.¹²³

¹²² An FAD is a man-made device used to attract ocean-going pelagic fish such as tuna, kingfish, sailfish and shark, making them more accessible to fishermen; see *Oman Daily Observer*, 11 December 2011: 1,3.

¹²³ Interview with Dr Barry Jupp, (Senior Consultant-Marine, GEO-Resources Consultancy), Muscat, correspondence, 23 February 2012.

In sum, the country actively pursues strict rules and participates in international events to enhance this initiative in areas beyond its national jurisdiction. The Law on Marine Pollution Control which came into force on 1 January 1975 extended Oman's jurisdiction to up to 50 nautical miles from the coasts (Amin 1981: 55-56), while the Sultan Qaboos prize for environmental preservation, recognised since 1991 by the United Nations Educational, Scientific and Cultural Organization (UNESCO), is an example of how Oman is acknowledged for its environmental protection and development efforts.¹²⁴

4.3.4.2. Fishery Development

This section outlines the government's programmes in developing the fishing industry. Oman's fishing industry currently contributes less than 1 percent of GDP but, with its economic activity potential, is regarded as one of the country's most important offshore resources since it provides employment to over 64,000 people (36,000 of whom were registered fishermen in 2011) and is a source of livelihood to around quarter of a million more (*Oman Daily Observer* 11 December 2011: 1, 3). As noted earlier, fishing development campaigns were launched to encourage private sector investment and support the industry. The government is allocating generous amounts of cash support for private industry which would be disbursed mainly through the Oman Bank for Agriculture and Fisheries. In addition, the government also provides loans at good rates for those involved in the relevant activities. In an attempt to protect the marine environment and improve the living standard of fishermen, the government has enhanced fish production in terms of quantity and quality through the use of modern methods that ensure the optimum use of this diversified wealth in Omani waters (*Oman Daily Observer* 11 December 2011: 3).

A government company for aquaculture is currently being formed with the aim of establishing fish farms and fish fodder factories, as well as providing veterinary services and technical support. The strategy explores the development of aquaculture in Oman and its contribution to food security, national income, diversification of exports and sources of earnings, creation of employment opportunities for Omanis, and development of local

¹²⁴ Further details can be found at, www.unesco.org/mab/doc/prizes/sq_winners.pdf, accessed 15 April 2012.

communities. Development of this industry has been supported through constructed fishing ports, harbours, roads network, and workshops, in addition to ice plants and other necessary facilities established throughout the country.

The fisheries sector's contribution to GDP rose from around OMR75.4 million (US\$196.1 million) in 2005 to around OMR82.2 million (US\$213.78 million) in 2008, accounting for some 0.4 percent of GDP. Since the development of fisheries is a priority, the government places particular emphasis on improving the capabilities of the traditional fishing sector. It does so by delivering training to fishermen and improving their fishing gear. In 2010 the fishing sector's share in GDP was still only 0.6 percent. Hence, within the government strategy, the target for the fishing sector was set by raising its contribution to about 2 percent by 2020, with an annual growth of 5.6 percent.

A review of Oman's fishery sector indicates considerable opportunity for development of the fishing industry. Although this resource has not been thoroughly quantified, there is sufficient research and data to support the government's development programmes and plans. Although the government has adopted strict rules and deploy a fisheries inspectorate to board fishing vessels and inspect nets, catches etc, serious concerns have repeatedly been raised about the sustainability of the demersal stocks and the welfare of the traditional fishery sector. Fishery operations conducted by the Royal Navy of Oman (RNO) vessels reveal that, the issue of over fishing needs to be addressed at the all levels. The marine resources, if properly managed, can continue to provide benefits to many generations of Omanis. It would be timely for Oman to formulate a sound maritime doctrine using the broadest possible base of contributing sources from the business and fisheries sector, to bring the industry to the level of its potential.

The fishery sector in Oman is one of the most important industries in terms of contribution to GDP and food security, in addition to providing employment opportunities. Useful efforts have been devoted to research, but further studies in various areas of aquaculture are still required in order to promote the development of the sector. Such research will need to focus on environmental monitoring, health and disease control. With oil tankers using Omani waters, it is probably inevitable that the sea surface will become contaminated with oil residues. The illegal discharge of crude and fuel oil by tankers, the cleaning of

cargo tanks and the disposal of polluted water overboard, as well as the and the release of ballast water into coastal areas, spreads organisms and sediments that have been carried from ports around the world; this has had major impacts on the marine environment.

An objective look at this vital element of the economy indicates that many actions are needed to develop the fishing industry so that it will provide the benefits expected from Oman's offshore resources. The negative aspects of resource development are somewhat more complicated. Young Omani fishermen are not properly trained or in any way equipped to conduct modern fishing operations, and lack the skills to undertake production efforts beyond the simple methods now employed. In addition, the government institutions charged with fisheries development need to recognize the actions required for development, and the corresponding priorities that concern the safety of fishermen, emergency procedures to save their lives, and maintaining systems for carrying out search and rescue operations.

The government has to produce clear policies for the private sector who in turn needs to take an interest in developing marine resources and should be willing to take considerable risks in doing so. Therefore the government should review its thinking on certain development issues, as well as its attitude towards service to the private sector, since positive development policy is vital and is needed immediately. The numbers of fishermen, though rising, are still not stable because young people are looking for higher wages and less strenuous careers. So, this is a national issue that needs to be addressed with keen interest from all of national agencies including security services and stakeholders.

As already discussed, though its total contribution to GDP is less than one percent, the fishing sector is important to the Omani economy, and fisheries are seen as one of the country's major natural resources and one of its main economic sectors. Because the fisheries resources are renewable, they are capable of much greater exploitation to meet both local and export market demand. Not least, the fisheries sector is expected to absorb a greater proportion of the national workforce in future, by training young Omanis in traditional and modern fishing methods, equipping them with advanced fishing boats and equipment, and associating them with Omani fishing companies in the selling and marketing of their products (e.g., by employing them to build and maintain fishing vessels

and equipment). Production levels and the value to the economy of aquaculture enterprises are still small compared to the contribution from capture fisheries, but are projected to increase as the sector progresses. In terms of providing livelihood and incomes, aquaculture production offers good prospects and is important for national security as is discussed in the next section.

4.3.5. Fish and National Security

This section examines the importance of fish to national security and how it provides sources of livelihood to large numbers of people and creates activities and employment opportunities.

The fisheries sector in Oman occupies an important place in the socio-economic development of the country, augmenting food supply, generating employment, raising nutritional levels, and earning foreign exchange through export (Johnson 2004: 5-9). Because energy and fish requirements are considered as strategic drivers they need to be correctly exploited. Over-fishing is an issue that inevitably leads to dwindling of fish resources and ultimately threaten the security of the society's activities, a view shared by Geoffrey Till who, in the case of Asia-Pacific, sees an imbalance between supply and demand and believes that such circumstances can lead to conflict (Till 2009: 288). Resource management, marine environment quality, scientific research, and dying reefs, though of little significance at the time, might also become future problems. Rising populations and increasing human demands continue to put additional pressure on existing resources, and the search for new and economically viable resources remains a never-ending process (Till 2009: *ibid*). The problem of resource constraints is more pronounced if there is no unity of effort in any action conducted by the government (ie, lacks a doctrine).

Oman has abundant and varied fish stocks within the EEZ. However, it is a finite resource that must be carefully exploited in order to sustain a viable industry and livelihood for many. Illegal fishing is the major threat to sustainable diversity and population, and over-fishing will lead to reduced catches in terms of quantity, quality and size. This could lead to the collapse of small communities reliant on fishing for sustenance and income and the

loss of a traditional way of live in coastal areas, as well as revenues due to Oman for licences. The threat is both internal, from illicit fishing by indigenous people (Abandoned or unmonitored fishing nets and crab nets can trap and kill fish that becomes entangled in the nets),¹²⁵ and the failure to observe conservation measures, and external in the form of industrial scale trawling contrary to international and national laws. Stripping away marine diversity will adversely affect the eco-system and impact creatures such as whales, dolphins and turtles which provide a major attraction to the tourism industry.

In Oman there have been challenges with regard to offshore exploitation of natural resources. Though Oman's efforts in protecting the environment are commendable, environmental degradation of the sea is of great concern. Oman's EEZ is transacted by the world's major hydrocarbon transit route to an from the Gulf. Super-tankers ply the sea lanes daily carrying billions of tons of petrochemicals. Much of the EEZ also enjoys special protection status due to the rich natural diversity within it. An accident or illegal flushing of storage tanks at sea would cause immeasurable damage to the marine environment affecting protected marine species, fish stocks and aquatic birds alike, and threaten desalination plants. Besides the ensuing ecological disaster, the economy would be affected by both the cost of clear-up action, provision of potable water and the loss of income from fishing and tourism. This is an issue, as are over-exploitation and illegal activities within the EEZ. The value of hydrocarbon reserves, and to a lesser extent fish stocks, is likely to influence any resolution of disputes, and their economic value requires governmental intervention, but it is important to realise that diminishing environmental resources may eventually have a significant impact upon Oman.

As a maritime nation, Oman is influenced by its marine environment which impacts extensively on its geographic, economic and strategic dimensions, and until 1970, the country's virtually subsistence economy was based almost entirely on agriculture and fishing. Today around 60 percent of the population either resided on the coast or lived within 45 kilometres of the sea (Ministry of National Economy 2009: 56-64). Most Omanis living along the coastline depended heavily on the sea for fishing as their livelihood and

¹²⁵Further details can be found at, www.ehow.com/about_6682943_effect-nets-crab-nets-ocean.html, accessed 6 January 2012.

from the outset realised the need for a mercantile fleet to preserve and maintain that livelihood and protect their country (Till 2009: 35-37).

Since 1970 the government has attempted to develop and secure the fishing industry and to exploit its potential. In recent years restrictions have been imposed on the fishing of certain species, such as lobsters, abalone and kingfish, due to a noticeable decline in stocks. This has affected the income of local fishermen and caused resentment among the coastal residents (as in several countries where quotas have been imposed). Young men have also drifted away from the fishing communities to the cities where they can earn better wages. For a state like Oman, where tribalism issues were dominant, such factors represented a potential threat to national security in the early 1970s. Recognising this, the government looked urgently for solutions to reduce the drift and in 1978 set up the Fishermen's Encouragement Fund which proved effective in encouraging the fishermen to keep to their traditional occupation. The financial assistance made available for the purchase of fibreglass fishing boats and outboard engines was particularly popular. In recent years much progress has been made in improving facilities for fishermen, including upgrading fishing harbours, constructing cold-storage and processing facilities, and improving the country's transport infrastructure with the construction of new road networks that have enabled fresh fish to be carried in refrigerated vans to population centres in the interior regions. Now the situation is more stable, and jobs have been created in fishing-related activities for a substantial number of both locals and foreigners.

However, as populations increase, demands on the sea and its resources also continue to rise. The massive increase in exploitation of offshore resources makes preservation of the marine ecology a vital issue for all nations worldwide. As a vast oceanic area, the Arabian Sea and the Indian Ocean region, dominated by deep waters, have relatively good physical characteristics, and the surface seawater temperature and salinity are usually better than that of the Gulf. A semi-enclosed body of water and is relatively small and shallow with an average depth of approximately 40 metres, occasionally reaching 90 metres (Razavi 1997: 8-10). Due to the heavy traffic through Omani waters, the maritime environment is deteriorating and fish resources are declining, since the area is highly susceptible to various types of pollution from the shipping industry. Another aspect of major concern in the region

is its vulnerability to the damage that has occurred from the rapid development and urbanization of the coastal zone since the discovery of oil.

Oman is a signatory to international agreements on combating illegal fishing. Notable is the Regional Commission on Fisheries (RECOFI), part of the United Nations Food and Agriculture Organisation (FAO), whose principal mandate is to combat illegal fishing. Underlining its commitment to fighting this phenomenon, Oman shares information with the Gulf States, other member countries of the Near East region of RECOFI, and the IORARC, to work out solutions and discuss the way ahead in addressing actions required to combat such illegal activities (*Oman Daily Observer* 20 November 2011; 1,6). Other problems are Oman's vulnerability to large-scale industrial fishing vessels, particularly along the Indian Ocean coast where the maritime zones are too vast to assert a sufficient operational presence, and such seasonal incursions in its own northern seas. In this regard, national maritime resources will be needed in the form of sophisticated surveillance assets that will operate at sea, to act generally as a deterrent, and more specifically oversee areas known to be susceptible to illegal fishing operations. There should also be regular meetings with national agencies and regional countries aimed at developing national capacity and promoting regional co-ordination, which means that countries will be better able to combat illegal fishing activities through the development and implementation of relevant international fisheries instruments.

Overall, though the on-going efforts to enhance maritime security in Omani waters indicate a positive impact on Oman's drive to combat unlawful activities (see Chapter Five- section 5.3), these efforts still lack a integration. Regarding illegal fishing, it is sufficient to say that, although Oman has some limited seaborne means of combating illegal fishing, the country's lengthy coastline and vast exclusive economic zone make it susceptible to occasional unauthorised fishing. Though the phenomenon is not widespread in Omani waters today, due partly to enhanced surveillance by various maritime security agencies, illegal fishing and uncontrolled fishing activities are causing concern about the viability of fish stocks. There are also occasional raids by intruders, especially those who tend to operate in remote areas where there is no continuous surveillance. The importance of the sea is an international reality and one with particular significance for Oman, for whom the

necessity of maritime doctrine in securing its maritime resources cannot be overemphasised.

4.4. Conclusion

Since 1982, nations, including Oman, have continued to established their claims to the sea based on the legal framework of the UNCLOS III, in order to establish the legitimacy of their jurisdictional requests and thereby reap economic rewards (Razafi 1997: 6-95). This chapter has examined offshore oil, gas and fish resources as elements of the national interest, and has explored their economic importance, the policies for dealing with them, and the strategies being imposed on them, as well as the way they contribute to national security.

With growing investment in offshore resources, integration of the world economy and the impetus towards globalization, Oman's dependence on the sea is bound to increase further. Development of resource exploitation is often driven by global demand and economic trends, and Oman's maritime interests dictate that there should be a free flow of trade, including export and import of oil, gas, fish and other materials, as well as security from seaborne attack for the coastal infrastructure.

Resources such as fish, oil and gas are very important to a nation with a maritime outlook like Oman that crucially depends on its maritime interests for its economic well-being. In a country with a large and potentially resource-rich EEZ, exploitation of its offshore resources is progressing slowly, but in the absence of a maritime doctrine that can coordinate efforts (ie scientific data and oceanographic researches) of national agencies, the true extent of these resources is yet to be ascertained. Oil and gas have so far remained only partly exploited; and concerted efforts are required for geophysical research through which the real potential present in this zone can be assessed. Although exploration of offshore oil and gas resources has progressed very slowly, the announcement in 2011 of the US\$600 million oil and gas project in Musandam and the new offshore oil and gas area survey policy, Oman has been able to attract some foreign investment in this sector.

The current (2012) exploitation of renewable resources in Oman is mainly limited to marine fisheries. In the pre-oil period fishing was the country's second economic activity after agriculture. The fishery sector today contributes less than one percent to the national economy; nevertheless, it has considerable potential if Oman takes a sufficiently close interest in developing and protecting it. As a result of the increasing pace of economic globalization and escalating energy demands, economic growth, social stability, prosperity and even the survival of governments or political structures will require nations to accept a great deal more inter-dependence (Grove 1990: 221). With its particular location Oman is strategically important and now represents a relatively dynamic and modernising market that is actively promoting global integration and economic diversification.¹²⁶

The welfare and activities of fishermen, who function in the same oceanic realm as maritime trade and ports, has a bearing on the various issues that have been identified as relevant to the security of national maritime interests. With the changing geopolitical environment, the surveillance and protection of this sea area places greater demands upon national resources. The sea area is thus the most striking fact about Oman's strategic geography. Since the coastline is relatively long (at 3,165 km) compared with that of the Arab Gulf states, and because the country faces an area of open ocean, it will be difficult to defend Oman against a conventional adversary (see Chapter Five: Royal Navy of Oman and Policing). As discussed in Chapters Two and Three, Oman's sea areas have become increasingly important but with inherent vulnerabilities because of the volumes and types of shipping that use Omani waters. In times of crisis that might result in the closure of the Strait of Hormuz, the only alternative would be to export and import oil and gas from the Arab Gulf countries through pipelines, ports and offshore terminals located outside the Gulf, and this would inevitably involve Oman's ports and its maritime territory.

Thus, while the significance of the sea as a medium for economic prosperity has grown it has also led to greater concern for maritime interests. The safe monitoring of offshore resources and of other national maritime interests, as discussed in preceding chapters, remains an integral and vital role, which is undertaken by the RNO and other national

¹²⁶ Interview with Hilda Al-Hinai (Deputy Permanent Representative to World Trade Organization Mission of Oman, Switzerland, Geneva), correspondence, 30 March 2012.

security agencies (RAFO & ROPCG) to ensure that the state's security is unchallenged. It must be acknowledged that a certain measure of control is needed to protect legitimate maritime interests from the adverse effects of the use of the sea by other parties. In this regard, not only has Oman considered its maritime interests but, in terms of exploiting its offshore resources and marketing them through its own Oman Shipping Company in oil tankers and LNG carriers, its maritime development profile has also been consolidated and is increasingly centred on meeting anticipated traffic growth and engaging in cross trades with other nations of the world to earn revenue. All this reinforces the urgent need for a maritime doctrine to coordinate the efforts of national agencies and stakeholders.

Resource management, the quality and protection of the marine environment, and marine scientific research are important and if not addressed early enough may turn into future problems. Therefore it is important for Oman to understand that limited environmental resources may have a significant and possibly damaging impact upon the Omani economy. If hydrocarbon reserves and fish stocks are not properly exploited, the value of these resources, to a certain extent, is likely to influence Oman's national security and economic growth, and hence must be carefully considered.

Finally, the chapter concludes that although offshore resource developments are on-going, Oman's planning ability to make effective use of the sea and to meet future demands is inadequate. As noted above, energy and fish requirements are considered to be strategic drivers, and the fact that Oman has so far fallen short and underestimated the wealth generated from the sea can be mainly attributed to the absence of a viable maritime doctrine.

CHAPTER FIVE

THE ROYAL NAVY OF OMAN AND POLICING

5.1. Introduction

Increasing global demand and heavy reliance on the sea for maritime trade and exploitation of its resources has increased the importance of secure sea routes (Borgerson 2009: 14-16). Oman is connected to the rest of the world through this network of routes and securing and protecting the Sea Lines of Communication (SLOC) puts considerable pressure on the Royal Navy of Oman (RNO) and other national security agencies such as the Royal Oman Police Coast Guard (ROPCG) and Oman's Royal Air Force (RAFO).

Navies have safeguarded their territorial waters for centuries, patrolling the high seas to ensure freedom of navigation and protect vital maritime borders. Oman's primary maritime interest is to assure national security – not only by guarding its coastline and island territories but also by protecting its maritime trade, shipping, ports, offshore resources and coastal installations as well as patrolling its Exclusive Economic Zone (EEZ) that extends out to 200 nautical miles.

This chapter examines RNO's roles in protecting Oman's sovereignty. Following an overview of the evolutionary history of the RNO, it examines Oman's maritime security in the context of regional geography, history, strategic concerns, and geopolitics. Oman's 'maritime environment', including legal and environmental issues, and national infrastructure and threats, is also examined. The chapter then discusses the RNO's roles and related tasks that help shape Oman's strategic options for the future.

It is argued that the development of Oman's naval forces has not matched the country's growing economic and maritime interests. There are a number of reasons for this, ranging from the lack of maritime doctrine, to a lack of awareness of Oman's physical and maritime geography, along with a limited understanding of the importance of the sea and the country's maritime interests for generating economic wealth. However, the most

significant factor has been the absence of maritime doctrine. Chapter One (Figure 1.1) suggests how the Ministry of Defence (MoD), as a department of the state, needs to formulate its defence policy, which should describe how the objectives of the national strategy will be achieved. Such a policy ought also to cover the state's objectives and priorities and therefore give guidance and set out priorities for equipment procurement to enhance the RNO's capabilities. As this chapter shows, due to the absence of a maritime doctrine the RNO operates under constraints and has to manage with various operating procedures that are not correlated with the country's overall national security.

5.2. Evolution of the Royal Navy of Oman: Overview

The sea has always been vital to Oman's external, political, and economic relations. This section reviews the history of what is now the RNO, which traces its origins to the time of Imam Ghassan bin Abdullah (807-824 AD),¹²⁷ the first Omani ruler to have a navy. He commissioned ships to be built to chase pirates from their lairs along the western shores of India; his strategy was successful and the pirates eventually gave up their raiding along the Arabian coast (Ministry of National Heritage and Culture 2005: 32).

With the development of skills and power, the Omanis dominated seafaring in the Indian Ocean for many years. However, the arrival of the Portuguese dramatically changed the maritime balance of power in the Indian Ocean. The sixteenth century began with conflict between the Omanis and the Portuguese, who invaded the country in 1508 (Ghubash 2006: 48). The more advanced Portuguese quickly dominated the conflict and, after most of its coastal towns had been captured, Oman lost its hold on the region's maritime trade routes, and its reign as the major maritime power of the Indian Ocean came to a halt (Rippenburg 1998: 29). The Omanis were eventually able to fight back and reclaim the naval ports that had been taken from them. Under Imam Nasser bin Murshid (1624-1649), and Imam

¹²⁷ The dating system refers to BC (Before Christ) as BCE (Before the Common Era); and to AD (an abbreviated Latin term *Anno Domini* = "in the year of the Lord") as CE (Common Era). The change was made to mask the Christian basis for the dating system and presumably make it more palatable to non-Christians. For more details see <http://www.studentsfriend.com/feed/topic11.html>, accessed 21 January 2012.

Sultan bin Saif (1649-1688) the main mission of the Omani navy was to drive the Portuguese from their strongholds in Omani territory which was duly accomplished in 1650 (Ghubash 2006: 55-67), after which the mission was extended beyond Omani territory and the naval force was deployed to the Western Indian Ocean, Persia, the Gulf, and East Africa to oust the Portuguese from the entire region (Kelly 1980: 106-108).

Imam Ahmed bin Said, founder of the Al Said dynasty, became the ruler of Oman in 1749. Recognising the advantage of having an effective navy, his first priority was to rebuild the navy that had been neglected after its victory over the Portuguese. His success at that time in building a fleet of four ships, each equipped with 40 guns, along with 25 locally-made boats, was a credit to Oman and enhanced the roles and mission of Oman's navy. The sea-based empire that existed between the seventeenth and nineteenth centuries required a stronger fleet to protect Oman's extensive territories. Sultan, Said bin Sultan's more powerful fleet enabled him to play a diplomatic role and he sent several ships on diplomatic and commercial missions to Europe and America, including the Omani vessel *Sultanah* which arrived in New York in 1840 carrying Ahmed bin Al-Noman Al-Ka'abi, the first Arab envoy to America (Till 2009: 259). However, with the internal political disputes in Oman at that time, and the division of the Omani empire in 1862, the nation fell into political and economic decline (Ministry of National Heritage and Culture 2005: 158-161) which lasted until Sultan Qaboos assumed the throne in 1970.

Since 1962, before the accession of Sultan Qaboos, a divisive rebellion had been raging in the Dhofar region of southern Oman. Though small, Oman's navy at the time played a low-profile but important part in the conflict by providing naval gunfire support and, towards the end of the 1970s, by bombarding enemy coastal positions. It also filled a useful logistical role by providing transport along the coast for onward fighting by soldiers in the mountains. With the discovery and exploitation of oil, funding had soon become available for investment in a modern fleet, and the first tentative steps towards building an up-to-date navy were taken in the late 1960s. During these formative years the navy existed as a naval branch of the Sultan's Armed Forces (SAF) rather than as the separate force that it is today.

From its very modest beginnings, the modern RNO by 1977 was efficient though still small, and its thirteen years of hard-won experience in Dhofar were to be of tremendous benefit in the difficult decade ahead. During the 1980s Oman faced several potential maritime threats, the most significant of which was the threat to its maritime sovereignty while guarding the Strait of Hormuz during the 1980-88 Iran-Iraq War. In the last quarter of the twentieth century Oman's modest naval force developed primarily as a regional navy that was able to operate throughout the wide expanse of the nation's EEZ (Peterson 2007: 442-447).

From this brief historical glimpse of the maritime nature of Oman's environment it is quite clear that, due to the challenges it faces in the maritime domain and because of threats to its security, Oman needs to establish a maritime doctrine. This is explored in more detail in the next sections.

5.3. Maritime Security

According to Klein, the term 'maritime security' has a different meaning depending "on who is using it or the context in which it is being used" (Klein 2011: 4-10). So it is clear that the term encompasses a greater range than the traditional notion of naval power. For example the RNO's *Policy and Directives Publication* referred to the aims and objectives of Oman's maritime security as among other things, ensuring freedom of navigation in Oman's sea areas, the security and protection of Oman's maritime interests (Trade, Shipping, Ports and Offshore Resources). Acknowledging that there was no agreed definition of maritime security, in 2008, the UN Secretary General identified seven common activities that cause direct and indirect threat to maritime security including: "piracy and armed robbery against ships, terrorists acts involving shipping, offshore installations and maritime interests, illicit trafficking of arms and weapons, illicit trafficking of narcotic drugs, smuggling and trafficking of persons by sea, illegal fishing, and intentional and unlawful damage to the marine environment" (Klein 2011: 10).

The arguments in this section place the geopolitical importance of Oman (past, present and future) into a strategic context, examining Oman's maritime environment and threats, along with the roles shaping the RNO's strategic options. Rights and duties across a broad

spectrum of maritime security threats and challenges are examined, and the section also covers the various dimensions of maritime security in order to assess how the government should respond to maritime security concerns and how Oman should be shaping its maritime doctrine. Given the changing dynamics of exclusive and inclusive claims to ocean use it is argued that maritime security interests should be given greater scope in the understanding of the maritime domain and law of the sea.

5.3.1. Geopolitical Importance of Oman

In the last three decades of the twentieth century, following the accession of Sultan Qaboos, Oman's political and economic fortunes revived, and like many other elements of the country's infrastructure, the Omani fleet was also expanded and modernised, enabling it to play its part in supporting economic expansion and keeping the country safe from external threat. Oman's foreign policy during the twentieth century was marked by number of events. When Sultan Qaboos assumed power in 1970, apart from, Britain, the US and India, Oman's contacts with the outside world, were disconnected. Since then the country has pursued a moderate foreign policy while dramatically expanding its diplomatic relations.¹²⁸ It has developed close ties with most of the Arab nations and in particular its neighbours by calling for, and firmly supporting, the founding of the Gulf Cooperation Council (GCC) in 1981 (Pasha 1999: 110-120).

In the twenty-first century, the world changed again, and the picture is now different. The US, Europe, and the Arab world have witnessed dramatic events (especially the "Arab Uprising" or "Arab Spring" in 2011) that have changed the social relationship between states and individuals.¹²⁹ An increase in migration and the pursuit of individual freedoms has resulted in many individuals viewing communities other than their own state as more important (McNaugher 1985: 106). Such individuals are often members of multiple organisational structures (e.g., having dual nationality, a rarity in Oman), religions, and families. In addition, the fusion of nationalism has meant that some individuals see

¹²⁸ Interview with Ambassador Dr Mohammed Al-Busaidi (Deputy Director General Diplomatic Institute, Ministry of Foreign Affairs, Muscat), 17 April 2011.

¹²⁹ Interview with Eric Morris (Geopolitical analyst and defence specialist with wide experience in advising governments in the Middle East, Good Governance Group: London), correspondence, 10 May 2012.

themselves as part of a broader collective identity rather than their individual national identity (Buzan & Hansen 2009: 27-380), such as “Europeans”, and to a certain extent, in the case of nationals of the GCC states, as *Khaleeji* (sing.) meaning a national of the GCC states as an entity (Long and Koch 1997: 229).

The impact of changing societal relationships varies depending on a state’s ability to influence individual beliefs and perceptions. Occasionally diverging loyalties between communities and the state have resulted in direct attacks against state security organisations by national subjects. The revolution in Bahrain that started in March 2011 asserted that Shi’i citizens had attacked forces of the same nationality based on their allegiance to their religious community in Iran. In some cultures, particularly tribal ones, control of the state is often a competition between different and mutually exclusive communities, e.g., in Yemen (Al-Suwaidi 1995: 33-54).

Within the GCC states, several communities have a significant mistrust of state security institutions (Khalaf and Luciani 2006: 17), as in the UAE where certain nationals were refused employment due to demands for constitutional and parliamentary reforms and their belief in the right to freedom of expression. According to *World Report 2012* issued by Human Rights Watch, the UAE’s human rights situation worsened in 2011 when the authorities “cracked down on peaceful dissent, arresting activists, disbanding the elected boards of civil society organizations, and preventing peaceful demonstrations”.¹³⁰ In the wider region, Saudi Arabia and the UAE are examples of how ruling family members dominate high-ranking posts in the government; this has created resentment and led to arrests of certain national activists, with the result that some communities within states are protesting in the hope that international pressure will oblige their governments to address their concerns. As a result communities like the *Baharna* in Bahrain and *Badoon* in Kuwait are taking a more proactive role in providing for the security of their citizens.

In less than a year, Saudi Arabia has witnessed the death of two important figures in Saudi politics. Following the death of Prince Sultan in October 2011, the death of Prince Nayef

¹³⁰For more details see, <http://www.hrw.org/world-report-2012/world-report-2012-united-arab-emirates>, accessed 21 March 2012.

on 16 June 2012 brought the Kingdom to a critical point, indicating that this key US/Western ally must urgently prepare a successor to the 88-year-old King Abdullah. The Saudis face internal security issues (unemployment, corruption etc.) and there is growing pressure for political reforms, inspired by the Arab Spring. There is also deeply concerned about Iran's nuclear programme and its activities and behaviour in the region.¹³¹

To provide individual security that reflects the totality, rather than the majority, of their populations, the Gulf States, including Oman, need to adopt a more flexible and inclusive approach to individual security that reflects issues such as cultural differences.¹³² Addressing, rather than suppressing people's security concerns is more likely to result in the creation of a secure environment (Khalaf and Luciani 2006: 17-24),

The Arab Uprising of 2011 seems to have set an example and was followed by riots in Europe and the US, demonstrating that no state is immune to the need to address domestic security issues. The small Arab Gulf States (including Qatar, UAE, and Kuwait) with low population numbers but high GDP faced certain internal security challenges (though these were duly suppressed by the arrest of national activists), and did adopt certain changes which were regarded as (weak) reforms. The GCC states are producers and exporters of oil and gas, and have large numbers of expatriate residents who represent a significant percentage of the total population, and even, in cases such as the UAE, Qatar and Kuwait, the majority (Long and Koch 1997: 229).

Before the wave of unrest that swept the Middle East in 2011, the US constantly praised Sultan Qaboos for his gradual opening up of the political reforms in Oman – an initiative that started in the early 1980s. Gradual liberalization since then has allowed Omanis to express their views on various issues (Valeri 2009: 119-124). However, some young Omani human rights activists are dissatisfied with the state of unemployment and with the political rights, believing that the democratization process has improved. This disaffection within Oman proved somewhat deeper and broader than experts had thought when protests

¹³¹ For more details see <http://www.huffingtonpost.com/huff-wires/20120616/ml-saudi-the-future/>, accessed 17 July 2012.

¹³² Interview with Eric Morris (Geopolitical analyst and defence specialist with wide experience in advising governments in the Middle East, Good Governance Group: London), correspondence, 10 May 2012.

broke out in Oman in February 2011 following the toppling of the Egyptian president. However, the generally positive views of Sultan Qaboos among Omanis, along with the fact that he addressed people's concerns by sacking corrupt ministers and introducing popular economic measures, appeared to have calmed the unrest (Katzman 2012: 1-6).

With regard to unemployment and the national workforce Oman, unlike the Gulf States (with the exception of Bahrain) possesses relatively modest oil and gas reserves but has less expatriate labour (Long and Koch 1997: 229). The Omani nationals account for approximately 70 percent, around 52 of the workforce,¹³³ and are represented at all levels (Oxford Business Group 2012: 167). However, the national workforce (Omanisation) does not work without skills training; nor has this process ever been the simple substitution of one expatriate with an Omani equivalent. Experience is developed through years of training and practice and to maintain an Omani in that post also means a long-term commitment, although bringing in and utilizing expertise from outside Oman will always be an effective short-term expedient. The obvious implication is that Oman must adjust to life without oil and gas far sooner than its more richly-endowed neighbours, and if this matter is not addressed urgently Oman may face several economic and political challenges. Economically speaking the demographic issue is critical; Oman's population is rising while its oil and gas reserves are declining, which will affect its employment programme as well as the young people who need jobs. It will also affect the low levels of private sector participation in development because there will be less business (Valeri 2009: 81-249).

As viewed from the West, the political challenge is that decision-making is still largely concentrated with Sultan Qaboos, even though he has a reputation for benevolence and is popular both inside Oman and at the regional and international level. What perhaps makes things easier for change in the future is that, unlike other neighbouring Gulf States, members of the ruling family in Oman do not hold authoritative power in the government

¹³³ The population census in 2010 reported an Omani population of 1,957,336 and an expatriate population of 816,143, representing 29.4 percent of the total population of 2,773,479 (see Chapter Three- Figures: 3.6, 3.7). This compares with the figures for 2003, when the total population was 2,340,815, of which 559,257 were expatriates. See *Oman Daily* newspaper (Arabic), section on Economy, "Announcing the Population Census", 12 June 2011, p.10.

which allows a good level of citizen participation in the decision-making process (Valeri 2009: 35-119). Another positive aspect is that Sultan Qaboos has been receptive to popular demands from his people, by granting additional legislative and regulatory powers to the Oman Council as part of his reaction to the 2011 unrest. Oman needs to inform the world that the Sultan is gradually allowing political participation, dialogue, political legitimacy, and constitutional changes concerning the succession process he has set up.

Thus, the geopolitics of the region in which Oman is located is one of the main factors in Oman's relationship with the outside world. This factor requires Oman to address its maritime security, since its economic wealth must develop and remain engaged with the sea even though, more than many other nations, it has to consider the many risks to and from the sea that are involved.

5.3.2. Oman's External and Economic Security

Given its location at the entrance to the Arabian Gulf and its geopolitical importance, Oman's strategic importance today has increased in direct proportion to the growth in petroleum and gas products that are exported along this route. The Strait of Hormuz is the only sea channel in or out of the oil and gas-rich Arabian Gulf. In 2008 between 16.5 and 17 million barrels passed daily through the Strait: i.e., approximately 40 percent of the world's seaborne traded oil. Such volumes make the Strait one of the most notorious choke-points for oil in the world (Oxford Business Group 2010: 15). Hence, its closure would demand the swift use of alternative means of transportation, if world trade and dependent national economies were not to suffer.

Periodically Iran reminds the world that it has a broad range of options for disrupting energy exports in the Strait. This is not a new development; Iran has been flexing its military muscles in the region since the rise of Reza Shah in the 1920s, by occupying the UAE islands in 1971, and threatening the closure of the Strait of Hormuz on and off since the 1980s. Although Iran has an array of options for limited strikes, Oman's interests, as well those of the GCC states, the US and the West, are the dynamics of an all-out effort. Iran is well aware of the geo-strategic significance of its proximity to the Strait of Hormuz

(Long and Koch 1997: 15-26), and the threat of mining the Strait or employing asymmetric warfare (targeting vessels with missiles) is a central component of Iran's defensive strategy. By holding the Strait to ransom, Iran expands the consequences of any military action against it to include playing with global oil prices. Given that to date Iran has avoided military action since its seizing of the UAE's islands, Abu Musa and the Tunbs, around four decades ago, this strategy of deterrence can be deemed a success but it will definitely harm Iran's relations with the world (Gause 2010: 18-87). Iran can hinder safe passage through the Strait of Hormuz if it feels that its security is threatened, thus effectively embargoing oil and gas shipments to most of the industrialized countries. Such action, backed up by nuclear threat, would devastate the GCC and the global economy, and would without question result in regional disaster, encompassing not only Iran but also every country within the area. Oman and the rest of the GCC states are of special concern and interest (Long and Koch 1997: 67-74).

Despite occasional illegal fishing activities by Iranian fishing dhows near the Strait of Hormuz traffic scheme (in Omani waters), of all the GCC states, Oman is perceived as politically closest to, and the least critical of Iran. However, Iran's strongest economic links are not with Oman but with the UAE, and Dubai in particular. There are around 7,073 Iranian companies operating in Dubai, in business categories ranging from banking and finance to oil and property development; an Iranian Trade Centre; and an Iranian Business Council to promote Iranian investment. It was estimated in 2006 that some US\$300 billion had been moved from Iran to Dubai by more than 400,000 Iranians (*WorldNetWeekly*: 2006).¹³⁴ To avoid any further conflicts within the volatile region, the wisdom of Sultan Qaboos saw no inconsistency between Oman's alliance with the US and the West and its friendship with Iran or Iraq in the 1990s, a relationship that has proved useful to both the US/West and the region. In the past, Oman was an intermediary through which the US returned Iranian prisoners captured during US-Iran skirmishes in the Gulf in 1987-1988. It repeated this intermediary role on 14 September 2010, when Iran released a young woman, one of three US citizens arrested in July 2009 for crossing into Iranian territory from Iraq. "The US State Department spokesman publicly confirmed that Oman had played a

¹³⁴ For more details see, <http://www.wnd.com/2006/02/34954/>, accessed 23 April 2012.

brokering role in her release”, possibly including paying US\$500,000 bail to the Iranian authorities; after leaving prison she was flown to Oman. Later, Omani diplomats were reported to be negotiating with Iran for the release of the two male hikers, who were freed in September 2011 (Katzman 2012: 11-12).

Traditionally Oman had had a troubled relationship with its neighbour, the former People’s Democratic Republic of Yemen (PDRY). Considered Marxist and pro-Soviet, the PDRY supported Oman’s Dhofar rebellion between 1962 and 1975 (Al-Suwaidi 1995: 95-100), but relations were normalized in 1983. With the union of the two Yemens after 1990, relations improved and there is now close cooperation with Yemen at all levels, with and beyond the backing of the GCC especially on matters such as maritime security and combating piracy. As a GCC member, Oman also backed the Council’s successful efforts to negotiate a peaceful leadership transition for Yemen and President Ali Abdullah Saleh formally transferred power to ‘Abd al-Rab al-Hadi, his vice-president.

The Soviet invasion of Afghanistan in December 1979 had encouraged the Indian government to take a greater interest in regional security. Oman’s naval links with India had virtually ceased after Indian navy personnel were replaced with Pakistani naval personnel in the mid-1970s. However, early in 1980 the Afghan situation enabled India to invite military co-operation with Oman, and agreements were concluded between the two countries in March 1989. One of the first outwardly tangible results of this new co-operation was a two-day joint naval exercise off the coast of Oman in January 1993, the first joint military activity between India and a member state of the GCC (Pasha 1999: 72-91).

From the time of the formation of Oman’s Navy, the naval fleet had brought in personnel, both serving and retired, from the Pakistan Navy to serve with the Omanis. Another feature of the links between the two navies was the training of Omani naval personnel in Pakistan (Peterson 2007: 332). As the Omani fleet grew in size and capability, these links with the Pakistan Navy blossomed into full joint naval exercises; the *Thamar Al-Tayyib*, held every two years, is intended to enhance inter-operability between the two naval forces and improve maritime security in the region.

The ‘Vision for Oman’s Economy: Oman 2020’ aims to carry out a substantial transformation in the structure of the economy. To achieve a sustainable economic growth, the intention is to develop a multiplicity of income sources instead of depending mainly on depleting resources. Despite efforts to diversify its economy, oil and gas still represent high percentage of Oman’s exports.¹³⁵ Because its oil and gas resources are diminishing (discussed in Chapter Four) the contribution of the oil sector to GDP is expected gradually to decrease, so that the government must find alternatives. Changing the production base of Oman’s economy will produce the challenges commonly associated with this type of structural transformation. If these are to be overcome and the projected economic diversification is to become a reality, a clear strategy with set dimensions is needed, along with a package of flexible and realistic policies and mechanisms. Prioritising economic diversification should be one of the main strategies for achieving national security and stability that a maritime doctrine would address.¹³⁶

5.3.3. Sovereignty in a Globally-connected Economy

National security is not confined to the ability to preserve the nation’s physical integrity and territory and to remain globally connected with the rest of the world on reasonable terms; it is also about defending the social/ethical values of the state (Buzan and Hansen 2009: 10-52). Hence Oman needs to protect its nature, institutions, and governance from outside disruption, and to control its sea and land borders and its airspace. Oman’s national security has been changing over time in response to security challenges but remains focused on the reduction of likely physical dangers. The Arab Spring of 2011 suggests that while considering longer range concerns related to other vital elements of national power, Oman’s national security should also allow for a well-studied strategy of investment and development, especially of a maritime nature, to proceed at a normal pace. For Oman, as for any other states, the general and continuing purposes for which it acts are the national interests, to which are linked national security and the well-being of the Omani people (Katzman 2012: 1-7)

¹³⁵ Interview with Dr Qais Al-Yahyai (Central Bank of Oman), correspondence, 6 December 2011.

¹³⁶ For more details on Oman’s economy see, www.moneoman.gov.om/loader.aspx?view=planning-diverse&type=plan, 18 March 2012.

Within the context of Oman's strategic environment and sovereignty, which is maritime in nature, there are several major ways in which future strategic national security-related issues need to be addressed. First, Oman exists in a region of political and economic development. The strategic importance of this region has become increasingly important since the development of the oil industry in the early twentieth century and more recently the gas industry. With this evolution, problems of regional instability have arisen, powerful states have intervened (US/West, followed by China and India), while regional states have started to claim some of the territory of others (Iran). Secondly, Oman and the regional states face a spectrum of possible threat environments (asymmetric threat) which may involve the armed forces in diplomatic, policing, or even war-fighting roles in order to defend or enforce law. These threats include: transnational crimes, piracy, smuggling, illegal immigration, illegal fishing, and terrorism.

Third, capabilities take a long time to build, particularly in the maritime field, so the concept of developing an effective navy, a major thrust of the maritime strategy, is to develop force levels to have a coherent multi-contingency force deployment strategy (Long and Koch 1997: 1-25). Thus, the RNO and the national security agencies have to work closely together to co-ordinate, conduct training, and join in littoral and high seas operations. These operations may also involve regional and allied forces, and may be either within Omani waters or in the territory of the littoral states. The last point is predicated on Oman's responsibilities in the region for safeguarding the strategic and economic importance of the Strait of Hormuz. Because of this, the political interest of the US/West, India, and China is likely to increase, while confrontation between Saudi Arabia and Iran will have possible implications for Oman, thereby influencing the legal complexity of maritime jurisdiction in the region, which might also impact on Oman's national security and strategy (Bernek 2010: 51-52).

In a globally-connected economy, any interruption in the global security system could negatively affect the economy and national security of any state. For Oman, with such a large EEZ, the sea is becoming an increasingly important source of living. With the sea being the avenue of much international trade, by value, volume and weight, the largest segment of Oman's economy is also based on sea transportation, which needs security.

People who live in poverty in certain states like India and Pakistan (large populations), and states like Yemen, Somalia and Bangladesh (bad governance/environmental instability), along with countries with neither the capacity nor the desire to provide economic security for their people (such as a state welfare system), are bringing about mass migration to Oman and other Gulf states; this also represents a potential threat to Oman's national security.

Global trade, long dominated by the advanced economies, is now shifting as new markets emerge, especially those of the BRIC countries (Brazil, Russia, India and China). With the ports of: China, Singapore and South Korea leading the world's top fifty ports, evidence suggests that Asia-Pacific will experience the fastest growth in global trade through to 2020 (UK MoD 2010: 51-53). With India and China representing the fastest-growing source of demand for exports, Asia may continue to be the most dynamic region in terms of trade. With the fastest growth in exports of goods occurring within the region itself both countries may drive the rise of the emerging markets (*Oman Daily Observer* 21 February 2012: 1, 4).

However, since nothing in this world is certain, things may change if, for example, the industrialized world enters a period of prolonged recession leading to depression, and if Israel/US strike Iran, which will affect oil prices and prospects for trade. The degree of change in both the scale and direction of trade will have a profound impact on the competitive environment for all companies, wherever they are located in the world. Trade will also become increasingly focused around Asia, the Middle East, Africa, and Brazil, suggesting that the key geographical location for companies will change (Broadman 2007:112-113). Once viewed as less-developed countries, China and India now represent emerging markets and contribute significantly to the region, offering a significant growth opportunity for multinational corporations, which should be exploited by Omani investment (*Oman Daily Observer* 23 April 2012: 1,6).

In the increasingly-connected global economy, the role of supplemental land and air transport is acknowledged. However, for Oman sea-borne trade is, and will remain far more important because it is increasing rapidly, by volume and therefore in value (see Chapter Three, Figures 3.3 and 3.4). This point is considered as part of the strategic

development process within Oman's waters and along its SLOC. Without monitoring of the maritime environment, Oman's mercantile connection with the world could be affected, which would have adverse effects on national services. Since the maritime industry itself is responsible, both locally and abroad, for thousands of jobs, it is clear that the maritime system comprises a myriad of users, logistic network and links to other nodes and industries. Therefore any disruptions in the maritime system can have negative impacts on a large number of participants in Oman's economy.

Maritime security in Oman as it stands now is fragmented across many national agencies and therefore Oman needs to address its maritime security for the benefit of its national economy and security. A maritime security consideration may be approached by dividing Oman's maritime zones into lines of operation: the first line would be for the inner maritime zones comprising the territorial waters and contiguous zone, and the second line would be at the EEZ and the continental shelf, and beyond (see Chapter Seven: Conclusion).

The experiences of Australia, Malaysia and Pakistan show their different approaches to the challenge of moving from coastal constabulary operations to those that cover all maritime zones and bring a diverse range of stakeholders together. These countries share similar factors with Oman as they all have varied sources of revenue, are located near trade routes, and have maritime commitments. While there is no ideal model, a common, underlying theme for Oman is that of replacing the present system, in which each service or ministry acts alone to meet specified goals, with an integrated and inclusive inter-agency approach since this will result in the significant benefit of realising a total capability that is far greater than the sum of its component parts. A brief overview follows of the changes to authority and responsibility adopted by Australia, Malaysia and Pakistan.

Australia has merged its civil and military maritime effort in waters adjacent to the coast to form a single maritime surveillance, response and interdiction organisation, tasked with providing a coordinated national approach to delivering services to client ministries. This has involved combining a reinforced civil 'Coastwatch' organisation (which traditionally undertook civil surveillance to support, amongst others, fisheries, customs and immigration policy) with a new military organisation, the 'Joint Offshore Protection Command'. Both

agencies provide a service to government departments by prioritising and coordinating their national surveillance, patrol and response efforts (Australia Department of Infrastructure and Transport 2012).¹³⁷

In 2005 Malaysia formed an independent agency, the Malaysian Maritime Enforcement Agency (MMEA) to take responsibility for maintaining law and order and coordinating search and rescue operations in its maritime zones and on the high seas. Assets required for these tasks were taken permanently from Navy, Air Force and Police and placed under the control of the Director General MMEA who is responsible to the government.¹³⁸

Pakistan's Maritime Security Agency (MSA) was formed in 1978, and was placed under the control of the Federal Government, with command and administration vested in a Director General (naval officer). The MSA is responsible within Pakistan's maritime zones for the prevention of unauthorised exploitation of offshore resources, enforcement of national and international laws, and assisting other departments and agencies with various tasks, including search and rescue and protecting offshore terminals and other installations.¹³⁹

It is clear from the foregoing that Oman's economy has been linked to the sea throughout history and this has not changed in modern times. With increasing global trade and influences of globalisation Oman's national economy is even more reliant on the sea and its resources. Today the maritime environment faces a number of threats (see discussion below; section 5.8) and therefore addressing maritime security is crucial.

The solution for Oman would be to exploit the foreign experience and consider establishing an independent maritime security agency. This would have to sit comfortably within the overall government organisation, complement national objectives and be

¹³⁷ For more information see, www.infrastructure.gov.au/transport/security/maritime/index.aspx accessed 23 April 2012.

¹³⁸ Interview with Captain Zahari Jamian (Royal Malaysian Navy), correspondence, 21 May 2010.

¹³⁹ For more details on Pakistan Maritime Security Agency see <http://www.msa.org.pk/>, accessed 23 April 2012.

flexible enough to be able to reform itself according to changes in the national and international context (see Chapter Seven, Conclusion).

This section has confirmed the increasing importance of maritime security in a world threatened by various challenges and risks, such as terrorism, piracy, drug-trafficking, illegal fishing and environmental damage, all of which call for a maritime doctrine. The fact of Oman's geopolitical significance is that most trading countries have a SLOC to the Gulf that utilises Oman's territorial waters and EEZ, which matters far more than the integrity of Omani waters to Omani ports. This is why Oman is essential – not because of its volume of trade as such, but because of its location next to a vital waterway and global chokepoint. If Oman was located elsewhere in the world and was less strategically significant the importance of its navy would also be very much reduced.

5.4. The Maritime Environment

Examination of the maritime environment highlights the fact that by nature Oman is a maritime nation with regional and international obligations. This section argues that an objective understanding of all activities and events in its maritime environment is crucial to Oman's national security.

5.4.1. Security: ISTAR (Intelligence, Surveillance, Target Acquisition, Reconnaissance)

The regional environment has attracted Western and US interests. Of all the European powers, Britain and France stand out as carrying the most weight in matters of Gulf security, with both having a legacy of imperial involvement in the Middle East. Britain in particular was the self-appointed policeman of the Gulf sea lanes for much of the nineteenth and twentieth centuries (Long and Koch 1997: 81). Oman as a maritime nation, claims one of the largest maritime areas in the Gulf region, exceeding 550,000 square kilometres. Strategically, it has been well-recognised by the major global naval powers, such as the US Navy, that good relations with Oman serve the interests of US foreign policy in the region and also provide the US with vital access to Omani waters, thereby facilitating their requirements when forming overseas sea-based operations. The region is

already centre-stage in international politics due to the importance of the Strait of Hormuz in issues of energy security, while maritime piracy, maritime trade, and instability in the area have, in one way or another involved the region or its littoral states. Clearly, Oman is advantageously placed on the key and crucial SLOC for energy security and trade as well as for the world economy, especially for China, India, and Japan; this brings with it huge national responsibility for the safety of navigation through its waters (Long and Koch 1997: 55-90).

The RNO aims at all times to achieve the strategic outcome of maritime security by securing Oman's maritime zones and thus stabilising its national security. Certain activities that make use of RNO's combat and other specialist capabilities, support Oman's security and stability and are achieved through security operations, short of open combat. These are Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) and all are all essential for maintaining a Recognised Maritime Picture (RMP) in and throughout Oman's maritime areas. Real-time dissemination of this picture to all appropriate national security agencies is essential for effective policing of the maritime zone. Intelligence and communication can provide the required level of information about the adversary, and the environment required to ensure the success of the mission.

Situation awareness of the region and beyond is a requirement of national interest and is another security area of concern to both politicians and military servicemen. However, achieving awareness of Oman's maritime domain is challenging, due to the vast sea area, the long and undefended coastline and the availability of capable assets (Ships, Maritime Patrol Aircraft, etc) all of which provide concealment as well as numerous access points to the land, thus affecting national security. Correct intelligence gained by national agencies and through co-operation with friends and allies will meet the needs of the RNO and other SAF units for intervention, military contingency and other national security requirements; hence, this mission requirement should be translated to reinforce capability (ships, aircraft and training).

5.4.2. Deterrence and Prevention

A key national security requirement is the effective understanding of all activities, events and trends within any relevant domain – air, land, or sea – that could threaten the safety,

security, economy or environment of Oman and its people (providing force for deterrence). As a direct result of the international focus on surveillance against the asymmetric threat, surveillance capability in terms of both platforms and sensor technology has increased significantly in the recent past – and will continue to do so. Selection and employment of appropriate sensors and systems would provide Oman with deterrence and prevention. This would also provide a layered preventive approach to maritime surveillance and detection that will give adequate warning and buy the decision maker time to take appropriate action. Effective surveillance and resultant RMP must be supported by a flexible range of patrol and reactive capabilities and communications infrastructure. Platforms include capable ships, fixed wing aircraft and helicopters. Oman must be very open about its actions within the EEZ to ensure that the national capability to police the EEZ is known and that Oman will protect its sovereignty, resources and citizens and those third parties under innocent passage to meet international commitments, and within the full rigor of the law. In very broad terms, such knowledge, backed by sound maritime doctrine and strategy, is essential in supporting decision-making for planning, identifying requirements, prioritizing resource allocation, and implementing maritime security operations.¹⁴⁰

5.4.3. Protection and Response

Active, continuous and integrated surveillance enables detection and investigation of unusual, unlawful or aggressive activity. Intervention is conducted within the limits of capability and jurisdiction, while the exchange of information with adjacent and cooperating agencies enables coordinated air/sea/land tracking and interception. This task is not easy and the concept should not neglect the extent of the region, its intrinsic relevance to Oman's national security, and the need to better understand, and respond to, the fundamental nature of the region. The thrust of this concept supports the need for the development of Oman's military strategy – and ultimately its defence – to be based rigorously on doctrine, especially if maritime in nature.

¹⁴⁰ **Centre of Gravity:** Characteristic(s), capability(ies) or locality(ies) from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight (UK MoD 2004: 243)

Military strategy, as described, is a bridge that relates military power to political purposes and, as such, consists of an approach to the delivery of policy within the prevailing strategic circumstances (Gray 1999: 17). Thus military strategy reflects what the armed forces and national security agencies will do, as well as how they will do it. In the military strategic context they play a substantial role in supporting foreign and security policy; they also have broad responsibilities that include defending the sovereignty of Oman by conducting operations in accordance with international laws, as discussed in the next section. These operations, which are important for protecting and maintaining sovereignty and for responding to hostility, would be clearly set out in a maritime doctrine.

5.5. The Legal Context: Obligations and Constraints

The RNO operates in accordance with international laws that establish its rights and obligations and govern its use of force, and as this section briefly outlines, it functions within a legal context that is directly related to the features of the maritime environment in which Oman is located. In general, its international commitments in the maritime environment can broadly be summarised as:

- Ensuring freedom of navigation and promoting the legitimate exploitation of the waters (and seabed) of maritime zones by providing a safe and secure maritime environment;
- Supporting the monitoring and enforcement of regulations applicable to Traffic Separation Schemes (TSS) and Inshore Traffic Zones (ITZ) within Oman's waters;
- Respecting its obligations in treaty law with its allies and other friendly nations (Oman MoD 2009: Chs 1-4).

Regarding state (or domestic) law, although the ROPCG retains primary jurisdiction within territorial waters and for any illegal activity covered by domestic law, the RNO also operates in accordance with national and international laws which establish its rights and obligations to the nation. This is to maintain the sovereignty of Oman's territorial seas and littoral area, in conjunction with other two services and national security agencies, and to deter military aggression or interference by demonstrating capability, intent, and readiness

to defend borders, to preserve the sovereignty of territorial seas, and exert control over Oman's maritime zones.

As a result of Oman's amicable policy, it has had good opportunities over the years to work with friends (the US and the UK, the GCC states and others); this has helped in complying with its international obligations and commitments, and enhancing maritime security (Katzman 2012: 11-16). However, with the changing nature of the security environment in terms of intensity and content, these efforts require even closer cooperation, because they occur in a rapidly changing regional and global context. With evolving events in the Gulf and the Middle East, maritime security requirements need to be thought about and planned with care. Oman must decide how it is to integrate maritime considerations (between national stakeholders) into foreign policy decision-making, and how that will affect both its national security and regional stability.

Maritime security should be institutionalized and developed to include national agencies and other parts of government that play a role in such policy formation. Within the government there must also be a much clearer recognition of the importance of the maritime factor in Oman's foreign policy choices and of the amount of wealth that can be generated from the correct use of the sea. This is considered in the next section. However, the RNO's responses to regional and international exercise initiatives are clear, and since Oman is aware of its national, regional or international responsibilities, these initiatives should be backed up by a maritime doctrine. In conjunction with other national forces (Joint Operations) that are employed as an instrument of foreign policy, the RNO must be capable, manned, equipped, and well-trained to provide security for Oman's national interests and sovereignty.

5.6. Protection of Fish Resources and Tourism

This section examines the importance to national security of protecting the sectors that include fish resources and tourism. Until 1970, in what at that time was effectively a subsistence economy, Omani incomes were based almost entirely on agriculture and fishing. With over 60 percent of the population either residing on or near the coast, there

was heavy dependence on the sea for fishing as their livelihood. In the past there had been a national fleet involved with fishing, transportation and trade that also played a vital role in protecting the country and its people, but as a result of its decline, along with increasing population growth and unemployment, young men drifted away from the fishing communities to the cities, where labour shortages arising from the development programme meant they could earn better incomes. In a state like Oman, where tribal issues were also dominant in the early 1970s, such factors threatened national security (Rippenburg 1998: 133-134).

A review of Oman's fishery sector indicates considerable opportunity for developing a rich marine resource (see Chapter Four: Offshore Resources). However, the country's lengthy coastline and large EEZ make it susceptible to illegal fishing. Due to enhanced surveillance and concerted efforts in fishery protection by the RNO, ROPCG and RAFO, illegal fishing and over-fishing activities are now identified as a matter of concern with regard to this viable national interest. Given the vast sea area, intruders are more likely to operate in the remoter areas beyond the reach of continuous surveillance, while Oman is also highly vulnerable to large-scale industrial fishing vessels, particularly on the Indian Ocean coast where the maritime zones are too vast to assert a sufficient operational presence. Seasonal incursions in the north have also been a problem (*Oman Daily Observer* 20 November 2011: 1,6). It is therefore very important that Oman, through developing and implementing relevant international fisheries instruments, should build up national capacity and promote regional co-ordination so that countries will be better placed to combat illegal fishing activities.

Concerning tourism, this sector represents another cornerstone of Oman's economic diversification strategy. In developing this sector the government's task, in addition to promoting national heritage and culture, is to build and protect the infrastructure (discussed in the next section), and to preserve the beaches and coral reefs as an integrated ecosystem of great economic, social and touristic significance. This strategy must aim to restore and preserve the health and richness of coral reefs, which will give a major boost to their popularity (*Oman Daily Observer* 16 April 2012: 6). Since these complex marine elements

are yet to be fully exploited, their protection and surveillance are becoming increasingly important for the RNO, and this calls for guidance in the form of a maritime policy.

5.7. Critical National Infrastructure Dependencies

In reviewing the Gulf Wars between 1980 and 1988 and the Gulf conflict of 1991, it is clear that situations escalated and that many oil tankers, some merchant shipping, and various important maritime trade links were attacked, damaged or destroyed, while the economies of the regional states and the energy markets were also badly affected (Tracy 1991: 224-230). Since most attacks took place in the vicinity of the Strait of Hormuz, although none were made against Oman's shipping, the country had to deal with a critical situation. This section briefly highlights the importance of security to the national infrastructure, a facet that can only be facilitated by a coordinated approach.

Because of the nature of its territory, several aspects of Oman's strategic infrastructure, particularly the industrial hinterland, seaports, and offshore installations, were initially developed along the coastlines and in the open sea, where their location was influenced by ease of access. Yet the original reason for their success, which was to facilitate the supply of materials, is inevitably the one that has made some elements of the strategic infrastructure, such as ports, relatively difficult to secure. Several of the ports and their industrial hinterland are critical parts of the national infrastructure; thus the immediate impact of an attack would have adverse effects while the downstream consequences for Oman of losing such infrastructure would produce even greater economic and security impacts.

While its shipping industry, port and all hinterland activities are growing rapidly, Oman now has substantial port facilities and a shipping industry that can draw huge investment. From Chapters Two and Four it can be seen that certain elements of the Omani economy depend directly upon the sea, while most rely indirectly on maritime links if only for the cheap transportation of goods (with over 70 percent of imports by volume coming into the country by sea). The maritime sector contributes to Oman in areas that include marine services, port services, and the marine leisure sector. The infrastructure also varies, and includes oil and gas pipelines coming to offshore terminals, oil fields and refineries and

water desalination plants along the coastline, electrical power stations situated on the coast along with the vast and uninterrupted quantities of water that they require, as well as various plants, oil refineries and LNG terminals. Several of these are crucial to the national infrastructure, and their loss would be disastrous. Hence, a maritime doctrine would state the principles by which maritime forces would be guided in achieving their objectives of safely securing the infrastructure against any threat.

5.8. The Nature of ‘Threat’

As one of the region’s expanding economies, Oman remains a growing trading nation, and as already shown in previous chapters, the sea forms a lifeline for Oman and many other nations. However, as this section shows, this lifeline also represents a supply route for a variety of threats, from the criminal to the less traditional and doubtless less likely forms of terrorist attack. This maritime lifeline is taken for granted: trade arrives without interruption, and this has remained true, apart from a few notable periods of history. Despite a few well-publicised incidents, most threats to international maritime trade since the end of the Second World War have been from accidents, the most notable being those involving oil tankers, with results not only causing environmental disasters but also interrupting flows of materials among countries.

While this is true in the Omani Sea Area there have been other real threats to US/West and Asian supplies further afield, notably during the Iran-Iraq War during the 1980s, when attacks on neutral vessels came from both sides and the navies of allied nations, including the RNO, were involved in protecting them. The effect on oil supplies in the West was limited, due to a glut on the world market at the same time, but insurance rates and crew costs saw an increase (Tracy 1991: 224-230). The various threats in the waters around Oman’s ports jeopardise the national maritime infrastructure and maritime industries, and indirectly can affect the country through higher costs and a slowdown in the world trading system. As a maritime nation with an economy so closely affected by the sea, Oman needs to promote and protect its maritime interests from such threats.

This section examines threats at sea and from the sea, not all of which will outwardly have so serious an impact. Threats to, and from, the sea are numerous and include the obvious pollution threat from stricken large vessels, especially when transporting oils or other toxic cargoes. Such large-scale incidents can also affect adjacent countries, and all require significant efforts to limit the impact, as well as clearing up the aftermath of the events, oil spills during the Iraqi retreat from Kuwait being a regional example. Because Oman has a long coastline and faces the Arabian Sea and the Indian Ocean it has extensive responsibilities and requirements. Coordinating Search and Rescue (SAR) efforts, and policing Oman's EEZ and offshore infrastructures is needed throughout this area, not only against the more traditional nefarious uses of the sea, but also against illegal exploitation of resources, fishing, and dumping of waste. The infrastructure that helps to prevent incidents and mitigate their subsequent effects must also be maintained (Oman MoD 2009: Chs 1-4).

While Oman's economy benefits positively from the links to the sea, as outlined above, criminal and illicit activities also thrive at sea. Illegal immigration has received much publicity. People-smuggling is believed to be more prevalent than human trafficking,¹⁴¹ and most attempts to gain illegal entry to Omani shores continue to be discovered on the Al-Batinah coast in the north east. Also the market for illicit drugs, worth billions of dollars, causes huge socio-economic damage to countries all around the world and can be very costly for a country like Oman, with drugs entering the country from various ports of origin. Although exact quantities are unknown, the largest proportion is believed to transit through land as well as sea borders (particularly through smaller ports). Other illegal contraband, including cigarettes, oils and alcohol, is also smuggled using similar methods.

Although it is a potential danger, the most publicised threat to the maritime sector today is probably maritime terrorism. Apart from maritime trade, it has been estimated that up to 40 percent of the world's energy supplies, particularly oil and LNG, pass through the Strait of Hormuz and through Omani waters (Oxford Business Group 2010: 15). The most widely-known form of attack against military and civilian shipping is the suicide attack, with

¹⁴¹ For details on 'Trafficking and Smuggling' see, <http://www.aic.gov.au/documents/F/2/2/%7BF226C525-F4D9-4AEC-B6D8-424A7E44C27B%7Dtcb002.pdf> accessed 23 April 2012.

examples close to Oman including the attack in 2001 against the USS *Cole* while it was refuelling at Aden (Till 2009: 227) and the attack in October 2002 against the French tanker *Limburg* off Yemen, while it awaited a cargo of crude oil (Ibid: 291).

Unsurprisingly, while piracy causes great alarm to general traffic, it can often be an over-dramatized danger. The areas of greatest risk from piracy include the Malacca Strait, the Horn of Africa, the Gulf of Aden and the east coast of Africa, but pirates have extended their operations into Omani waters. The International maritime Organisation (IMO) definition of piracy in article 101 of UNCLOS 1982 explicitly underlines piracy as illegal acts carried out for private ends, thus excluding acts of terrorism, insurgency, or those of environmental activists for nature (Burns, Bateman and Lehr 2009: 75). With the current situation in Yemen, Somalia, and the Bab Al-Mandab Strait, Oman's ports are particularly vulnerable and increasing number of attacks will mean increased marine insurance premiums, and eventually a dramatic rise in the price of goods. The nature of the threat is spectacular for the media, and it is much overplayed for a lot of reasons not least by navies to prove their value, or navies watching other navies – China, India, Pakistan. Terrorist-style attacks on offshore installations do present their assailants with all sorts of difficulties but an attack on an oil terminal is another matter. These are on-shore installations though the attack may come from the sea; therefore coordination is the key. With pirates extending their activities closer to Port Salalah, there are real fears that this could have a negative impact on port operations, including loss of reputation and revenue. Were this to occur, nearly half the traffic using the port would be forced to bypass Oman's ports for other competitive ports in the region.

As discussed earlier in the study, the choice of a target would be relatively easy in Oman's case, since a list of strategic ports is simple to establish. Once the type of cargo handled is also taken into account, it is obvious that an attack would have the greatest strategic impact on ports and offshore oil and LNG installations, all of which are vulnerable. An attack against the petroleum and gas infrastructure would have major impact, not only from the potential devastation of explosions and fires, but also from the damage to the energy infrastructure. An attack against the LNG terminal would also have severe political resonance and would be seen as an attack against Muscat. To the ill-disposed, oil

refineries, oil terminals, offshore oil and/or gas field installations and desalination plants are equally attractive targets.

Oman's strategic position can bring both opportunity and risks. For Oman, threat and security perceptions come more from the sea in the form of illegal maritime activities and crimes, rather more than they do from land. It is thought unlikely that an attack on Oman's physical integrity will emanate from the neighbours that share land borders (Saudi Arabia, UAE, Yemen), although the current situation in Yemen is not stable and Oman must watch that border very closely. However, it is necessary to balance the likelihood of a conventional land-based invasion attack scenario against other effective forms that might threaten Oman's security, such as interdiction of trade leading to economic pressure, or sabotage operations against the coastal infrastructure. Even so, these attacks too would probably be from the sea, and therefore the sea remains vital to Oman's economic well-being since much of its trade relies on freedom of navigation through Omani waters.¹⁴²

Oman's close links with other navies have been demonstrated over decades, primarily through a variety of exercises, and it is therefore unlikely to remain aloof from the range of operations that may arise in the region with varying degrees of notice. While establishing an effective strategy and doctrine based upon a comprehensive maritime strategy will be critical, Oman lacks the means to include the full range of maritime missions and functions, and must therefore make crucial choices as to what strategic options will best match national policy and objectives with the resources available.

In a sense, no nation is an island and choices have to be made which invariably represent compromises between what needs to be protected and what the state can afford. The inevitable gaps that emerge can best be covered through a series of formal and informal arrangements with friendly powers. In the case of Oman the inland and coastal areas, and possibly out to the EEZ would clearly be a priority, second only to the critical requirement of maintaining the integrity of the Strait of Hormuz. If the Omanis do not do this, others will do it for them. Another matter to be considered is the use of a risk analysis approach to

¹⁴² Interview with Major General Mungo Melvin (British Army ret'd, Tisbury, UK), 17 February 2012.

identify the more immediate threats in relation to the degree of severity and the timeframe i.e. short term/long term, etc.

Oman's current military concept of national security and strategy, as set down in the RNO's *Policy Directives*, reflects an enduring strategic preference for prevention of the conditions under which a threat to Oman could develop. Threat of direct military attack from another country must be viewed from a perspective of maritime strategy, although in reality this remains relatively low as Oman does not have an offensive foreign policy and has no intention of projecting power outside its territory. Attacks are more likely to be aimed at disrupting its economic interest via maritime trade interdiction or legal and military challenge to the use of strategic straits away from its maritime approaches.

Another growing threat comes from below the waters of the Sea of Oman. Underwater attack might take the form of a torpedo-firing submarine capable of transporting swimmers to harbour approaches, either by itself or by smaller chariot or midget submarines, or by laying mines of an advanced design. The operations of any maritime nation like Oman can easily be frustrated by a relatively unsophisticated submarine threat. Currently the SAF have a limited Anti-Submarine Warfare (ASW) defensive capability, though the possession of submarines by several navies in the region could pose a significant threat to Oman's maritime and strategic interest.

The risk of terrorism as well as concern over the spread of intra-state and cross-border conflict has increased the incentive for stronger states (Iran) to intervene in the internal affairs of the weaker ones (Bahrain). Because the root causes of many conflicts can no longer be tackled by purely military means, states need to adopt a broader and more integrated approach to providing national security.

Causes of and threats to, economic insecurity are extremely varied, so direct threats may include a lack of access to natural resources caused by over-exploitation, poor industrial development, national debt, and bad governance, whilst indirect threats may include organised crime and environmental threats such as infectious disease, environmental degradation, climate change or the spread of nuclear contamination (as at Chernobyl in

1980).¹⁴³ Japan's nuclear crisis in March 2011 could be repeated in the Gulf region if something similar happened with Iran's nuclear infrastructure or in the future with the UAE's nuclear projects. One devastating result would be the failure of the potable water obtained from desalination plants in all GCC states. Given the requirements of economic development, Oman must realize that, of all its needs, the country's requirement to safeguard natural resources (environmental protection) and correctly exploit the sea is an essential element of national security. With globalisation, preserving economic growth and investment has become an important consideration in security objectives, and requires a strong naval doctrine and presence, backed by a consistent political will and a wise foreign policy.

Overall, there is a low risk of military threat on Oman, a situation achieved through stable foreign policy, diplomacy and maintaining a credible defence force. However, there are a variety of threats to security within Oman's sea areas. The vast EEZ and the extended coastline also provide open access to Oman's shores that can be exploited by criminals who may pose a direct or indirect threat to Oman and the well being of its people. Before moving to examine RNO's roles and tasks, it is worth summarizing the nature of threat which includes:

- Tourism
- Trans-national Crime
- Piracy
- Illegal fishing and Overfishing
- Pollution
- Inter-state Conflict
- Climate Change

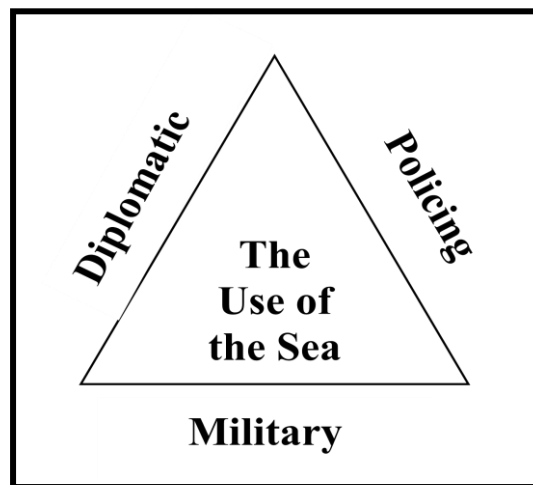
Having discussed the threat, the following sections discuss the strategic options – i.e., what does Oman want to achieve and how will it do so, and how relevant is a maritime doctrine if Oman is to address the above threats and challenges?

¹⁴³ For details of the nuclear accident at Chernobyl in 1986 and its aftermath, including evacuation of populations, see http://www.world-nuclear.org/info/chernobyl/health_impacts.html, accessed 11 April 2012.

5.9. Role and Mission of the RNO

This section examines the RNO's roles and their critical contribution to the co-ordination of the military and civilian agencies that provide control and security of land, sea and air in Oman. It argues that use of the sea for military and commercial communication is an accessible and generally indispensable amenity. States, whether large or small, are becoming interested in the sea, having identified three main uses – transportation of people and goods, transportation of military forces, and exploitation of resources– and navies exist as the means to further such ends (Booth 1977: 15-16). As an instrument of a state's maritime strategy, navies attempt to use the sea for their country's own purposes, while preventing others from using it for their disadvantage; thus they consciously exert themselves to meet national goals in times of peace, tension and war. Bigger navies are poised to respond at any time, and anywhere around the globe, whereas smaller navies are limited to their local area for meeting limited national tasks. In general, all navies can be assigned the following trinity of roles under the influence of the sea (Figure 5.1.). However, as part of a wider concept of the unity of maritime power, RNO has other military, diplomatic and policing roles as well as humanitarian duties to fulfil, which are explained below.

Figure 5.1. Trinity Roles



Source: based on Booth 1977: 16

5.9.1. The Policing Role; Maintaining Sovereignty and Good Order

The RNO's policing role is concerned with the maintenance of public order in a broad sense and takes place mainly in territorial waters. Assuring the security of Oman's territorial waters and coasts is an ever-present duty of the RNO; indeed, stopping and boarding suspicious vessels in Omani waters has been routine business for the navy since the 1960s and the days of the Coastal Patrol.

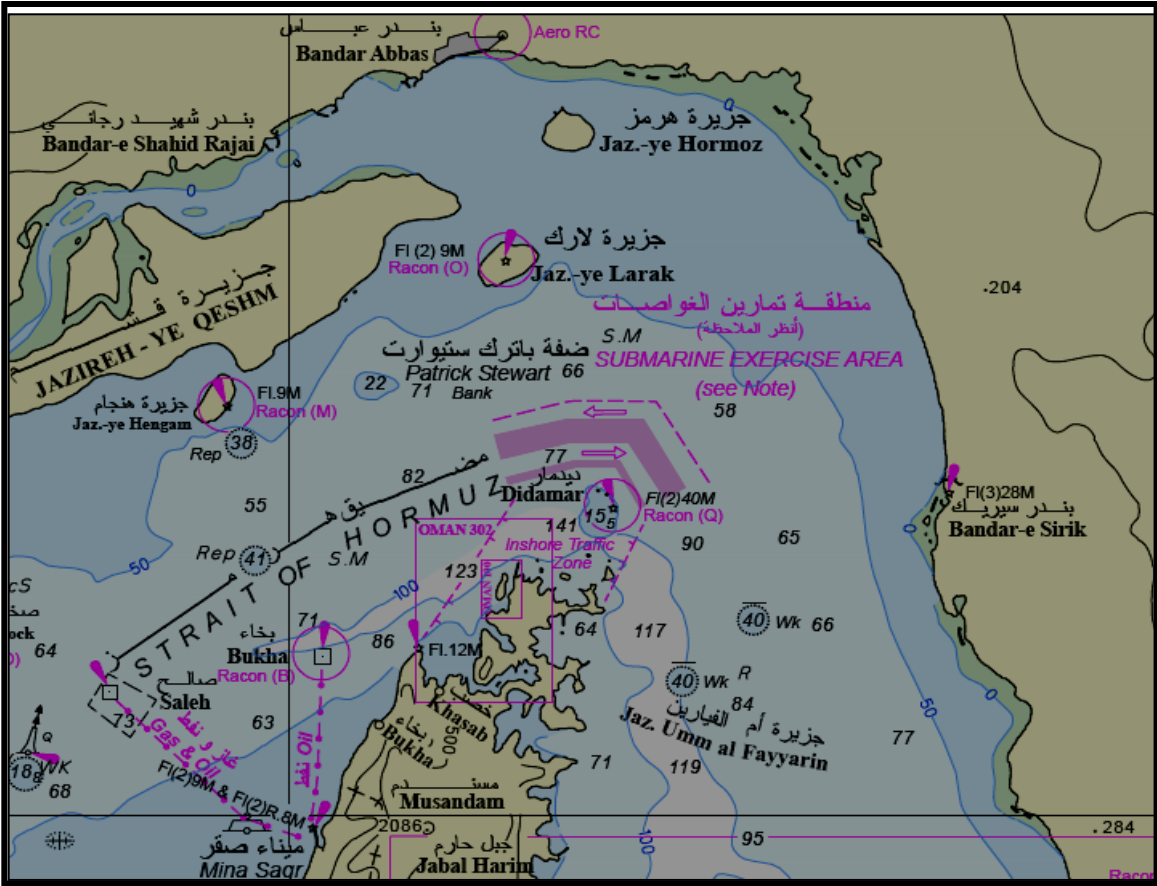
Since 1970, RNO's roles and tasks have been seen as asserting Oman's sovereignty over its territorial waters (extending approximately twelve miles offshore) by creating a visible naval presence, and more specifically, preventing illegal carrying and landing of arms and ammunition, preventing illegal immigration and illegal fishing, and monitoring Japanese fishing trawlers for compliance with concession orders as set by the government. Other tasks were well understood and practised, including, in particular, maintaining freedom of navigation in the Strait of Hormuz. Throughout the Iran-Iraq war period the RNO ensured the safe passage of vessels carrying the world's oil and gas supplies, as it still does. Such troubled times could well return although the protagonists might change. After the 1990-91 Gulf conflict, peace in the region facilitated the holding of national and international naval exercises in Omani waters. Certainly all these tasks vary according to the nature of the national and regional environment and remain just as valid today.

5.9.2. Guarding the Strait of Hormuz

Naval operations in the vicinity of the Musandam region are unlike those elsewhere off the coast, due to the nature of Oman's maritime geography and its proximity to other nation states, mainly Iran and the UAE. A strategic chokepoint, the Strait of Hormuz links the deep waters of the Sea of Oman to the shallower waters of the Arabian Gulf. Here the continental shelf shoals and narrows very rapidly as the Sea of Oman tapers off towards the north-west (Razavi 1997: 55-65). The original maritime traffic routeing scheme established in the Strait of Hormuz in 1970 was modified nine years later to reduce the risk of grounding between the three Quoin islands (known locally as *Salamah wa Banataha*) and the mainland, and to allow the passage of large ships as well as enabling fishing activities by local Omani fishermen to remain unhindered (Graz 1982: 49). The Musandam

Peninsula and the islands are Omani sovereign territories and delineate the south side of the Strait, with Iran’s coastline curving around the northern shore: both schemes were and are within Oman’s territorial waters. In 2010, 36,100 vessels used the Traffic Separation Scheme (TSS) in the Strait of Hormuz (Figure 5.2).¹⁴⁴

Figure 5.2. The Traffic Separation Scheme in the Straits of Hormuz



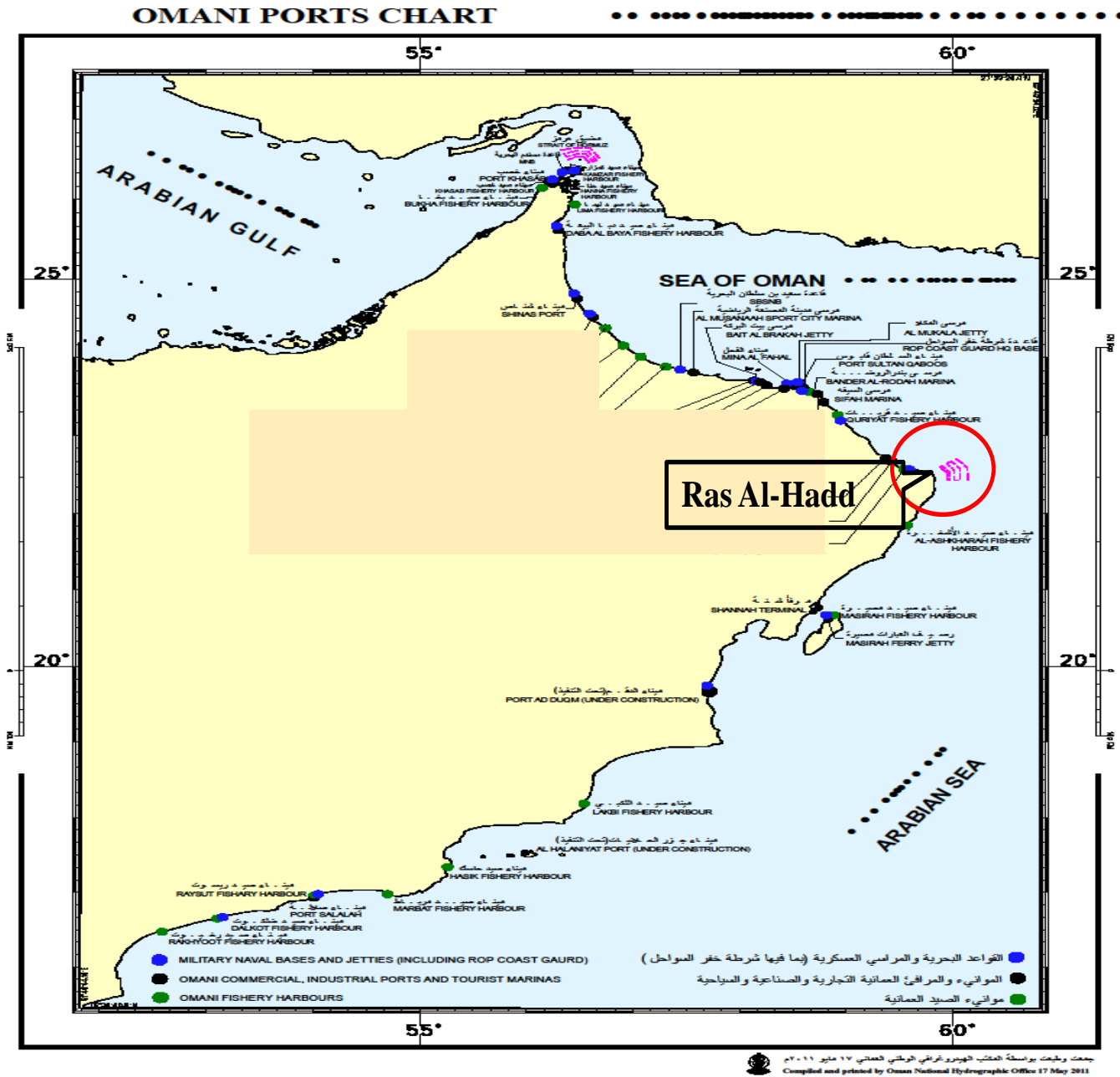
Source: Oman’s National Hydrographic Office 2011

The other traffic routing scheme within Oman’s waters is the one off Ras Al Hadd in the eastern region (Figure 5.3). Safeguarding international shipping in the Strait is an important aspect of upholding the sovereignty of Oman’s national waters, ensuring that ships in those waters obey the rules set down for their own safety and the safety of the marine environment. The International Maritime Organisation (IMO) lays down the rules

¹⁴⁴ Interview with Captain Mohammed Al-Hinai (Commanding Officer of Musandam Naval Base), 5 March 2011.

by which ships are operated, along with the internationally-agreed Traffic Flow off Ras Al-Hadd and the EEZ routing measures that are designed to allow ships to pass safely in otherwise congested waters.

Figure 5.3: Traffic Flow off Ras Al-Hadd



Source: Oman's National Hydrographic Office 2011

5.9.3. Safeguarding and Enjoyment of National Resources

Oman's EEZ is potentially rich in resources such as fish, oil, gas and minerals (Chapter Four: Offshore Resources). The further defining of exclusive economic and contiguous zones for coastal states by UNCLOS III (which came into force in 1994) has caused conflicting interests amongst neighbours and bigger powers, and it is now even more important for the RNO to extend and demonstrate the state's writ to the very boundaries of Oman's maritime areas. This is very much a naval role, since the RNO is compelled to ensure security at all times, whereas the roles of the ROPCG, RAFO and other security agencies are more preventive in nature. The offshore resources, structure and installations, the creation of the 200 nautical-mile EEZ, and the increasing political and strategic importance of the search for resources in this zone have confronted Oman, and many other countries in the same position, with the reality that, regardless of how many international treaties and agreements are concluded, sovereignty only has a true meaning when it can be enforced.¹⁴⁵

5.9.4. Defence of Commerce and Shipping

As previously highlighted, Oman's maritime trade, a major source of national wealth, has been carried in ships of many nations for centuries, and continues into modern times where over 70 percent of its imports and exports are seaborne. Located on one of the world's most significant maritime trade routes, Oman observes the daily passing of millions of tonnes of global maritime trade along its shipping lanes. Its responsibility is to ensure the free and safe passage of ships through Omani waters with regard to its own trade and that of others using its waters.

During the Iran-Iraq War, the RNO found this a complex business that involved various threats, including mines, air-launched missiles and Iranian fast boats (the so-called *Boghammers*) (Peterson 2007: 444). Guarding the SLOC is only one aspect of the demands on the modern RNO in defence of the maritime economy, and is not necessarily the most important, since, as shown, the nature of threat in the maritime environment changes. The

¹⁴⁵ Interview with Commander Thani Al-Mahrouqi (Head of Oman's National Hydrographic Office, Muscat), correspondence, 3 April 2012.

RNO plays a good part in securing the entire system: thus the constructive use of maritime power should provide the best conditions for maritime trade when backed up by a sound maritime doctrine.

5.9.5. *Environmental and Fishery Protection*

Oman has international obligations and considerable national interest in preventing pollution of the marine environment and protecting fragile, marine ecosystems. The Ministry of Environment and Climatic Affairs leads policy on measures to both prevent and control pollution, is the custodian of the National Oil Spill Contingency Plan (NOSCP), and draws upon assets from, amongst others, the RNO, RAFO, the ROPCG Guard, the Port Authorities, Petroleum Development Oman and the civil aviation authorities, to report on and/or to control incidents. If pollution (principally but not exclusively from oil) reaches the shores of Oman, other government and non-government agencies will be involved in subsequent action. In all cases, an accurate picture of events, clear top-level direction on priorities, and effective coordination is critical to the success of control operations and the identification (and subsequent prosecution of) offending vessels. Responsibility for the command, control and coordination of search and rescue, salvage and pollution control following a marine accident or incident is complex. Therefore the Government of Oman and stakeholder Ministries and Departments, including the RNO, must ensure that national plans are sufficiently robust to survive the very considerable pressures that would result from a significant marine accident – or a maritime terrorist incident.

Protection of the marine environment is not limited to pollution control; maintenance of the national fish stocks is another vital policy element. Fishery protection tasks carried out against illegal fishing that damages and depletes national fish stocks are often a naval responsibility in their initial stages, before being handed over to the ROPCG to deal with the legal aspects (*Oman Daily Observer* 20 November 2011: 1,6). The lack of such power is a weak point for the RNO in fulfilling its duties, but could be solved through application

of a maritime doctrine of arrest.¹⁴⁶ In addition to fishery protection the RNO assists in the development of fish farming. Naval units have a crucial role in assisting the Ministry of Agriculture and Fisheries Wealth to increase fish stocks by laying out a large number of purpose-designed and built Fish Aggregation Devices (FAD) to provide new breeding habitats for fish (Chapter Four: Offshore Resources).

As discussed in Chapter Four, fishing is an important sector in the national economy and is the largest commercial employer of Omani nationals. The Ministry of Agriculture and Fisheries Wealth is responsible for the management, conservation and sustainable commercial exploitation of fishing stocks in Oman's maritime areas and administers a licensing system for both traditional and commercial fishing vessels. A successful fisheries policy is based on political will, national legislation concerning conservation and management, and effective deterrents (punishment of those who violate the law). The RNO, ROPCG and RAFO are already tasked to conduct fisheries patrols in support of the Ministry. However, to be truly effective such operations require surveillance, information, communication, and coordination; aspects which can be dealt with only by way of a maritime doctrine.

Overall, the importance of protecting the maritime environment is significant for Oman, not only because of its long coastline, but also for its strategic position and the volume of trade that passes through its waters (Chapter Two: Maritime Trade and Shipping). For Oman the maritime environment provides a conceptual basis for maritime power, and also reflects the importance of maritime interests to national security by blending the common ground between national maritime interests (maritime claims, offshore territories, offshore resources, maritime trade) and maritime industries (shipping, fishing, offshore oil and gas, maritime tourism) with the contribution of all units of the Armed Forces.

5.9.6. Nation-building and Aid to the Civilian Community

This section highlights the importance of doctrine when the RNO is delivering assistance to the civilian community, since such tasks need coordination and collaboration between

¹⁴⁶ An obvious precedent is that of British naval officers who work on board fishery protection vessels. After receiving extensive training they are given powers of arrest for vessels that are in contravention of fishery regulations (UK MoD 2004: 18-22).

civil and security agencies. Due to its physical geography, Oman possesses several very strategic islands and territories that are only accessible by air and/or sea. These include Masirah Island, the Islands of Al-Halaniyat and the Damaniyats, and the islands in the Musandam region (see Chapter One, Figure 1.2). The Musandam region is detached from the rest of Oman by territory belonging to the UAE, and although it can be accessed by air, it can only be reinforced and supplied in large quantities by sea.

RNO takes pride in its role of responding to natural disasters and assisting the civil authorities, and access to, and delivery of development programmes in remote settlements and communities have been made easier by the navy's amphibious forces being able to provide support. However, this role would be enhanced if Oman had a maritime doctrine, since coordination with the civil authorities in these areas would greatly facilitate the smooth execution of such tasks.

5.9.7. Hydrographic Tasks and Search and Rescue

As noted throughout this study that sea provides the most efficient medium for commerce. Hence, economic and social well-being both depend on a country's ability to maintain efficient and safe navigation routes in its waters. Through training and mutual cooperation with British hydrographic expertise, modern surveys, and the charting of Oman's waters, the RNO's Hydrographic Service further aids safety of navigation, and discharges important aspects of Oman's international obligations. Oman is a member of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and the International Hydrographic Organization (IHO), both of which form part of the wider maritime picture. The RNO's Hydrographic Service has risen from modest beginnings to being the most highly developed and respected hydrographic service in the Gulf region.¹⁴⁷ For Oman, provision of hydrographic data and services is critical in ensuring sustainable development of maritime industry in Omani areas as well as the protection of its marine environment.

¹⁴⁷ Interview with Commander Thani Al-Mahrouqi (Head of Oman's National Hydrographic Office, Muscat), 21 June 2011.

Concerning SAR, it has been customary for centuries for navies to provide assistance to mariners in distress, frequently at immense risk to naval personnel and ships. Often the maintenance of safety of life at sea is a responsibility discharged jointly by the navy in cooperation with the ROPCG and RAFO, as well as with national agencies. However, due to the lack of a maritime doctrine, this task often lacks coordination, resulting in huge loss of effort and resources. Saving lives by assisting ships in distress or searching for fishermen lost at sea provides dramatic news stories which often tell of great heroism on the part of the rescuers. Regardless of its other commitments and its capability and despite the undoubted risks, RNO has always sought to provide assistance whenever needed, as was demonstrated on a number of occasions during the Tanker War.

5.9.8. The Role of Naval Diplomacy

Freedom of the seas was established under UNCLOS III, and under specific articles allows ships rights of innocent and transit passage,¹⁴⁸ but without violating the sovereignty of the littoral state(s). All waters seaward of territorial seas are international waters in which high seas freedoms of navigation and over-flight are reserved for the international community. International waters include Contiguous Zones (24 nautical miles), EEZ and High Seas.¹⁴⁹ The use of air or land forces, by contrast, can lead to an escalation of hostilities or even war. Thus, naval diplomacy covers a wide spectrum of activities involving international relations, from the total absence of violence to the use of force.

RNO capability as it stands at present is capable of maintaining an obvious ability in surveillance, and the unavoidable possibility of having to intervene while increasing activity levels up to the overt posture of warfare for the purpose of national security. There are many ways in which maritime security will involve exclusive claims by Oman within the law of the sea. Oman's military interests will typically focus in the first instance on securing Oman's national sovereignty. These military interests are likely to involve claims to undertake military exercises and weapons tests at sea, as well as to ensure that the key

¹⁴⁸ These include Article 17: Rights of innocent passage; Article 38: Rights of transit passage; and Article 39: Duties of ships and aircraft during transit passage.

¹⁴⁹ For full explanation of EEZ, Contiguous Zone and High Seas, see Glossary.

navigational routes in Oman's maritime areas remain available. Oman will also have a primary interest in securing its own border against unlawful acts or illegal entry.

The most robust aspect of the use of naval forces is the concept of gunboat diplomacy,¹⁵⁰ a form of coercive diplomacy conducted in times of peace or crisis (Cable 1971: 14). Gunboat diplomacy is intended to achieve aims that are difficult to negotiate through standard diplomatic intervention but that do not require the action of out-and-out war, a role that the RNO practised during the Tanker War in the 1980s. With its coercive character gunboat diplomacy, by exploiting the synergy of diplomacy and naval power, becomes an alternative to war. In such diplomatic use of naval forces, the intention of Oman's policy has invariably been to avoid violence; however, the possibility of violence does always exist. Hence prudent naval pressure from all maritime powers operating in the region, along with the RNO, as noted in the next section, demonstrates their ability and their readiness to fight for sea and air control.

5.9.9. 'Showing the Flag' and other Overseas Deployments

Navies generally project a favourable image of their own country while also displaying an image of impressive naval force to demonstrate support and strengthen ties with allies/friends. With its ocean-going ships and patrol vessels, the RNO can play a very effective ambassadorial role, and indeed has done so on many occasions in recent years. Making port visits and deployments beyond Oman can foster goodwill, acquire intelligence, and enable the carrying out of joint manoeuvres with friendly countries, just as the development of the RNO allowed larger and more meaningful joint exercises with foreign naval vessels visiting Oman.

Although Oman has no obvious enemy, policy dictates that development and peace cannot be achieved without trained and proficient armed forces. For this reason the RNO conducts exercises on a regular basis with many navies, such as the United States Navy, Britain's Royal Navy, the French Navy, the Pakistani and the Indian Navies and, more recently with the Iranian Navy, in addition to the navies of the Gulf States.

¹⁵⁰ **Gunboat Diplomacy:** is defined as "the use or threat of limited naval force, otherwise than an act of war, in order to secure advantage or to avert loss, either in furtherance of an international dispute or else against foreign nationals within the territory or the jurisdiction of their own state" (Cable 1971: 14).

Exercises between navies can be minor, as in the case of Passage Exercises (PASSEX), conducted on an opportunity basis with navies of allied and friendly nations following their visits to Oman; or major, such as the example of *Saif Sareea*.¹⁵¹ The Oman-UK exercise *Saif Sareea II*, held in October 2001, was thought to have been the largest joint exercise in the region, and for the British forces it was the largest training deployment since exercise *Lion Heart* in Germany in 1984. Another large joint exercise with the GCC states was *Dara'a Al- Jazeerah*,¹⁵² hosted in Oman in October 2007. However, throughout the years and on a daily basis, the RNO shows Oman's flag by its constant presence in the vicinity of the Strait of Hormuz.

This peaceful projection of a nation's culture, accompanied by friendly relations, has become an important function for naval forces. With its unique characteristics, maritime power (see Chapter Six) provides an independent, self-contained, sovereign platform that, with minimum logistical requirements, can visit other coastal states on goodwill visits (sometimes known as 'flag-waving', the flag being the national flag of the visiting warship). As RNO has grown in size and capability so has its ability to conduct naval diplomacy missions as dictated by the government. An example of such a mission included participation in International Fleet Reviews in Malaysia (1990), India (2001), the UK (2005), Qatar (2009), and Kuwait (2011).¹⁵³

Although the Commanding Officers of RNO's vessels enjoy the opportunity to choose a place to visit at the end of their commanding post, the best-known of these aquatic ambassadors is the sailing vessel *Shabab Oman* (Youth of Oman). Since being commissioned into naval service on 1 April 1979, *Shabab Oman* has assumed a high-profile role in character and leadership training for young Omanis, as the ship's name suggests, with deployments ranging far around the world. Many hundreds of trainees from all of Oman's military and paramilitary services have experienced life at sea under sail, and have derived great personal gain from their time on board, reliving the good old days

¹⁵¹ Meaning, *Swift Sword*

¹⁵² Meaning *Island Shield*

¹⁵³ Interview with Captain Abdullah Al-Shabibi (Director, Office of the Commander Royal Navy of Oman, Muscat), 17 May 2011.

of national maritime legacy.¹⁵⁴ However, without a maritime doctrine such missions can be seen as redundant and not serving the overall foreign policy.

5.9.10. National Naval Review and Demonstration of Capability

As a ruler who graduated from the Royal Military Academy at Sandhurst (UK), Sultan Qaboos has a strong military background and extensive personal experience of the need for well-equipped and well-led national forces to defend Oman. Since the end of the Iran-Iraq war, the navy has staged a number of Sea Days and Naval Reviews that, in a brief exercise, engage all the elements of the navy operating and cooperating with other armed forces. The essence of navies is their military character and their ability to use force with the aim of securing maritime strategy objectives, since a state's security and stability depend upon that of its maritime division. The RNO's role is to ensure the stability and security of Oman by maintaining and employing naval capability as an instrument of national policy (Military Defence of Oman), which is done by providing the maritime component of Joint Capability required to interdict and repel military threat to Oman. However, the absence of doctrine means the loss of this joint position and causes the services to operate under constrained conditions.

5.9.11. The Military Role

This section examines the military role played by the RNO. Between the extremes of global maritime power at the top of the scale and small coastal policing forces at the bottom, navies worldwide possess considerable expertise and ability. In maritime operations, small fast vessels armed with relatively unsophisticated weapons, can complicate sea control calculations. The fundamental military role of any navy is to fight in order to deter, but, if necessary, to fight and win engagements at sea in defence of sovereignty (Till 2009: 14-17). The task of the RNO, or its senior commanders, is to advise the government on resources and future needs and the ultimate mission is to provide forces as a national policy instrument, capable, manned, equipped, and trained to the appropriate level of readiness to make a maritime contribution to military objectives at the highest

¹⁵⁴ Interview with Captain Abdullah Al-Shabibi (Director, Office of the Commander Royal Navy of Oman, Muscat), 17 May 2011.

level. The military roles explain why there has to be an RNO; since the most important element of maritime strategy is a combatant navy, it is this component of the maritime spectrum which provides security for all the other maritime elements. In addition, the navy has the potential to support broad national objectives, particularly in foreign policy and the national economy, as explained above.

Faced with the need to respond to Iraq's aggressive launching of the war against Iran in 1980, Iran retaliated in 1984 by imposing a naval blockade of the Strait of Hormuz to strangle Iraq's seaborne trade and economic livelihood and to prevent the import of military materials (Peterson 2007: 442). The blockade that was thrust without warning on Oman and its navy produced a diplomatically delicate position. Under UNCLOS III, as noted, ships have a right of transit passage through a strait used for international navigation that passes through a sovereign state's territorial waters – in this case the traffic-routing system in the Strait of Hormuz in Oman's territorial waters (Razafi 1997: 55-67).

The terms of the Laws of War allow belligerents to conduct offensive operations and to board and search merchant vessels; however, they are expressly forbidden to do so in the territorial seas of a neutral country, in this case Oman. Thus any interference in the safe navigation of international shipping through the traffic routing system in the Strait of Hormuz is against international law and Omani sovereignty (Razavi 1997: 57-65). However, Oman had no desire to antagonize its neighbour, with whom it had no quarrel, or to indicate support for either of the belligerent parties. Its legal position was clear, and was supported by UNCLOS; it was therefore used to enforce international law for the protection and benefit of all international shipping using Omani waters. During the war, Oman's naval operations in the region became more complicated than ever. Three days into the so-called Tanker War, the main focus shifted from monitoring Iranian naval movements to marshalling international maritime traffic using the TSS (section 5.9.2), a policing duty that the RNO has always taken seriously (Peterson 2007: 442-443).

The revised TSS, introduced in 1979 to route the main shipping lanes, now included an ITZ between the Salamah Islands (the Quoins) and the mainland, to which, with Omani government approval, only small coastal vessels had access. The possibility, real or perceived, of being stopped in the Strait and boarded by the Iranian Navy encouraged

ships' masters to use the ITZ, thereby negating the very reason for which the new traffic separation scheme had been designed, and providing Oman with two more problems. One was its duty to uphold the new internationally-agreed and enforceable traffic separation scheme; the other was to impress upon ships' masters that Oman's navy could, and would, enforce safe and unhindered navigation through the Strait. Throughout this difficult period the RNO's policy was to enforce international law even-handedly with all users of the Strait. Although some vessels attempted to flout the rules, the policy was successful (Peterson 2007: 442-448).

Relationships between the Omani and Iranian navies was mutually robust as each attempted to uphold the policies set by their respective governments without the use of force. Warships of the two nations routinely and calmly traded verbal warnings provided by their governments, in the full knowledge that each side was ready for instant action if the need arose. Regardless of being outclassed by Iran's superior naval forces, the RNO was not intimidated about maintaining Oman's sovereignty, or providing assistance as required to merchant shipping, or even rescuing an attacking Iranian boat when, in the early months of 1988, one of the crew threw another overboard and killed a second because of a dispute between them as to whether to fire on passing ships.¹⁵⁵ The fact that no international shipping was hindered on its lawful passage is testament to the professionalism with which Rules Of Engagement (ROE) were followed and the manner in which the RNO carried out its role.

The war (Tanker War) attracted the attention of many foreign navies to what had otherwise been a peaceful stretch of waterway. Their governments were aware of the potential threat to international oil supplies and the likely effect on national and international economies. Although levels of tension varied, the RNO was able to respond to any incursions in a firm and polite manner, thereby contributing greatly to Oman's international image in general and its navy's image in particular. The Arabian Gulf was quiet and the inhabitants perhaps suffered less stress on an individual level because of Oman's policy and because the RNO was maintaining order in the Strait (Peterson 2007: 442-446). The direct defence of

¹⁵⁵ Eye-witness account by Midshipman Khamis Al-Jabri, RNO, of an incident observed in the Strait of Hormuz during the war, Musandam region, 1988.

shipping passing through Omani waters clearly remains a duty of the RNO, albeit of somewhat less significance than previously.

Overall, Omani policy has been known for wisdom and frankness (Kechichian 1995: 65-118) while maintaining deterrence, thus allowing the daily passage of trade in its waters to continue unimpeded unless in direct conflict with Oman's interests. The role of the RNO remains that of providing a capable maritime force for use as an instrument of national policy and military force. In discharging this role it is entrusted with ensuring the freedom of navigation in Oman's waters, and the peaceful and legitimate exploitation of Oman's EEZ. It must therefore be able to deploy the forces required to deter aggression or exploitation; assist in crisis or conflict management; and command, control and/or conduct the maritime operations required to secure Oman's sovereignty, with or without other national forces or even, if necessary, with its international partners.

The section has argued that overall the role of the RNO is to guarantee the use of the sea, which is fundamental to Oman's national sovereignty. It allows for the passage of goods and people and for exploration and exploitation of the maritime resources and interests. In common with other navies, the RNO has historically exercised a trinity of functions (Figure 5.1) to achieve the policing, diplomatic, and military objectives of national security policy; together they constitute the exercise of naval power by the nation. These functions, however, do not exist in isolation and are in need of a maritime doctrine to bring them together. Collectively they provide the state with a continuum of naval missions and capabilities that is needed for dealing with the security of its own sovereignty and its maritime interests.

5.10. Strategic Option

The chapter has so far covered a wide range of issues for consideration but before focusing on how Oman may wish to address these issues, it is necessary to put what will follow into the context of the strategic options that are discussed in the present section. These options represent national maritime strategic objectives. As a set of agreed conditions, goals or outcomes for the marine environment, they form the desired national end-state, and are the

maritime subset of the state's National Strategic Objectives that need to be coordinated into a form of maritime doctrine.

5.10.1. The End-state (What is to be achieved?)

Oman's foreign and security policy is built upon a doctrine of peaceful co-existence with all nations. Because of its geo-strategic and significant location, the national end state dictates that Oman must maintain a strong maritime capability to support and underwrite its foreign and security policy, and to maintain its sovereignty and its international obligations. Its location brings both opportunities and risks to Oman. Hence the RNO, as a small maritime force, makes a crucial contribution to the co-ordination of the military and governmental/national agencies that ensure the defence and security of Oman. Broadly, RNO needs to maintain the sovereignty of Oman's territorial seas and littoral in conjunction with other forces and agencies by:

- Conducting maritime security operations throughout Oman's maritime areas to deter and respond to threats to national stability and security;
- Conducting co-ordinated operations with other national agencies to ensure the legitimate use and exploitation of the maritime zones for which Oman is responsible.

5.10.2. Ways and Means (How to achieve it?)

Oman's policies are a major determinant of its success in the attempt to transform itself into a modern, open, developed country that is both secure and prosperous. Because Oman is primarily a maritime nation, the RNO plays a vital role in providing security. For example, piracy has recently returned to Oman's waters; this requires the long reach and endurance of more naval vessels to patrol and deter pirates, and means that the fleet must be a capable, versatile, mobile, sustainable fighting force that balances readiness for high-intensity combat operations with the requirement for the routine conduct of continuous maritime security operations (Oman MoD 2009: Chs 1-4). Therefore it must:

- Maintain and operate an integrated naval force with combat, combat support, maritime security, and non-military objectives, and specialist and general capabilities, both ashore and afloat. This fleet must always be manned, equipped, maintained, and trained to

appropriate readiness to meet all tasks, and must always be prepared to stretch the boundaries of individual and collective performance and exploit the unique contribution of naval power.

- Recognize and exploit the unique characteristics and strengths of maritime power with RNO output focused on what it can contribute to national security objectives, and maximize RNO output from assigned resources.

The RNO patrols the Strait of Hormuz, the surrounding waters, the Sea of Oman (including Oman's maritime border with the UAE), and the maritime border with Yemen. In doing so, it carries out the government's wishes in a highly sensitive political atmosphere. Also reflecting state policy are the ROE, implicit in any of which is the Commanding Officer's right to self-defence if attacked. With Oman's policy this requires exerting the minimum force required for self-defence as a situation dictates. More importantly, the whole thrust of the rules is that they reflect the political will of the government which sanctions them; therefore government approval is essential before the rules are issued or modified, since any action resulting from their incorrect application must be justified by the state in the international arena. Since this process takes time, any naval operation in sensitive areas like the Strait of Hormuz must be worked with carefully balanced diplomacy: this calls for immediate maritime doctrine.

5.10.3. What Makes Oman's Special and Why?

Oman's doctrine of peaceful co-existence in a volatile region makes it very significant, since the region is a maritime geo-strategic environment and its national security and interests could be threatened at any time. In the Omani context, there are relevant factors in framing the maritime contribution to the strategic and military strategic objectives. First, Oman's position at a maritime crossroads, with its maritime zones positioned across sea lines of communication are of global significance because of the volumes of commercial traffic crucial to global economies that pass along them. Second, with its extended maritime borders and remote territories (such as Musandam), Oman's isolated military/civil communities rely heavily on maritime lines of communication. Thirdly, its

responsibilities, both specific and implied, stem from its maritime heritage and its position as a leading regional maritime power.

Therefore, as noted earlier, Oman's position brings both opportunities and risks, and with such specific conditions and tasks, the RNO's military objectives dictate that it must be prepared to deliver high-intensity maritime combat efforts in Oman's defence. This is crucial since any military aggression or interference must be deterred by demonstrating capability, intent, and readiness to defend borders, preserve sovereignty, and exert control over territorial waters and maritime zones. Non-military objectives exploit the combat and other specialist capabilities of the RNO in support of broader national peace-time objectives that may include support of law, order, safety and the civil administration, as a consequence of its combat/maritime security capabilities. RNO's maritime tasks in protecting the national maritime interests include (MoD 2009: Chs 1-4):

- Securing the maritime flank of land-based operations, and preventing reinforcement or support of hostile activity within Omani maritime territory;
- Protecting the area of joint operation against air or surface threat;
- Protecting SLOC and port approaches for both military and non-military maritime traffic, in support of friendly operations;
- Protecting national coastal and offshore assets (oil/gas fields/terminals)

5.10.4. Techniques, Tactics and Procedures (TTP)

Within its military strategic context, Oman has no ambitions to project military force beyond its own territories and maritime zones, except in terms of mutual defence assistance to regional allies (such as to support the GCC states) against any external aggression, in accordance with the mutual defence agreement. In support of foreign and security policy, the SAF, of which RNO is a constituent, provide deterrence forces and defence against threats to the sovereignty of Oman, and conduct operations, developing Techniques, Tactics and Procedures (TTP) to repel external aggression and restore sovereignty. Although coordination in this case is lacking due to the absence of national maritime policy, the armed forces work with other national agencies to conduct operations

against infiltration, trafficking, piracy, illegal resource exploitation, and other illicit activity in national waters and throughout Oman's maritime zones.

5.10.5. Capability and Priority

A core force of combat-capable vessels/assets provides continuous maritime security operations and response to contingencies, representing a fundamental role for the RNO, whose concept of operation and fighting capability, as it currently stands, is based on the fleet of corvettes and missile boats, within which a force of nine missile-equipped corvettes and fast attack craft provide the lead combat element. This force is supported by three 76mm equipped gunboats, amphibious and landing ships, and a logistic ship. Effective operations have an integrated Command and Information System (CIS) which provides direction and control of maritime activities, informed by situational awareness achieved through the collection, processing and sharing of surveillance and intelligence information. Where situations demand, other units and facilities delivering specialist capabilities will also join in, completing the loop. However, this capability is reduced due to the absence of a unifying factor that collectively provides the state with the strong naval capability needed to achieve the desire objective. The RNO maintains a rounded capability to meet the requirements of the fleet's operational tasks.

Accepting that there will be competing needs for the fleet's resources, it is not intended that the RNO will meet all tasks simultaneously. Subject to specific circumstances and conditions, allocation of resources will be prioritised as follows:

- Combat Tasks and Defence of sovereignty;
- Civil emergency and contingency;
- Maritime Security Operations (coordinated with national Agencies);
- Standing Maritime Security Operations.

5.11. The Means: What is needed to achieve effectiveness?

This section discusses the means needed to achieve effectiveness at all levels. It argues that maritime doctrine is the basis for both the theoretical and practical determination of what to do and how to do it in an efficient and most economical way.

5.11.1. People, Training, and Equipment

It is not simply technology that gives the RNO its capability but rather the way that this technology is employed. It is the people, who are represented by RNO vessels, various assets and support organisations, who generate the real capabilities. People, both uniformed and civilian, are therefore the most important factor for maintaining operational effectiveness. With the absence of a maritime doctrine, the RNO's good record of operational achievement, which provides a firm foundation for its current activities and future progress, can be lost at any time if not properly maintained, and this foundation can be rapidly eroded.

The processes by which servicemen are trained for maritime operations involve both individual and collective efforts. The complexities of modern warships and the systems used by RNO mean that from the outset naval personnel of all ranks and specialisations require above-average intelligence and a high level of education. Training and maintaining operational readiness is the prime peacetime role for the RNO, but it must also consider the many social, economic, political and other duties it may be called on to perform. It should make every effort and explore all available avenues to ensure that the high standards and discipline which have always been associated with the RNO will continue. Bases, ships and units, whether newly-commissioned or operational after extended periods of maintenance or even extended leave (both frequently involving considerable changeover of personnel), cannot be expected to conduct operations with any high degree of efficiency. Achieving the necessary competence level will depend on operational requirements, but even in peacetime no vessel will be deployed on task until it has reached a specified minimum level of operational capability.¹⁵⁶

¹⁵⁶ Interview with Commodore Rasheed Al-Raaisi (Director General for Operations and Plans, Royal Navy of Oman, Muscat), correspondence, 11 April 2012.

Timely maintenance is the key to ensuring ship and equipment reliability, availability, and weapon-system accuracy. A balance must also be found between maintenance requirements and operational objectives. Should a doctrine exist for the RNO, this will be achieved by carrying out strategic forecast programmes, fleet operational programmes, and fleet upkeep programmes without any constraints on capability.

5.11.2. Organization and Information,

Effective administration is fundamental to any organisation's efficiency; hence RNO's capacity to accomplish its assigned missions. The objective of RNO's organization is to align the service with its own supporting departments and trained ships (platform and personnel) to deliver the required effect. The Commander Royal Navy of Oman (CRNO) is responsible to the Sultan for raising, training and sustaining the RNO, and retains permanent sovereign authority on behalf of the Sultan, Supreme Commander of the Sultan's Armed Forces, over all units and establishments in the RNO. The function of Commander of the Fleet is carried out by the Commander of the RNO.¹⁵⁷

With a maritime doctrine looking into assets of national maritime needs, selection of appropriate sensors and systems would provide Oman with a layered approach to maritime surveillance that would give adequate information and warning and buy time for the decision-maker to take appropriate action. An efficient, forward-looking administrative structure supported by modern technology is the basis of good management in the RNO. Rapid information exchange is fundamental to effective integration of joint force operations, while security of information is a vital element of successful Command and Control (C2).

The selection of contributory platforms and sensors, whilst extremely important, is, however, only the first step. Production of the Recognised Maritime Picture (RMP) itself requires a flexible C2 system that integrates a wide range of sensors and surveillance systems into a relevant and easily interpreted tactical picture. Not only must the sensors and platforms be affordable, they must also have industry standard interfaces and open

¹⁵⁷ Interview with Rear Admiral Abdullah Al-Raaisi (Commander Royal Navy of Oman, Muscat), 21 June 2011.

source, easily configurable software that will enable their product to be integrated into a common picture. Furthermore, whilst the chosen solution may or may not include programmes to assist with rapid decision making and mission planning, it must include integrated communications – a weak area in both military and civil crisis response that is both common and damaging.

From the communications viewpoint, modern, high speed, high data rate, secure communications, data links and computers should be available to fuse and coordinate real time information from different sensors and platforms to create and share a common, comprehensive recognised picture. This total capability is frequently referred to as a network-centric or network-enabled capability. It can be seen that information management is a complex and specialist skill that needs constant attention and adjustment. However, without the will and ability to compare and integrate the available information between individual users, interoperability is at best poor, decision-making will be impaired, and operations potentially ineffective. Therefore the total surveillance/intelligence picture, which will necessarily include some highly sensitive information, need not be included in the RMP. The ability to integrate all available inputs and to control the distribution of appropriate elements to those who need them in order to preserve security is a key requirement.

Growing dependence on information technology systems creates increased risks if their security is disregarded. The RNO corvettes, having the largest fighting capability, add to decision superiority through integration of their weapon and sensor systems in wider networks across the Joint Force, contributing to the Recognised Air Picture (RAP) and RMP and enhancing shared situational awareness by contributing to the Joint Operation Picture. Despite RNO having no dependent air arm, it is linked in to the RAFO to provide maritime air support although it lacks robust coordination in some cases. If Oman had a maritime doctrine, such operations would be enhanced through interoperability, via the management of networked data links and by providing positional reference across Surface and Air operating environments able to be exploited by all national security agencies.

Task-specific information exchange is developing, with the ability to access open-source strategic information via internet and satellite television in operational planning spaces,

and the aspiration to interface with tactical intelligence assets. To achieve this strategy, coordination and interoperability between the RNO, the ROPCG, RAFO, and other national security agencies must be reviewed regularly, to identify splits, gaps and vulnerabilities and provide security and defence for Omani maritime boundaries and commercial ports. The ROPCG has recently sought to enhance maritime security operations, minimize gaps in port security, increase proficiency in security enforcement, and leverage partnerships with RNO and other related organizations. The intention is to mitigate security risks and increase domestic maritime awareness and readiness for the protection of the nation's sovereignty, territory, population and critical infrastructure against any attacks. However, for economy of effort, all of these tasks need exchange of information, good planning, and co-ordination. This strategy should include achieving maximum awareness of potential threats to Oman, and deterring, intercepting and defeating them; this cannot be achieved successfully without a maritime doctrine.

5.11.3. Interoperability and Equipment

The involvement of multiple agencies in any operational environment inevitably raises the question of interoperability,¹⁵⁸ through a common factor, i.e., doctrine. Technically, one could improve interoperability at a stroke through common equipment. This approach would result in considerable savings in procurement costs as would, where practicable, centralising training, logistics support, and maintenance. Whilst interoperability on the international scale is extremely difficult, due to cost sharing, industrial activity, political considerations, intellectual property rights of both technology and product, and foreign policy considerations, nationally it is more practical. If common equipment is not possible, compatible equipment, like common technical protocols, should be a mandatory element of all procurement projects. Interoperability can also be achieved or improved by common or standard operating procedures, common training, realistic exercising and the monitoring of standards – basically what a maritime doctrine will do. The problems of interoperability of even the simplest of radio communications between stakeholders in the maritime, port, security and emergency or disaster relief sectors should not be underestimated.

¹⁵⁸ **Interoperability.** The ability to operate in synergy in the execution of assigned tasks (Australia MoD 2010: 197)

In addition to the considerable advantages of having common equipment in terms of interoperability, common procurement presents others. The retention of ownership of assets need not be compromised by sharing the considerable financial savings and reduced costs associated with bulk purchase through common procurement, or through shared life support, training, and the ability to create centres of excellence for maintenance and training in which specialist knowledge is used to the full. Another side of common procurement is also worth considering –that is from the perspective of the supplier. When there is not a cross-government approach to procurement with common standards and protocols, companies attempting to supply equipment of the same capability and function to different customers and agencies within the same country often encounter different descriptions of similar or even identical requirements and different methodologies for assessment, bidding and acceptance. This does not help the supplier and almost certainly leads to higher unit costs. Furthermore, unfocused procurement can result in the process being administered by people who, although extremely well-intentioned, have no operational, technical or industrial experience. Although procurement methodology may not at first appear to be a major consideration in the effective management of maritime zones, the savings that can be made and the greater interoperability resulting from common equipment or common protocols can be significant force multipliers.

5.11.4. Infrastructure and Logistics

Possession of a number of bases, ports and viable structures offers greater flexibility for the deployment of national and other friendly naval forces. For Oman in particular, these are also important for their revenue-generating potential and for their role in promoting wide-ranging economic activities. Hence, there are calls for a national maritime policy that will directly connect these national assets with security. By providing bases for its military forces, Oman's ports are important for the state's national security.

As noted in Chapter Three on Ports, the greater the number of bases, the greater is the flexibility of naval forces to operate during peacetime and war (Vego 1999: 61). However, this will be effective only if the ports and infrastructures in question are equipped to cater for naval vessels. This entails thinking about supplies, ammunition, dedicated secure facilities, and port protection which Oman should consider.

RNO vessels have limited storage capabilities for rations and spare parts while at sea. For national security operations, logistical support needs to be organised jointly with other services and national agencies. At times logistics issues may lend themselves to economies of scale by integrating the needs of the three services and national support agencies. There are also some differences in strategic, operational and tactical levels of logistics among the systems supporting these needs that must be addressed in a maritime doctrine.

5.11.5. The Budget: How much will it cost?

The natural resources ‘curse’ has long been recognized as a phenomenon whereby nations, despite richly abundant resources, find themselves at odds and under pressure because of the power struggles that such resources generate (internal and external influences being part of this). The price for security on, and from, the high seas comes at no small cost, and not just in the loss of liberty. In terms of manpower, equipment and time, security is often expensive; at sea this is no different, as the legal and physical environment magnifies and complicates many of the problems found ashore. Governments often question this expense and, when considering the risks against the number of incidents, often choose to minimise investment and expenditure in this area. Looking at the percentage of defence expenditure to GDP, Oman’s military spending (2009) represents 9.6 Percent of GDP, being the second in the GCC after Saudi Arabia with 11.1 percent (World Bank 2012).¹⁵⁹

The RNO’s financial policy is based directly on that formulated for the Ministry of Defence by the Office of the Minister Responsible for Defence Affairs. Policy guidance and financial control are exercised through instructions from the ministry and SAF, based on the organizational structure of the MoD.¹⁶⁰

Maritime security can be expensive; technological solutions are often required to conduct surveillance over vast areas of sea and coastline, and none of these is cheap. Even relatively rich countries quibble over costs in this area. Vessels that can patrol the EEZ must be ocean-going, which adds to build maintenance and crew costs; even aircraft with

¹⁵⁹ Data according to ‘The World Bank’. For more details see, <http://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS>, accessed 23 April 2012.

¹⁶⁰ Interview with Commodore Yaqub Al-Kamshki (Director General for Finance and Administration Royal Navy of Oman, Muscat), 26 June 2011.

relatively simple sensor packages are quite costly. In order to conduct effective maritime security, Oman's strategy must take as one of its strands the ability to pursue by disrupting threat or terrorist plans, activities and capabilities.

Military power at sea is the most important component of a maritime power. While the international law of the sea gives Oman the right to extend its EEZ to 350 nautical miles, Oman will need to identify what capability is required in terms of hulls and to ensure that it has an adequate maritime reach. The means to protect such a vast extended sea area are to be found in the economic elements of maritime power and lie ultimately in the possession of an effective navy. The quest for accruing economic benefits from the sea motivates the development of military power at sea, which in turn facilitates the growth and expansion of maritime economic elements. Since the need for a navy is driven by a nation's maritime interests, it is important to understand why Oman needs a navy and whether the size and shape of the RNO are commensurate with those interests. Oman must acquire an adequate sea-based capability to maintain its strategic economic interests in its maritime territory. These would include:

- The redistribution of allocated military resources.
- Capable ships with long endurance, sea-keeping capabilities, and helo-borne capability.
- Ships with Replenishment at Sea (RAS) capability, since their main task is to support the RNO at sea with fuel, stores, and ammunition.
- Ships for aviation support, amphibious support, forward repair facilities, and secure sea transport for the Military Afloat Reach and Sustainability.
- Amphibious Combat Support to assist land forces from the sea towards potential locations at some distance inland from the beachhead and then to sustain their operations.
- Maritime Patrol Aircraft.
- Surveillance Systems.
- Joint sea-based logistics support and sustainment systems.

- Forward Aviation Support – the provision of support to maritime rotary wing operations. The ships will be able to act as a forward maintenance facility for deployed helicopters.

Operationally, effective and cost-effective operations in Oman’s maritime areas are best approached by an ‘effects-based operation’ approach;¹⁶¹ i.e., determining first what effect (outcome) is required, and then deciding the most economical way of achieving it. While it is recognized that there is always likely to be some overlap in capability, when legacy systems are considered, employing the principle of economy of effort should certainly ensure that not only is duplication minimized, but also that the right capabilities are developed and embedded in the most appropriate Service. Furthermore, the principle should ensure that the required surveillance, patrol, and enforcement capabilities are clearly stated by client ministries and national agencies, thereby opening the way for assets to be employed whenever possible on two or more tasks concurrently. This may result in inter-Service or Ministry agreements over the level of support that will be provided to individual tasks. Above all, it should ensure that new equipment is only procured when the desired capability is not already available elsewhere. As maritime wealth generation is fundamental to Oman’s future growth, coastal and EEZ security is vital. It is essential that all matters relating to the security and management of Oman’s maritime zones reflect the views of all stakeholder, services, ministries and departments, but this can only be achieved by the establishment of a maritime doctrine.

5.11.6. Doctrine

The fleet must demonstrate a continuous and visible presence throughout Oman’s maritime zones, concentrating on offshore and remote coastal areas to complement the ROPCG’s operations without overlap. Active, continuous and integrated surveillance enables detection and investigation of unusual, unlawful or aggressive activity. Intervention will be conducted within the limits of capability and jurisdiction, while exchange of information with adjacent and cooperating agencies will enable coordinated air/sea/land tracking,

¹⁶¹ **Effects Based Operations.** “Operations designed to influence the will of an adversary, own forces or neutrals, through the co-ordinated application of military capability, in order to achieve the desired Strategic Objectives” (MoD UK 2004: 255).

intercepting, neutralising or, if necessary, destroying hostility. In terms of planning, a maritime doctrine will provide a better understanding of aims and objectives under normal and abnormal conditions.

The deployment of maritime assets to mission areas with a clear setting of plans (*Where, What and Why*) would provide the answer to *How*, which is missing and needs addressing. Inevitably, difficulties are caused, mainly by Oman's lack of a maritime doctrine. In other words, maritime doctrines written for other countries simply will not do for Oman, which therefore requires its own doctrine to allow for the unique circumstances affecting its security.

The critical need for Oman's maritime doctrine is clearer today than ever before, even during the time of the empire. Doctrines play a valid role within the armed forces and are considered the best theoretical option to meet challenges, particularly in an unpredictable environment (Vego 2007: XII, 3-23). Despite the absence of formal doctrine in the past, many navies were successful because certain prescribed training techniques, organizational structures, and tactical procedures were commonly used. In the days of the Omani sea-based empire, doctrine was of no great significance, but it would certainly have helped subordinate commanders to interpret plans and orders received because they would have been written in commonly-understood terms.

A doctrine instructs one how to think, not what to think (Till 2009: 46-47); therefore it contains principles. Above all, it should be endorsed at the highest level in order to provide a platform for developing a Strategy that has three parts: (i) Ends – as laid down by the doctrine; (ii) Ways – how one achieves the ends; and (iii) Means – the capabilities that are required to support the ways (Scudder 2009: 7-30). For example, Oman's Maritime Doctrine will, when established, include the treatment of Oman's EEZ; this should go beyond satisfying the minimum 'safety at sea' obligations, as defined by the IMO.

The doctrine must also include protection of ships (national and foreign shipping) participating in legitimate maritime trade as they transit Oman's maritime zones. Since both these issues will require a response – the first based on SAR, and the second on interdiction – both will require maritime surveillance: the first being full coverage on

Channel 16,¹⁶² and the second coverage that will detect, identify and recognize¹⁶³ threats to legitimate shipping. The doctrine is an important paradigm and can only be presented nationally (by an Omani) on behalf of the Sultan, if it is to hold credibility within Oman and in the international community.

To sum up, it is my conclusion, based on twenty-five years of experience as an RNO naval officer and subsequently reinforced by a period of intensive study in the preparation of this thesis, that the RNO has operated under some constraints. In the absence of a formal doctrine the RNO has had to manage through the use of fragmented documents, at times with some difficulty. But Oman is a new country; after the demise of its empire it did not enter the modern world until 1970, and Omanization of the navy and the development of a professional officer corps of mariners are even more recent advances. Even so, it is perhaps the case that a maritime doctrine, the need for which has been recognized for some time, could have been addressed before now.

5.12. Conclusion

Strategists argue that the traditional role of sea-power navies has been to protect merchant shipping, fisheries, and the freedom of the sea so that sea-borne trade remains unhindered (Richards 2003: 1-13). A navy is a versatile and flexible instrument and can be used by a nation in an increasingly wide-ranging manner, from destruction of an enemy to coercive diplomacy. It can also be used to enhance international co-operation in conflict situations, and to provide a competitive edge to economic activity (Till 2009: 253-296). The RNO arose out of Oman's long seafaring history and more recently from an obvious national need, during the period of the Dhofar war and the Iran-Iraq war.

Today, the RNO's duty is to protect Oman's sovereignty, ensure freedom of navigation over its waters and defend Oman's strategic and economic interests. More than ever a maritime doctrine is an essential requirement for Oman today, simply because of its

¹⁶² Channel 16: International distress, safety and calling radiotelephony channel. For more details see, http://www.ofcom.org.uk/static/archive/ra/publication/ra_info/ra264/ra264.htm accessed 26 April 2012

¹⁶³ **Identification & Recognition** is the determination of signs by means of the friendly or hostile character of aircraft, ships or submarines. The positive recognition of friend or enemy is the most important factor in Enemy Contact Reports. Identification is part of picture compilation, and serves the overall purpose of adequate asset and weapon employment (Oman MoD 2005: 4-7).

physical location and maritime geography and the magnitude of the tasks it is required to perform. The RNO is a small-power navy, yet it functions as a highly flexible and efficient force, and keeps up to date with technology as well as tactics through its connections with modern navies including the British, American, French, and others.

The sea area and the various tensions between nations divorced from Oman's land boundaries, present it with maritime security concerns, both real and potential, that will continue to alter over time. It is on these factors that the roles and missions of the Omani navy are founded and adapted to meet Oman's ever-changing needs. The nature of the threat to Oman's national security includes:

- Tourism: although it may not be directed at Oman, the instability it causes directly affects national security. Terrorists may use Oman as route for people, weapons and money. Thus a direct threat to offshore infrastructure remains a possibility.
- Trans-national Crime: involving the trafficking of people, illegal immigration, drugs and weapons.
- Piracy: caused by lack of effective governance (Somalia and Yemen) can pose threat to people, shipping and trade and undermine development. There is also a direct impact on the cost of living in Oman and Omani exports due to increased shipping costs due to defensive routing and increased insurance premium.
- Illegal fishing and Overfishing: are major threats to sustainable diversity and population, and over-fishing will lead to reduced catches in terms of quantity, quality and size.
- Pollution: the EEZ is transected by the world's major hydrocarbon and petrochemicals transit routes to and from the Gulf. An accident or illegal flushing of storage tanks at sea would cause immeasurable damage to the marine environment affecting fish stocks and threaten desalination plants. Besides the ensuing ecological disaster, the economy would be affected by both the cost of clear-up action, provision of potable water and the loss of income from fishing and tourism.

- Inter-state Conflict: although Oman enjoys cordial and diplomatic relationships with regional neighbours, a nation state has to be capable of defending itself if attacked by a belligerent nation or entity. It is important to monitor regional trends and be prepared to maintain sovereignty over territorial waters and exercise control across the EEZ.
- Climate Change: affecting regional weather and maritime conditions. Changes in sea temperatures will alter the habitat and location of marine life, and thus the viability of sustainable fish stocks. Climate change, coupled with global population growth may become a driver of migration to areas with more abundant food and water, and reliance on fish as a food source.

The mission of the RNO is to provide, as an instrument of national policy, capable forces that are maintained in an appropriate state of readiness to offer a maritime contribution to military objectives at the highest level. Generally speaking, these roles explain why there has to be an RNO. The most important element of maritime strategy is a combatant navy; hence, it is this component of the maritime spectrum which provides security to all the other maritime elements. In addition the navy must have the potential to support broad national objectives, particularly in foreign policy and the national economy which raises the notion of coordination through a common factor (doctrine). States need a broader approach to the contemporary security environment and their own national security issues.

Global events in 2011 demonstrated that all states needed to think more in order to prevent recurrent conflict. Thus, to achieve national maritime security Oman needs to be ready to face various conflicting interests, not least the ability to balance short- and long-term requirements. This requires the relevant national agencies to work collectively for the benefit of Oman, and to recognise a greater interdependence between them. These agencies may be required to identify and forego their own priorities in order to achieve the possibility of a more wide-ranging national security, but can all this happen successfully without a maritime doctrine?

CHAPTER SIX

AN OUTLINE PROPOSAL OF A MARITIME DOCTRINE FOR OMAN

6.1. Introduction

Protecting Oman's sovereignty and maritime interests is the top priority for the Royal Navy of Oman (RNO). To protect national sovereignty, the RNO deploys its maritime forces in and throughout Oman's maritime zones – a vast area of ocean containing many resources and in which illegal activity of any kind is possible. The scope of such a mission is an enormous responsibility for the RNO and the other national security agencies assigned with the same task. It requires communication and collaboration across all national agencies through a defined structure, activities that are normally guided by a nation's maritime doctrine which, surprisingly, Oman does not yet possess.

As noted in Chapter One, Till defines maritime doctrine as the “application of maritime theory in a particular time and place” (Till 2009: 46). It establishes a bridge between a nation's maritime forces, military strategy, and standing operating procedures, enabling performance of significant functions; this is very much needed for Oman. Militarily, commanders cannot operate solely under the guidance of broad strategy, nor can they make appropriate mission decisions guided solely by tactics and techniques (Vego 2007: XII, 3-23). Doctrine steers actions and provides the basis for mutual understanding within and between naval units and other security agencies, ensuring unity and efficiency in the execution phase.

For around two centuries, from the time of the expulsion of the Portuguese from Muscat in the mid-seventeenth to the nineteenth century, Oman was a principal maritime power in Arabian waters (Kelly 1980: 104-107). Although the Omanis offered an example of the sea as a dominion and as a resource (Till 2009: 24-31), they failed to invest in that history. Oman has yet to develop a maritime doctrine, which is one of the main reasons for the lack

of coordination between the RNO and other agencies in the protection of Oman's maritime interests. This chapter provides an outline proposal for a maritime doctrine for Oman, on the basis of which the country can organise, train, equip, develop, coordinate and employ its maritime power.

6.2. Rationale (Background and Literature Review)

Clausewitz's point that "one need not start afresh" is worth emphasising. Since theory is often based on the processing of past experience, history should help us avoid repeating previous errors (Till 2009: 40). Doctrine is derived from extensively-studied lessons, ranging from actual combat to various peacetime exercises and manoeuvres (Strachan 2011: 1292). The importance of understanding doctrine and strategy is discussed here. Noting how the terminology is used across all walks of life, even in the worlds of governance and corporate finance, the section outlines the relationship between Oman's national security, strategy, and doctrine, highlighting Oman's strategic environment and its on-going strategic interests.

6.2.1. Doctrine and Strategy Rationale

During the late nineteenth century intellectual rigour began to be applied to the study of the strategic role of the sea in history. Much has since been written on the subject, initially to counter ignorance of the sea's role in the survival of nation states. The writings of strategists, thinkers and historians on maritime strategy and doctrine are considered and their strategic thinking and concepts explored (see also Section 6.8).

During the seventeenth century, the main means of indoctrination were drill manuals, military discipline, and peacetime manoeuvres. However, in the aftermath of the French Revolution (1789-1799) and the Napoleonic Wars (1803-1815), the widespread introduction of conscription and the advent of mass armies brought many changes. The Prussian/German military leader Field-Marshal Helmuth von Moltke (1800-1891) led the way in developing and applying doctrine in the mid- to late nineteenth century. Although Napoleon and Moltke differed in their approach to warfare, both realised that subordinate

commanders required technical skills as well as the ability to understand the commander's orders. Until the nineteenth century the term 'doctrine' was not used in American or British military dictionaries, although the maxims of Napoleon and Marshal Auguste Frédéric-Louis de Viesse de Marmont (1774-1852), and the writings of Antoine Henri De Jomini (1779-1869) were widely read within military circles (Vego 2007: XII, 3-23).

From his first-hand experience of the Napoleonic wars, Jomini produced a valuable work that influenced naval theory for most of the nineteenth century. His ideas on command of the sea and proper naval bases to serve the fleet represented essential ingredients for a successful maritime strategy. In practice they also reflected confidence that his subordinates were completely familiar with contemporary naval thinking. Similarly, Lord Nelson, a great believer in delegation, expected his subordinates to use their intelligence, seamanship and understanding of his intentions to outmanoeuvre their opponents more adeptly. Importantly, Nelson devoted much time and effort to discussing with his captains how he pictured forthcoming battles, with the result that they could act independently in support of his objectives without further referring to him (Till 2004: 54).

Carl Philipp Gottfried von Clausewitz (1780-1831), a Prussian army officer and military theorist who stressed the importance of the moral and political aspects of war, is widely acknowledged as one of the most important early strategic theorists. His best-known work, *Vom Kriege* (On War), first published in 1832, remains the most frequently cited, and in many respects the most modern of these early writings. Clausewitz stressed the dialectic of how opposite factors interact, noting how unexpected developments unfolded under conditions of war, and regarded history as a complex check on abstractions that did not accord with experience. Unlike Jomini, he argued that war could not be quantified into map work and graphs (Howard and Paret 1976: 27-45).

Much thought was also devoted to the works of historians and commentators such as the Colomb Brothers. As British strategists, Vice-Admiral Philip Howard Colomb (1831-1899) and Royal Marine Captain Sir John Charles Ready Colomb (1838-1909), both used their experiences to highlight the relationship between the army and the navy. Philip Colomb's approach was different from that of his younger brother John. As a naval officer, his thinking involved concentrating on the functional methods of imperial defence, but he

was also concerned with the principles of naval warfare, realizing that relatively little thought was given to maritime strategy (Till 2004: 64). Writing at the same time as Alfred Thayer Mahan, Admiral Philip Colomb, whose work *Naval Warfare* (first published in 1891) traced the rise of naval warfare and linked it to the establishment of commerce, remarked how vessels that could remain at sea for longer periods enhanced a nation's ability to impact on the enemy's sea dependence for wealth and security (Till 2009: 204-216).

Maritime strategy revolves around three major concepts: Command of the Sea, Sea Control, and Sea Denial (see Section 6.9). Command of the sea was historically an absolute concept that basically espoused a nation's free use of the sea. Although this was understood tactically for centuries, Mahan and Colomb both made use of the term, Colomb in particular emphasising that command of the sea was to be understood as the principal aim of naval warfare. A power that strived for anything less, such as surprise attacks, control of ports or coastal territories, or defence of its commerce would never be a serious naval power and could never defeat its opponents (Till 2009: 145-204).

In addition to strategic and political realities, the economic burden imposed on national economies by the continuing revolution in military technology after 1918 meant that command of the sea could not be preserved, and it gave way to sea control (Till 2004: 151). In response to these issues, sea control was said to encompass more modern realities while upholding the vital role of history and strategy, although Grove asserts that the term 'command of the sea' should not be abolished and refers to Corbett in noting that the normal state of the sea is a relative and not an absolute term (Grove 1990: 12-13).

Thus the early development of theory was devoted to maritime strategy and doctrine even before the major surge of interest worldwide that occurred from the end of the nineteenth century (Till 2009: 47-48). Although Western knowledge in this subject was recognised, works such as *The Influence of Sea Power Upon History 1660-1783* (1890) by the American Rear-Admiral Alfred Thayer Mahan (1840-1914), and *Some Principles of Maritime Strategy* (1911) by the British historian Sir Julian Corbett (1854-1922) had a particular impact (Richards 2003: 1-13). Mahan's contribution to the usefulness of maritime power benefited from Jomini's principles pertaining to war at sea; his description

of the important role of the British navy in Britain's rise to world authority emphasised the significance of such power (Earle 1971: 388-415). Although Mahan was talking of British sea power in the age of sail, steam power and the industrial revolution later changed the picture completely, so that his ideas on navies and commerce protection now appear valid when applied to the economic realities in which navies operate and deliver their maritime strategy (Richards 2003: 4). He argued that commerce was fundamental to maritime power and the best way to threaten or defend it was to engage the opponent's most powerful forces in decisive battle (Till 2009: 51-56).

While Mahan is credited for the ascendancy of American naval power and places sea power into a political context, Corbett is regarded as Britain's greatest maritime strategist. His work is widely used and highlights the attributes and application of a maritime strategy from a naval perspective (Richards 2003: 8-13). Where Mahan advocated naval supremacy as an enabling end in itself, Corbett saw maritime strategy as merely one component of an overall national strategy (Corbett 2008: 1-10). Though agreeing with Mahan on the importance of the sea as a means of communication, Corbett did not support Mahan's notion of the decisive battle, regarding this as the most important means for achieving control of the sea and securing the Sea Lines of Communication (SLOC) (Till 2009: 51-68).

Later in the twentieth century there were increasing contributions from France in the work of Admiral Raoul Victor Patrice Castex (1878-1968), who produced a comprehensive review of classical maritime theory between 1927 and 1931. His five-volume study, *Théories Stratégiques* (c.1929), contains ideas that remain relevant to modern naval warfare, including the application of strategic manoeuvres, and in a modified form have been used as tenets in Australia's approach to warfare (Australia MoD 2000: 37-45). Another significant maritime strategist was Admiral Sir John Fisher (1841-1920) who was more concerned with the future prospect of flotilla defence and introduced the significant role of submarines in naval warfare (Till 2004: 54-71).

Admiral Sir Herbert Richmond (1871-1946) took a different approach from Mahan and Corbett, seeing the need to move British naval thinking away from its obsession with battle and towards securing the SLOC, which he regarded as fundamentally important to Britain

(Till 2004: 54-71). Richmond's *Statesmen and Seapower* (1943) was intended to educate politicians and sailors alike on the abiding realities of naval greatness and the inter-relationships of political and military strategy, since it was important to understand the connection between Britain's developing overseas influence and the utilization of its maritime strengths. In emphasising the importance of sea power over land power, the ideas expressed by leading academic and military writer, Colin Gray, in *The Leverage of Seapower* (1992) are similar to those of Richmond (Till 2004: 105).

The multi-faceted nature of maritime power was also appreciated by the Russian Admiral Sergei G Gorshkov (1910–1988), an important figure in maritime strategic thought whose contribution matched contemporary requirements. During the 1960s and 1970s Gorshkov adopted a policy of rapid maritime expansion, aiming to create powerful blue water fleets capable of extending Soviet naval power across the world's oceans. In *The Seapower of the State* (1979) he attempted to explain prevailing Russian strategic thinking; his skill lay in his ability to promote the belief that Russia's future lay at sea. Through his sea power doctrine he successfully challenged conventional dogma that classified Russia as a land power only, remarking that the predominantly defensive, coastal nature of the Soviet navy was no longer adequate to meet the multi-faceted activities of other navies in wars and peacetime, and that to succeed it needed to be a balanced force (Gorshkov 1979: 277). With his initiative and assistance, the Soviet military establishment developed a keen desire to dominate the maritime frontier (Till 2004: 75).

As the importance of navies as political tools increased, the theory of maritime power set out by Sir James Cable (1920-2001) in *Gunboat Diplomacy* (1971) offered a powerful explanation of how the principal naval powers might wish to exploit their naval resources to support their foreign policy (Till 2004: 39-69). Cable did not formulate grand theories of sea power as Mahan had done, or theories of war in the manner of Clausewitz, but by demonstrating to practitioners what they were doing and why, his views on illuminating facets of strategy in the light of facts was just as valuable. In his *Maritime Strategy for Medium Powers* (1986), Rear-Admiral John Richard Hill highlighted the limited capabilities of medium-power navies, pointing out that superpowers were “self-sufficient,

and possessed economic muscle, diplomatic clout, and military might to defend their interests with their own resources” (Hill 1986: 13-48).

In his description of the functions of navies, Ken Booth notes that “maritime forces possess considerable utility in a wide range of situations, from conflict to peaceful human activity”. In *Navies and Foreign policy* (1977), he undertook a specialized study of naval power as a policy instrument that historically had played an important part in the foreign policies of most major states, and that in this context the roles of maritime forces fell into one of three categories: military (or combat-related), diplomatic (or foreign policy-related) and policing (or constabulary) (Booth 1977: 15-16).

Peter Paret also addressed this theme in *Makers of Modern Strategy* (1986), by examining most of the major theorists who have dealt with the use of force as a tool in international relations. In *The Political Uses of Sea Power*, Edward Luttwak emphasises how the familiar attributes of an oceanic navy (inherent mobility, tactical flexibility and a wide geographic reach) render it particularly useful as a policy instrument, even in the absence of hostilities (Luttwak 1974: 1). On the other hand, although Eric Grove’s *The Future of Sea Power* discusses the importance of the sea as a dominating means of transport and an important medium for military application where needed, he stresses that sea power must be used through the application of maritime strategy (Grove 1990: 31). This theory has been further explored in Geoffrey Till’s writings which, by covering most issues involved in maritime strategy and naval thinking, have extended the level of maritime strategic theory.¹⁶⁴

British and American analysts continue their joint efforts to define strategic maritime concepts and match them to contemporary requirements. In its various versions (from 1921 and 1925, and successively in 1948, 1958 and 1969), *The British Naval War Manual* (the original BR 1806 – the high point of the Royal Navy’s doctrinal publishing) was the main source of higher-level doctrine for many Commonwealth navies after World War II. The

¹⁶⁴ Geoffrey Till is the author of a number of books including: *Air Power and the Royal Navy* (1979); *Maritime Strategy and the Nuclear Age* (1984); *Modern Sea Power* (1987); *The Sea in Soviet Strategy* (1989); *Coastal Forces* (1994); *Sea Power: Theory and Practice* (1994); *Sea Power at the Millennium* (2001); *Sea Power: A Guide for the 21st Century* (2004, 2009); and *The Development of British Naval Thinking* (2006).

end of the Cold War in the early 1990s served as the impetus for an explosion of formal doctrine as Western navies, in the absence of a great power competitor, searched for new roles and justification. This work fundamentally reinforced longstanding maritime concepts and tasks, some of which had received little emphasis within the context of twentieth century wars. This body of higher-level maritime strategic work has been further extended by contemporary thinkers and writers including Ken Booth, Colin Gray, Eric Grove, and Geoffrey Till.

The European states (UK and France), with their dominion over the sea, developed navies and strategies, both locally and worldwide, maintained sea control, projected power ashore in peace and in war, defended or disrupted trade, and maintained good order at sea. Till argues that although the Europeans provided examples of the sea as a means of dominion, they were not unique (Till 2009: 31-32). Within the Arab world, Khalid ibn Al-Walid (592-642 CE) was noted for his military prowess, with much of his strategic and tactical genius evident in his use of extreme methods, including his emphasis on annihilating enemy troops rather than achieving victory merely by defeating them. As an architect of most the early Muslim military doctrines, he regarded the manoeuvre as an instrument for bringing about the enemy's destruction (Pratt 2000: 82).

Another example was Oman's principal maritime power which lasted from the seventeenth to the nineteenth century (Kelly 1980: 104). In addition to Western efforts in maritime strategic thinking and theory, evidence suggests that there were significant developments occurring at that time in Arab seafaring and navigational techniques, such as the use of a lodestone at sea as a magnetic compass and the continued improvement of nautical handbooks (Hawley 1977: 19-25, 186). Certainly some useful works devoted to the subject appeared in the fifteenth and sixteenth centuries, while the fifteenth-century contribution to maritime practice made by Arab seamen in Omani waters is well-known and is an important element in Oman's maritime history.

Ahmed bin Majid was born on the northern coast of Oman and lived through a particularly critical period in maritime history (Price 1986: 9). He wrote around 40 books on navigational subjects, including the famous *Book of Profitable Things Concerning the First Principles and Rules of Navigation* (1489), which dealt with aspects of astronomy, sea

routes, seasons, natural features, weather conditions, and geography relating to navigation (Al-Hassani 2006: 263). Majid's knowledge and experience in navigation helped European explorers, who at that time were discovering the route round the Cape of Good Hope into the Indian Ocean that was to give them the key to commercial dominance of those waters. His fellow countryman, Sulaiman Al-Mahri, produced five extant works, the earliest of which, written in 1511, is another great work of sea-faring literature, entitled *Al-Mahri's Fundamentals for the Mastery of Maritime History* (Ministry of National Heritage and Culture 1999: 101-106).

In the Far East, the impact of the works of the ancient Chinese strategist Sun Tzu (sixth century BC) and other Chinese and Japanese maritime writers deserves more study (Till 2009: 48). Many modern commentators and writers on doctrine refer to Sun Tzu, who explained the concept of the *Manoeuvrist Approach*,¹⁶⁵ noting that to "subdue the enemy without fighting was the pinnacle of skill" (Sun Tzu 1963: 77). The value of this doctrine was demonstrated in the Russo-Japanese War of 1904-1905, when the Japanese army adopted German concepts of warfare and training methods. Essential to their success was a wholehearted belief, held by almost all Japanese officers, in the inherent soundness of the German-style training they had received. In the Russo-Japanese War, by contrast, the Russian officers were technically ill-educated. They lacked any coherent doctrine that all could understand and accept, with the result that the Russian commanders spent more time dealing with constant internal friction than in fighting the enemy.

In 1902 Admiral Yamamoto Gomei, along with most Japanese strategists, acknowledged Mahan's analytical skills, and rushed to apply his theories. Akiyama Saneyuki, known as the father of Japanese naval strategy, and Sato Tetsutaro, regarded as Japan's Mahan, also drew intellectual inspiration from ancient Japanese writers and from Sun Tzu. However, the exact nature of Mahan's influence on the Japanese naval establishment is a matter of some dispute. In general, Japanese strategists focused primarily on tactics and operations rather than the more ratified dimensions of naval warfare. In contrast to Mahan, they

¹⁶⁵ **Manoeuvrist.** A term describing an approach that employs the principles of Manoeuvre Warfare (UK MoD 2004: 270).

learned about naval strategy from combat experience rather than from abstract sea power theory (Yoshihara and Holmes 2008: 150).

Apart from Sun Tzu's *Art of War*, Chinese naval strategists seem to embrace their own universal logic for sea power with undercurrents of both Mahan and Marxists (Yoshihara and Holmes 2008: 70). Between 1940 and 1950 the Chinese developed a school of maritime thought that focused mainly on a large fleet, with army and air support, whose essential task was coastal defence. Chinese naval thinkers such as Admiral Liu Huaqing argued that this was a conscious and illustrious alternative concept of maritime strategy, but were concerned that modest forces would not satisfy their broader strategic aims and thus would be unable to defend China against attack by large naval forces (Till 2004: 73). Indeed, China's maritime strategic thinking seems to have some difficulties. While some, like naval strategist Hu Jintac, argued for building a powerful navy, others were opposed. Ye Zicheng claimed that development of the Chinese navy should be limited and also subordinate to the development of land power (Yoshihara and Holmes 2008: 72).

In India, Rear-Admiral Raja Menon argues in *Maritime Strategy and Continental War* (1998) that historically, nations embroiled in continental wars have had poor maritime strategies. He bases his claim on analysis of histories of maritime strategy in continental wars and discussion of case studies of the American civil war, Indo-Pakistan wars, and the French experience, and contends that navies involved in such wars made unconvincing contributions to overall political objectives (Menon 1998: 48-61). However, this is open to argument since the Battle of the Nile, for example, not only halted the French move towards India but left a huge army stranded in Egypt. In *Asia Looks Seaward, Power and Maritime Strategy* (2008) Yoshihara and Holmes offer a first examination of the simultaneous rise of two Asian naval powers, China and India, and the potential impact that such a reconfiguration of oceanic power in Asia could have on long-term regional stability, noting that "Asia is headed toward an uncertain and potentially volatile future in the maritime arena". They believe that since Japan, China and India are dependent on seaborne commerce for their economic well-being they have clearly set their eyes on the high seas (Yoshihara and Holmes 2008: 70-145).

Closer to Oman, Iranian naval strategic thinking dates from the eight-year war between Iran and Iraq. Rear-Admiral (retired) Professor Ali-Asghar Kazemi¹⁶⁶ notes that “when unequal opponents face each other, the best move for the weaker side is to resort to a war of attrition and guerrilla operations”. His thinking was employed during the Tanker War (1984-1988) when Iran’s Revolutionary Guard employed an asymmetric naval tactic.¹⁶⁷

In summary, the notion of maritime strategy and doctrine as a fundamental aspect of military planning was first developed in writings by Sun Tzu, Clausewitz, and Jomini. In other nations the theory developed differently, with the arrival of Mahan, Colomb, and Corbett. Doctrines have traditionally evolved from the need to protect national interests and achieve national objectives. Maritime strategic concepts have also developed over time, building on historical lessons and strategic realities while absorbing the impact of technology, increasing knowledge, and changing societal values (Till 2009: 167). With its maritime legacy, Oman should exploit the benefit of history and consider a maritime doctrine as an important tool.

6.3. Understanding Strategy

Doctrine is the starting point from which solutions are developed and options assessed for specific demands. It provides the framework for an organisation’s operations (Scudder 2009: 1-15). Maritime doctrine provides a shared way of thinking and connects the naval commanders and the strategy, tactics, techniques and procedures they are following. This section reviews strategy and examines its importance in today’s globalised world.

6.3.1. Defining Strategy

Both ‘strategy’ in English and *istratijiyya* in Arabic come from the Greek *strategos*, meaning ‘commander’ (*stratos* = army; *agos* = leader). The American theorist, Milan Vego, suggests that the ancient Greek word refers to the forms and methods used in

¹⁶⁶ Ali-Asghar Kazemi is the author of a number of books including: *Legal Dimensions of the Prospects for Peace Between Iran and Iraq*, 1999; and *Legal Dimensions of Iran’s Sovereignty in the Persian Gulf*, 1988. For personal profile details see, <http://aakazemi.blogspot.co.uk/2005/12/ali-asghar-kazemi-profile.html>, accessed 26 April 2012.

¹⁶⁷ For details on Iran’s Modern Naval Strategy, see <http://www.fas.org/irp/agency/oni/iran-navy.pdf>, accessed 26 April 2012.

classical times by a *strategos* or army leader in exercising his leadership tasks (Vego 2007: I, 36-37). With the writings of Sun Tzu, Jomini and Clausewitz, strategy was defined and elaborated. Strategy as noted by Strachan (2011) is a “declaration of intent and an indication of the possible means required to fulfil that intent”. He further argues that once it moves beyond the near term, it “struggles to define what exactly it needs to do” (Strachan 2011: 1281).

The central premise of Jomini, the first to write about it in *Traité de grande tactique* in 1803, was that strategy was the key to warfare and was used exclusively by military forces. Until the nineteenth century, there had been no common agreement among strategists as to whether strategy was a component of the art of war, or both an art and a science (Paret 1986: 146).

Sun Tzu’s *Art of War*, written in China around 500 BC, was admired by Britain’s most prolific twentieth-century military writer, Basil Liddell Hart (1895-1970) (Baylis et al. 1987: 32), who defined strategy as the “art of distributing and applying military means to fulfil the policy ends” (UK MoD 2010: 6); it was this definition prompted the argument as to whether maritime strategy was an art or science (Till 2009: 41-2). Vego (2007) has attempted to clarify terms such as strategy and operations which, when loosely applied, cause some confusion among military and civilian historians even though strategy has been thought of throughout most of history as both the art and the science of warfare. Since strategy is the business of all who direct the different capabilities of military, commercial, government, or significant corporate bodies and organisations, the term is now widely used across civilian life as well, and in its daily use has been adopted exclusively to mean something that is important. Nevertheless, there is still a general understanding that to achieve the overall aim (at whatever level and in relation to whatever activity, whether governmental, business or military), strategy must consider, and in various ways employ, all the capacities of the organisations concerned.

In today's world the potential and relevance of strategy is great. Since it is versatile and encompasses many elements of theory and practice, it has also become widely used across the civil and military spectrum, with the intention being to combine all the available means in the most economic and efficient way to achieve the outcomes that are already set by the

policy. It is about the people and realising the vision for the future. Taking the example of Oman during its period as a sea-based empire, the sea was an avenue or highway to the world and was regarded as a medium through which to establish external contacts. Thus, maritime strategy is more than just a military term; it concerns both promotion and protection of national interests at sea. This is something that needs to be well understood by the policy- and decision-makers in Oman.

Strategy has evolved into the art of controlling and utilising the traditional instruments (diplomatic, military, economic) of a nation's power with the aim of effectively promoting and securing its vital interests (Anwar 1995: 9-11). It is evident that strategy can be described as a combination of science and art, in which the science is the means and the art is the way it is implemented. Noting that strategy is governed by flexible principles, Castex placed greater emphasis in situations on giving free play to the creative imagination and to the human spirit, ignoring Clausewitz's important suggestion that "war is neither art nor science". The German scholar Bernhardt offered a useful definition of strategy as "the art of leading troops to combat in a decisive direction and in the most favourable conditions" (Castex 1994: 6-22). But although the principles of strategy can be captured and codified as science, it will always remain an art in practice, since the complexities of today's world do not allow a set formula or a template for strategy. Planning and operating against an adversary, either alone or with others who may have different views and scope for action, becomes very difficult task, since a strategy that has worked in the past may not necessarily function in the future: therefore a situation may dictate changes to the strategy being used. This is why strategy, although a rational process, is more art than science. This view is shared by Hew Strachan who sees that strategy once it moves it struggles to define what exactly it needs to do (Strachan 2011: 1281).

In the military realm the object of a strategy is to force the enemy to accept the terms that the opponent intends to impose on him, meaning that the military strategist has the task of connecting military power to policy goals. There are numerous elements that influence and shape strategy, as well as factors that impact upon its implementation. Since all wars and conflicts are similar, strategy represents a guide and foundation, rooted in historically-based guesswork, to fulfil policy in an unforeseeable future (Strachan 2011: 1281-1283). It

is generally understood that the traditional conceptualization of sea power is the ability of states to control the seas and project power across the sea. This orthodox conceptualisation of sea power was the focal point of strategists like Mahan (Richards 2003; 2-8). However, its conceptual relationship to airpower and land power tends to suggest that it restricts itself to military forces on the open ocean (Till, 2009: 20-38).

To avoid ambiguity and broaden the understanding of security, modern strategic debate has increasingly begun to employ the concept of maritime power and strategy. Following Clausewitz's theoretical path, Corbett indicates that the sea is a substantial factor in a maritime strategy and that naval strategy is the part that determines the movements of the fleet (Corbett 2008: 1). However, for Oman, the present study should be concerned with the broader application inherent in the concept of maritime doctrine, which encompasses the use of maritime power in the pursuit of national interests and more specifically in the fulfilment of economic, military, and diplomatic objectives, which Oman can not afford to miss.

Maritime strategy shows how a nation uses its maritime power to enhance or secure its national interests through the use of diplomatic, economic and military strengths at sea as national strategic instruments (Anwar 1995: 9-11). So, it is the comprehensive direction of all aspects of national power to achieve national strategic goals by exercising some degree of control at sea (Australia MoD 2010: 199). Good strategy should not be limited in a military sense and focus on the positive use of the maritime domain,¹⁶⁸ for the purpose of gaining national interests. However, with the changing of the global security environment, it may include a range of maritime activities to deny or prevent the same purpose of the competitors. Hence, strategy in general is concerned more with the implementation of policy and doctrine.

Maritime strategy also enhances national sea power (Anwar 1995: 9-10), which in turn promotes and co-ordinates all aspects of maritime activity, both civilian and military, in order to optimize the use of the available resources (Till 2009: 21). It is used to develop and employ assets of national power in a synchronized and integrated manner to achieve

¹⁶⁸ The term **Maritime Domain** refers to the series of jurisdictional zones that surround the coast of a state. It includes territorial seas and exclusive economic zones (UK MoD 1999: 218).

the required objectives (art). In a military context, it is an overall plan to move to some desired goal in a threatening or conflict scenario. Its most critical attribute is that it is placed in the context of a given politico-military situation and within the ambit of an overall set of national aims (Anwar 1995: 9-11). It is also concerned with projection of power inland from the sea, in which case ‘littoral warfare’ (outlined in section 6.8.9 below) takes on a new meaning – carrier strikes, airborne helicopter attacks, missiles launched from sea assets, etc. It uses sea power to support national strategies and foreign policies; therefore developed states are in a better position to pursue maritime strategies because of their capabilities.

As clearly defined by Corbett, “by maritime strategy we mean the principles which govern a war in which the sea is a substantial factor” (Corbett 2008: 1). So, the main domain of maritime strategy is the sea, and the exponent of this strategy is the sea power (Anwar 1995: 9). However, a state’s maritime strategy, especially in the developing world, is directly affected by economic, political, and technological factors, events and conditions. For example, some countries are financially unable to purchase advanced capability weapons and in other cases are prevented from doing so by the prevailing political situation which does not allow them to do so.

The foregoing suggests that Oman’s maritime strategy should be placed before a desired outcome, shaped by national interests and by contingency, and should therefore drive the outcome of events to fit with the objectives of Oman’s national policy. But how does it fit into the domain of diplomacy and doctrine? The next section looks at the relationship between them.

6.3.2. Policy, Diplomacy, Doctrine and Strategy – the Connection

During the Cold War, doctrine had sufficient political impact to be regarded in strategic terms, but today, by virtue of its use of predominantly conventional means, it is seen largely as a professional military matter. The connection between policy, diplomacy, doctrine, and strategy is briefly examined here.

With regard to operational thinking, maritime strategists have devoted much attention to maritime power and strategy, and have discussed the relationship between concepts of

policy, diplomacy, doctrine, and strategy. These concepts are equally important when they are linked and work with each other, even though serving different purposes (Scudder 2009: 25-27). Although illustrated in Figure 6.1 below, it is important to highlight the difference between policy and strategy, while acknowledging that their interpretation and relationship may differ between nations, organizations and cultures (Scudder 2009: 25-27). Policy is fundamentally a political direction or activity given in pursuit of national or collective interests which strategy is then designed to achieve. Before designing a strategy to accomplish a goal, a policy has to be formulated and the designed strategy then takes over (Castex 1994: 205-248). It is often used to describe what to do (directives) (Scudder 2009: 26); therefore it should ordain the ends and indicate the broad parameters of the means – though not necessarily the ways.

Because policy contains many constraints that are imposed in the fulfilment of the goals, it determines the means available, i.e., time, money, and capabilities. The strategy then develops and integrates with the means to achieve policy objectives; ‘how to do it’. However, for a good workable strategy it must also include the ‘why’ and the ‘what with’. So, in its real sense, strategy can be described as the art and skills of applying the necessary means to achieve the desired objectives. Hence, it is true to say that there is no strategy without a policy that matches objectives with resources.

France’s Admiral Raoul Castex (1878-1968) proposed that policy and strategy were distinct elements and equally important servants and executors of the national will, and quoted Clausewitz’s saying that “war was a violent form of policy”. The German scholar Bernhardt looked at war differently, believing it to be the “extension of policy by other means” (Castex 1994: 26). Thus, on the basis of their thinking, strategy clearly returns to policy with interest, and when it is well-conducted, strategy contributes to the achievement of policy’s objectives (Castex 1994: 235).

Within the realm of strategy, there is always a complex relationship between doctrine and policy, with each influencing the other. In the Omani context, defence policy which represents the Sultan, Supreme Commander of the Sultan’s Armed Forces (SAF), denotes a considered response to the strategic environment, and is the principal source of direction

for the armed forces. Thus, Oman's maritime doctrine should underpin the development of national strategy. Without it, planners and decision makers in Oman would have to make decisions without a point of reference or guidance. Hence, doctrine will guide actions and provides the basis for mutual understanding within and among the services and the national policymakers (US MoD 1994: ii). Strategy, on the other hand, is an implementation of policy to achieve a desired goal.

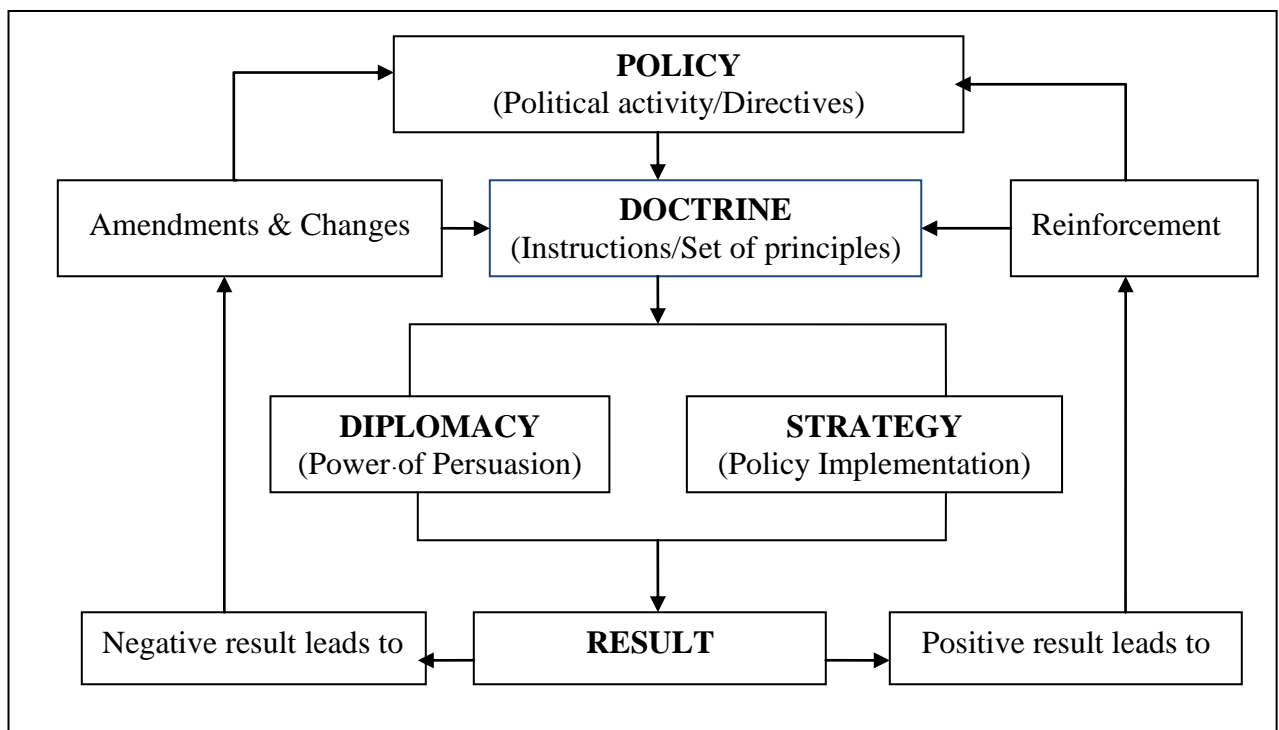
Within this context, joint doctrine establishes a link between the ends (what must be done) and the means (capabilities) by providing the ways (how) for joint forces to achieve military, strategic, and operational objectives in support of national strategic objectives (Scudder 2009: 25-27). While closely related, doctrine and policy fulfil fundamentally separate requirements. The RNO's *Policy and Directives* publication lays down roles and tasks that are assigned to naval forces and establishments. When RNO gets new ships, RNO policy directed by higher authority can create new roles and requirements for the new ships and capabilities that require regulations, or issue policies that describe the rules of application for particular resources.

Henry Kissinger defined diplomacy as "the art of settling disputes by negotiation" (Kissinger 1957: 203). It is the ability to persuade and convince an opponent without the use of military force. In most cases diplomacy works and can successfully de-escalate a situation. When it fails, however, it can sometimes leave no option but military action. In this regard, the US/West used Oman as mediator to help them achieve their strategy by delivering their messages to Iran (Chapter Five, section 5.3.2). Thus, diplomacy and strategy are complementary in many and varying circumstances and both are subordinate to politics, i.e., to the perception of the national interest by citizens or their leaders. But diplomacy is even more important in times of war since it creates the conditions for peace, maintains channels of communication with the opponent, and helps to gain allies or at least deprive the enemy of them.

Policy, diplomacy, doctrine, and strategy are distinct but equally important interlinked components (Scudder 2009: 25-27). Where doctrine evolves from government's policies, strategy is derived from doctrine. If a strategy produces success, it reinforces the doctrine, but if it leads to failure, the doctrine is accordingly modified to achieve the intended

interests and objectives. Strategy works in liaison with policy (Castex 1994: 228-235). Therefore, doctrine is the ideology that guides the development of policies that then regulate the application of laws in executing strategies. However, in practice, the process is cyclical and changes in one component will arguably affect the others.¹⁶⁹ When a situation demands a change in policy or strategy, this can lead to a change in doctrine and vice versa, while any change in doctrine can drive a change in strategy and maybe in policy (Scudder 2009: 29). Figure 6.1 illustrates this complex relation.

Figure 6.1: The Policy, Diplomacy, Doctrine and Strategy Cycle



Source: Till 2009: 47; and further comments by Till, 15 May 2012

¹⁶⁹ Interview with Professor Geoffrey Till (Contemporary British Maritime Strategist), correspondence, 15 May 2012.

6.4. Oman's National Security, Strategy and Doctrine

The following section looks at Oman's security and strategic policies and discusses the requirements for maritime forces to contribute to the implementation of military strategy, as well as the nature of that contribution. Regarding its national interest, Oman's first duty is to provide for the security and wellbeing of its citizens. Its responsibilities also include the protection and security of national sovereignty, both Oman's territory and its people. These responsibilities extend further to the support of national values and the development of social, environmental and economic prosperity. The relationship between National Strategy and Doctrine is indicated in Figure 6.2.

The SAF and the national security agencies provide the military capability of Oman's national power. Within the country's foreign and security policy, Oman's strategic environment may be defined as the changing context within which Oman exists and interacts with all nations of the world. This strategic relationship between Oman and others is a result of a wide range of constantly changing factors that include: geographic, economic, political and social (Australia MoD 2010: 39-43). Because of Oman's strategic position, it is possible to make judgments about the fundamental security challenges facing Oman, although assessments and courses of action relating to those challenges are inherently dynamic and must be reviewed constantly as situations demand (Oman MoD 2009: Chs 1-4).

The need for cooperative action is particularly relevant in the maritime context (Australia MoD: 39-44), where the free movement of shipping in Oman's maritime domain (including the Strait of Hormuz) between the world's trading blocs is vital to the effective functioning of the national, regional and global economy, yet is liable to suffer interference at any point on its passage (Kechichian 1995: 65-118). Therefore, because of their potential consequences, Oman's abiding vital strategic interests include but are not limited to:

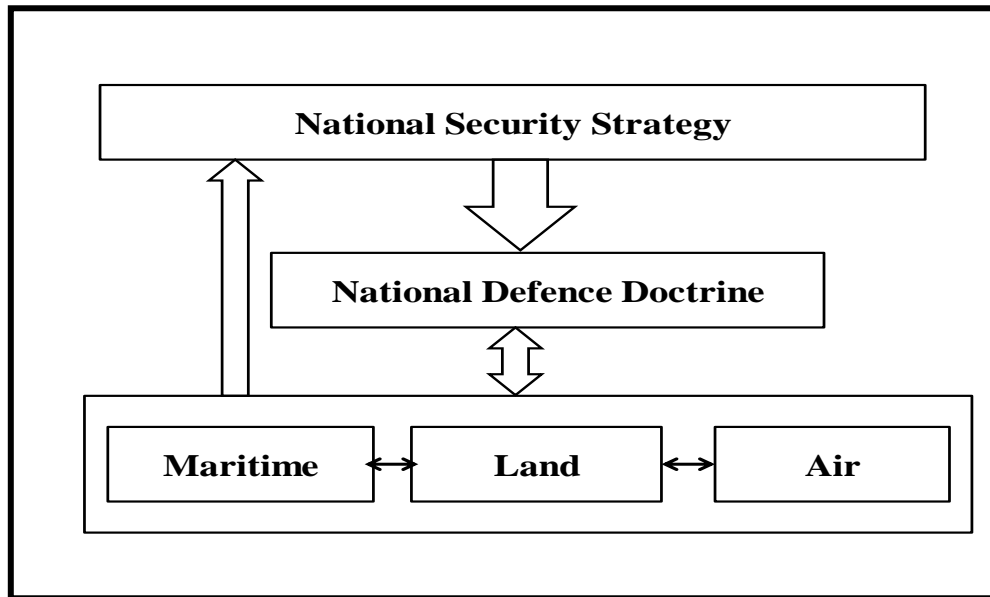
- Security of the country and the defence of its sovereignty against any threat;
- Security, stability and cohesion of the region and Oman's immediate neighbourhood;

- Strategic stability in the Arabian Gulf and the Indian Ocean region, since Oman has an enduring strategic interest in the stability of the wider Gulf-Indian Ocean region

As has been highlighted throughout this study, Oman's prime maritime interest is its national security and therefore it must take an active role in dealing with national, regional and global security challenges. This role should be based on international laws produced by the United Nations. Oman must meet its obligations under UNCLOS to take a global view on maritime security. To do so Oman must first address its national security and strategy. This can be achieved with close coordination between different ministries, ROPCG and the armed forces. Then Oman must also work within regional and international bodies that promote effective management of the marine environment (environmental protection, pollution control, fishery protection, order at sea and safe navigation).

Alliances such as the GCC and others play little or no part in framing a maritime doctrine. This is because Oman maintains its distance from other GCC members and is opposed to any overpowering influence that might result from the ambitions of any state for the GCC or for the region. A more important influence would be for Oman and major powers such as the United States to develop common ROEs between themselves, in the first instance over critical sea areas such as the Strait of Hormuz. Secondly, understandings should be arrived at with neighbouring powers, such as India, Pakistan and Iran, over the intentions behind Oman's maritime doctrine. When established, Oman's maritime doctrine will thus set out the framework of how Oman should direct and coordinate to best effect those of its assets involved with national security (Oman MoD 2009: Chs 1-4). Figure 6.2 illustrates the relationship between national strategy and doctrine, and shows that national security strategy is being impacted by maritime land and air influences.

Figure 6.2. The Relationship between National Strategy and Doctrine



6.5. Characteristics of Maritime Power and Sea Power

The following sections look briefly at the characteristics and attributes of maritime power and sea power, and outline the contribution (generic, regional, and with specific reference to Oman's conditions) which these elements can make to joint operations.

The sea has been a vital element in the security of a significant portion of mankind. It has become a means of transportation and trade, a resource and a source of economic wealth, and a medium of dominion and diplomacy (Till 2009: 35-37). For Oman, especially in the days of empire, the sea also had a political dimension, while economic and military dimensions have more recently become linked as the sea develops into a medium for technological development. As has been shown elsewhere in the study, Oman's relationship with the sea is defined by many physical, economic, political, military, and social factors that also show how the country's strategic maritime location and geography

are central to understanding its maritime history and how its maritime power was created and sustained.

Understanding the maritime environment is critical to the success of maritime operations, because maritime combat capability depends fundamentally upon the ability to access and analyse environmental knowledge (Australia MoD 2010: 99-113). The characteristics and attributes of maritime power and sea power, and the contribution (generic, regional, and with specific reference to Oman's conditions) which these elements can make to joint operations are also scrutinised. The mobility, flexibility and adaptability of warships, their access and reach, and their ability to remain calm, as well as the capacity of ships to transport a critical mass of combat power over long distances, provide many options for political and strategic decision-making across a wide range of contingencies (Till 2009: 355-356).

By their nature, maritime powers possess characteristics and attributes, including mobility of mass, reach, access, adaptability, flexibility, self-confidence and persistence, resilience, versatility, lift capacity, and readiness, to an extent and in combinations not necessarily present in other environments (Australia MoD 2010: 85). The importance of these attributes is discussed and/or assessed with respect to generic (i.e., any) maritime power, and to regional maritime powers (GCC countries and allies), and specifically with reference to Oman.

6.5.1. Regional Characteristics (GCC and the Allies)

The characteristics of the regional maritime powers of the Gulf Cooperation Council (GCC) countries combined with Oman's other allies, provide a significant maritime power capability for the regional security environment. The attributes described above constitute global and blue water maritime power capability. The maritime powers exercising power and concerned with the security of the region today are the US, the UK, and France, along with the six Arab states of the GCC whose maritime forces have mutual agreements (Long and Koch 1997: 75-132).

6.5.2. Oman's Specific Characteristic and Conditions

Maritime strategy reaffirms the use of sea power to influence actions and activities at sea and ashore for the purpose of national security and interests (Australia MoD 2010: 199). Oman's national security depends on its ability to preserve its sovereignty and territory, maintain both political and economic relations with the rest of the world on reasonable terms, and protect its environment from any disruption. The expeditionary nature and the versatility of Oman's maritime forces provide it with the advantage of enlarging or contracting its military footprint in areas where access is denied or limited (eg., deployments of SAF units in 1990-91 against Iraq over Kuwait) (Peterson 2007: 445-448).

Omani policy suggest that Oman has no ambitions to project military force beyond its own territories and maritime zones, except in terms of mutual defence assistance to the GCC states or to friends and allies on the basis of mutual defence agreements. However, there are environmental factors that are relevant in framing the maritime contribution to the strategic and military objectives of Oman. For instance, some of Oman's maritime borders are disconnected from the main land and extend to the Musandam peninsula (see Figure 1.2 in Chapter One), and isolated military/civil communities are reliant on maritime lines of communication for their support. Similarly Oman's position is at a maritime crossroads, and its maritime zones straddle the SLOC that are of global significance: e.g., the Strait of Hormuz, the Ras Al-Hadd Traffic Separation Scheme (see Chapter Five- Figure 5.3), and shipping routes along the Sea of Oman deep-water route.

Oman must also protect its strategic ports (Port Sohar, Port Salalah, Port Sultan Qaboos, and Port Al-Duqm, as well as Port Khasab for the resupply of Musandam). Similarly shipping, both national and international (when in Omani waters) need RNO's protection. RNO and other national agencies are also responsible for safeguarding Oman's offshore assets (offshore oil and gas fields, oil and gas exporting terminals, oil refineries, water desalination plants and other coastal industrial services). Vital national infrastructure, including industry, transport, communications and civil administration that are concentrated in coastal areas must also be taken into account. At the same time, Oman's sea area, which is almost twice that of the land mass, (although yet to be ascertained) contain some valuable resources that are critical to the current and future national economy

(Kelly 1980: 104), (see Chapter Four). Such responsibilities, both specified and implied, are the result of Oman's maritime heritage and its position as a leading regional maritime nation; activities to support them need a maritime doctrine.

As will be discussed in the next section, the maritime tasks required concerning national operations- the security of Oman's maritime borders involves the presence of RNO vessels which demonstrate their presence and their capabilities, which include operating in oceanic and shallow waters, performing exercises in early warning and surveillance, and displaying their in-built capacity to undertake appropriate responses during dynamic situations. Hence RNO has to enhance its competence as follows:

- Versatility and the ability to re-role to emergent tasks in stride;
- Readiness and sustainability and the ability to self-support on task for extended periods;
- Freedom of navigation and the ability to operate in all environmental conditions, and to establish a national footprint throughout Oman's maritime zones in pursuit of national foreign and security policy objectives;
- Enhancement of the national and multi-national inter-operability of both ships and personnel.

6.6. Maritime Operations and Tasks

This section briefly examines the many different ways in which maritime power and its forces can be used. It shows that the roles of maritime forces depend fundamentally upon their war-fighting capabilities, but also reveals the extent to which these capabilities confer on any nation the flexibility to advance the aims of national and foreign policy (Australia MoD 2010: 99).

In order to counter various threats to Oman's national interests, as well as to accomplish all its tasks, the RNO (along with SAF units and other national security agencies) has to carry out a number of operational tasks as discussed below. While the tasks are numerous, each operational situation will dictate which will need to be taken first (priority) and to what degree. Since the focus of the RNO's roles and objectives is to maintain the capability

required to defend Oman's sovereignty, the doctrine will play a vital role in matching strategy with tasks and capabilities.

6.6.1. Categories of Maritime Tasks

Maritime forces possess considerable utility in a wide range of situations in times of war and peace.(Australia MoD 2010: 99). Booth suggests that the roles of maritime forces in this context fall into one of three categories: military, diplomatic, and policing or constabulary (Booth 1977: 16). In discussing the RNO and Policing, Chapter Five explained the roles of RNO and how it uses the sea across the span of its maritime operations and tasks, giving specific guidance, as outlined here, on generic maritime operations that can be dealt with by all naval forces in general and the RNO in particular.

Although maritime operations are aimed against an adversary, it should be remembered that naval operations also include other maritime tasks, such as maintaining a presence at sea to deter a possible adversary, national and international law enforcement (order at sea), commerce protection (trade and shipping), defence of the coast and the maritime boundaries, reconnaissance and intelligence gathering. They can also support raids by Special Forces, and the landing and evacuation of troops, and civil communities (ie., emergency). Generic operations can include cover, interdiction of shipping, exclusion, operations in defence of shipping, barrier operations, screening, advance force operations, and protection of commercial activities (Australia MoD 2010: 99-113).

The sea can, of course, be utilised for the projection of power against the shore in a number of ways. Combat Operations from the Sea can cover amphibious operations, support for land operations, and shaping operations. Diplomatic operations represents a specific category, while Military Assistance to the Civil Community extends to such areas as disaster relief and evacuation, constabulary operations, and search and rescue, alongside protection of the environment and resources, peace operations, and countering illegal activities (UK MoD 2004: 57-66).

Assistance to the Civil Community differs from Military Aid to the Civil Power, being related simply to providing help in civil matters; it does not concern the enforcement of law and order. In some countries, such as the UK, the role of armed forces is to provide

specialist assistance in the form of military aid, categorised as follows (UK MoD 2004: 60-64):

- Military Aid to the Civil Community (MACC). In Oman this involved support during and after Cyclones Gonu (2007) and Phet (2010).
- Military Aid to the Civil Authority (MACA). The RNO assisted with patrolling the coast (near the City of Sport) during the Asian Beach Games held in Oman in December 2010.
- Military Aid to the Civil Powers (MACP). This would follow any breakdown of Law and Order (as occurred in Northern Ireland).

6.6.2. Conditions and Tasks Specific to Oman

Its military objectives (objective)¹⁷⁰ dictate that in order to deter any military aggression or interference, the RNO needs to be prepared to deliver a high-intensity maritime combat appearance for the defence of Oman, by demonstrating capability, intent, and readiness to defend borders, preserve sovereignty, and exert control over territorial waters and maritime zones. The non-military objectives exploit the combat and other specialist capabilities of the RNO in support of broader national objectives in peacetime. Unless specified, these objectives are not force-driven and, as a consequence of RNO's combat/maritime security capabilities, may include support of law, order, safety, and the civil administration. Its maritime tasks in protecting the national maritime interests include:

- Securing the maritime flank of land-based operations and preventing reinforcement or support of hostile activity within Omani maritime territory;
- Protecting the area of joint operation against air or surface threat;
- Protecting SLOC and port approaches;
- Protecting national coastal and offshore assets (oil and gas fields and terminals)

¹⁷⁰ **Objective** (Military); a “clearly defined and attainable goal for a military operation, for example seizing a terrain feature, neutralising an adversary’s force or capability, or achieving some other desired outcome that is essential to a commander’s plan and towards which the operation is directed” (Australia MoD 2010: 201).

Maritime security objectives use the combat and other specialist capabilities of the RNO in support of national security, achieving these through maritime security operations short of combat, in and throughout Oman's maritime zone (see Chapter Five, section 5.3). These activities include:

- Maritime surveillance;
- Ensuring freedom of navigation and promoting the legitimate exploitation of the sea and securing the maritime environment;
- Enforcing maritime traffic regulations;
- Providing support to the ROPCG and other national security agencies;
- Conducting counter-illegal activity;
- Providing naval support to maritime counter-terrorist operations, including the protection of offshore installations;
- Providing naval support to other national security operations of a specific military capability.

The fleet operational tasks required to meet the RNO's objectives include:

- Maritime Security Tasks;
- Contingency Operation and Emergency Tasks;
- Specialist and Occasional Tasks;

6.6.3. Priorities

The RNO maintains an ample capability to meet the requirements of the fleet operational tasks (section 6.6.2). Accepting that there will be competing needs for the fleet's resources it is not intended that the RNO will meet all tasks simultaneously. Subject to specific circumstances and conditions, allocation of resources will be prioritised as follows:

- Combat tasks and defence of sovereignty;
- Civil emergency and contingency;
- Maritime Security Operations (coordinated with national agencies);
- Standing Maritime Security Operations;
- Standing RNO specialist and support tasks;

- Occasional tasks as and when required.

6.6.4. Matching Strategy and Doctrine

Oman's foreign and security policy is built upon a doctrine of peaceful co-existence with all nations.¹⁷¹ Because of its physical location, situated in a geographical area of global significance, there is a need for Oman to maintain a strong maritime capability to support and underwrite its foreign and security policy and to maintain its sovereignty. This location brings both opportunities and risks to Oman. Hence, Oman's maritime policy, with RNO as its maritime power, makes a critical contribution to the co-ordination of the military and governmental/national agencies that ensure the defence and security of Oman. In its attempts to transform Oman into a modern, open, developed country that is both secure and prosperous, its maritime policies will be one of the major determinants of capability; the favourable reputation won during the Iran/Iraq War and tanker war indicates a large degree of success in this area.

As noted above, within its military strategic context, Oman has no ambitions to project power outside its territory. In support of foreign and security policy, the SAF, of which RNO is a constituent, provides deterrence and defence forces against threats to Oman's sovereignty, and if necessary, conducts operations to repel external aggression and restore sovereignty. In cooperation with other national agencies, the armed forces – though Oman lacks maritime doctrine – will take action against infiltration, trafficking, piracy, illegal resource exploitation and other illicit activity, in national waters,¹⁷² and throughout Oman's maritime zones.

6.6.5. Matching Tasks and Capabilities

The RNO's focus is to maintain the fleet to fulfil its roles and objectives in defence of Oman. Combat capability in time of conflict remains the primary objective of fleet training

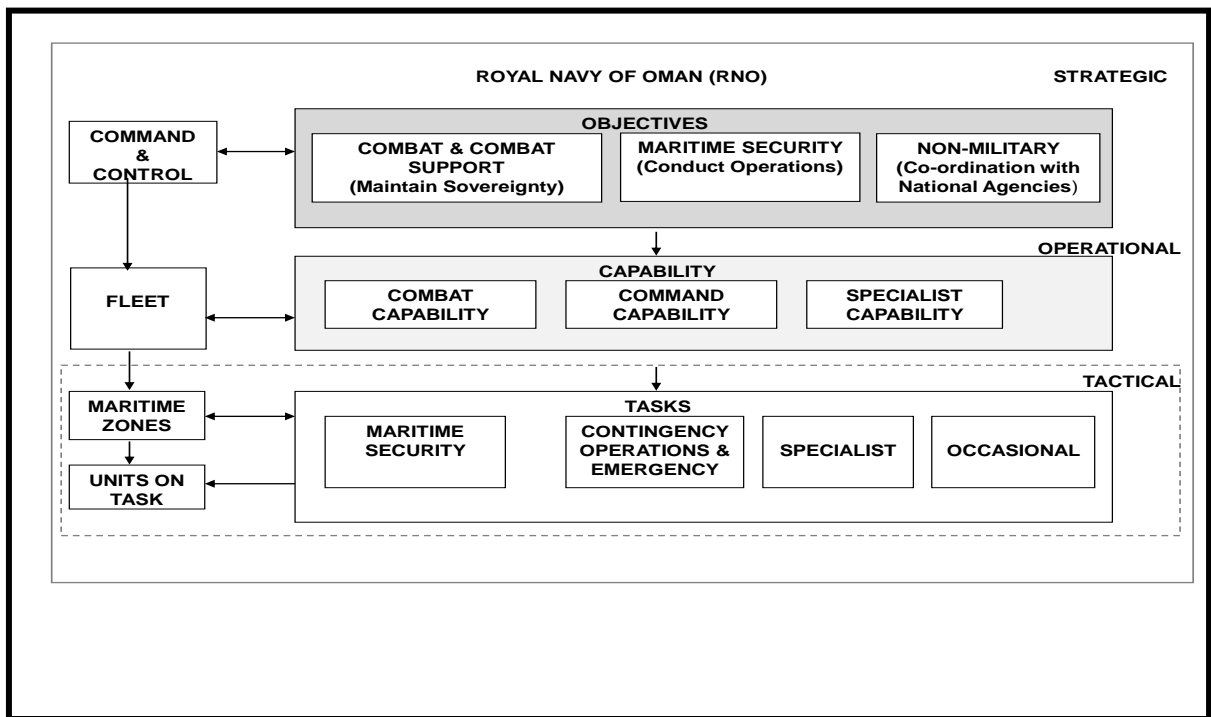
¹⁷¹ Interview with Ambassador Dr Mohammed Al-Busaidi, (Deputy Director General Diplomatic Institute, Ministry of Foreign Affairs, Muscat), 17 April 2011.

¹⁷² **National Waters**, which extend to no more than twelve nautical miles from the coast, are subject to the territorial sovereignty of coastal nations, but with certain navigational rights reserved to the international community. **International waters** are to seaward of territorial seas and include waters of the Contiguous Zones, EEZ, High Seas, and Continental Shelf. All nations enjoy the high seas, freedom of navigation, and over-flight within international waters (Oman MoD 2009:2-4).

and the basis for all fleet operational and tactical procedures. RNO's tasks and capabilities are illustrated in Figure 6.3.

Combat capability in peacetime is another aspect of maritime security operations and is a fundamental part of the RNO's role. As noted in Chapter Five: section 5.3 there is no agreed definition to the concept of 'Maritime Security', the RNO's objective of such operations is to deter aggression and illegal activity, and to contribute to the interdiction of and appropriate response to illegal activity. As discussed above, maritime security operations are conducted in accordance with legal rulings (national and international laws). Such tasks are carried out through continuous patrol, surveillance, and monitoring of maritime activity in Oman's area of responsibility, which includes Oman's Territorial Waters and the contiguous area, and the EEZ that extends to 200 nautical miles offshore. As will be shown all tasks and operation are carried in accordance with both national and international laws.

Figure 6.3. The RNO's Tasks and Capabilities



Source: Information based on Oman MoD, 2009

6.7. The Legal Context

This section briefly looks at the relationship between maritime roles, operation and tasks and the laws (national and international) governing military operations, illustrates the extent of Oman's maritime jurisdiction and the complexities inherent to maritime regions, and introduces the general principles of the Law of Armed Conflict and Naval Warfare.

The SAF operates in accordance with both national international laws that set out its status and obligations, and govern its use of force. In addition the RNO operates within an increasingly complex legal framework, directly related to the features of its maritime geography and environment in which Oman is set. Oman strongly believes on diplomacy and relies heavily upon international law to resolve tension between states or conflict situation. Economic interdependence and the free flow of global trade produce good outcomes for all states, and hence help promote peaceful relations among them (Australia MoD 2010: 31-34). Disruptions to the global economy and trade bring the opposite effect and increase the potential for dispute and conflict. Thus, good order at sea is of paramount importance to Oman, as for the global community. National laws from which RNO and SAF units work on are issued by higher authority, including the Sultan's Regulations for the Armed Forces, Ministry of Defence Instructions (MODI), Sultan's Armed Forces Instructions (SAFI).

Oman is also a signatory to all United Nation Conventions on Law of the Sea, including UNCLOS I (1958), UNCLOS II (1960), and UNCLOS III (1973-1982).¹⁷³ These conventions have been produced as a constituent part of the peaceful cooperation of all countries (Gorshkov 1979: 46). Figure 6.4 shows a section of Oman's maritime zones and boundaries. Counterbalancing the adoption of distended national jurisdictions toward the seas, these UN Conventions established three important regimes in securing the freedom of navigation (UK MoD 2004: 249-264).

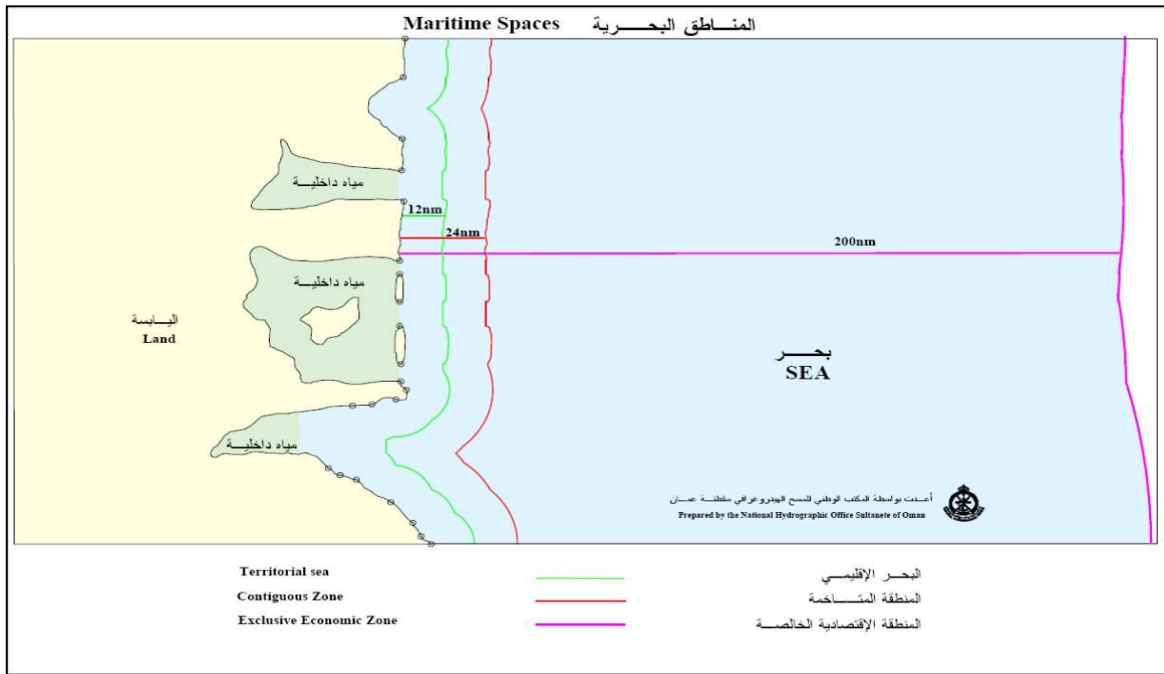
- Innocent Passage, through territorial waters.

¹⁷³ UNCLOS III came into force on 16 November 1994 (Australia MoD 2010: 33).

- Transit Passage, through international straits.
- Archipelagic Sea-Lanes Passage, through archipelagos.

Both national and International Laws, give Oman (MoD, SAF, Ministry of Foreign Affairs) the rights to make orders and laws with respect to the military defence of Oman and also with due regard to the international community. For example the *RNO Policy Directive* provides essential guidance and advice on which RNO conducts its operations at and from the sea.

Figure 6.4: Maritime Zones and Boundaries



Source: Oman's National Hydrographic Office, 2011

6.7.1. Law of Armed Conflict: General Principles

The power of persuasion or what can be described as *diplomacy* mostly works but often fails. When it does, it permits tension to escalate which will then ignite war. All of these are simply the outcome of failed diplomacy.

In recognition of the fact that armed conflicts cannot be avoided, a body of international law has developed with the aim of regulating the conducting of hostilities (Australian MoD 2010:33). Such law has been commonly referred to as Hague Law and Geneva Law (Dinstein 2004: 78). Hague Law provides regulation with respect to the means and methods of warfare; it is also contained within a series of Hague Conventions and in several others (Dinstein 2004: 1-26).

The Law of International Armed Conflict “is predicated on a subtle equilibrium between two diametrically opposed impulses: military necessity and humanitarian considerations” (Dinstein 2004: 16). General principles to be taken into account include Distinction, Proportionality, Necessity, Humanity, Strategic Targets, Operational Targets, Tactical Targets (MoD 2004: Ch 9). Thus the Law of Armed Conflict only permits attack on objectives of military importance and requires that civilians and civilian objects are spared as far as possible from the effects of war (ibid). In speaking of “the conduct of lawful targeting” Dinstein further notes that this is based on four fundamental principles (Dinstein 2004: 16-112).

6.7.2. The Law of Naval Warfare

This law regulates the conduct of naval warfare at sea and is a subset of the Law of Armed Conflict (Australian MoD 2010:36). The rules that govern conflict operations at sea may be found in various Hague Conventions, the four 1949 Geneva Conventions and the Geneva Additional Protocol 1 for 1977 (Roberts and Guelff 1982: 481-513). They are mostly intuitive since they reflect customary international law. A relevant document that pertains to international law can be found in the 1994 San Remo Manual (Australian MoD 2010:36) on International Law Applicable to Armed Conflict at Sea (Ibid: 573-607).

6.7.3. Rules Of Engagement

Rules Of Engagement (ROE) represent guidance for operational commands and delineate the constraints and possible freedoms in the application of force. The necessity of having ROEs readily available and agreed by government before a situation occurs, is to achieve military objectives for the furtherance of a state’s policy (UK MoD 2004: 288). ROEs are

influenced by established and internationally recognized norms of behaviour and “naval customs”. It is important that the Law of Armed Conflict is differentiated from the ROEs that are issued by a state and that can be altered at will (Dinstein 2004: 4). Politically directed, the ROEs will determine the posture of the Task Force (TF). The Commander of the Task Force (CTF) will have an important role in applying and, if necessary, seeking amended ROEs. Although the right of self defence remains the implicit prerogative of every Commanding Officer or individual Commander, they are not permitted to exceed these levels of delegation without higher command approval. The next section briefly looks at the development of strategic theory and its relevance for maritime warfare today.

6.8. General Maritime Strategic Concepts

Maritime forces and naval forces are two interlinked concepts and serve the same purpose. In other words, the difference between them is that maritime forces encompass both military and civilian assets, whereas naval forces include military units only. The attributes of maritime forces described above in Section 6.6 are also to be noted. The following sections look briefly at the generic concepts, while their relevance to modern warfare is further outlined.

6.8.1 *Maritime Power and Sea Power*

The notion of ‘maritime power’ has inspired some ingenious thinking among strategists. Maritime power is a political and economic term that demonstrates an ability to use the sea by employing maritime strategy, which is itself defined as “the comprehensive direction of all aspects of national power to achieve national strategic goals by exercising some degree of control at sea” (Australia MoD 2010: 201). The concept of ‘maritime power’ (which includes seaborne, air and land forces operating at or from the sea with the unifying factor) has traditionally been used to control sea communications for the benefit of the trade and economic well-being of a state (UK MoD 2004: 41-57). So, its objective is to guarantee freedom of use of the sea, especially that part that is fundamental to national sovereignty. When this sea area is properly controlled and managed (using maritime doctrine), it allows for the passage of goods and people. It will also allow for exploration and exploitation of

offshore resources. In this sense, as has been noted in Chapter Five, Figure 5.1, navies have historically been regarded as able to exercise a trinity of functions – military, diplomatic and policing – to achieve the objectives of national security policy; together these functions constitute the exercise of naval power by the nation.

Mahan's definition of 'sea power' involved six broad strategic elements, including geographical position, physical conformation, extent of territory, population numbers, national character, and nature of the government (Mahan 1987: 29-58). In Mahan's view, these characteristics determined the ability of nation states to develop and successfully employ sea power. Corbett always said that the real point of sea power was not so much what happened at sea, "but how that influenced the outcome of events on land" (Till 2009: 22).

The subject definition of sea power was concluded by Till noting that "the capacity to influence the behaviour of other people comes with what one does at, or from, the sea" (Yoshihara and Holmes 2008: 8). Sea power is not synonymous with naval warfare but is the ability to use the seas for commercial and military purposes. It identifies an instrument of state policy for maritime activities and military operations, which is something that Oman needs to understand. Hence, the concept of sea power can be seen as the performance of comprehensive national power at sea, including protection of maritime trade and utilization of offshore resources, the use of navies in wartime, and peace time (Gray 1992: 3-7). Clearly defined in the Australian maritime doctrine, sea power is "the sum of all physical, demographic, geographic, economic, and military resources that are derived from, or related to, the sea and that are used by a nation to advance its national interests" (Australia MoD 2010: 206).

Mahan's view of sea power showed that naval power (i.e., military) and maritime power (military and civilian) were the two essential elements making up real sea power (Richards 2003: 2-8). These power elements were sustained by three essential support elements. The first was the industrial potential that would allow a country to trade; the second included maritime trade and the shipping to carry that trade; and the third element was the naval bases and naval ships to protect the country's interests (Mahan 1987: 28-58) (and see

Chapters Two, Three and Four. For a Sea Power Model developed from the thinking of both Mahan and Till, see Figure 6.5).

Figure 6.5. Sea Power Model



Source: Information based on Till 2009: 21, 84

6.8.2. *Naval Power and Command of the Sea*

Naval power has been a feature of warfare and can be simply described as the projection of force by navies (Till 2009: 263-264). However, a maritime nation with effective maritime power may aim to protect its maritime interests by this means though it will also endeavour to damage those of its adversaries. Although it is a relative concept, Command of the Sea allows maritime nations to adapt their strategies and doctrine, either by projecting their military power overseas or preventing their adversaries from doing otherwise. However, command of the sea seems to yield to sea control. During the Cold War, analysts concluded that because of political and commercial developments, it was difficult to secure high degrees of command of the sea (Till 2009: 151).

6.8.3. *Sea Control and Sea Denial*

The definition of Sea Control implies the meaning to control that expanse of sea through which a naval task force is transiting. It is a moveable point and can be limited in place and time with the required extent being determined by the desired task. The concept must include the air space above, the water itself, the seabed and the electro-magnetic spectrum (UK MoD 1999: 232).

‘Sea Denial’ is a term related to sea control, and ranges from the maintenance of a blockade of enemy forces, to the operation of Exclusion Zones.¹⁷⁴ This can take many forms, such as maintaining a blockade of enemy forces, operating exclusion zones, and campaigning against an adversary’s trade or logistics systems (UK MoD 1999: 35).

6.8.4. *Battle-Space Dominance and Force in Being*

The developments of warfare and technology advance of ships and aircraft have led to the gradual integration of all combat elements of sea, land and air to achieve the Battle Space Dominance. This involves control over the environs of the entire battle space – surface,

¹⁷⁴ **Exclusion Zone.** A zone declared by a military force or nation, the entering of which zone by forces of a potential enemy would be regarded as hostile intent or a hostile act. The zone may be moving or stationary and may include airspace above it (Australia MoD 2010: 193).

sub-surface, air, land, information environment, and the electromagnetic spectrum (UK MoD 1999: 35).

Another concept related to Sea Control and Sea Denial is that of the Force in Being (previously known as Fleet in Being). This refers to the way in which a weaker power, by forcing a stronger power to divert valuable resources to contain it, has the advantage of avoiding a head-on confrontation with the stronger power; i.e., the Force in Being (UK MoD 1999: 36-37). Thus a force in being can compel the enemy to unfavourable course of action to him. Here, an example from World War II was the German battleship *Tirpitz* which, while based in Norway, forced convoys to and from the UK and Russia to move under heavy guard by surface combatants that included heavy fleet units. Simply by being there, *Tirpitz* very effectively tied down significant numbers of allied forces (Till 2009: 175-177, 259).

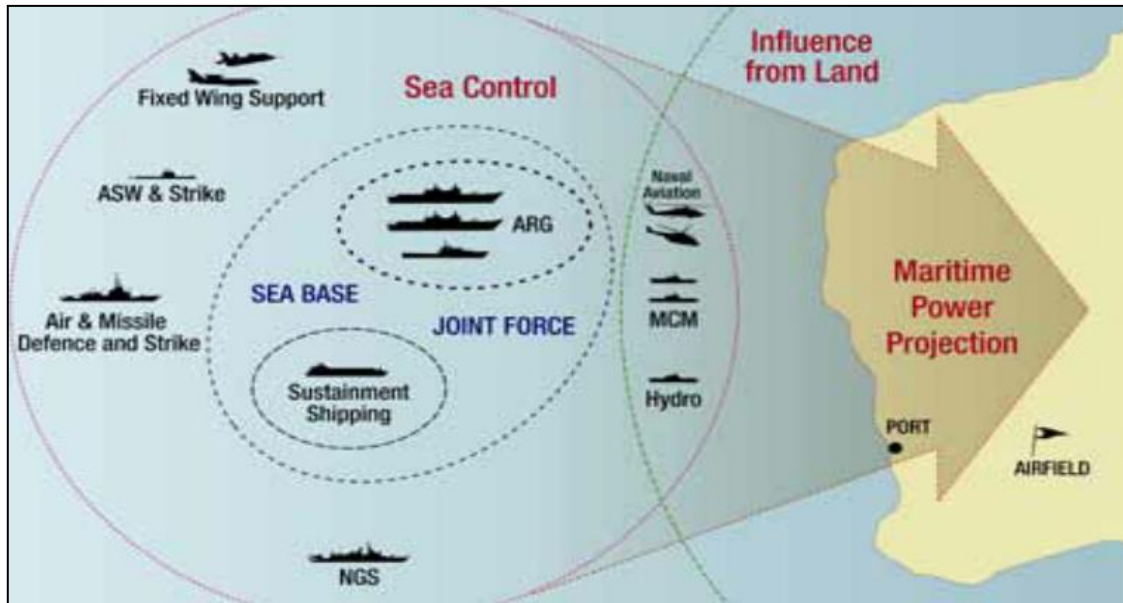
6.8.5. *Sea Lines of Communication*

The maritime highway, alternatively known as the Sea Lines of Communication (SLOC), can be defined as the most efficient and navigable route taken by a ship to transit a passage at economical speed, taking into consideration the timely delivery of its cargo. Militarily it can also refer to the maritime supply routes between operational forces and their supporting bases (Australia MoD 2010: 205).

6.8.6. *Maritime Power Projection*

The delivery of force from the sea is defined as ‘Maritime Power Projection’ and can take the form of the landing of amphibious or Special Forces, or the delivery of sea-borne land forces, or bombardment from vessels at sea. This concept involves the use of seaborne military forces directly to influence events on land (UK MoD 2004: 272). Figure 6.6 illustrates the concept and the forces involved.

Figure 6.6: Maritime Power Projection



Source: Australia MoD 2010

6.8.7. Maritime Strategy and Modern Warfare

The characteristics of modern naval wars have changed the boundary between strategy and tactics to the benefit of the tactics, thereby clarifying the ambiguity of the earlier distinction (Castex 1994: 11). The application of strategic manoeuvre remains relevant to modern naval warfare and has been used in a modified form as a tenet of the approach of most blue water navies to warfare (Australia MoD 2000: 29-47). Given the other inherent characteristics of sea power described in section 6.6, particularly its mass mobility, increased reach means that naval forces have a greater utility in a wide range of situations.

6.8.8. Grand Strategy or National Strategy and Diplomatic Effort

Grand strategy or national strategy has defined its role according to the context identified by Liddell Hart, who observed that the role of grand strategy was to coordinate and direct resources to achieve the political objective of the war (UK MoD 2010: 6). According to Hew Strachan, national strategies tend to look at least ten years ahead. The period taken in

his though may indicate the normal procurement cycle for most defence equipment (Strachan 2011: 1281).

In his theory of war, Corbett considered that diplomatic effort represented a key role for naval forces in limited conflicts (Corbett 2008: 11-30). Today this appears no less relevant for a strategic environment in which international tensions and unrest are rarely far from the surface. Despite the fact that the RNO has acquired some Ocean Patrol Vessels (OPV), it is still far away from what Edward Luttwak described as an “oceanic navy”. It is not without a fleet train for support operations (i.e., replenishment at sea) as OPV are still limited to endurance and magazine capacity (less than a month). Luttwak notes in *The Political Uses of Sea Power* that the familiar attributes of an oceanic navy are inherent mobility, tactical flexibility, and a wide geographic reach that renders it peculiarly useful as an instrument of policy, even in the absence of hostilities.

From its inception and development during the 1970s, the RNO has to an extent applied Luttwak’s theory by including overseas visits, attending exercises, and participating in international naval reviews and defence exhibitions. Sea power has important characteristics that include Visibility, Flexibility and Mobility. In a diplomatic sense this equates to ‘showing the flag’, since with sea power a nation can demonstrate its strength in either a reassuring or a threatening manner. Cable called this ‘naval suasion’ or ‘constabulary duties’ (see Chapter Five on the RNO and Policing).

6.8.9. Support for Littoral Warfare and Protection of Commerce

As simply defined by the British maritime doctrine, the ‘Littoral’ region is “coastal sea areas and the portion of the land susceptible to influence or support from the sea” (UK MoD 1999: 216). The post-Cold War international context has driven most military policy towards joint and global expeditionary warfare (Till 2004: 66), while military technology has greatly enhanced the ability to achieve maritime power projection on land (Till 1994: 186). Therefore, with the Revolution in Military Affairs (RMA) the concept of Littoral has become relevant and not absolute. For example, the littoral region being influenced depends on the capability being used (ie., a US warship can influence or support operations further in land than can any other warships of similar class from another navy).

6.8.10. Naval Diplomacy and Naval Resolve

Despite the fact that naval diplomacy is an old concept, it has not been fully covered by maritime strategists, though all have pointed out that maritime strategy and the use of naval forces should be appropriate to an overall national strategy and for the achievement by a country's leaders of their hoped-for political purpose (Till 2009: 253).

The Omani example of the naval diplomacy (during the time of the Omani empire) was the built of a warship *A'Sultanah* that first sailed to New York in 1840, to deliver the first Arab ambassador to America and then to London in 1842. With this behaviour, Oman became noticed by world's great powers at that time and Sultan *Said* quickly realised that there was no point in having a ship unless it was drawn to the attention of the people whose opinion he sought to influence (Till 2009: 258-260).

After the events of 11 September 2001 (9/11), the US and the West considered it necessary to define a new framework within which to analyse the political use of naval power in the twenty-first century and consequently, to identify a new agenda for naval diplomacy. Taking inspiration from Luttwak's theory to explain a wider naval diplomacy agenda, this new structure included the two concepts of political use of naval forces that were exploited mainly during the post-Cold War era. One of these concepts is the definitive use of military force, borrowed from Cable's theory; the second is anticipatory self-defence or pre-emption.

Since the future of modern Western armed forces is aimed towards *Effects-Based Operations*,¹⁷⁵ the objectives will be to try and coordinate the activity of all national power elements (political, economic, and military) to achieve the desired goal (UK MoD 2004: 203). As Luttwak suggests, Naval Resolve means that the political use of naval forces can be indirect (Luttwak 1974: 3), i.e., based on the reaction that such use has on the target, although even a well-considered course of action will assist the attempt to achieve the required strategic results. According to this perspective, the navy represents the most

¹⁷⁵ **Effects-Based Operations** are operations designed to influence the will of an adversary, own forces or neutrals, through the co-ordinated application of military capability in order to achieve the desired Strategic objectives (UK MoD 2004: 254).

suitable tool for achieving those goals, by embedding both political (diplomatic) and military elements within itself.

Having considered the maritime strategic concepts and their relevance to today's naval warfare, the next section will briefly examine the elements of sea power.

6.9. Elements of Sea Power

Figure 6.5 above shows that, sea power is the product of interconnected constituents that are difficult to tease apart (Anwar 1995: 19). As this section indicates, these constituents are attributes of countries that make it easier or harder for them to be strong at sea and utilise its benefits. As noted by Mahan, elements of sea power (see section 6.8.1) encompass the sum of all physical, demographic, geographic, economic and military resources derived from the sea or related to the sea (Mahan 1987: 29-58).

Overall, if sea power is to be defined as the capacity to influence behaviour on land from the sea, then these elements must be developed, managed and exploited. The question is whether these elements call for a unifying body (doctrine) to coordinate and maximise their outcome?

6.10. Conclusion

Historically, maritime strategists have devoted considerable time to thinking about and contributing to the development of doctrinal themes and concepts of maritime strategy; their theories are very relevant to modern warfare, and particularly to naval strategy. However, for today's more capable navies, the value of these theories lies in the attempt to define the relationship between a navy and its nation. Navies of different capabilities, along with technological change and doctrine, have clearly influenced the tactical and operational applications of sea power. Although sea power continues to be a relevant concept in military doctrine, the most expeditious way to achieve it remains through sea control, which requires greater capability than do normal forms of maritime operations (Till 2009: 56-63).

This chapter has outlined the generic maritime concepts of how and why maritime forces are employed to support a state's initiatives. Despite their diversity and differences, the strategy of all navies is aimed at using the sea to enhance sovereignty and preserve maritime interests (Richards 2003: 1-2). They seek to employ sufficient naval assets and capabilities to achieve and secure the required aims and objectives. The maritime strategy of navies is centred on force projections, and diplomatic, constabulary and military functions, a strategy originating in the concepts of classical naval strategists, notably Mahan and Corbett, and more recently Till and Grove.

Oman's maritime strategic requirements are more closely tied to concepts of sea control, sea denial than to maritime power projection. The country's location and the maritime geography of its territory (Musandam, Strait of Hormuz) make it fundamentally dependent upon the sea for trade and the well-being of its people. Therefore it is control rather than denial that weighs more closely upon Oman's situation. However, because of the policy Oman is following (diplomacy, defence agreements etc) and the capability of its navy, while denial retains a place, sea control operations with other GCC states and allies ensure that Oman's response options are not constrained and that they will be needed whenever the country's national interests are threatened.

Recent strategic assessments of the situation in the region, particularly with reference to the Strait of Hormuz and piracy, have recognised this reality, as well as the need for Oman to maintain credibility in projecting military power within its operational environment. Oman has therefore to improve its armed forces' amphibious capability, sea lift (Musandam and Islands), and offshore sustainment capabilities. The wider region includes a number of nations with significant surface, sub-surface, air, and electronic warfare capability (India, Iran and Pakistan), and it would be unwise to assume that the preconditions for sea control will exist regardless of the strategic situation.

While Oman may adopt and benefit from exercises with US and Western navies (mainly UK and France), and the navies of India, Pakistan and the GCC states, Oman must maintain the capability to protect its maritime domain, and maintain its sea control and its sea denial capability – independently. In this regard, therefore, a maritime doctrine is an essential national requirement.

CHAPTER SEVEN

CONCLUSION

7.1. Introduction

Oman occupies a strategic position in regional geopolitics, with its interests and concerns spanning the regions of the Arabian Gulf, the Arabian Sea and the Indian Ocean. Its long coastline and extended Exclusive Economic Zone (EEZ) means that its national security must be achieved through close coordination between different government agencies, the Sultan's Armed Forces (SAF), the Royal Oman Police Coast Guard (ROPCG) and national security agencies. Key to this is the compilation and dissemination of the Recognised Maritime Picture (RMP),¹⁷⁶ the prioritisation of tasks and activities, coordination of intervention actions, and devoting sufficient resources.

Over 95 percent of global trade moves by sea (Till 2009: 26). Oman's growing economy is connected to the global economy and hence is reliant on secure access to the world's shipping routes and ports. Hydrocarbons (oil and gas) form the major part of Oman's export trade, while cars, industrial equipment and food make up the bulk of the imported and raw materials for processing and re-export. The threats and challenges to Oman's maritime security are increasingly trans-national (Chapter Five-section 5, 8). Therefore it is important to develop strong links between Oman's national and security agencies as well as those of other states (regional and international) that are engaged in defence, fisheries management, pollution control, sea safety and vessel traffic management. This approach requires engagement with such organisations through the development of a maritime doctrine.

Within Oman, there are several different Ministries that have various responsibilities for exploiting or protecting Oman's maritime interests such as: Transportation and

¹⁷⁶ **Recognized Maritime Picture (RMP).** The fullest achievable agreed level of identification and tracking of all surface and sub-surface contacts in the area of interest. The RMP is normally associated with the Recognised Air Picture (RAP) of the same area. (UK MoD 2004: 287).

Communications, Agriculture and Fisheries Wealth, Oil and Gas, Commerce and Industry, Environment and Climatic Affairs, and the Ministry of Defence (MoD), together with the ROPCG and national security agencies. Through development of a maritime doctrine, all these bodies would be encouraged to develop a common understanding of the diverse threats and challenges that Oman is facing, and to coordinate a closer integration so that all their activities will contribute to national security and development. The doctrine will form an integrated civil-military approach to ensure that Oman has the essential situational awareness to aid planning, decision making, and effective responses to the emerging challenges. Based on legal obligations (national, regional and international), and with a collective approach, the use of protection and security measures where necessary, Oman can develop strong, balanced and flexible capabilities that enable the decision makers to know what is happening within Oman's maritime domain, and how to influence it.

The objective of this first ever study of Oman's maritime doctrine is to examine the value and application of doctrine to Oman, and set out how Oman can address and manage the challenges and threats to national security within the maritime domain, in order to safeguard the nation, its citizens, its prosperity, and way of life.

7.2. Findings

Through interviews and other research activities, such as reviewing and analyzing available literature and documents concerning doctrine, this thesis has argued that national security entails more than the traditional view of defending the nation from invasion by other states; it includes threats to individual citizens, the traditional way of life, and the integrity and interests of the state. A key part of Oman's national security is the ability to ensure that the maritime natural resources, interests, and commercial activities within Oman's waters and the EEZ are secured and protected, in order to make sustainable wealth available for the exclusive benefit of Oman and its people. Hence the conclusions resulting from this study of Oman's maritime doctrine provide some insight into the organization and operation of the national and security agencies and stakeholders. These conclusions reveal an essential need for an overarching body and for expression of that doctrine as a codification of principles and procedures.

There are thirteen conclusions to consider before addressing the recommendations:

The first conclusion is that the big picture, as illustrated in Figure 1.1, indicates that an essential element is missing from the national maritime security strategy – Oman’s Maritime Doctrine. From a military perspective this is explained as follows; the armed forces are placed at the bottom since their role is to serve the nation state and they work under direction in response to national policy, whether economic or otherwise. The national security services provide Oman with its domestic/internal security, for which the Sultan’s Armed Forces (SAF) supply components for required tasks, such as counter piracy and counter illegal fishing, as well as public order duties, while the RNO patrols as directed by the higher authorities. Thus, when national interests are considered, the procurement of equipment, for instance, should not only be for war fighting but in line with other key national requirement.

It is argued, for example, that Oman has sufficient fighter aircraft to defend its modern installations and its airspace, but currently (2012) lacks capable Maritime Patrol Aircraft (MPA) able to carry out effective surveillance and assist in enforcing maritime security, particularly in the coastal areas and the vast expanses of the EEZ. Hence MPA should be regarded as a key national requirement, above the need for additional fighters for a country with a defensive posture and whose maritime wealth generation is fundamental to its future growth.

This significant shortfall suggests that once overall national security policies, strategies and related maritime policies are worked out and in place, the MoD and SAF can then formulate their Territorial, Air, and Maritime defence doctrines. This, as Figure 1.1 in Chapter One indicates, will also affect other ministries and how they formulate their policies/strategies. The national viewpoint as to who directs, who sets the roles and missions, and therefore how capability should be procured and delivered, will be resolved. If Oman had a concise maritime doctrine then it would not be in its present condition, i.e., having inadequate capabilities to provide protection to its sea areas and its maritime interests.

The second is that the significant relevance of maritime trade and shipping to Oman cannot be over-emphasised. These national interests have been important throughout Oman's history and today are even more demanding. Leaving aside their historical evolution and current structure of geographical clusters (Nawaz 2004: 11-22), maritime trade and the shipping industry are seen to be composed of a wide range of organizations and activities that can benefit Oman's national economy (all aspects of which are under-exploited by Oman). It is known that maritime industry is an essential part of Oman's maritime interests, and thus demands innovation and good management systems to ensure its efficient exploitation and long-term sustainability. The implementation of national and international regulations to address maritime issues is significant for supporting and sustaining a healthy and productive environment. This conclusion also notes that maritime industry as a whole is of crucial importance to developing societies (Nawaz 2004: 1-9), such as Oman. However, and due to the absence of a maritime policy which is underwritten by a doctrine, the government has, until relatively recently, had a limited perception and appreciation of the influence of this sector as an essential element in terms of social, economic and security calculations and development. Integration into the world economy is fundamental to Oman's economic development, since in an age of globalisation, economies have become increasingly dependent on international trade (Till 2009: 26). Oman is not exploiting these opportunities to seek new advantages, and needs to engage more forcefully.

Third, the sea is significant for Oman in providing an efficient and cost-effective means of transportation – hence the role of Oman's maritime industry is crucial in supporting the growth of its national trade and national security. However, despite such reliance on maritime trade, Oman's investment in the modern shipping industry and related activities started relatively late, and the sea in this aspect is under-exploited. Most of the country's maritime trade came through Port Sultan Qaboos in Muscat, until the opening of Port Salalah in 1998, and the establishment of the Oman Shipping Company (OSC) and the National Ferries Company (NFC) in 2003 and 2006 respectively. A major finding in this study concludes that Oman's maritime trade and shipping industry are not aligned and are without synergy. The fact that there is no declared maritime policy issued by the government to encourage the establishment of a merchant navy or to reinforce the work of

the OSC in promoting national trade indicates that it will be unable to meet the potential future demands of trade. To avoid financial constraints and the capital-intensive nature of the maritime industry, the government has not been fully engaged, nor has it encouraged the private sector to share the load.

The fourth conclusion is that without a national maritime policy and doctrine there is little coordination or participation between national agencies and stakeholders, and as some observers have stated, demand for port developments is a long process and for all sorts of reasons may not be approved. This means that progress in the maritime industry and related activities is slow and often ineffective. With the absence of a maritime doctrine, the synergy and coordination between relevant ministries, national agencies, and the private sector is missing. The Ministry of Transport and Communications focuses only on general maritime affairs and considers neither the wider picture of national interests nor the requirements of a national merchant navy or maritime transportation system. Yet these are essential national assets that are needed in peace and war. They are important factors in the development of maritime policy, and they interact with each other and with the government to establish a balance between developing and conserving offshore resources, ensuring that the Omani public enjoys the multiple benefits of its maritime riches. At present that interaction is not regulated by a coordinated policy, which leads to inefficiencies in the system.

Fifth, for the benefit of Oman's national security, a developed national merchant navy (see section 7.3) would reduce dependency on foreign carriers that may be unable to guarantee continuous shipments in situations of desperate need or heightened tension. This is especially relevant in the case of Oman: although the OSC transports oil, gas, containers and bulk cargo, the risk of conflict in the regions (Gulf and Indian Ocean) remains a future possibility over such issues as the Strait of Hormuz and Iran, and the Indian Ocean rivalry between India and Pakistan (Nawaz 2004: 5).

The sixth conclusion is that the global importance of ports as a maritime asset offers considerable economic potential for the country. This significance is derived from their economic interests; yet, the development of national ports in Oman has had a late start. With the increasing containerization of world trade (Till 2009: 26), ports like Sohar,

Salalah, and al-Duqm will assume an even more significant role in serving global trade and can become a great source of national revenue. Despite the radical shift in the government's present thinking about embarking on ambitious programmes for developing ports and upgrading infrastructures, this process needs a robust policy to sustain it. These ports are national gateways that will potentially serve as major catalysts for development and thus should improve the socio-economic conditions of the population, not only in the coastal areas but in the remoter hinterland.

It is envisaged that Oman's ports will have the capacity to act as a conduit for regional trade and also become major trans-shipment hubs that will serve maritime commerce in the wider region. The ports will also provide strategically important bases along Oman's extended coastline for the RNO and the ROPCG. This prospect urgently demands a framework that will sustain such developments; however in the absence of sound maritime doctrine that can coordinate national policies and strategies, such projects may not be meaningful in the long run if they are not supported by a good vision plan. Oman's ports, with their potential to serve national, regional and global trade can only facilitate the potential for economic growth if proper policies and strategies are pursued and there is a common body, identified by a maritime doctrine, to coordinate them.

Seventh, substantial capital is required for investment in important infrastructural development that will enable ports, national maritime enterprises, and export- and import-dependent sectors to remain competitive at both the regional and global level. This finding suggests that to a large extent, opportunities and challenges for port development occur jointly with developments in maritime trade and the shipping industry, including all maritime activities. Since interests and vulnerability are correlated, expanding national interests would necessitate even greater emphasis on establishing a maritime doctrine that offers a sound approach to funding of these resources and opportunities.

The eighth conclusion is that from the national security perspective national port development is vital. Developing ports can be an economically viable activity since it generates business opportunities for national, regional, and international companies whilst it can also create employment opportunities for the local Omani workforce. However, such infrastructure requires security and protection, which emphasises the importance of co-

ordination between the relevant ministries, national and security agencies, and stakeholders (investors). Not least, these ports provide strategically important bases for the RNO, the ROPCG, the armed forces and other security agencies, as well as friendly forces operating along the coastline. As such they are integral parts of the overall national maritime doctrine.

Ninth is that ports vital to the nation are required to be free and open for use at all times if the nation's economy is not to suffer. The success of any commercial and/or industrial port or maritime establishment is not without its challenges, the most important of which is undoubtedly the security situation in the region and concerns about the activities of outlaws such as pirates. As discussed in Chapter Two, much global attention is focused on the region with the primary concern of protecting trade and energy in the form of a free flow of oil and gas from the Gulf. This suggests that any criminal activities in Oman's ports or its offshore infrastructures could paint a negative picture which, as a consequence, would potentially reflect badly on the national economy and foreign policy. A well-constructed maritime doctrine will therefore cover the wider picture and address such issues. At the moment, the resources of the RNO, the Royal Air Force of Oman (RAFO) and the ROPCG are inadequate to protect Oman's ports and offshore installations from all maritime threats; this needs to be addressed urgently as part of a unified national maritime doctrine.

The tenth conclusion is that under the UN Convention of the Law of the Sea (UNCLOS) provisions for the recognition of maritime zones and for the uses of the sea's resources for economic well-being, Oman has responsibilities and opportunities that require co-ordination. In May 2009, the UN allowed for the extension of existing EEZs from 200 to 350 nautical miles under certain circumstances (Parry 2010: 19), thereby potentially providing additional resources to maritime states. Today's technology not only provides the means of exploiting such ocean resources but also helps in structuring powerful and effective naval forces for the security of maritime frontiers (Nawaz 2004: 53-58). This extension of the rules is in principle relevant to Oman, and as a result Oman's wealth from the sea could increase. The exploitation of ocean resources is driven by global demand and economic trends (Till 2009: 287-289), a sphere in which Oman has fallen behind due to the

absence of a maritime policy. Oman's national, regional and maritime obligations all dictate that there should be a free flow of trade, including exports of oil, gas, and fish and imports of other materials, as well as security against seaborne attacks on the coastal infrastructure. A maritime doctrine will embrace, protect and sustain the richness of these resources for Oman's own economic and strategic advantage.

Eleventh is that, despite their obvious importance, exploration and exploitation of offshore resources is progressing only slowly in Oman. Scientific data and adequate oceanographic research is also lacking for Oman's entire EEZ, and the true extent of these resources is yet to be ascertained. Even oil and gas have so far remained under-exploited and this calls for some concerted efforts in oceanographic research through which to assess the EEZ's true potential. The announcement in 2011 of the US\$600 million oil and gas project in Musandam, and the new offshore area oil and gas survey policy, shows that the government has been able to attract some foreign investment in this sector. Such investment and potential wealth generation for Oman should be safeguarded under the umbrella of an effective maritime doctrine.

Exploitation of Oman's renewable resources is mainly limited to marine fisheries, and though this sector has considerable potential, its current contribution to GDP is insignificant (less than 1 percent). It has been found that since Oman's maritime interests all occupy the same oceanic realm as maritime trade, shipping and ports, the welfare and activities of fishermen have a bearing on the variety of issues that have been identified as relevant to the security of national maritime interests. Though exploitation of offshore resources is continuing, Oman's effective use of the sea, and plans and capability for meeting future demands is still inadequate. This shortfall is caused by the mindset of the decision makers who, as Till explains, fail to convey the importance of energy and fish as strategic drivers (Till 2009: 287-292). As noted in Chapter Four (section 4.3.5), Oman's failure to evaluate the wealth generated from the sea is also attributed to the absence of a viable maritime doctrine that highlights such importance.

The twelfth conclusion is that, with the change in the geopolitical environment, the surveillance and protection of the sea area places greater demands upon national resources. Oman's sea area, edged by a long coastline much of which faces an open and undefended

ocean region, is the dominant feature of its maritime geography. This area would be difficult for Oman to defend against a conventional adversary (Chapter Five on RNO and Policing).

As discussed in Chapter Two (Maritime Trade and Shipping) and Chapter Three (Ports), Oman's sea areas have become increasingly important but with inherent vulnerabilities because of the shipping that uses Omani waters. It has been suggested that in times of crisis that might lead to the closure of the Strait of Hormuz, one possible alternative would be to export and import oil and gas from the Arab Gulf countries via pipelines to ports and offshore terminals outside the Gulf, such as Oman's ports and maritime territory. Thus, while the significance of the sea as a medium for economic prosperity might grow, it will lead to a greater concern for maritime interests to be protected and this becomes even harder without a maritime doctrine. It has also been found that the safe monitoring of offshore resources and of other national maritime interests discussed in previous chapters is a vital role that is undertaken mainly by the RNO, the ROPCG and RAFO. Yet these forces are without a common doctrine and as a consequence work under constraints, further worsened by a mismatch between capability and strategy that a maritime doctrine would have resolved.

The final conclusion, founded on those preceding it, is the inescapable one that Oman is in urgent need of a formal maritime doctrine. This conclusion reveals that Oman should work towards establishing a maritime doctrine to safeguard its national security and maritime interests through a common national approach, exploiting any opportunities offered by the UNCLOS to generate and sustain economic growth. To match tasks with doctrine, Oman should address the problems discussed in the next section by developing and maintaining the capabilities to monitor what is happening within its sea areas and, where appropriate, by conducting effective intervention to meet the challenges and threats that or may exist. This doctrine brings together the objectives and plans of all government departments and forces that are involved in managing and protecting Oman's maritime interests and activities.

So what are the problems that a maritime doctrine addresses and hopefully resolves? As was noted in Chapters One and Six, doctrines in general are associated with levels of thought that include political, military-strategic, and operational aspects.

On the military-strategic side, maritime doctrine is the foundation upon which tactics, techniques, and procedures are built. Hence, it facilitates operations in the maritime environment by containing details of the composition, roles, tasks and capabilities of Oman's organization. Its primary attribute is that it consists not of specific procedures, but of fundamental principles, which guide the employment of maritime forces and elements – or, in more general terms, the nature of the forces and a rational basis for their use. It is a commonly understood and shared framework upon which specific operations can be planned and executed (Till 2009: 46-48, 112-113).

It also represents a body of common thinking intended to be exploited as a guide by all relevant forces in an operation that supports effective action with minimum detailed direction (Strachan 2011: 1292-1294). Thus it is not a set of orders that govern operations; rather it provides a commander with the experiences of others confronted with similar situations and leaves him to judge the situation and take the appropriate course of action (UK MoD 1999: 2-6). So doctrine applies only at the operational level, where the notional employment of functions and capabilities shapes the way in which plans are drawn up and executed. The maritime doctrine affects a number of subordinate concepts, as well as some of the higher-level concepts driving doctrine itself. Among those concepts affected are tactics, techniques, procedures, tactical directives, rules of engagement, training and education, organization and force structure, analyses, programming, planning, strategy, and policy (Vego 2007: XII, 3-23).

In the domain of policy and strategy, doctrine clarifies the government's policy and national security policy, both of which will enhance the utility of a national maritime strategy (Strachan 2011: 1292-1296). As noted in Chapter Six (section 6.3.2), maritime strategists have devoted much thought to the relationship between concepts of policy, diplomacy, doctrine, and strategy. These concepts are equally important when they are linked and work with each other, although serving different purposes. As Figure 6.1 shows, doctrine connects policy, diplomacy and strategy, and is the key to evaluating the

feasibility of political goals with respect to ways and means. It does this by forming a coherent body of knowledge that translates the intent of general goals into specific actions. This crossover zone is where plans are formulated and the capabilities available can be evaluated against the perceived national requirements.

Because doctrine is conceptual in nature (Strachan 2011: 1292), it remains relatively unchanged except by the most profound of technological advancements. When properly recognized, categorized and assessed, these changes are the basis for determining new capability requirements. The ability to conceptualize future operations through analysis of doctrinal trends is the key to defining and justifying future national capability requirements. Figure 6.1 illustrates how the case can be made that policy is ultimately affected by revised strategy, which in turn is affected by doctrine. Doctrine in this case can stabilize and even restrain the government from making radical departures in policy. A maritime doctrine defines the capability of the military, and capability should be one of the major inputs into national security and defence policy (Strachan 2011: 1292-1296).

Generally, maritime doctrine comprises concise yet comprehensive statements of principles and practices for the conduct of naval warfare for current and future situations. These principles and practices have been validated and are thus considered authoritative, but not necessarily prescriptive. Doctrine is evolving and dynamic, and so it must be responsive to current policies, resources, strategy, campaign concepts, threats, and emerging technology; none of these is timeless and/or enduring (UK MoD 1999: 5-8). Maritime doctrine will provide Oman with a common cultural perspective that tells decision makers and planners how to think and not what to think. By capturing the historical perspective and lessons from experience, it anticipates the technological and intellectual developments that will bring cost-effective benefits to Oman. In other words, it provides a bridge or common thread leading from the past to the present and future.

Before moving to the recommendations, it is worth summarizing the conclusions:

- An essential element is missing from Oman's national maritime security strategy – *Oman's Maritime Doctrine*. The significant relevance of maritime trade and shipping to Oman cannot be over-emphasised.

- The sea is significant for Oman in providing an efficient and cost-effective means of transportation; the role of Oman's maritime industry is thus crucial in supporting the growth of its national trade and national security.
- Without a national maritime policy/doctrine there is little coordination or participation between national agencies and stakeholders.
- The importance of a developed national merchant navy that can reduce dependency on foreign carriers unable to assure continuous shipments in situations of desperate need is very obvious.
- The global importance of ports as a maritime asset offers considerable economic potential for the country.
- Substantial capital is required for investment in important infrastructural development that will enable ports, national maritime enterprises, and export- and import-dependent sectors to remain competitive at both the regional and global level.
- From the national security perspective national port development is vital.
- Such nationally vital ports need to be free and open for use at all times if the nation's economy is not to suffer.
- Under the UNCLOS provisions for the recognition of maritime zones and for the uses of the sea's resources for economic well-being, Oman has responsibilities and opportunities that require co-ordination.
- Despite their obvious importance, exploration and exploitation of offshore resources is progressing only slowly in Oman.
- Greater demands are placed upon national resources with the change in the geopolitical environment, and the surveillance and protection of places within the sea area.
- Based on the preceding points is the inescapable conclusion that Oman is in urgent need of a formal maritime doctrine.

7.3. Recommendations

This study has shown clearly that Oman is in need of a maritime doctrine. Based on the above conclusions, this section proposes a set of recommendations:

The first recommendation is that the government should make a thorough appraisal of the requirements of the private sector in terms of its existing and potential involvement in the maritime sector. In order to increase investment and establish enterprise, it should ensure that the incentives offered are encouraging to attract more domestic and foreign investment. Moreover, the rules and regulatory frameworks involved in the workings of the maritime industry must be made clear, transparent and business-friendly if any serious investment is to be expected in this sector. As Chapter Two indicates, it is also very important for the government to establish a marine policy, address maritime security, and provide a secure environment for both domestic and foreign investment, since these elements are crucial for the development and sustainability of the national maritime industry. For the industry to become financially viable in the long term, the government must pay attention to the investment activities in neighbouring countries. It needs to explore with other countries the possibility of joint collaboration for the long-term economic survival of maritime industries, and look for cooperation with countries that are currently emerging as major economic players globally. However, with foreign investment comes a degree of pressure which Oman needs to consider carefully.

Secondly, while Oman is embarking on port development, the government must at all times keep in mind the related security issues. Considering the country's growing dependence on the benefits of maritime trade, there would be no advantage in total reliance on ports situated on a lengthy coast-line open to the ocean if the question of maritime security was not well addressed. If properly managed, the ports will lead Oman into a new era of socio-economic development, and the volume of trade expected to flow through them suggests that they can generate good revenues, as long as economic and security policies/strategies are properly managed.

Thirdly, while the national merchant navy is an important part of the maritime transportation system, it is only a portion of the whole system (*IHS Global Insight 2009: 1-8*), and must be approached within the broader context of maritime freight transport and

the free flow of commerce throughout the economy. Oman's transportation options, including short-sea shipping, need to be more fully exploited if the government is to achieve continued economic growth and provide for the safe and efficient movement of domestic and international freight. To support the increasing volumes of maritime trade the strategic policy must also consider the need for vessels that are suited to moving all kinds of cargo. This, in turn, requires an advanced network of ports and maritime infrastructure, trained personnel ashore and afloat, and support services to keep the entire transport network running efficiently. Given congestion on many roads and the long-term trend of increasing transportation costs, the government needs to encourage the introduction of short-sea shipping to enhance the planned rail network. As the volume of maritime traffic increases and more shipping calls upon the expanded infrastructure along Oman's coastal waters, cost-effective and efficient environmental compliance will become increasingly important and challenging. It is in Oman's national interest to have policies that ensure the commercial viability of the marine transportation system in a way that will mitigate adverse impacts on the environment and human health while complying with modern environmental legal frameworks (*IHS Global Insight* 2009: 46).

Fourth, resource management, marine environment quality and protection, and marine scientific research are important and may become future problems if not addressed early enough. Therefore it is important that Oman understands the limited environmental resources may have a significant impact upon Oman economy. Thus if the value of hydrocarbon reserves and fish stocks is not properly exploited, this is likely to influence Oman's national security and economic growth adversely. It must be conceded that a certain measure of control is needed to protect legitimate maritime interests from the harmful effects of the use of the sea by other parties. Not only has Oman considered its maritime interests but, in terms of exploiting its offshore resources and marketing them through its own OSC in oil tankers and LNG carriers, its maritime development profile should be consolidated and centred on meeting anticipated traffic growth and engaging in cross trades with other nations in order to earn revenue. All this calls for the early requirement of a maritime doctrine to coordinate efforts of national agencies and stakeholders.

Fifth, Oman's ports are expected to attract their share of trade, although levels remain subject to certain factors that the government must address. One of these factors is that the ports must face the challenge of having to compete with already-existing and well-developed ports in the surrounding region. Thus, to make the ports competitive, concerted efforts based on effective strategies are needed to create an environment conducive to the industrialization of their surrounding areas. Following a blending of economic incentive packages with management policies based on those of various globally-ranked ports and industrial zones around the world, particularly in the Gulf (Dubai) and in Asia (Singapore), a maritime policy must evolve for the consideration of officials handling all matters related to the ports. It is emphasised that some elements of these proposals will require a radical departure from Oman's traditional economic and trade policies. In this regard, a clear and transparent strategy is considered to be an appropriate tool with which convey consolidated government policies.

The sixth recommendation is that Oman should take advantage of the revision of the rules established by UNCLOS, and claim the extension of its EEZ to 350 nautical miles (Parry 2010: 19). If accepted this will give it legitimate access to reserves and resources (fish, oil, gas) that are offered by the sea and its seabed. It therefore needs to address various important aspects, such as setting up adequate oceanographic research programmes and gathering scientific data in a wide variety of fields. The present contribution of marine fisheries to the national economy is low, but there is considerable potential for improvement if Oman embarks on pursuing viable development and research programmes.

Similarly there is potential for various problem scenarios if the Omani EEZ is extended to 350 nautical miles. Although Oman is advantageously positioned to exercise control over political competition in the region, economically speaking it is likely to have to face competition over resources, while militarily it must deal with a number of security and protection challenges. From an entirely practical viewpoint, the country will require a different type of warship, with deep-sea/oceangoing capabilities and crews trained to remain at sea for much longer periods of time than is currently the case with inshore operations. At this level, too, the maritime air service takes on a new dimension at this range, with the requirement for fixed wing aircraft rather than helicopters.

The existing community of fishermen and their fishing assets must also be modernized and kept regularly updated, for better exploitation and preservation of the marine environment and its living resources. Challenges in this regard should include a national policy/strategy from which a maritime doctrine is developed to fight illegal maritime activities, including illegal over-fishing and marine pollution which are major threats to fish and other living marine resources like coral reefs (Till 2009: 288-289).

Seventh, the government must realize that increasing understanding of environmental issues is also creating demand for a marine policy that will lessen environmental impacts. Today, the maritime industry is required to comply with rapidly-evolving operating and design rules pertaining to emissions, water treatment, and disposal of various materials. As the volume of shipping increases and more vessels call at Omani ports, environmental compliance in a cost-effective and efficient manner will become imperative and even more challenging. It is in Oman's national interest to have policies in place that will ensure the commercial viability of the marine transportation system and mitigate adverse impacts on the marine environment, while also complying with the modern environmental legal framework (*IHS Global Insight* 2009: 46). Therefore, the Ministry of Transport and Communications must ensure that all shipping, including national vessels operating in Omani waters, will be in compliance with all environmental regulations. The government must in addition encourage uniformity in environmental rules and regulations pertaining to the maritime industry at both the national and international level.

The eighth recommendation is that policy- and decision-makers need to understand that the strategic location of any state can bring both opportunities and risks, and that in this regard Oman is no exception. Looking ahead to maritime security, it is clear that the maritime threats and challenges in Oman's sea areas are growing (see Chapter Five, section 5.8). Hence, development of the RNO and national security agencies should be seen as making effective use of the sea and expanding Oman's maritime interests. With the increasing reliance on maritime trade, shipping, development of ports, and exploitation of offshore resources, these structures must be properly exploited to meet Oman's economic and security objectives. The need for a sound economic base cannot be over-emphasized, and Oman must therefore devise a maritime strategy that relies on its sources of natural wealth.

In the long run the country must maximize its management of the sea to sustain economic growth through a maritime doctrine.

Despite the threats described in Chapter Five, the vast majority of international maritime trade transits safely through Oman's sea areas. This, along with Oman's limited capability in maritime security, can be attributed to a large and interchanging coalition of navies that police the high seas. There are lessons to be drawn from the height of the Iran-Iraq war, when less than 2 percent of international shipping in the area was attacked, and most vessels survived the experience (Tracy 1991: 227). In such circumstances, the inadequate capabilities of the national assets tasked with maritime security will inevitably lead to different responses which may fall beyond the national security policy objectives. Hence, the lesson that must be drawn is that there is a need to establish a maritime security authority/agency, where representatives of the various services and interests would be co-located, and provided with adequate systems of command and control.

In this regard, Oman can benefit from other nations that are experienced in the field and have successfully delivered a cogent, cross-government maritime security strategy. While these models may not be perfect, they have gained from having a particular focus, an aspect that needs to be refined and developed in Oman. Such an approach would create the impetus to drive through a single connected and coherent strategy, that would remove any suspicion of duplication of effort while simplifying command and control structures and formalizing working practices across government departments. If this could be accomplished and if Oman maximized the use of its existing assets, it would then be possible to compare strategy against existing assets, and to decide whether there was a shortfall of assets against requirements, as calculated from the national maritime strategy. This would formalise maritime security as a force or as a driver of capability across defence and security areas, which is what a maritime doctrine should do.

Ninth is that Oman must maximize its management of the sea to achieve economic growth and national security objectives and benefit from foreign lessons. Experience worldwide has shown that nations have approached the challenge of moving from coastal constabulary operations to those that cover all maritime zones in different ways, including bringing together a diverse range of stakeholders. Whilst there is no global institutional model, a

common underlying theme is that of replacing the traditional ministerial system (in which each ministry acts alone to meet specific goals but which results in fragmentation, duplication and ineffectiveness) with an integrated and inclusive inter-agency approach.

Maritime security in Oman as it stands at present is fragmented across many agencies; thus, in order to benefit from the experience of others who have an independent agency or authority to deal with maritime security, Oman must address the whole question of maritime security. Oman's sea area of responsibility can be divided into lines of operations. The first of these is for the inner maritime zones, consisting of the territorial waters (12 nm) and contiguous zone (24nm). The second is for the EEZ and the continental shelf out to 200 nm or possibly 350 nm in the future.

The first line of operation (inner zones), including Oman's maritime integrity and the wider maritime security of the area of the Sea of Oman, is the most easily envisaged. Although this sea area still needs to be broken down into separate spheres of responsibility, activities that are carried out by the RNO, RAFO and the ROPCG are crucial. They include surveillance, counter-terrorism, and protection of such assets as offshore facilities and resources, as well as port and sea lane security, and fishery protection. Other activities needed for maintaining security within this area include Search and Rescue (SAR), countering narcotics and other forms of smuggling, maintenance of safe navigation including traffic surveillance, hydrographic surveying, routing and maintaining navigation aids, and pollution control.

The second line of operation (outer zones) will involve conducting Oman's maritime security out to 200 nm (or 350 nm when extended) to the continental shelf and beyond, thereby fulfilling its regional and international maritime obligations. This will involve all of Oman's defence assets in monitoring, reporting, and perhaps directly engaging in opposing any activity that threatens Oman's physical or economic well-being, whilst operating outside their traditional area of operations and normally on the basis of non-interference. In addition, opportunities will be taken to conduct capacity-building activity with friends and allies. This recognizes that Oman's security cannot be restricted to territorial waters or even the continental shelf, and that threats need to be countered before they affect Oman or its interests (if and when foreign policy permits).

An important element in maritime security operations is to enable military assets to be an effective force for good within their allocated area of operations. This strand sees Oman's defence assets deployed on various missions and, wherever they are operating, assisting in reporting, tracking and where appropriate, prohibiting illicit actions. This can occur even when such actions do not impact directly on Omani interests but can be of assistance to potential allies and friendly nations, and also conducive to policies of greater co-ordination between Oman's friends and allies. All of these above activities are meant to be conducted in parallel with normal operations and as dictated by Oman's foreign policy. Setting up a maritime security authority/agency will create a hub for the efforts demanded by simplifying interactions and information exchanges between and among national security stakeholders and other related national agencies. It will also provide a focal point for the amalgamation of information from all agencies and sources, including friends and allies, into a shared picture of maritime activity throughout the Omani sea area and beyond (see Chapter Five, section 5.3).

It may be a surprise to learn that policy makers have yet to undertake a thorough reappraisal of the country's overall maritime strategy and recognize the importance of RNO and ROPCG as important elements of maritime power and as important pillars of a robust economic strategy. The RNO in turn must initiate a sustained campaign of educating the general public about the importance of its roles in ensuring Oman's national security.

The solution for Oman, as for all other countries, will be to address its maritime security by making an appropriate compromise between a coordinating body or agency with no executive powers that is able to call upon other ministries to act to achieve national objectives. This agency must sit comfortably within the overall government organization, complement national objectives, and be sufficiently flexible to restructure as or when the national and international context alters. Clear strategic and policy direction is essential, as is an authoritative domain leader who will take responsibility for introducing common shared practices and processes, for merging information and intelligence, and for coordinating operational and resource planning, procurement and support. These fundamental issues are all too easily set aside, but ill-defined responsibilities impose

considerable limitations and burdens on those charged with defending the sovereignty of a nation's maritime zones.

The tenth recommendation is that Oman must plan how best to support such strategies for enforcing maritime and port security in the face of an increasingly dynamic international environment, and the challenge from world terrorist organizations determined to bring harm to Oman. In an effort to meet the increased requirements of providing maritime security Oman will need to increase the size and assets assigned to these roles while still maintaining other traditional constabulary missions, including immigration, fisheries, drug enforcement, and illegal immigration.

Eleventh is that it is essential for Oman to establish a marine policy, address maritime security, and provide a secure environment for private investment, since this is crucial for the development and sustainability of a national maritime industry. In this regard, Oman itself must set an example to the private sector by investing in the maritime industry so that foreign investors will be encouraged to follow. The government must work to generate business in order to attract investment in the maritime industry, and must also demonstrate sincerity in promulgating policy; thus its actions must conform to policy guidelines.

Twelfth, although there is little supporting evidence to be drawn from other nations who have applied similar concepts, in the long term Oman should envisage setting up an independent authority for maritime industry (ports, shipping, maritime service and any related activities), taking into account, amongst others, the following issues:

- What are the justifications for introducing the concept of setting up an independent authority for maritime industry?
- Which other nations have applied similar concepts, and how successful are they?
- How are the management and administration of all maritime activities/actions defined and who has the final authority?
- How will the agency interact with other ministries, and where do other ministries (e.g., Transportation and Communications & Commerce and Industry) fit into the overall model?

When properly managed, this authority/agency can reinforce maritime trade through the effective coordination of shipping requirements with various government agencies, thereby generating wealth and ultimately bringing about effective use of the sea and its resources. It will also help to streamline procedures and remove obstacles that hinder smooth and efficient conduct of maritime business activities.

Thirteenth, it is important that the government understands and assesses the strategic factors that will enable the maritime sector to play this vital role in Oman's economy. This would include expanding the size of the non-oil production base so as to foster an increase in the volume of trade. This can be done by focusing on the export/import orientation of the Omani economy and utilising its maritime location for increasing export, re-export, and transit operations. The infrastructure relating to maritime trade, the shipping industry, and telecommunications must also be developed and maintained. Oman must therefore establish the necessary legal framework as well as drawing up long-term plans that will eliminate restrictions and barriers to the flexibility of the national market.

The final recommendation is that, from a practical point of view, the fleet operated by OSC should be integrated into a national merchant navy/marine ready for times of emergency. As noted in Chapter Two (Maritime Trade and Shipping), the US Merchant Marine offers a useful example here from which to draw some lessons. However, the features of an Omani merchant navy should be designed specifically to meet Oman's national requirements and be capable of fulfilling tasks that include:

- Carrying domestic maritime trade and a substantial percentage of Oman's foreign export and import trade at all times;
- Being prepared to serve as a naval and military auxiliary in time of war or national emergency. Hence being Omani flagged vessels ;
- Containing the best-equipped, safest, and most suitable types of vessels, manned with trained, skilled and efficient Omani personnel;
- Being equipped with efficient facilities for ship repair and other logistics services;
- Designing short-sea shipping and the proposed rail network to complement the national maritime transportation system.

Overall, a well-planned strategy is needed, and efforts must be made to utilise Oman's maritime potential by exploring and exploiting the area of the extendable EEZ. The dynamic nature of the maritime domain must always be emphasised, while the need to protect the environment requires a coherent set of national and international policies. These must be applied in an efficient way that minimizes the costs of compliance and ensures commercial viability. Issues of marine pollution and overfishing are a serious threat to the marine environment and its resources, and need immediate attention and continuous monitoring. The government must devote enough resources and maximise efforts to prevent and contain marine pollution. Furthermore, it will be essential for Oman to carry out extensive scientific research related to current and future resource requirements. More broadly, military, commercial, recreational and environmental interests may at times be seen to conflict with each other, thus highlighting the need for communication and coordination of maritime policy. Although the goal of all national and security agencies is to facilitate commerce in an environmentally-responsible manner, regulation of commerce and the environment needs to be both clear and consistent – an aspect that will be covered by the maritime doctrine.

By bringing together the opinions of reviewing and analyzing available literature and documents concerning doctrine, this thesis has argued that national security entails more than the traditional view of defending the nation from invasion by other states; it includes threats to individual citizens, the traditional way of life, and the integrity and interests of the state.

Lastly, this study fills a significant gap in our understanding of Oman's national maritime policy/strategy, and shows that Oman's lack of a maritime doctrine is more obvious today than ever before. Since this is the case, Oman's maritime doctrine must exploit Oman's geography and history to identify lessons. Since history is a source for doctrine development, one might capitalize on what the British historian J.B. Kelly wrote about Oman. Arguing that geography had made Oman a virtual island (Kelly 1968: 2), and affected its history and its people, both of which had developed separately from the remainder of the Peninsula, he pointed out that Oman had created an empire supported by a principal maritime power (Kelly 1980: 104-110). So, does this answer the question of how

important a maritime doctrine is to Oman? Possibly the jury is still out, but today the evidence appears incontrovertible – Oman’s geo-strategic location and its maritime interests, enhanced by its integration into regional and international systems suggests that a maritime doctrine has become fundamental to the way the country moves forward to a secure future.

APPENDIX 1

QUESTIONS CONCERNING DOCTRINE, POLICY AND STRATEGY

- Where is the place of maritime doctrine in the context of national security strategy and national defence doctrine?
- What are the general characteristics of maritime power?
- What is the geo-strategic significance of Oman and its specific maritime responsibilities?
- What maritime capabilities does Oman require? and what are the maritime tasks that Oman must conduct?
- What is the relationship between maritime doctrine and defence policy?
- Does doctrine belong within the context of strategy and the operational art rather than high policy?
- What is the relationship between maritime doctrine, defence policy and procurement strategies?
- Especially for Oman with its geo-political position, and the fact that this position provides opportunities and risks, how important is maritime doctrine at both the strategic and tactical level?
- What role does maritime doctrine perform? And where should it reside? Is it the case that most navies do not have a doctrine? For those that do, is it treated rather like a holy book and left to one side, to be used only in academic institutions and defence colleges because it has no role on the bridge of a warship?
- How far does a doctrine go? and how often should it be reviewed?
- Does doctrine belong within the context of strategy and the operational arts rather than high policy?
- Given that the average “life” of a warship is anything over 25 years, is it possible to define a doctrine which can encompass a similar period?

- How much influence does doctrine have on plan?
- How far does doctrine look ahead?
- Can't we do without maritime doctrine? What would it add to Oman?
- In Oman's case where the army is the senior service, and the navy is the third, where does maritime doctrine sit? And how can I argue for its priority?
- Given the challenges and threats of an evolving strategic environment, what contribution is expected from RNO?
- What are the priorities (from Oman's national perspective) among the range of threat and tasks?
- What are Oman's primary national security objectives?
- How might RNO roles and missions change given future challenges, and how would they complement the capabilities of other government agencies?
- What is the RNO's role with respect to maritime security? What are the similarities and differences between maritime security tasks and sea control?
- If RNO has a role in maritime security, how should that role be balanced with more traditional naval requirements (i.e., power projection, war fighting, etc)?
- Does the following define a strategic overview of future RNO roles and missions? If not, what is missing?
 - Prevention of Threat and challenges
 - Providing humanitarian assistance
 - Ensuring order and safety at sea
 - Preserving and protecting the maritime environment
 - Power Projection
 - Defending important resources

APPENDIX 2

GLOSSARY OF TERMS

Advance Force

A temporary organization within the amphibious task force which precedes the main body to the objective area. Its function is to participate in preparing the objective for the main assault by conducting such operations as reconnaissance, seizure of supporting positions, minesweeping, preliminary bombardment, underwater demolitions and air support (Australia MoD 2010: 181).

Aim (Military)

A single unambiguous military purpose that must be established before a plan can be developed at any level of command for a military operation (Australia MoD 2010: 181).

Airborne Early Warning and Control (AEW&C)

Air surveillance and control provided by airborne early warning aircraft which are equipped with search and height-finding radar and communication equipment for controlling weapon systems (Australia MoD 2010: 182).

Amphibious Assault

The principal type of amphibious operation which involves establishing a force on a hostile or potentially hostile shore (Australia MoD 2010: 182).

Amphibious Demonstration

A type of amphibious operation conducted for the purpose of deceiving the enemy by a show of force with the expectation of deluding the enemy into a course of action unfavourable to them (Australia MoD 2010: 182).

Amphibious Force

A naval force and landing force, together with supporting forces that are trained, organized and equipped for amphibious operations (Australia MoD 2010: 182).

Amphibious Operation

A military operation launched from the sea by a naval and landing force embarked in ships or craft, with the principal purpose of projecting the landing force ashore tactically into an environment ranging from permissive to hostile (Australia MoD 2010: 182).

Amphibious Raid

A type of amphibious operation involving swift incursion into or temporary occupation of an objective followed by a planned withdrawal (Australia MoD 2010: 182).

Amphibious Withdrawal

A type of amphibious operation involving the extraction of forces by sea in naval ships or craft from a hostile or potentially hostile shore (Australia MoD 2010: 183).

Anti-Submarine Warfare (ASW)

Operations conducted with the intention of denying the enemy the effective use of their submarines (Australia MoD 2010: 183).

Archipelagic Sea-Lanes Passage

Under the terms of the 1982 UNCLOS, Archipelagic States may designate sea lanes and air routes suitable for continuous and expeditious passage of foreign ships and aircraft, in their normal mode of operation (thus implying submarines may transit dived), through or over its archipelagic waters and the adjacent territorial sea (UK MoD 2004: 238-239)

Archipelagic Waters

Those waters enclosed by archipelagic baselines drawn in accordance with Article 47 of the *United Nations Law of the Sea Convention 1982*. The sovereignty of an archipelagic state extends to the waters enclosed by the baselines, regardless of their depth or distance from the coast, as well as the associated seabed, subsoil and airspace (Australia MoD 2010: 183).

Archipelagic State

An independent state consisting entirely of an archipelago of islands (UK MoD 2004: 239).

Archipelagic Waters

Waters over which an *Archipelagic State* claims sovereignty under the 1982 UNCLOS (UK MoD 2004: 239)

Area of Influence

A geographical area wherein a commander is directly capable of influencing operations, by manoeuvre or fire support systems normally under their command or control. In maritime operations, such an area may be fixed or moving (Australia MoD 2010: 183).

Area of Interest

That area of concern to a commander relative to the objectives of current or planned operations, including his areas of influence, operations and/or responsibility, and areas adjacent thereto (UK MoD 2004: 239).

Armed Conflict

Conflict between States, or between a State and organised, disciplined and uniformed groups within a State such as an organised resistance movement, in which at least one party has resorted to the use of armed force to achieve its aims (Australia MoD 2010: 184).

Asymmetric Threat

A threat emanating from the potential use of dissimilar means or methods to circumvent or negate an opponent's strengths while exploiting their weaknesses to obtain a disproportionate result (Australia MoD 2010: 184).

Attrition

The reduction of the effectiveness of a force caused by loss of personnel and *materiel* (UK MoD 2004: 240).

Balanced Fleet

A naval force that can be generated and sustained with the range of capabilities required to provide the national government with the range of military options required to meet national security and military strategic goals. Inherent in the force is the flexibility to deal with both symmetric and asymmetric threats in the maritime battlespace (Australia MoD 2010: 184).

Balanced Force

A military force that has all the necessary capabilities to carry out a particular mission without unnecessary redundancy (UK MoD 2004: 241).

Baseline

The line from which the seaward limits of a state's territorial sea and certain other maritime zones of jurisdiction are measured (Australia MoD 2010: 184).

Battle-space

All aspects of air, surface, subsurface, land, space and the electromagnetic spectrum that encompass the area of operations (UK MoD 2004: 241).

Battlespace Awareness

Knowledge and understanding of the battlespace that enable timely, relevant, comprehensive and accurate assessments in order to successfully apply combat power, protect the force and/or complete the mission (Australia MoD 2010: 184)..

Battlespace Dominance

The degree of control over the dimensions of the battlespace that enhances friendly freedom of action and denies the enemy freedom of action. It permits power projection and force sustainment to accomplish the full range of potential missions (Australia MoD 2010: 185).

Belligerent

In time of crisis or war, an individual, entity, military force or state engaged in conflict (Australia MoD 2010: 185).

Benign Application

The use of armed forces solely for the capabilities not directly associated with combat that they can provide (UK MoD 2004: 242).

Blockade

A legal definition is “An operation intended to disrupt the enemy’s economy by preventing ships of all nations from entering or leaving specified coastal areas under the occupation and control of the enemy. Blockade is an act of war and the right to establish it is granted to belligerents under the traditional laws of war. This law requires that the blockade must be effective, that it is to be declared by the belligerent so that all interested parties know of its existence and that it is confined to ports or coasts occupied by the enemy”. The expression is used more broadly to mean a combat operation carried out to prevent access to, or departure from the coast or waters of a hostile state (UK MoD 2004: 242).

Campaign

A set of military operations planned and conducted to achieve a strategic objective within a given time and geographical area, which normally involve maritime, land and air forces (Australia MoD 2010: 185).

Centre of Gravity

Characteristic(s), capability(ies) or locality(ies) from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight (UK MoD 2004: 243).

Close Air Support (CAS)

Air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces (UK MoD 2004: 243).

Close Blockade

A *blockade* that denies an enemy access to or from his ports. See *distant blockade* (UK MoD 2004: 243).

Close Escort

Escort of shipping where the escorting force is in company with escorted shipping and can provide a measure of direct defence (UK MoD 2004: 243).

Coastal State

A state party within the terms of the *United Nations Law of the Sea Convention 1982* with a coastline under its lawful jurisdiction (Australia MoD 2010: 186).

Coercion

The use of force, or the threat of force to persuade an opponent to adopt a certain pattern of behaviour, against their wishes (Australia MoD 2010: 186).

Combat

Military combat is a contest in which the parties attempt to achieve mutually incompatible aims through the organized use of *violence* by armed forces (UK MoD 2004:244).

Combat Air Patrol (CAP)

An aircraft patrol provided over an objective area, the force protected, the critical area of a combat zone, or in an air defence area, for the purpose of intercepting and destroying hostile aircraft before they reach their targets (Australia MoD 2010: 186).

Combined Operation

An operation conducted by forces of two or more allied nations acting together for the accomplishment of a single mission (Australia MoD 2010: 187).

Command

The authority which a commander in the military Service lawfully exercises over subordinates by virtue of rank or assignment. Command includes the authority and responsibility for effectively using available resources and for planning the employment of, organising, directing, coordinating and controlling military forces for the accomplishment of assigned missions. It also includes responsibility for health, welfare, morale and discipline of assigned personnel (Australia MoD 2010: 187).

Command and Control (C2)

The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission (Australia MoD 2010: 187).

Command of the Sea

The ability to use the sea in its entirety for one's own purposes at any time and to deny its use to an adversary. Command of the Sea implies that dominance has been achieved to such a degree that the risk to one's own forces from enemy action are negligible or non-existent (Australia MoD 2010: 186).

Conflict

(Armed) Conflict (usually abbreviated) is a situation in which violence or military force is threatened or used. Generally it is a contest between two opposing sides, each seeking to impose its will on the other; however, intrastate conflict may involve several factions (UK MoD 2004: 248).

Constabulary Operation

The use of military forces to uphold a national or international law, in a manner in which minimum violence is only used in enforcement as a last resort and after evidence of a breach or intent to defy has been established beyond reasonable doubt. The level and type of violence that is permitted will frequently be specified in the law, mandate or regime that is being enforced. Also called Policing (Australia MoD 2010: 188).

Contiguous Zone

A belt, usually 12 miles in width, immediately adjacent to the *territorial sea* and extending to a distance not more than 24 miles measured from the baselines from which the breadth of the territorial sea is measured (UK MoD 2004: 249).

Continental Shelf

An area of the seabed and the subsoil adjacent to the coast but beyond the territorial sea in which the coastal state has sovereign rights for the purpose of exploration, control and exploitation of the living and natural resources. The extent of the area can be defined by formulae developed by LOSC (Australia MoD 2010: 189).

Convoy

A number of merchant ships or naval auxiliaries, or both, usually escorted by warships and/or aircraft, or a single merchant ship or naval auxiliary under surface escort, assembled and organised for the purpose of passage together. The intent of convoy is to reduce losses through enemy action, to make best use of protective forces and to increase losses of enemy attacking forces (Australia MoD 2010: 189).

Corvette

Escort vessel usually of about 500-1000 tons displacement which represent an intermediate type between the frigate on one side and fast attack craft on the other (Miller 1986: 20-21). In modern navies like the Royal Navy of Oman a corvette is the smallest class of capital ship displacing approximately 1500-2650 tons, and armed with missiles (Surface- Surface & Surface-Air) , depth charges, and one or more guns of 76mm and 30mm. Fast and highly manoeuvrable, corvettes are used for scouting, escort, quick strike and anti-air and anti-submarine operations. See also Destroyer and Frigate.

Counterinsurgency

Those military, paramilitary, political, economic, psychological and civic actions taken to defeat insurgency (Australia MoD 2010: 189).

Counter-piracy

Those military, paramilitary, political, economic, psychological and civic actions taken to defeat piracy (Australia MoD 2010: 189).

Counterterrorism

All offensive measures taken to neutralise terrorism before and after hostile acts are carried out. Note: Such measures include those counterforce activities justified for the defence of individuals as well as containment measures implemented by military forces or civilian organisations (Australia MoD 2010: 189).

Cover

The action by land, air or sea forces to protect by offence, defence or threat of either or both. Cover may extend to actions in the electro-magnetic spectrum (Australia MoD 2010: 190).

Covert Operation

An operation that is so planned and executed as to conceal the identity of, or permit plausible denial, by the sponsor. A covert operation differs from a clandestine operation in that emphasis is placed on concealment of the identity of sponsor rather than on concealment of the operation (Australia MoD 2010: 190).

Customary International Law

Those laws that represent the long-standing and consistent practice among most States with respect to a particular subject and which are accompanied by the belief of such States that the practice is obligatory. A long-continued practice acquiesced in by other States may create customary international law irrespective of the intent of those States. A State, as a member of the community of nations, may therefore be said to have tacitly consented to it. Customary international law is one of the principal sources of international law (Australia MoD 2010: 190).

Data Link

The means of connecting one location to another for the purpose of transmitting and receiving data (Australia MoD 2010: 190).

Deception

Those measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence to induce him to react in a manner prejudicial to his interests (UK MoD 2004: 251).

Decisive Points

A point from which a hostile or friendly centre of gravity can be threatened. This point may exist in time, space or the information environment (UK MoD 2004: 251).

Defence in Depth

The siting of mutually supporting defence positions designed to absorb and progressively weaken attack, prevent initial observations of the whole position by the enemy, and to allow the commander to manoeuvre their reserve. The siting of units for defence in depth at sea can be either relative to other units for a force in transit or geographical for a force in an operating area. It will rely upon the mutual support provided by layered defence (Australia MoD 2010: 191).

Deny

To prevent enemy use of an area, feature, route or facility or combat capability in a particular environment, by a physical or implied presence, firepower, obstacles, contamination, destruction or a combination of these measures (Australia MoD 2010: 191).

Destroyer

High speed warship designed to operate offensively with strike forces, with hunter-killer groups, and in support of amphibious operations. Destroyers also operate defensively to screen support forces and convoys against submarine, air and surface threats (Australia MoD 2010: 191). See also Frigate and Corvette.

Deterrence

The prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction (Australia MoD 2010: 191).

Distant Blockade

A *blockade* that denies the enemy passage through a sea area through which all ships must pass in order to reach the enemy's territory. See also Close Blockade (UK MoD 2004: 254).

Distant Escort

Escort of shipping where the protective forces are not sufficiently close to provide a measure of direct defence but effect protection by *deterrence* through the threat of reprisals (UK MoD 2004: 254).

Doctrine

Fundamental principles by which military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application (UK MoD 2004: 254).

Effects Based Operations

Operations designed to influence the will of an adversary, own forces or neutrals through the co-ordinated application of military capability, in order to achieve the desired Strategic objectives (UK MoD 2004: 255).

Embargo

A prohibition on the entry or egress of shipping into a port. Nowadays frequently used for prohibitions of certain categories of cargo such as munitions (Australia MoD 2010: 192).

End-State

The political and/or military situation to be attained at the end of an operation, which indicates that the objective has been achieved (UK MoD 2004: 255).

Endurance

The time an aircraft can continue flying or a ground vessel or ship can continue operating under specified conditions, for example without refueling (Australia MoD 2010: 192).

Escort

A combatant unit or units assigned to accompany and protect another force. Used colloquially as a generic expression for a destroyer or frigate (Australia MoD 2010: 192).

Exclusion Zone

A zone declared by a military force or nation, the entering of which zone by forces of a potential enemy would be regarded as hostile intent or a hostile act. The zone may be moving or stationary and may include airspace above it (Australia MoD 2010: 193).

Exclusive Economic Zone (EEZ)

An area beyond and adjacent to the territorial sea, subject to the specific legal regime established in Part V of the *United Nations Law of the Sea Convention 1982*, under which the rights and freedoms of the coastal state are governed by the relevant provisions. The EEZ shall not extend beyond 200nm from the baselines from which the breadth of the territorial sea is measured (Australia MoD 2010: 193).

Expeditionary Force

A force projected from the home base capable of sustained operations at distance from that home base (Australia MoD 2010: 193).

Expeditionary Operation

A military operation which can be initiated at short notice, consisting of forward deployed, or rapidly deployable, self-sustaining forces tailored to achieve a clearly stated objective at a distance from a home base (Australia MoD 2010: 193).

Fire Support

The application of fire, coordinated with the manoeuvre of forces, to destroy, neutralise or suppress the enemy (UK MoD 2004: 258).

Flag State (of a ship)

The term used to refer to a country that maintains a vessel registry. That country is also sometimes referred to as the Administration. A vessel must agree to abide by international rules and regulations as set forth by the country in which it wishes to be flagged (McNicholas 2009: 87).

Fleet in Being

The use of options provided by the continued existence of one's own fleet to constrain the enemy's options in the use of their fleet (UK MoD 2004: 259).

Force Generation

The process of providing suitably trained and equipped forces, and their means of deployment, recovery and sustainment to meet all current and potential future tasks, within required readiness and preparation times (UK MoD 2004: 259).

Force in Being

The use of options provided by the continued existence of one's own forces to constrain the enemy's options in the use of their forces (Australia MoD 2010: 194).

Force Multiplier

A platform or system with latent capabilities which, when applied in conjunction with other assets, has a multiplier effect on applied capability. For example, underway replenishment ships have a force multiplier effect on surface combatant capability (Australia MoD 2010: 194).

Force Protection

Actions taken to prevent or mitigate hostile actions against the state's Defence Organisation. Force protection does not include actions to defeat the enemy or protect against accidents weather or disease (Australia MoD 2010: 194).

Freedom of the Seas

The right of aircraft, ships and submarines to travel freely respectively above, on or in the high seas (Australia MoD 2010: 194).

Friction

The accumulation of chance errors, unexpected difficulties, enemy actions, and confusion in battle. It is the force that resists all action and which makes the simple difficult and the difficult seemingly impossible. The expression was used by Clausewitz in *On War* (UK MoD 2004: 260-261).

Frigate

Escort vessel designed to provide air, surface and undersea defence to naval forces and convoys. It is capable, if required, of conducting sustained independent operations to achieve a variety of missions (Australia MoD 2010: 194). See also Destroyer and Corvette.

Full Command

The military authority and responsibility of a commander to issue orders to subordinates. It covers every aspect of military operations and administration and exists only within national Services. Note: the term 'command' as used internationally, implies a lesser degree of authority than when it is used in a purely national sense. No international or coalition commander has full command over the forces assigned to them (Australia MoD 2010: 194).

Guerre de Course

A campaign directed at the merchant shipping of the enemy. It may have the intent of achieving leverage by damaging their international trade or be an outright effort to cut off supplies to their domestic economy (Australia MoD 2010: 195).

Gunboat Diplomacy

A colloquial expression for naval diplomacy (UK MoD 2004: 262).

Hard Kill

The use of explosive or kinetic weapons to achieve physical destruction of a target. See also Soft Kill (Australia MoD 2010: 195).

High Seas

All parts of the sea which are not included in the territorial seas or internal waters of States. All States have the freedom to navigate or conduct other activities, subject to certain restrictions, on the high seas. Where States have declared other zones beyond the territorial sea (contiguous zone, exclusive economic zone, continental shelf), the traditional high seas

freedoms are affected by the rights that Coastal States can exercise in such zones (UK MoD 2004: 262).

Hub Port

A port through which cargo moves to and between several smaller ports or land cargo distribution areas (Coulter 2002: 133).

Information Campaign

Co-ordinated information output of all Government activity to influence decision-makers in support of policy objectives, while protecting one's own decision-makers (UK MoD 2004: 263).

Infrastructure

A term generally applicable to all fixed and permanent installations, fabrications or facilities for the support and control of military forces (Australia MoD 2010: 196).

Innocent Passage

Innocent passage entitles a warship to traverse another State's territorial seas 'continuously and expeditiously'. Passage is innocent as long as it is not prejudicial to the peace, good order or security of the coastal or island State (Australia MoD 2010: 196).

Insurgency

An organised movement aimed at the overthrow of a constituted government through one of subversion and armed conflict (Australia MoD 2010: 196)

Interdiction

Actions to divert, disrupt, delay or destroy the enemy before he can affect friendly forces (Australia MoD 2010: 196).

Internal Waters

All waters actually within the territory of a state such as harbours, rivers and lakes; together with all other waters to landward of the baseline from which the state's territorial sea is measured. They are an integral part of the territory of the state in which the laws of the land apply with little exception (Australia MoD 2010: 196).

International Strait

Straits which are used for international navigation between one part of the high seas or an EEZ and another part of the high seas or EEZ. In these straits all ships and aircraft enjoy the right of transit passage, which shall not be impeded; except that, if the strait is formed by an island of a state bordering the strait and its mainland, transit passage shall not apply if there exists seaward of the island a route through the high seas or through an EEZ of similar convenience (Australia MoD 2010: 195).

Interoperability

The ability to operate in synergy in the execution of assigned tasks (Australia MoD 2010: 197).

Intervention

A campaign or operation with limited objectives, involving the entry of another state where opposition is expected (Australia MoD 2010: 197).

Joint

Connotes activities, operations, organisations, etc in which elements of more than one Service of the same nation participate. (When all Services are not involved, the participating Services shall be identified, for example Joint Army-Navy.) (Australia MoD 2010: 197).

Joint Force

A general term applied to a force composed of significant elements of the Navy, Army and Air Force, or two or more of these Services, operating under a single joint force commander (Australia MoD 2010: 197).

Joint Task Force

A force composed of assigned or attached elements of two or more Services established for the purpose of carrying out a specific task or mission (Australia MoD 2010: 197).

Latent Capabilities

Capabilities that are not always used in the primary role, but which are inherent, intrinsic, and accessible through adaptation and multi-role employment (Australia MoD 2010: 197).

Law of Armed Conflict

The international law regulating the conduct of States and combatants engaged in armed hostilities. Often termed 'law of war' (Australia MoD 2010: 197).

Layered Defence

The disposition of protective assets possessing a mixture of antisubmarine, anti-surface and anti-air capabilities in layers of screens and patrol areas about units of high value or crucial waters (UK MoD 2004: 267).

Leverage

Disproportionate strategic or operational advantage gained by the use of a form of military power to exploit its geographical circumstances (UK MoD 2004: 267).

Lift

The capability to move resources between two points (Australia MoD 2010: 198).

Limited War

Armed conflict, short of general war, confined to a single theatre of operation involving the overt engagement of the forces of two or more nations (Australia MoD 2010: 198).

Lines of Communication

All the land, water and air routes that connect an operating military force with one or more bases of operations, and along which supplies and reinforcements move (Australia MoD 2010: 198).

Littoral

The areas to seaward of the coast which are susceptible to influence or support from the land and the areas inland from the coast which are susceptible to influence or support from the sea (Australia MoD 2010: 198).

Littoral Manoeuvre

The use of the littoral as an operational manoeuvre space from which a sea-based joint amphibious force can threaten, or apply and sustain, force ashore (Australia MoD 2010: 198).

Logistics

The science of planning and carrying out the movement and maintenance of forces (Australia MoD 2010: 198).

Mandate

The terms of a UN Security Council resolution and any further direction given by the relevant international organisation or other international agreement (Australia MoD 2010: 198).

Manoeuvre Warfare

A warfighting philosophy that seeks to defeat the enemy by shattering their moral and physical cohesion — their ability to fight as an effective, coordinated whole — rather than by destroying them physically through incremental attrition (Australia MoD 2010: 198).

Manoeuvrist

A term describing an approach that employs the principles of Manoeuvre Warfare (UK MoD 2004: 270).

Maritime Environment;

The complex union and interaction with the marine environment that includes; oceans, seas, bays, estuaries, and other major water bodies, with the atmosphere and land seaward of the mean high water mark (USN Dictionary of Military and Associated Terms, 2010, 287)

Maritime

Maritime; of or relating navigation or commerce on and in the sea or on the seabed,. Sea also Naval (Cottrell 1981: 27).

Marine Environment

The oceans, seas, bays, estuaries, and other major water bodies, including their surface interface and interaction, with the atmosphere and with the land seaward of the mean high water mark (US MoD 2010 : 286).

Maritime Domain

The series of jurisdictional zones that surrounds the coast of a State. It includes territorial seas and the EEZ (UK MoD 2004: 270).

Maritime Domain Awareness

The effective understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment of a nation (Australia MoD 2010: 199).

Maritime Forces

Forces whose primary purpose is to conduct military operations at, over and from the sea. The expression includes surface combatants, submarines, auxiliaries, chartered vessels, organic aircraft and helicopters, shore installations intended for coastal and maritime defence and land forces, shore based aircraft and helicopters assigned to maritime tasks (Australia MoD 2010: 199).

Maritime Operation

An action performed by forces on, under or over the sea to gain or exploit control of the sea or to deny its use to an enemy (Australia MoD 2010: 199).

Maritime Patrol Aircraft (MPA)

Surveillance, undersea and surface warfare aircraft capable of operating in maritime areas at extended distances from their base (Australia MoD 2010: 199).

Maritime Power Projection (MPP)

The threat or use of maritime combat capabilities, at global range, to achieve effects in support of national policy objectives. Also see *power projection* (UK MoD 2004: 272)

Maritime Reconnaissance

The acquisition of information of intelligence interest employing aircraft, surface vessels, submarines and underwater detection devices (Australia MoD 2010: 199).

Maritime Strategy

The comprehensive direction of all aspects of national power to achieve national strategic goals by exercising some degree of control at sea (Australia MoD 2010: 199).

Maritime Superiority

The capability of a State to establish sea control at will in any area of importance to that State (UK MoD 2004: 272).

Merchant Shipping

The complete merchant shipping industry including that of a nation's fishing industry (UK MoD 2004: 272).

Military Strategy

That component of national or multinational strategy, presenting the manner in which military power should be developed and applied to achieve national objectives or those of a group of nations. (Australia MoD 2010: 200).

Mine Countermeasures (MCM)

All methods for preventing or reducing damage or danger from mines (Australia MoD 2010: 200).

Mission

A clear, concise statement of the task of the command and its purpose. One or more aircraft ordered to accomplish one particular task (Australia MoD 2010: 200).

Mission Essential Unit

A unit, the destruction, serious damage or withdrawal from operation of which would prevent the successful completion of the mission (Australia MoD 2010: 200).

Mobility

A quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfil their primary mission (Australia MoD 2010: 200).

National Interests

The general and continuing ends for which a State acts (Australia MoD 2010: 200).

National Security

The ability to preserve the nation's physical integrity and territory; to maintain the economic relations with the rest of the world on reasonable terms; to protect its nature, institutions, and governance from disruption from outside; and to control its borders (Australia MoD 2010: 200).

Naval

Naval; of or relating to ships or shipping. See also Maritime (Cottrell 1981: 27).

Naval Diplomacy

The use of naval force in support of diplomacy to support, persuade, deter or coerce (Australia MoD 2010: 200).

Naval Forces

Seaborne military forces including surface combatants, submarines, amphibious and mine warfare units, hydrographic and oceanographic units, organic helicopters and auxiliaries (Australia MoD 2010: 201).

Naval Gunfire Support (NGS)

Gunfire provided by surface combatants in direct support to operations ashore (Australia MoD 2010: 201).

Objective

A clearly defined and attainable goal for a military operation, for example seizing a terrain feature, neutralising an adversary's force or capability or achieving some other desired outcome that is essential to a commander's plan and towards which the operation is directed (Australia MoD 2010: 201).

Organic

In a naval context used to mean capabilities and resources that are borne within a *naval force* or formation. Often used of aircraft, *logistics*, weapons and sensors (UK MoD 2004: 281).

Peace-building

A set of strategies which aim to ensure that disputes, armed conflicts and other major crises do not arise in the first place or if they do arise that they do not subsequently recur. It includes:

- Pre-conflict peace-building refers to longer-term economic, social and political measures which can help States deal with emerging threats and disputes.
- Post-conflict peace-building involves rehabilitation and construction assistance generally, support for various kinds of institution building and specific practical programs like demining (Australia MoD 2010: 202).

Peace Enforcement

The coercive use of civil and military actions by legitimate, international intervention forces, to assist diplomatic efforts to restore peace between belligerents, who may not consent to that intervention. These actions will take the form of a graduated response to conflict resolution: from the imposition of civil sanctions, followed by military support of sanctions, military sanctions and finally collective security actions (Australia MoD 2010: 203).

Peacekeeping

A non-coercive instrument of diplomacy, where a legitimate, international civil and/or military coalition is employed with the consent of the belligerent parties, in an impartial, non-combatant manner, to implement conflict resolution arrangements or assist humanitarian aid operations (Australia MoD 2010: 203).

Peacemaking

An operation conducted after the initiation of a conflict to secure a ceasefire or peaceful settlement, that involves primarily diplomatic action supported, when necessary, by direct or indirect use of military assets (Australia MoD 2010: 203).

Peace Operation

An operation that impartially makes use of diplomatic, civil and military means, normally in pursuit of UN Charter purposes and principles, to restore or maintain peace (Australia MoD 2010: 203).

Piracy

An act of boarding or attempting to board any ship on the high seas with the apparent intent to commit theft or any other crime and with the apparent intent or capability to use force in the furtherance of that act (Australia MoD 2010: 203).

Poise

An attribute of a *maritime force* which permits it to remain in international waters for long periods while retaining the ability to become engaged in events ashore or withdrawn without risk of embroilment (UK MoD 2004: 284).

Policing

See *constabulary applications* (UK MoD 2004: 284).

Power Projection

For the purposes of this publication, as distinct from the meaning of the Military Task of the same name: The threat or use of joint military capabilities and other instruments of national power, at global range, to achieve strategic effects in support of national policy objectives (MoD UK 2004: 284).

Presence

The exercise of *naval diplomacy* in a general way involving deployments, port visits, exercising and routine operating in areas of interest to declare interest, reassure friends and allies and to *deter* (MoD UK 2004: 284).

Preventive Deployment

The deployment of military forces to deter violence at the interface or zone of potential conflict where tension is rising among parties. Forces may be employed in such a way that they are indistinguishable from a peacekeeping force in terms of equipment, force posture, and activities (Australia MoD 2010: 204).

Principles of War

The Principles of War are guides to action and fundamental tenets forming a basis for appreciating a situation and planning, but their relevance, applicability and relative importance change with circumstances (UK MoD 2004: 285).

Psychological Operation

A planned psychological activity in peace and war directed to enemy, friendly and neutral audiences in order to influence attitudes and behaviour affecting the achievement of political and military objectives. It includes strategic psychological activities, consolidation psychological operations and battlefield psychological activities (Australia MoD 2010: 204).

Quarantine

Expression used loosely to mean a restriction on the egress of certain types of cargo. Also used to mean embargo enforcement (UK MoD 2004: 285).

Reach

The ability to operate for extended periods at considerable distance from shore support (Australia MoD 2010: 204).

Readiness

The time within which a unit or formation can be made ready to perform unit-type tasks. This time is amplified or measured by indicators of its current personnel, material and training state. The time does not include transit time. Ships and their *organic* air units will have the required combat load and other logistic material embarked or appropriately positioned (UK MoD 2004: 286-1).

Recognised Picture

The fullest achievable agreed level of identification and tracking of all air, surface and sub-surface contacts in the area of interest (Australia MoD 2010: 204).

Recognised Environmental Picture (REP)

The total set of shared Environmental Information on a particular operation, or Joint Operations Area (JOA), available through a secure information environment on CIS networks to support Situational Awareness and decision-making by commanders, and facilitate information sharing with allies and partners (UK MoD 2004: 287).

Recognised Maritime Picture (RMP)

The fullest achievable agreed level of identification and tracking of all surface and sub-surface contacts in the area of interest. The RMP is normally associated with the Recognised Air Picture (RAP) of the same area (UK MoD 2004: 287).

Reconnaissance

A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy; or to secure data concerning the meteorological, hydrographic or geographic characteristics of a particular area (Australia MoD 2010: 204).

Replenishment at Sea (RAS)

Those operations required to make a transfer of personnel and/or supplies when at sea (Australia MoD 2010: 204).

Ro-Ro shipping

Roll on-Roll off shipping into and from which vehicles can be driven from and to a wharf or jetty (UK MoD 2004: 287).

Roulement

The rotation of personnel or units in the front line with those in reserve in order to maintain the fighting effectiveness of the forces engaged in an operation (Australia MoD 2010: 204).

Rules of Engagement (ROE)

Directions for operational commands that set out the circumstances and limitations under which armed force may be applied by forces to achieve military objectives for the furtherance of state/government policy. ROE are thus issued as a set of parameters to inform commanders of the limits of constraint imposed or of freedom permitted when carrying out their assigned tasks. They are designed to ensure that any application of force is appropriately controlled (UK MoD 2004: 288).

Screen

An arrangement of ships, aircraft and/or submarines to protect mission essential units or a convoy (Australia MoD 2010: 205).

Sea Basing

In amphibious operations, a technique of basing certain land force support functions aboard ship which decreases shore based presence (Australia MoD 2010: 205).

Sea Control

The condition that exists when one has freedom of action to use an area of sea for one's own purposes for a period of time and, if necessary, deny its use to an opponent. Sea control includes the airspace above the surface and the water volume and seabed below (UK MoD 2004: 289).

Sea Denial

The condition short of full *sea control* that exists when an opponent is prevented from using an area of sea for his purposes (UK MoD 2004: 289).

Sealift

The movement of resources between points by carriage in shipping (UK MoD 2004: 289).

Sea-keeping

The dynamic characteristics of a ship in surviving and operating in various conditions of swell, wave height, wave length and wind (Australia MoD 2010: 205).

Sea Lines of Communication (SLOC)

The most efficient navigable routes followed by shipping from their points of departure to their destinations. SLOCs may refer in military operations to the maritime supply routes between operational forces and their supporting bases. The term is also used to describe the major commercial shipping passages of the world. SLOCs do not have a physical existence and should not be considered in the same way as lines of communication on land (Australia MoD 2010: 205).

Sea Power

The sum of all physical, demographic, geographic, economic, and military resources that are derived from or related to the sea and that are used by a nation to advance its national interests. More specifically sea power expresses a nation's ability to defend, by means of a navy and its adjuncts, its maritime interests (Australia MoD 2010: 206).

Shake Down

The period of crew training on first proceeding to sea after a long period in harbour, a major change in personnel and/or extensive maintenance on systems. It ensures that personnel and materiel have achieved the necessary standards to allow the ship to operate safely and proceed to more intensive training for operations (Australia MoD 2010: 206).

Shaping

Creating the conditions for mission success (UK MoD 2004: 290).

Ship-To-Objective-Manoeuvre (STOM)

Projection from maritime sea based platforms of joint assets by surface or air assault direct to objectives (UK MoD 2004: 290).

Self-defence

A commander has the authority and obligation to use all necessary means available and to take all appropriate action to defend that commander's unit and other forces in the vicinity from a hostile act or hostile intent. Force used should not exceed that which is necessary to decisively counter the hostile act or intent and ensure the continued safety of forces or other persons and property they are ordered to protect. Forces may employ such force in self-defense only so long as the hostile force continues to present an imminent threat (US MoD 2010: 422).

Shipping Lane

A term used to indicate the general flow of merchant shipping between two departure/terminal areas (US MoD 2010: 427).

Special Forces

Specially selected military personnel, trained in a broad range of basic and specialized skills, who are organized, equipped and trained to conduct special operations. Special forces can be employed to achieve strategic, operational or tactical level objectives across the operational spectrum (Australia MoD 2010: 206).

Short-sea Shipping

As a maritime transport system within a region which distributes cargo delivered to regional centres by deep sea vessels, and provides a port-to-port service, often in direct competition with land based transport (Stopford 1997: 8-9).

Soft Kill

Efforts using other than explosive or kinetic systems to destroy or neutralize a target. They may include electronic measures (Australia MoD 2010: 206).

Surveillance

The systematic observation of aerospace, surface or subsurface areas, places, persons or things, by visual, aural, electronic, photographic or other means (Australia MoD 2010: 207).

Task Element (TE)

The fourth and lowest level in which units are grouped within a task organization. A task element may consist of any one ship or independent unit (UK MoD 2004: 293).

Task Force (TF)

A temporary grouping of units, under one commander, formed for the purpose of carrying out a specific task or mission. In a task organization, a task force is the highest level in which units are grouped (Australia MoD 2010: 207).

Task Group (TG)

The second highest level in a task organization, a task group is a grouping of units under one commander subordinate to task force commander, formed for the purpose of carrying out specific functions (Australia MoD 2010: 207).

Task Organization

A command organization in which the various units and formations are organized by task into task forces, task groups, task units and task elements (Australia MoD 2010: 207).

Task Unit (TU)

The third level in which units are grouped in a task organization. A task group is normally divided into two or more task units according to the tasks required to be accomplished (Australia MoD 2010: 207).

Trans-shipment

The term trans-shipment refers to the movement of cargo from one ship to another (McNicholas 2009: 45),

Territorial Sea

An area of waters adjacent to a state over which it exercises sovereignty, subject to the right of innocent passage. Every state has the right to establish the breadth of its territorial sea up to a limit not exceeding 12nm, measured from the baselines (Australia MoD 2010: 208).

Transit Passage

All vessels and aircraft have the right to unimpeded transit passage through and over straits used for international navigation. Transit passage must be continuous and expeditious and vessels and aircraft must not threaten or use force against nations bordering the strait. Transit passage is in the normal mode and includes activities such as fuel replenishment, submerged transit for submarines, organic flying operations and tactical manoeuvring (Australia MoD 2010: 208).

Unmanned Aerial Vehicle (UAV)

A powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or non-lethal payload. Ballistic or semi-ballistic vehicles, cruise missiles, and artillery projectiles are not considered unmanned aerial vehicles (Australia MoD 2010: 208).

Versatility

The ability to change fighting posture quickly without recourse to outside resources (UK MoD 2004: 295).

Warship

A surface vessel or submarine forming part of the armed forces of a sovereign state armed and equipped to engage in combat (Australia MoD 2010: 208).

Work Up

The training program, both in harbour and at sea, by which naval units are brought to the required level of operational capability (Australia MoD 2010: 208).

BIBLIOGRAPHY

PRIMARY SOURCES

Interviews and correspondence [listed by Alphabetical order of last Name]

Anonymous, Muscat, interviewed 9 October 2011.

Al-Balushi, Khalil (former staff of OSC, now General Manager, Arabian Maritime and Navigation Aids Services, Muscat), correspondence, 23 November 2011.

Blatchford, David (Director of Blatchford's International Shipping Company, Exeter/UK) interview, 10 April 2012.

Al-Busaidi, Ambassador Dr Mohammed (Deputy Director General Diplomatic Institute, Ministry of Foreign Affairs, Muscat), interview, 17 April 2011.

Ford, Peter (Chief Executive Officer (CEO), Port Salalah, Muscat), interview/correspondence, 17 August 2011; 9 December 2011; 9 April 2012.

Al-Harthy, HE Said (Undersecretary for Ports and Maritime Affairs, Muscat), correspondence, 8 February 2012.

Al-Hinai, Captain Mohammed (Commanding Officer of Musandam Naval Base, Musandam), Interview 5 March 2011.

A-Hinai, Hilda (Deputy Permanent Representative to Oman's WTO Mission, Geneva, Switzerland), correspondence, 30 March 2012.

Al-Jabri, Bader Rashid (Geologist, Occidental Oil Company, Muscat), interview/correspondence, 8 October 2011.

Al-Jabri, Lieutenant Commander Saleh (Captain of the sailing vessel *Jewel of Muscat*, Muscat), interview 20 July 2011.

Jamian, Captain Zahari (Royal Malaysian Navy), correspondence, 21 May 2010.

Al-Juhani, Captain Kamel (retired) (Kingdom of Saudi Arabia Navy, Jeddah), interview/correspondence 14 May 2012.

Jupp, Dr Barry (Senior Consultant-Marine, GEO Resources Consultancy, Muscat), correspondence, 23 February 2012.

Al-Kalbani, Khalid (Director of Oil Marketing, Ministry of Oil and Gas, Muscat), correspondence, 11 April 2012.

Al-Kamshki, Commodore Yaqub (Director General for Finance and Administration, Royal Navy of Oman, Muscat), interview 26 June 2011.

Al-Kharousi, Dr Lubna (Director of the Centre Marine Science and Fisheries, Muscat), interview/ correspondence, 21 June 2011.

Al-Kindi, Dr Abdul-Aziz (Vice-Chancellor for Academic Affairs, Nizwa University, Muscat), interview 10 October 2011.

Al-Kiyumi, Brigadier Issa (Director General of Customs, Royal Oman Police), correspondence, 14 January 2012.

Le Gallais, Charles (Serco Defence, Science and Nuclear; also consultant to Oman's ports security), interview/ correspondence, Exeter UK, 7 February 2012.

Al-Mahrouqi, Commander Thani (Head of Oman's National Hydrographic Office, Muscat), interview/ correspondence 21 June 2011.

Melvin, Major General Mungo (British Army 'retired', Tisbury UK), interview 17 February 2012.

Morris, Eric (Geopolitical analyst and defence specialist at the Good Governance Group London, with wide experience in advising governments in the Middle East), interview/correspondence, 28 September 2011, and by email 10 May 2012.

Al-Mujaini, Lieutenant Commander Ahmed (RNO Staff Security Officer, Muscat), interview 15 July 2011.

Al-Raaisi, Rear Admiral Abdullah bin Khamis (Commander Royal Navy of Oman, Muscat), interview 21 June 2011.

Al-Raaisi, Commodore Rasheed (Director General for Operations and Plans, Royal Navy of Oman, Muscat), correspondence, 11 April 2012.

Al-Shabibi, Captain Abdullah (Director, Office of the Commander, Royal Navy of Oman), interview 17 May 2011.

Till, Professor Geoffrey (contemporary British maritime strategist), correspondence 15 May 2012.

Al-Yahyia, Dr Qais (Central Bank of Oman, Muscat), correspondence, 6 December 2011.

Attendance at Doha Maritime Defence Exhibition Conference (DIMDEX 2008), Doha UAE, 17-19 March 2008.

Attendance at 10th International Naval Engineering Conference and Exhibition 11-13 May 2010, arranged by BAE Systems, at HM Naval Base, Portsmouth, UK.

Official Publications

Australian Government, Department of Foreign Affairs and Trade (2011), “Information on the Establishment and Development of IOR-ARC” (Indian Rim Association for Regional Cooperation), website at www.dfat.gov.au/geo/indian_ocean/regional_orgs/ior-arc.html, accessed 17 February 2012.

_____, Department of Infrastructure and Transport (2012), “Maritime Security”, at www.infrastructure.gov.au/transport/security/maritime/index.aspx, accessed 23 April 2012.

Australia, Ministry of Defence (2000), *Australian Maritime Doctrine*, Canberra: Defence Publishing Service.

_____, (2010), *Australian Maritime Doctrine*, Canberra: Defence Publishing Service.

Canada, Department of National Defence (2009), *CFJP 01, Canadian Military Doctrine*, Canadian Forces Joint Publication, Ottawa: DND at www.cfd-cdf.forces.gc.ca/cfwc-cgfc/Index/JD/CFJP%20-%20PDF/CFJP%2001/CFJP-01_Cdn_Mil_Doctrine_EN_2011_09.pdf (2009 print volume superseded by 2011 issue, available online only, www.cfd-cdf.forces.gc.ca/sites/page-eng.asp?page=10468), accessed 15 May 2012.

Central Bank of Oman (2011), *Annual Report 2010*, Muscat: CBO.

Central Bank of Oman (2012), *Annual Report 2011*, Muscat: CBO.

Commission of the European Communities (1985), “Progress towards a common transport policy: Maritime transport; Commission communication and proposals to the Council transmitted on 19 March 1985. COM (85) 90 final, 14 March 1985”, in *Bulletin of the European Communities*, Supplement 5, 1985.

India, Ministry of Defence (2004), *Indian Maritime Doctrine NBR 8*, New Delhi: Integrated Headquarters MoD (Navy).

India, Ministry of Defence (Navy), Integrated Headquarters (2007), “*Freedom to Use the Seas: India’s Maritime Military Strategy*”, prepared by Admiral Sureesh Mehta, at www.scribd.com/doc/31917366/India-s-Maritime-Military-Strategy, accessed 26 April 2012.

IHS (Information Handling Services) Global Insight Inc, (2009), “An Evaluation of Maritime Policy in Meeting the Commercial and Security Needs of the United States of America”, prepared by *IHS Global Insight* (www.ihs.com/products/global-insight/) for the US Department of Transportation, Maritime Administration (www.marad.gov); see www.dri-wefa.com/gcpath/MARADPolicyStudy.pdf, accessed 24 April 2012.

- International Maritime Bureau (IMB), “Interactive piracy map”, issued by the IMB and posted at website of the International Chamber of Commerce, Commercial Crime Services, www.icc-ccs.org/piracy-reporting-centre/live-piracy-map accessed 16 April 2012.
- International Union for Conservation of Nature (IUCN) (1988), *Oman Coastal Zone Management Plan: Quriyat to Ra’s al Hadd*, Gland, Switzerland: IUCN.
- Malaysia, Ministry of Defence (1997), *Naval Operational Planning Process BRL-2015*, Kuala Lumpur: Royal Malaysian Navy.
- Netherlands, Ministry of Defence (2005), *Netherlands Defence Doctrine*, The Hague: Netherlands Defence Staff.
- Oman and UK, Ministries of Defence (2001), *Oman-UK Joint Exercise Orders*, available at HQ RNO, Muscat.
- Qatar National Bank (QNB) (2011), “Oman, Economic Insight: Outlook for 2011-2012”, Doha 2011, at www.qnb.com.qa/csportal/BlobServer?blobcol=urlenglishdoc&blobtable=QNBNewDocs&blobkey=id&blobwhere=1313926320120&blobheader=application%2Fpdf, accessed 25 January 2012.
- Sultanate of Oman, Directorate General of Customs, Royal Oman Police: “Statistics” (for Figures 2.2, 2.3, 3.3, & 3.4 above), made available by the Director, Muscat, 14 January 2012.
- _____, Ministry of Agriculture and Fisheries Wealth (2010), *Wealth Statistics Book*, Muscat.
- _____, Ministry of Agriculture and Fisheries Wealth (2011), *Investment Guidelines for Aquaculture Development in the Sultanate of Oman*, Muscat.
- _____, Ministry of Communications (1981), *The Maritime Law*, Muscat.
- _____, Ministry of Communications (1981), *Law Regulating Navigation and Territorial Waters*, Muscat.
- _____, Ministry of Defence (2004), *Fleet Operational Guide*, Muscat: Royal Navy of Oman.
- _____, Ministry of Defence (2005), *RNO Fleet Warfare Guide*, Muscat: Royal Navy of Oman.
- _____, Ministry of Defence (2009), *RNO Policy and Directives*, Muscat: Royal Navy of Oman.
- _____, Ministry of Defence, National Hydrographic Office (2011), all charts included in this thesis provided by the Hydrographic Office, Muscat.

- _____, Ministry of National Economy (2009), *Statistical Year Book*, Issue 37, November, Muscat.
- _____, Ministry of National Heritage and Culture (1991), *Oman, a Seafaring Nation*, 2nd ed., Muscat: Ministry of National Heritage and Culture.
- _____, Ministry of National Heritage and Culture (2005), *Oman, a Seafaring Nation*, 3rd ed., Muscat: Ministry of National Heritage and Culture.
- _____, Ministry of Oil and Gas (2012), on “Oil & Gas concession blocks 2012”.
- _____, Ministry of Transport and Communications (2010), *Ports of Oman*, Muscat.
- _____, Ministry of Transport and Communications (2011), “Port Al-Duqm”, at www.motc.gov.om/tabid/40/Default.aspx accessed 1 January 2012.
- Sultanate of Oman, The Ministerial Committee (2010). *The Evolving Journey: Celebrating 40 Years of Achievements*, Omani Pavilion, Expo Shanghai 2010 and Darran LLC.
- _____, “Royal Decree 114/1”, text available at, www.omanlegal.net/LAW%20ON%20CONSERVATION%20OF%20THE%20ENVIRONMENT%20&%20PREVENTION%20OF.pdf accessed 29 December 2011.
- United Kingdom, Ministry of Defence (1995), *The Fundamentals of British Maritime Doctrine* BR 1806, London: HMSO.
- _____, (1997), *The United Kingdom Approach to Amphibious Operations*, London: The Stationary Office.
- _____, (1999), *British Maritime Doctrine BR1806*, 2nd ed., London: The Stationary Office.
- _____, (2004), *British Maritime Doctrine BR1806*, 3rd ed., London: The Stationary Office.
- _____, (2010), *Global Strategic Trends*, 4th ed., London: MoD, 2010.
- _____, Defence Academy of the UK (2010), *Thinking Strategically*, London: The Royal College of Defence Studies.
- United Kingdom, Official Communications regulator (OFCOM): website on “The use of international maritime VHF channels”, specifically Channel 16, the international distress/safety channel, www.ofcom.org.uk/static/archive/ra/publication/ra_info/ra264/ra264.htm, accessed 26 April 2012.
- United Nations, Conference on Trade and Development (UNCTAD) (2010), *Review of Maritime Transport 2010*, New York and Geneva: UN.
- _____, (2011), *Review of Maritime Transport 2011*, Geneva: UN.

- _____, (2011), *Trade and Development Report 2011*, Geneva: UN. Website at www.unctad.org/en/docs/tdr2011_en.pdf accessed 22 November 2011.
- _____, “Convention on the Law of the Sea (UNCLOS)”, for a general overview, see, www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf accessed 19 February 2012
- _____, (1958) *United Nations Convention on the Law of the Sea (UNCLOS I)*, NY: United Nations.
- _____, (1960), *United Nations Convention on the Law of the Sea (UNCLOS II)*, NY: United Nations.
- _____, (1973-1982), *United Nations Convention on the Law of the Sea (UNCLOS III)*, esp. Article 101, New York: United Nations. For specific information on piracy and Article 101 see especially Part VII, High Seas Section I, pp. 57 et seq. at www.un.org/depts/los/convention_agreements/convention_overview_convention.htm accessed 19 February 2012.
- United Nations Educational Scientific and Cultural Organisation (UNESCO) see website at www.unesco.org/mab/doc/prizes/sq_winners.pdf, for details of UNESCO’s MAB programme which is responsible for awarding the Sultan Qaboos prize for environmental preservation, accessed 15 April 2012.
- United States of America, Central Intelligence Agency (CIA) (2011), *World Fact Book: Oman*, <https://www.cia.gov/library/publications/the-world-factbook/geos/mu.html>, accessed 24 April 2012.
- _____, Department of Defense (1994), *Naval Doctrine Publication NDPI, Naval Warfare*, Washington DC: Department of the Navy.
- _____, (2001), *Dictionary of Military and Associated Terms*, Joint Publication 1-02. Washington DC: Department of Defense.
- _____, Department of Energy, Energy Information Administration (EIA) (Feb 2011), *Country Analysis Briefs: Oman* (including energy overview and petroleum development brief), website at www.eia.gov/countries/cab.cfm?fips=MU accessed 4 May 2012.
- _____, Office of Naval Strategy (2009), Report on “Iran’s Modern Naval Strategy: From Guerrilla Warfare to a Modern Naval Strategy”, available from website of Federation of American Scientists (FAS), www.fas.org/irp/agency/oni/iran-navy.pdf, accessed 26 April 2012.

SECONDARY SOURCES

Academic Studies

- Aarts, Paul, (1999), *The Arab Oil Weapon: a One Shot Edition?* Occasional paper No 34, Abu Dhabi: The Emirates Center for Strategic studies and Research.
- Afrasiabi, K. L. (1994), *After Khomeini, New Directions in Iran's Foreign Policy*, Boulder CO: Westview Press.
- Alderton, Patrick M. (2004), *Reeds Sea Transport: Operations and Economics*, London: Adlard Coles Nautical.
- Amin, Sayed H. (1981), *International and Legal Problems of the Gulf*, London: Middle East and North African Studies Press.
- Anthony, Ian, and Peter Jones (1998), *International Arms Transfers and the Middle East*, Occasional paper no 21, Abu Dhabi: Emirates Center for Strategic Studies and Research.
- Anwar, Capt. Mohammed TI(M) (1995), "Role of Smaller Navies", unpublished PhD thesis, University of Karachi: Pakistan, at pr.hec.gov.pk/Thesis/530.pdf , accessed 24 January 2012.
- Armistead, Leigh (2004), *Information Operations, Warfare and the Hard Reality of Soft Power*, Washington DC: Brassey's Inc.
- Auerswald, David, Janet Breslin-Smith, and Col. Paula Thornhill (2004), "Teaching Strategy Through Theory and Practice", *Defence Studies* (Journal of the Joint Services Command and Staff College, UK), Vol 4, no.1, pp.1-17.
- Australian Institute of Criminology (2008), "People smuggling versus trafficking in persons: what is the difference?", *Transnational Crime Brief*, no. 2, 2008, website www.aic.gov.au/documents/F/2/2/%7BF226C525-F4D9-4AEC-B6D8-424A7E44C27B%7Dtc002.pdf accessed 23 April 2012.
- Bailet, François (2002), "Ocean Governance: Towards an Oceanic Circle", NY, UN HQ, 25 & 26 September 2002 at www.un.org/Depts/los/convention_agreements/convention_20years/presentation_ocean_governance_frbailet.pdf, accessed 30 March 2012.
- Balakarishman, K.S. (1998), *Asia-Pacific Security and the ASEAN Regional Forum: Lessons for the GCC*, Occasional paper no 25, Abu Dhabi: The Emirates Center for Strategic studies and Research.
- Banerjee, Indranil (nd), "The Indian Navy at War 1971", at www.bharat-rakshak.com/NAVY/History/1971War/Banerjee.html accessed 15 December 2011

- Bardhan, Pranab K. (1970), *Economic Growth, Development, and Foreign Trade: a Study in Pure Theory*, New York: Wiley Inter-science.
- Bowden Anna and Basnet Shikha (2011), “*The Economic Cost of Somali Piracy*” Working Paper, Oceans Beyond Piracy, a program of One Earth Future Foundation, at http://oceansbeyondpiracy.org/sites/default/files/economic_cost_of_piracy_2011.pdf accessed 11 April 2012.
- Bathurst R.D. (1972), “Maritime Trade and Imamate Government: Two Principal Themes in the History of Oman to 1728”, in Derek Hopwood, ed., *The Arabian Peninsula: Society and Politics*, London: Allen & Unwin.
- Baylis, John, et al., eds. (1987), *Contemporary Strategy Theories and Concepts*, New York: Holmes and Meier.
- Beach Edward (1988), *Keepers of the Sea*, Annapolis MD: The US Naval Institute.
- Beasant, John (2000), *Oman: The True-Life Drama and Intrigue of an Arab State*, Edinburgh and London: Mainstream Publishing.
- Bensahel, Nora, and Daniel L. Byman (2004), *The Future Security Environment in the Middle East*, Santa Monica CA: RAND Cooperation.
- Berneke Agnes (2010), *Geopolitics in the 21st Century*, Budapest: King Sigismund College and Paris: L’Harmattan Publishing.
- Blake, Gerald (1982), *Maritime Aspects of Arabian Geopolitics*, Arab Papers No 11, London: The Arab Research Centre.
- Beyoghlow Kamal A. (1999), *The Strategic Implications of Biological and Chemical Weapons on Gulf Security*, Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Booth, Ken (1977), *Navies and Foreign Policy*, London: Croom Helm.
- Borgerson, Scott G. (2009), *The National Interests and the Law of the Sea*, Council on Foreign Relations, Special Report No.46, New York NY: CFR Press.
- Bowden, Anna, and Shikha Basnet (2011), *The Economic Cost of Piracy 2011*. Report for the One Earth Future Foundation, Colorado USA, website at oceansbeyondpiracy.org/cost-of-piracy/economic, accessed 11 April 2011.
- Bredima-Savopoulou, Anna, and John Tzoannos (1990), *The Common Shipping Policy of the EC*, Amsterdam: North-Holland/Elsevier.
- Broadman, Harry G. (2007), *Africa's Silk Road: China and India's New Economic Frontier*, Washington DC: The International Bank for Reconstruction and Development (IBRD).
- Brodie, Bernard (1973), *War and Politics*, New York NY: Macmillan Publishing.

- Brooks, Mary R., Kenneth Button and Peter Nijkamp, eds. (2002), *Maritime Transport* (Classics in Transport Analysis, Series 1), Cheltenham UK: Edward Elgar.
- Buzan, Barry, and Lene Hansen (2009), *The Evolution of International Security Studies*, Cambridge: Cambridge University Press.
- Cable, James (1971), *Gunboat Diplomacy: Political Application of Limited Naval Forces*, New York: Praeger Publishers.
- Casey-Vine, Paula, ed. (1995), *Oman in History*, London: Immel Publishing.
- Castex, Raoul (1994), *Strategic Theories*, first pub. c. 1929 [this edition selected and trans. by Eugenia C. Kiesling], Annapolis MD: Naval Institute Press.
- Clausewitz, Carl von (1976), *On War*, ed. and trans. of the original 1832 edition by Michael Howard and Peter Paret, Princeton NJ: Princeton University Press.
- Clayton, Peter (2008), *Two Alfa Lima, the First Ten Years of the History of Trucial Oman and the Oman Scouts 1960-1950* [in Arabic], Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Cleuziou, S., and M. Tosi (2007), *In the Shadow of the Ancestors, the Prehistoric Foundations of the Early Arabian Civilization in Oman*, Muscat: Ministry of Heritage & Culture.
- Corbett, Julian S. (1911), *Some Principles of Maritime Strategy*, London: Macmillan [Original edition, available through Tutis Digital Publishing Pvt Ltd. Mumbai, 2008]
- Cordesman Anthony H. and Abraham R. Wagner (1990), *The Lessons of Modern War: Volume II - The Iran-Iraq War*, Washington DC: Center for International and Strategic Studies (CSIS), and Boulder CO: Westview Press [Ch.9 also in restricted format at csis.org/files/media/csis/pubs/9005lessonsiraniraqii-chap09.pdf (accessed 11 February 2012)]
- Cordesman, Anthony H., and Khalid R. Al-Rodhan (2006), *The Global Oil Market: Risks and Uncertainties*, CSIS Significant Issues series, Volume 28 Number 1, Washington DC: Centre for Strategic and International Studies.
- Cottrell, Alvin J. et al. (1981), *Sea Power and Strategy in the Indian Ocean*, Beverly Hills CA: Sage Publications.
- Coulter, Daniel Y. (2002), "The Rise of Hub Ports," in Sam J. Tangredi, ed., *Globalization and Maritime Power*, Washington DC: National Defense University Press.
- Devlin, Julia (1998), *An Institutional Approach to Economic Policy Reform in the Gulf States*, Occasional paper no 13, Abu Dhabi: Emirates Center for Strategic studies and Research.

- Dinstein, Yoram (2004), *The Conduct of Hostilities Under the Law of International Armed Conflict*, Cambridge and NY: Cambridge University Press.
- Earle, Edward Mead, ed. (1971), *Makers of Modern Strategy, Military Thought from Machiavelli to Hitler*, Princeton NJ: Princeton University Press.
- Economist Intelligence Unit (EIU) (2008), *Oman: Country Profile*, London: EIU.
- Ehteshami, Anoushiravan, and Manshour Varasteh (1991), *Iran and the International Community*, London and NY: Routledge.
- Ehteshami, Anoushiravan (1998), *The Changing Balance of Power in Asia*, Occasional paper no 16, Abu Dhabi: The Emirates Center for Strategic studies and Research.
- Elleman, Bruce A., Andrew Forbes and David Rosenberg (2010), *Piracy and Maritime Crime: Historical and Modern Case Studies*, Newport RI: US Naval War College Press.
- Emerson, Sarah A. (2000), “The Relevance of Caspian Oil for the World Market”, in Emirates Center for Strategic Studies and Research, *Caspian Energy Resources, Implications for the Arab Gulf*, Reading: Ithaca Press for ECSSR, Abu Dhabi UAE.
- Emirates Center for Strategic Studies and Research (ECSSR) (1997), *Gulf Energy and The World; Challenges and Threats*, London: I. B. Tauris for ECSSR.
- Enders, Walter, and Todd Sandler (2006), *The Political Economy of Terrorism*, Cambridge: Cambridge University Press.
- Erickson Andrew S, et al., (2007). *China's Future Nuclear Submarine Force*, China Maritime Studies Institute (CMSI), Vol.1, Annapolis MD: Naval Institute Press.
- Evans, David C., and Mark R. Peattie (1997), *Kaigun: Strategy, Tactics, and Technology in the Imperial Japanese Navy 1887-1941*, Annapolis MD: Naval Institute Press.
- Evans, M. H. H. (1990), *Amphibious Operations, The Projection of Sea Power Ashore*, Vol.4 of Brassey's Seapower Series, London: Brassey's.
- Farhang, Rajae (1993), *The Iran-Iraq War: the Politics of Aggression*, Gainesville FL: University Press of Florida.
- Farthing, Bruce (1993), *International Shipping: an Introduction to the Policies, Politics and Institutions of the Maritime World*, 2nd ed., London; Lloyd's of London Press Ltd.
- Feste, Karen A (1996), *The Iranian Revolution and political Change in the Arab World*, Occasional paper No 4. The Emirates Center for Strategic studies and Research.
- Forbes, Andrew, ed. (2002), *The Strategic Importance of Seaborne Trade and Shipping: A Common Interest of Asia Pacific*, Papers in Australian Maritime Affairs no. 10, Canberra: Royal Australian Navy Sea Power Centre, at www.navy.gov.au/w/images/PIAMA10.pdf accessed 4 May 2012.

- Frankel, Ernst Gabriel (1987), *The World Shipping Industry*, London: Croom Helm.
- Fuller, Graham E. (1991), *The Centre of the Universe. The Geopolitics of Iran*, Boulder CO: Westview Press.
- Gause, F. Gregory III (2010), *The International Relations of the Persian Gulf*, Cambridge and NY: Cambridge University Press, 2010.
- Glantz, David M. (1992), *The Military Strategy of the Soviet Union: a History*, London: Frank Cass.
- Gorshkov, Sergei G. (1979), *The Sea Power of the State*, Oxford: Pergamon Press (trans. of Russian original, *Morskaya Moshch Gosu-darstva*, Moscow, 1976).
- Grammenos, Costas Th., ed. (2002), *The Handbook of Maritime Economics and Business*, 1st ed., London: Lloyd's of London Press.
- Gray, Colin S. (1992), *The Leverage of Sea Power: the Strategic Advantage of Navies in War*, New York, The Free Press.
- _____, (1999), *Modern Strategy*, London and NY: Oxford University Press.
- Graz, Liesl (1982), *The Omanis, Sentinels of the Gulf*, London and NY: Longman.
- Greenaway, David (1988), *Economic Development and International Trade*, London: Macmillan.
- Grime, Robert P. (1991), *Shipping Law* 2nd ed., London: Sweet and Maxwell,
- Grove, Eric (1990), *The Future of Sea Power*, London: Routledge.
- Ghubash Hussein (2006), *Oman Islamic Democratic Tradition*. London: Routledge.
- Gulf Co-operation Council (GCC) (2011), Summit Conference, Riyadh, Saudi Arabia, 19-20 December 2011 (covered by Al-'Arabiyya satellite channel).
- Hamoudi, Hadi H. (2006), *Oman, Prosperity Today, the State and Development*, London: Scientific Academy for Research and Study (SARS).
- Harding, Richard (1999), *Seapower and Naval Warfare, 1650-1830*, London: UCL Press and Routledge.
- Al-Hassani, Salim T. S., Elizabeth Woodcock, and Rabah Saoud (eds.) (2006), *1001 Inventions Muslim Heritage in Our world*, Manchester: Foundation for Science, Technology and Civilization (FCTC).
- Hassan, Ammad (2005), "Pakistan's Gwadar Port: Prospects of Economic Revival", unpublished MA thesis, Naval Postgraduate School, Monterey California USA, at www.nps.edu/Academics/Centers/CCC/Research/StudentTheses/.pdf accessed 24 January 2012.

- Hawley, Donald (1997), *Oman and its Renaissance* (rev. of 1990 ed.), London: Stacey International.
- Haydon, Peter, and Ann L. Griffiths, eds. (1994), *Maritime Security and Conflict Resolution at Sea in the Post-Cold War Era*, Halifax NS: Dalhousie University's Centre for Foreign Policy Studies.
- Henderson, A., et al. (2007), "The Sultanate of Oman shark fishery; Species composition, seasonality and diversity", *Fisheries Research* (Sultan Qaboos University, Muscat), Vol. 86, issues 2-3, pp. 159-168 (also available through, www.sciencedirect.com/science/article/pii/S016578360700121X, accessed 28 May 2012.
- Herbert-Burns, Rupert, Sam Bateman, and Peter Lehr, eds. (2009), *Lloyd's MIU Handbook of Maritime Security*, London: Taylor and Francis.
- Higgott, Richard (1998), *Globalization and Regionalization: New Trends in World Politics*, Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Hill, Rear Admiral John R. (1986), *Maritime Strategy for Medium Power*, Annapolis MD: Naval Institute Press.
- _____, (2000), *Maritime Strategy Revised*, WP No.3, Royal Australian Navy, Sea Power Centre, Canberra, www.navy.gov.au/w/images/Working_Paper_3.pdf accessed 30 January 2012.
- Human Rights Watch (HRW) (2012), *World Report 2012: United Arab Emirates* available at www.hrw.org/world-report-2012/world-report-2012-united-arab-emirates accessed 21 March 2012.
- Hunter, Shireen T. (2000), *Iran, Between the Gulf and the Caspian Basin, Strategic and Economic Implications*, Occasional paper No 38, Abu Dhabi: The Emirates Center for Strategic studies and Research.
- Iheduru, Okechukwu Chris (c. 1996), *The Political Economy of International Shipping in Developing Countries*, Newark DE: University of Delaware Press.
- Al-Jabri, Khamis Salim, Lieutenant Commander, Royal Navy of Oman (2005), "To what extent does Iran play a Destabilising Role in the Middle East" unpublished MA thesis, Joint Services Command and Staff College, Shrivenham: UK, 2005.
- Janis, Mark W. (1976), *Sea power and the Law of the Sea, Studies in Marine Affairs*, Lexington MA: Lexington Books.
- Jasani, Bhupendra, and Andrew Rathmell (1998), *The Role of Space-based Surveillance in Gulf Security*, Occasional paper No 29, Abu Dhabi: The Emirates Center for Strategic studies and Research.
- Jennings, R. Y. (1963), *The Acquisition of Territory in International Law*, Manchester and NY: Manchester University Press/Oceana Publication Inc.

- Ji, Guoxing (2002), *Asian Pacific SLOC Security: The China Factor*, Working Paper series, No. 10, Canberra: Royal Australian Navy Sea Power Centre.
- Johnson, Lyndon, and Adam Starchild (2004), *Effective Use of the Sea*, Report of the Panel on Oceanography of the President's Science Advisory Committee, Honolulu, HI: University Press of the Pacific.
- Khalaf, Abdulhadi, and Giacomo Luciani, eds. (2006), *Constitutional Reform and Political Participation in the Gulf*, Dubai: UAE: Gulf Research Center.
- Kanaga, Rajan Veluthevar (1998), *Asia and the Gulf; Prospect for Cooperation*, Occasional paper no 28, Abu Dhabi: The Emirates Center for Strategic studies and Research.
- Katzman, Kenneth (2012), "Oman: Reform, Security, and U.S. Policy", Congressional Research Service (CRS) report, www.fas.org/sgp/crs/mideast/RS21534.pdf accessed 21 March 2012.
- Kechichian, Joseph A. (1995), *Oman and the World: the Emergence of an Independent Foreign Policy*, Santa Monica CA: RAND.
- Kedourie, Elie (1992), *Politics In The Middle East*, Oxford: Oxford University Press.
- Kelly, John Barrett (1968), *Britain and the Persian Gulf 1795-1880*, Oxford: Clarendon Press.
- _____, (1980), *Arabia the Gulf and the West, a Critical View of the Arabs and their Oil Policy*, London: George Weidenfeld and Nicholson.
- Kighton, R. J. (2004), "The Psychology of Risk and its Role in Military Decision-making", *Defence Studies* (Journal of the Joint Services Command and Staff College, UK), Vol 4, no.3, pp.309-332
- Kimball, Lee A. (2001), *International Ocean Governance: Using International Law and Organizations to Manage Marine Resources Sustainability* [rev.2003], Gland (Switzerland) and Cambridge: International Union for Conservation of Nature and Natural Resources (IUCN).
- Kishtainy, Khalid (2007), *Oman and the Experiment in Democracy*. London: Elliott & Thompson.
- Kissinger, Henry A. (1957), *Nuclear Weapons and Foreign Policy*, New York: Harper and Row, for the Council on Foreign Relations.
- Klein, Lawrence R. (1998), *Implication of WTO Membership for the Global Economy*, Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Klein, Natalie (2011), *Maritime Security and the Law of the Sea*, London and NY: Oxford University Press.

- Koyama, Ken (1997), "Growing Energy Demand in Asia Countries: Opportunities and Constraints for the Gulf Energy Exporters", in The Emirates Center for Strategic Studies and Research, *Gulf Energy and the World, Challenges and Threats*, London: I B Tauris for the ECSSR.
- Krepon, Michael (2000), "Introduction", in Emirates Center for Strategic Studies and Research, *The Balance of Power in South Asia*, Abu Dhabi: ECSSR.
- Kumar, Kr Deepak (2010), "Asymmetric Threats and Their Challenges to Freedom of Navigation", unpublished MSc thesis, World Maritime University, Malmö, Sweden, at www.wmu.se/sof/or.jp/fd2011_kumar.pdf, accessed 24 April 2012.
- Lawson, Fred H. (1997), *Dialectical Integration in the Gulf Co-operation Council*, Occasional paper No 10, Abu Dhabi, Emirates Center for Strategic Studies and Research.
- Leggate, Heather, James McConville, and Alfonso Morvillo, eds. (2005), *International Maritime Transport*, London and New York: Routledge.
- Long, David E., and Christian Koch (1997), "Introduction", *Gulf Security in the Twenty-first Century*, Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Lorange, Peter (2009), *Shipping Strategy, Innovating for Success*, Cambridge: Cambridge University Press.
- Lovett, William A. (1996), *United States Shipping Policies and the World Market*, Westport CN: Quorum Books.
- Luttwak, Edward N. (1974), *The Political Uses of Sea Power*, Baltimore, MD: The John Hopkins University Press.
- McNicholas, Michael (2008), *Maritime Security: an Introduction*, Oxford: Butterworth-Heinemann (Elsevier).
- McNaugher, Thomas L. (1985), *Arms and Oil: U.S. Military Strategy and the Persian Gulf*, Washington DC: The Brookings Institution.
- McKnight, Sean, Neil Patrick, and Francis Toase, eds. (2000), *Gulf Security: Opportunities and Challenges for the New Generation*, London: The Royal United Services Institute for Defence Studies (RUSI).
- Mahan, A. T. (1890), *The Influence of Sea Power on History 1660-1783* (1987 edition published in New York by Dover Publications).
- Mansur, Ahsan S. and Volker Treichel (1999), *Oman Beyond the Oil Horizon: Policies Toward Sustainable Growth*, Occasional Paper No 185, Washington DC: International Monetary Fund.
- Maynard, John A. (1988), "Commercial Fisheries in Oman", report for the Omani-American Joint Commission for Economic and Technical Cooperation, prepared

by the Bureau for Private Enterprise, US Agency for International Development (USAID), pdf.usaid.gov/pdf_docs/PNABC046.pdf accessed 16 April 2012.

- Mazrui, Ali A. (1998), *Islam, Western Democracy and the Third industrial Revolution: Conflict or Convergence*, Lecture 17, Abu Dhabi UAE: The Emirates Center for Strategic Studies and Research.
- Mego, Milan N. (2007), *Joint Operational Warfare, Theory and Practice*, Newport RI: USA Naval War College.
- Menon, Raja (1998), *Theory on Maritime Strategy and Continental Wars*, London: Frank Cass.
- Miller, David and Chris Miller (1986), *Modern Naval Combat*, London: Salamander Books Ltd.
- Mingst, Karen A. and Jack L. Snyder (2004), *Essential Readings in World Politics* 2nd ed., NY and London: W.W. Norton.
- Mitchell, Donald W. (1974), *A History of Russian and Soviet Sea Power*, London: André Deutsch.
- Moller, Bjarn (1997), *Resolving the Security Dilemma in the Gulf Region*, Occasional paper No 9, Abu Dhabi, Emirates Center for Strategic studies and Research.
- Nawaz Raja Rab, (2004), "Maritime Strategy in Pakistan", unpublished MA thesis, Naval Postgraduate School, Monterey California, USA, 2004, at www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA429850 accessed 24 January 2012.
- Nixon, Richard (1988), *1999: Victory without War*, New York: Simon and Schuster.
- Onley James, (2007), *The Arabian Frontier of the British Raj, Merchants, Rulers, and the British in the Nineteenth-Century Gulf*, Oxford University Press.
- Owen, Roger (1992), *State, Power and Politics in the Making of the Modern Middle East*, London: Routledge.
- Oxford Business Group (OBG) (2010), *The Report: Oman 2010*, London and Dubai: OBG.
- _____, (2011), *The Report: Oman 2011*, London and Dubai: OBG.
- _____, (2012), *The Report: Oman 2011*, London and Dubai: OBG.
- Pamborides G. P, (1999), *International Shipping Law: Legislation and Enforcement*, Athens: Ant. N. Sakkoulas Publishers.
- Paret, Peter (1986), *Makers of Modern Strategy*, Princeton NJ: Princeton University Press.
- Parrenas Julius Caesar (1998), *The GCC and the development of ASEAN*, Occasional paper no 26, Abu Dhabi: Emirates Center for Strategic Studies and Research.

- Parry, Chris, Rear Admiral (ret'd) (2010), "The Sea in a Variably Globalised World", in *RUSI Defence Systems*, Summer issue, London: Royal United Services Institute, at www.rusi.org/downloads/assets/ParryRDSsummer2010.pdf accessed 25 April 2012.
- Parshall, Jonathan B., and Anthony P. Tully (2005), *Shattered Sword, the Untold Story of the Battle of Midway*, Washington DC: Potomac Books.
- Pasha, A. K. (1999), *India and Oman: History, State, Economy and Foreign Policy*, New Delhi: Gyan Sagar Publications.
- Peimani, Hooman (1999), *Iran and the United States. The Rise of the West Asian Regional Grouping*, Westport CN: Praeger Publishers.
- Peterson, J. E. (2007), *Oman's Insurgencies: the Sultanate's Struggle for Supremacy*. London: Al-Saqi Books.
- Phillips, Wendell (1967), *Oman: A History*, New York: Reynal and Company.
- Pratt, Fletcher (2000), *The Battles that Changed History* [unabridged re-publication of the 1st edition, 1956], New York: Dover Publications.
- Price, Richard (1986), *The Maritime Laws of the Arabian Gulf Co-operation Council States*, Vol.1, London: Graham and Trotman.
- Pugh, Michael (1994), *Maritime Security and Peacekeeping: a Framework for United Nations Operations*, Manchester: Manchester University Press.
- Al-Qasimi, Sultan bin Muhammad (1989), *Taqsim al-Imbraṭuriyah al-Umaniyah, 1856-1862* [The Demise of the Omani Empire 1862-1865] 3rd ed., Dubai: Al-Bayan Press.
- Ranft, Bryan, and Geoffrey Till (1983), *The Sea in Soviet Strategy*, London: Macmillan.
- Razafi, Ahmed (1997), "Continental Shelf Delimitation and Related Maritime Issues in the Persian Gulf", *Ocean Development and International Law: Studies on the International, Legal, Industrial and Policy Aspects of Ocean Development*, Vol. 29, The Hague: Kluwer International.
- Rezun, Miron (1990), *Iran at the Crossroads, Global Relations in a Turbulent Decade*, Boulder CO: Westview Press.
- Richards, Katherine, Lieutenant Commander, (2003), "Classical Naval Strategy and Medium Power Navies" Royal Australian Navy Defence Publishing Service: Canberra, available at www.navy.gov.au/w/images/PIAMA14_1.pdf accessed 30 January 2012.
- Richardson, Michael (2004), *A Time Bomb for Global Trade: Maritime-related Terrorism in an Age of Weapons of Mass Destruction*, Singapore: ISEAS Publications.

- Rifkind, Malcolm (1997), *Britain and the Middle East into the 21st Century*, Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Riphenburg, Carol J. (1998), *Oman: Political Development in a Changing World*, Westport, CT, Praeger Publishers.
- Roberts, Adam, and Richard Guelff (1982), *Documents on the Laws of War*, 3rd ed., 2000, London: Oxford University Press.
- Rubin, Barry, ed. (1988), *The Politics of Terrorism, Terror as a State and Revolutionary Strategy*, Lanham MD: University Press of America.
- Saikal, Amin (1997), *Emerging Powers: the Cases of China, India, Iran, Iraq and Israel*, Occasional paper no 11, Abu Dhabi: Emirates Center for Strategic studies and Research.
- Saleem, Mohammed (1997), *GATT and Impact on the GCC Countries*, Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Sharpley, Richard, and David J. Telfer eds. (2002), *Tourism Development: Concepts and Issues* (Aspects of Tourism series), Bristol: Channel View Publications.
- Scudder, Kathleen A. (2009), "The Value of Doctrine for Developing Organization", unpublished MS thesis, Naval Postgraduate School, Monterey California, USA, available at www.dtic.mil/dtic/tr/fulltext/u2/a514379.pdf, accessed 24 January 2012.
- Sheppard, C. et al. (2010), "The Gulf: a Young Sea in Decline", *Marine Pollution Bulletin*, Vol. 60, no. 1, pp. 13-38; also at www.elsevier.com/locate/marpolbul .
- Singh, Jasjit (1998), *Enhancing Peace and Cooperation in West Asia: An Indian Perspective*, Occasional paper no 27, Abu Dhabi, The Emirates Center for Strategic Studies and Research.
- Smith, Brian D. (1988), *State Responsibility and the Marine Environment: the Rules of Decision*, Oxford: The Clarendon Press.
- Snyder, Craig A, (1999), *Contemporary Security and Strategy*, London: Macmillan.
- Starr, Frederick S. (1999), *The Security Environment of Central Asia*, Abu Dhabi: The Emirates Center for Strategic Studies and Research.
- Stevens, Paul (1997), "The Role of the Gulf in World Energy: Lessons from the Past", Ch.1 in The Emirates Center for Strategic Studies and Research, *Gulf Energy and the World, Challenges and Threats*, London: I B Tauris for the ECSSR.
- Stopford, Martin (1997), *Maritime Economics*, 2nd ed., London: Routledge.
- _____, (2002), "Shipping Market Cycles", in C Grammenos, ed., *The Handbook of economics and Business*, 1st ed., London: Lloyds of London Press.

- _____, (2009), *Maritime Economics*, 3rd ed., London: Routledge.
- Strachan, Hew (2011), "Strategy and Contingency", *International Affairs*, Vol. 87, no. 6, November, pp. 1281-1296.
- Stueck, William (2002), *Rethinking the Korean War, a New Diplomatic and Strategic History*, Princeton NJ and Oxford: Princeton University Press.
- Sturt, Richard H. B. (1989), *The Collision Regulations: the Application and Enforcement of the Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1989*, London: Lloyd's of London Press.
- Sun Tzu (6th c. BC/1963), *On the Art of War*, translated by Samuel B. Griffith, Oxford: Oxford University Press.
- Al-Suwaidi, Jamal S. (1969), *Iran and the Gulf, a Search for Stability*, Abu Dhabi: Emirates Center For Strategic Studies and Research.
- _____, (1995), *The Yemeni War of 1994: Causes and Consequences*. Abu Dhabi: Emirates Center For Strategic Studies and Research.
- _____, ed. (2000), *The Gulf: Future Security and British Policy*, Abu Dhabi: Emirates Center For Strategic Studies and Research.
- Tangredi, Sam J., ed. (2002), *Globalization and Maritime Power*, Washington DC: National Defense University Press.
- Till, Geoffrey (1982), *Maritime Strategy and the Nuclear Age*, London: Macmillan.
- _____, (2004a), *The Development of British Naval Thinking*, London: Routledge.
- _____, (2004b), *Seapower: A Guide for the Twenty-First Century*, 1st ed., London: Frank Cass.
- _____, (2007), "New Directions in Maritime Strategy", *Naval War College Review*, Vol. 60, No 4, Autumn (Newport RI: US Naval War College).
- _____, (2009), *Seapower: A Guide for the Twenty-First Century*, 2nd ed., London: Routledge.
- Townsend, John (1977), *Oman, the Making of the Modern State*, London: Croom Helm.
- Tracy, Nicholas (1991), *Attack On Maritime Trade*, Toronto: University of Toronto Press.
- Twinam, Joseph Wright (1997), *The United States and the Gulf: half a Century and Beyond*, Occasional paper no 12, Abu Dhabi: Emirates Center for Strategic Studies and Research.
- Valeri, Marc (2009), *Oman: Politics and Society in the Qaboos State*, London: Hurst & Company.

- Valinassab, T., et al. (2006), "Abundance of demersal fish resources in the Persian Gulf and Oman Sea", *Journal of the Marine Biological Association of the United Kingdom*, Vol. 86, pp. 1455-1462.
- Vassiliki, Bageri, and Y. Katsoulakos (2008), "Evolution of European Competition Policy Regulations for the Maritime Sector", in SKEMA Consortium (European Commission), *Seventh Framework Programme: Maritime and Logistics Co-ordination Platform*, Athens University of Economics and Business (AUEB) for SKEMA Consolidation Studies WP No 2, pp.15-22, available at www.myprojectspace.eu/AppDocuments/tblDocuments/85/D2.1.4.1%20EU%20Competition%20Policy%20Maritime%20Sector%20AUEB%2015May09.pdf accessed 30 January 2012.
- Vego, Milan N. (1992), *Soviet Naval Tactics*, Annapolis MD: The US Naval Institute.
- _____, (1999), *Naval Strategy and Operations in Narrow Seas*, Portland OR: Frank Cass.
- _____, (2007), *Joint Operational Warfare, Theory and Practice*, Newport, Rhode Island: Naval War College.
- Vallejo, S.M. (1994) New structures for decision-making in integrated ocean policy. In: P. B. Payoyo (ed.) *Ocean governance: Sustainable development of the sea*. Tokyo: United Nations University Press, pp. 71–95.
- Villiers, Allan (2006) *Sons of Sindbad, the Photographs*, intro. William Facey et al., London: The National Maritime Museum.
- Waber, Andrew J. (2008), "Popular Perceptions of the American Merchant Marine during WWII", unpublished MA thesis, Florida State University, USA, 2008, available at diginole.lib.fsu.edu/etd/1434, accessed 29 April 2012.
- Weeks, Albert L. (2002), *Stalin's Other War: Soviet Strategy 1939-1941*, Lanham MD: Rowman and Littlefield Inc.
- Weigley, Russell F. (1977), *The American Way of War; a History of the United States Military Strategy and Policy*, Bloomington IN: Indiana University Press.
- Westing, Arthur H., ed. (1986), *Global Resources and International Conflict: Environmental Factors in Strategic Policy*, London and NY: Oxford University Press, for Stockholm International Peace Research Institute (SIPRI).
- Wighton, R. J. (2004), "The Psychology of Risk and its Role in Military Decision-making", *Defence Studies* (Journal of the Joint Services Command and Staff College, UK), Vol. 4, no.3, 309-332.
- Williamson, Murray, and Allan R. Millett (1996), *Military Innovation in the Interwar Period*, Cambridge and NY: Cambridge University Press.

Williamson, Murray, and Allan R. Millett (2000), *A War to Be Won, Fighting the Second World War*, Cambridge MA and London: The Belknap Press of Harvard University Press.

Wilson, B. (2005), "History of the Royal Navy of Oman", unpublished document.

Wilson Rodney (1998), *The Changing Composition and Direction of GCC Trade*, Occasional Paper No18, The Emirates Center for Strategic studies and Research, Abu Dhabi.

Wolff, Brian R., and John Alexander (Commander USN Ret) (1997), *From the Sea: the US Navy and Marine Corps into the 21st Century*, London: Osprey.

Wright, Martin, ed. (1989), *Iran: the Khomeini Revolution* [series on Countries in Crisis] London: Longman.

World Bank (2012)

Yoshihara, T., and J. R. Holmes, eds. (2008), *Asia Looks Seaward: Power and Maritime Strategy*, Westport, CN: Praeger.

Zad, Khalil Zilmi, ed. (1996), *The Strategic Assessment*, Translated Studies No 5 [Arabic], Abu Dhabi: Emirates Center for Strategic Studies and Research.

Media: Television [listed by date of transmission]

5 December 2011, Oman State TV, "Pages from Arabian Maritime Memory", [documentary in Arabic];, see www.oman-tv.gov.om/tvara/txtd15.asp

12 December 2011, Al-'Arabiyya Satellite Channel News, "Coverage of GCC Summit Conference", Riyadh, Saudi Arabia.

8 January 2012, Oman State TV, interview with the Director General of Customs, Royal Oman Police.

19 February 2012, Oman State TV, live interview with the Under Secretary of the Ministry of Agriculture and Fisheries Wealth, on "Wealth for Fisheries".

6 June 2012, Oman State TV, live interview with the Minister of Tourism, on "Tourism in Oman".

9 June 2012, Oman State TV, live interview with the Minister of Transport and Communications on "Al-Duqm dry dock".

Media: Newspapers and Magazines [listed by date of publication]

AMEinfo (Dubai)

18 February 2009, article on “Oil production from Oman’s first offshore block”, at www.ameinfo.com/185251.html , AMEinfo’s business resource website, accessed 14 January 2012.

Business Monitor International (UK),

1 March 2011, “Oman Oil and Gas Report Q2 2011”, at marketpublishers.com/r/O2A2FE68353EN.html, accessed 11 April 2012.

6 March 2012, “Oman Tourism Report Q2 2012”, marketpublishers.com/r/O2A2FE68353EN.html, accessed 11 April 2012

Financial Times (UK)

12 December 2011, article on “Industrial Transport”, p. 23. (FT is subscriber-only)

22 December 2011, article on “Analysis of Shipping”, p. 12.

Iraq Business News (UK)

10 November 2011 & 22 December 2011, articles about “Iraq’s ports”, online at www.iraq-businessnews.com/tag/ports/, accessed 24 January 2012

Jane’s Intelligence Weekly

19 May 2010, “Africa-Gulf of Guinea Faces Rising Piracy Challenge”, Vol. 2, no 18, p.7 (JIW published in hard copy for 2 years only and is now entirely online)

Jane’s Navy International

May 2010, “Anti-Piracy Operation”, Vol. 115, pp. 27-30.

Khaleej Times newspaper,

9 December 2011, article on “DP World to add 1m TEUs at existing Jebel Ali facility” www.khaleejtimes.com/biz/inside.asp?xfile=/data/business/2011/December/business_December147.xml§ion=business accessed 9 December 2011.

Middle East Economic Digest (MEED, London)

9 June 2011, “Oman spends to curb unrest”, in MEED supplement, *Middle East Economic Review 2011*, p. 12: www.meed.com/supplements/2011/middle-east-economic-review-2011/oman-spends-to-curb-unrest/3100145.article (MEED is subscriber-only)

Muscat Daily

29 October 2011, “Oman LNG contributes nearly 15% to Sultanate’s GDP: official”, www.muscatdaily.com/Archive/Business/Oman-LNG-contributes-nearly-15-to-sultanate-s-GDP-Official accessed 14 April 2012.

Oman Daily (Arabic version)

21 May 2011, interview (by the newspaper) with Dr Lubna bint Hamoud Al-Kharousi, Director of Marine Science and Fisheries Centre, Muscat, p.7.

12 June 2011, “2010 Population Census” [announcing results] (in section for Omani economic news), issue 10967, p. 10.

Oman Daily Observer (English version) at main.omanobserver.om/pdf

2 June 2010, article “Oman Attends Port State Control Executive Panel Meeting in Bahrain”, at omanobserver.om/node/11707 (accessed 23 February 2012)

25 May 2011, “Duqm Investment to Touch US\$1.5bn”, press briefing by the Minister responsible for Financial Affairs, Muscat, pp.1,3, at main.omanobserver.om/files/pdf/2011/5/25/OmanObserver_25-05-11.pdf

17 July 2011, “Port Sultan Qaboos turns tourism hub”, pp. 1,2, available at main.omanobserver.om/files/pdf/2011/7/17/OmanObserver_17-07-11.pdf

8 October 2011, article “India’s SCI chooses Port of Salalah as trans-shipment hub”, p.18, main.omanobserver.om/files/pdf/2011/10/8/OmanObserver_08-10-11.pdf

20 November 2011, article “Move to Stop Illegal Fishing”, pp. 1, 6, available at main.omanobserver.om/node/72673, accessed 3 December 2011

25 November 2011, “Plan to regulate fish marketing”, pp.1,2, accessed 1 January 2012. main.omanobserver.om/files/pdf/2011/11/25/OmanObserver_25-11-11.pdf

6 December 2011, “Duqm Zone to Spur Diversification”, Council of Ministers discussion on progress at al-Duqm, pp.1,5,available at main.omanobserver.om/files/pdf/2011/12/6/OmanObserver_06-12-11.pdf accessed 1 May 2012.

6 December 2011, “US\$600m hydrocarbon project to fuel Musandam’s growth”, p.21, at main.omanobserver.om/files/pdf/2011/12/6/OmanObserver_06-12-11.pdf accessed 1 May 2012.

11 December 2011, “Sohar Bulk Terminal to begin operations soon”, pp. 1,21, at main.omanobserver.om/files/pdf/2011/12/11/OmanObserver_11-12-11.pdf

- 11 December 2011, “Top Priority to Fisheries Sector”, pp. 1,3, comment by Dr Fuad bin Jaafar al-Sajwani, Minister of Agriculture and Fisheries, at conference in Muscat, main.omanobserver.om/files/pdf/2011/12/11/OmanObserver_11-12-11.pdf
- 3 January 2012, “General Budget for 2012”, (Business section) pp. 23-24, available at main.omanobserver.om/files/pdf/2012/1/3/OmanObserver_03-01-12.pdf
- 21 February 2012, “Middle East and North Africa (MENA) trade with Russia, India and China set to grow fastest through to 2020”, Muscat, p. 22, available at main.omanobserver.om/files/pdf/2011/12/11/OmanObserver_21-02-12.pdf
- 21 February 2012, “New Oil and Gas fields in Oman” Muscat, pp. 1,4, available at, main.omanobserver.om/files/pdf/2012/2/21/OmanObserver_16-04-12.pdf
- 2 April 2012, “New Phase of Tourism Development in Oman”, Muscat, pp.5, 6, at, main.omanobserver.om/files/pdf/2012/4/2/OmanObserver_02-04-12.pdf
- 16 April 2012, “New Phase of Tourism Development in Oman”, p.6, available at main.omanobserver.om/files/pdf/2012/4/16/OmanObserver_16-04-12.pdf
- 17 April 2012, article on “Enhanced Oil Recovery set” Muscat, pp. 1,6 main.omanobserver.om/files/pdf/2012/4/17/OmanObserver_17-04-12.pdf
- 17 April 2012, article on “Oman eyes global investment in shale gas exploration” (Business section), Muscat, p. 21
- 23 April 2012, article on “Sultanate attracts Huge Investments”, Muscat, pp.1,6, available at main.omanobserver.om/files/pdf/2012/4/23/OmanObserver_23-04-12.pdf
- 16 May 2012, article on “Accidents and the wheel of extinction”, Muscat, p. 4, available at main.omanobserver.om/files/pdf/2012/5/16/OmanObserver_16-05-12.pdf
- 16 May 2012, article on “Roads to connect Duqm”, Muscat p. 1, available at, main.omanobserver.om/files/pdf/2012/5/16/OmanObserver_16-05-12.pdf
- 9 June 2012, article on “Duqm Dry Dock Complex opening today” Muscat, pp. 1,6 main.omanobserver.om/files/pdf/2012/6/9/OmanObserver_09-06-12.pdf
- 10 June 2012, article on “New floating dry dock plan” Muscat, pp. 1, 6, main.omanobserver.om/files/pdf/2012/6/10/OmanObserver_10-06-12.pdf

Pacific Maritime Magazine Online

- 22 September 2011, article “Russian Seaports Aim for Global Domination” by Eugene Gerden, www.pmmonline.com/2011/09/russian-seaports-aim-for-global.html, accessed 24 January 2012.

The Sunday Times (UK),

29 January 2012, article, “Mother ship bears down on pirate gangs” (World News section), p.32.

INTERNET SITES

aakazemi.blogspot.co.uk/2005/12/ali-asghar-kazemi-profile.html, website of Iranian scholar Ali-Asghar Kazemi, accessed 26 April 2012.

www.biblestudytools.com/classics/shedd-calvinism/the-meaning-and-value-of-the-doctrine-of-decrees.html?p=2 website expanding on the value and meaning of a doctrine.

csis.org/ website of the Centre for Strategic and International Studies, Washington DC, accessed 14 April 2012.

World Bank (2012), Report on “Military expenditure (% of GDP)”, The World Bank Group, <http://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS> , accessed 23 April 2012.

www.deepgreencrystals.com/images/GlobalOilChokePoints.pdf article on “World’s choke points and oil market vulnerability”, accessed 16 December 2011.

www.dnv.com/binaries/Intro%20to%20PSC_tcm4-421835.pdf, information on “Port State Control (PSC)”, accessed 23 February 2012.

www.economywatch.com/economic-statistics/country/Oman/ “Oman, economic statistics and indicators (as at August 2011)”, accessed 12 December 2011.

www.ehow.com/about_5118567_benefits-trade-zone.html, article by Edwin Thomas on “Benefits of a free trade zone”, accessed 11 April 2012.

www.ehow.com/about_6682943_effect-nets-crab-nets-ocean.html article on, “The Effect of Lost Fishing Nets & Crab Nets in the Ocean” accessed 6 January 2012.

www.eia.gov/cabs/Oman/Full.html, website of Energy Information Administration, Country Analysis Briefs, “Oman”, February 2011, accessed 13 April 2012.

www.eia.doe.gov/emeu/cabs/Oman/pdf.pdf , “Oman Energy Data”, accessed 10 April 2012.

www.fao.org/fi/oldsite/FCP/en/OMN/body.htm), Information on “Fisheries Management in the Sultanate of Oman” as at April 2001, accessed 4 July 2012.

www.huffingtonpost.com/huff-wires/20120616/ml-saudi-the-future/, article on “Saudi succession decision comes at critical time”, accessed 17 July 2012.

www.iags.org/n0929034.htm website of Institute for the Analysis of Global Security, article on “Energy Security and Liquefied Natural gas”, 29 September 2003, accessed 1 February 2012.

www.iala-aism.org/iala/index.php home page of the International Association of Marine Aids to Navigation and Lighthouse Authorities, accessed 23 February 2012.

www.ihp.int/srv1/ home page of the International Hydrographic Organization (headquartered in Monaco), accessed 23 February 2012.

<https://www.ingepo.ro/en/materials/531/economic-financial-crisis-and-the-armament-trade-worldwide> website of INGEPO Consulting, Romania, accessed 23 April 2012.

www.mmea.gov.my/index.php?lang=en, website of the Malaysian Maritime Enforcement Agency, accessed 23 April 2012.

www.mofw.gov.om/tabid/363/Default.aspx website of Oman’s Ministry of Agriculture and Fisheries Wealth, accessed 18 March 2012.

www.moneoman.gov.om/loader.aspx?view=planning-diverse&type=plan website of Oman’s Ministry of National Economy, information specifically on diversification, accessed 18 March 2012.

www.moneoman.gov.om/Eco_Money.asp website of Oman’s Ministry of National Economy, information specifically on “ Human Resources Development Strategy”, accessed 18 March 2012.

www.motc.gov.om/tabid/40/Default.aspx website of Oman’s Ministry of Transport and Communications, accessed 1 January 2012.

www.msa.org.pk/ website of the Pakistan Maritime Security Agency, accessed 23 April 2012.

www.navy.gov.au/w/images/PIAMA10.pdf website of the Royal Australian Navy Sea Power Centre’s research papers series, accessed 4 May 2012.

www.nfc.om/ennew/content.aspx?id=87 website of Oman’s National Ferries Company, accessed 25 November 2011.

oceansbeyondpiracy.org/cost-of-piracy/economic, article on the economic cost of piracy, accessed 11 April 2012.

www.oceanprotectionservices.com/articles/?p=1335 , article on the hijacking of an Indian tanker, accessed 13 May 2012.

oilandgasinvestor.com/pdf/OmanSR.pdf ,Article on “Oman investing in gas” accessed 10 April 2012.

oilstockinvestment.com/bp-to-invest-heavily-in-gas-sector-in-sultanate-of-oman-business-intelligence-middle-east-bi-me-com-news-analysis-reports/ article dated 23 October 2011 on “Oil stock investment”, accessed 13 April 2012.

oman.tpg-media.com/2011/ongoing-expansion-at-the-port-of-salalah/ article on “Port Salalah expansion”, accessed 10 April 2012.

omanlawblog.curtis.com/2009/03/united-nations-un-environment-programme.html article on “Oman law”, accessed 2 December 2012.

www.omanlng.com/tabid/154/Default.aspx website of the Oman Liquid Natural Gas LLC, accessed 21 January 2012.

www.oman-oil.com/ website of the Oman Oil Company, accessed 21 January 2012.

www.omanship.co.om/ website of the Oman Shipping Company, accessed 25 November 2011.

www.pierce.ctc.edu/dist/coe/pdfDocs/HSPD13_MaritimeSecurityStrategy.pdf, “National Strategy for US Maritime Security”, accessed 20 April 2012.

www.pmmonlinenews.com/2011/09/russian-seaports-aim-for-global.html, the online supplement to *Pacific Maritime Magazine*, article on “Russian Ports strategy”, 22 September 2011, accessed 24 January 2012.

www.portofsohar.com/about-the-port, home page of “Sohar Industrial Port”, accessed 25 January 2012.

www.portofsohar.com/terminals, [about-the-port](http://www.portofsohar.com/about-the-port), “Sohar Industrial Port Terminals”, accessed 25 January 2012.

www.portstrategy.com/news101/asia/ranking-shows-asian-ports-hold-their-own article on Ports strategy, accessed 6 January 2012.

www.salalahport.com/port_news_item.aspx?id=16654 , article on Port of Salalah, accessed 25 January 2012.

sedac.ciesin.org/pidb/texts/acrc/ProtKuwait.txt.html accessed 11 April 2012, articles on “The Kuwait Convention and the accompanying Protocols”, accessed 6 January 2012.

www.studentsfriend.com/feed/topic11.html, article on “World History and Geography - Christian calendar” accessed 21 January 2012.

www.telegraph.co.uk/news/worldnews/europe/italy/9016774/Italy-cruise-ship-disaster-did-island-sail-past-put-ship-on-course-for-disaster.html account of the Italian cruise ship disaster, accessed 20 February 2012.

www.vliz.be/projects/sail/fiches/10.pdf, article on the Economic importance of ports, accessed 10 April 2012.

en.wikipedia.org/wiki/Intermodal_container, detailed information on TEUs and containers, accessed 18 February 2012

en.wikipedia.org/wiki/List_of_world's_busiest_transshipment_ports, ranking of the world's busiest ports, accessed 24 November 2011.

www.wnd.com/2006/02/34954/ website of "World Net Weekly, article on Iran's investments in Dubai (2006), accessed 23 April 2012.

www.world-nuclear.org/info/chernobyl/health_impacts.html, accessed 11 April 2012.

www.worldfolio.co.uk/companies/port-of-duqm-oman article on the profile of Port Duqm, accessed 30 April 2012.

www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports website of the World Shipping Council, listing the world's top 50 container ports, accessed 6 January 2012.

www.zawya.com/story/ZAWYA20111207034757/?relcontent=ZAWYA20111105070426/ article "Oman: \$600m hydrocarbon project to fuel Musandam's growth" accessed 6 January 2012.