



**מרכז חיפה למחקרי מדיניות ואסטרטגיה ימית**  
Haifa Research Center for Maritime Policy & Strategy

# **MARITIME STRATEGIC EVALUATION FOR ISRAEL 2017/18**

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March 2018

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The Maritime Strategy Evaluation report, including the insights and recommendations included in it, are based on the personal experience and professional judgment of the authors, but do not necessarily represent the official position of the Center or of the Haifa University.

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## Haifa Research Center for Maritime Policy and Strategy

The center is developing knowledge in maritime strategy, focusing on Israel's maritime surroundings: the Eastern Mediterranean and the Red Sea. The center does so in five core areas: (1) regional security and foreign policy, (2) the mobility of goods, people and ideas, (3) law, (4) energy (5) and the environment.

The center was established in response to the of rising significance of the maritime domain both globally and in our region: the emerging strategic maritime competition between the United State and China, the expansion of exclusive economic zones (EEZ) and the crucial role of the seas in the international economic system both as a source of economic activity as well as serving as the world's main trade route. Our immediate environment saw a similar rise in the significance of the seas including the oil discoveries in the eastern Mediterranean, the evolution of the Israeli navy into a national strategic arm, Israel's total dependence on sea trade, and the growing realization that future development of national infrastructure may have to be done in the sea as land is becoming scarce.

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## Executive Summary

At the beginning of 2016 and as part of Haifa University's effort to take a leading role in national maritime research, the University's Board of Governors approved the establishment of the Haifa Research Center for Maritime Policy and Strategy which will be involved in research related to regional security and foreign policy, the flow of goods, people and ideas, law, energy and the environment.

The Center has set a goal for itself to carry out academic research, to serve as a knowledge center for policy makers, public leaders and the citizens of Israel and to become part of the public discourse. In addition, the Center has begun to create research collaborations with leading knowledge centers in other countries and to train young researchers in subjects related to maritime strategy.

The assessment for 2017 focuses on the Eastern Mediterranean and the Red Sea though it also includes an examination of global developments and trends in the maritime domain, which are likely to have an effect on the Eastern Mediterranean in general and on Israel in particular. The previous report, which was published in December 2016, laid the foundations of the annual assessment while the current assessment relates primarily to changes that have occurred in the past year and to trends that are taking shape and concludes with recommendations to the relevant entities, primarily in the Israeli public sector.

In spite of the far-reaching changes in recent decades, which are related to the increasing importance of the sea as a component in Israel's resilience, maritime domain awareness in Israel remains low, among both government leaders and the public. Recently published studies in scientific journals indicate that the problem is not unique to Israel.<sup>1</sup> The lack of awareness is even more acute when one examines Israel's unique geostrategic location; its complete dependence on the sea lanes for the import and export of goods; the discovery of offshore natural gas fields in its economic waters, which have provided the country with energy independence; the increasing reliance of the Israeli water sector on desalinated water for the supply of drinking water; the reliance of international communication on underwater cables that carry most of the communication with Europe and the US; the high proportion of the population living adjacent to the Mediterranean coast; and the sea as a space that can compensate for Israel's loss of strategic depth and the only possible space for the establishment of new infrastructure and the removal of hazardous infrastructure from population centers.

The lack of a maritime policy and strategy has led to a reactive policy, as demonstrated in a number of instances, including the discovery of natural gas in Israel's economic waters, the transfer of infrastructure from the coast to the sea, the formulation of a general plan

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1 Christian Bueger, Timothy Edmunds, Beyond seablindness: a new agenda for maritime security, *International Affairs*, Volume 93, Issue 6, November 1st 2017, pp. 1293–1311.

for the protection of natural gas facilities and infrastructure, the destinations for the export of part of the natural gas production, legislation that will apply to the economic waters, the geopolitical implications of development of Israel's ports, the capability to transport goods by sea in an emergency and the development of human resources that can serve as an infrastructure to deal with these issues. In an examination carried out by the Center of other coastal nations, and primarily those who are members of the OECD,<sup>2</sup> it was found that most of them have dealt with these issues by formulating a maritime strategy. During the past year, the Center carried out a study that looked at a number of models and methodologies developed by the aforementioned countries and chose a model and methodology that is suited to the case of Israel. This study was submitted as a response to a call by the National Economic Council within the Prime Minister's Office for policy assessments to be used in the preparation of a policy paper to be submitted to the 35<sup>th</sup> government of Israel when it is established.<sup>3</sup>

The Maritime Strategic Assessment for 2017-18 was written by the researchers of the Haifa Research Center for Maritime Policy and Strategy of Haifa University, research fellows of the Center and additional individuals at the University who possess unique expertise in these subjects. The report is divided into a number of sections: The first section deals with foreign policy and security issues and opens with a review of developments, changes and trends in the global maritime domain. There exists a consensus that the global economy's center of gravity is moving eastward. For many centuries, the center of gravity was Western Europe, which at a later stage shifted to the US. If current trends continue, it will be located in Asia by the middle of this century and we are currently in a period of transition to a world in which the developing economies of China, India and other emerging nations are becoming dominant powers on the global stage.

China is becoming a global superpower with increasing economic and military strength. India, whose economy is growing rapidly, is also contributing to the shift eastward. In contrast, the tension in the Korean Peninsula is becoming a source of instability in the region, due to North Korea's nuclear program and its ability to launch nuclear weapons at the West Coast of the US. Russia, which is suffering from a long-term economic crisis, has not abandoned its divisive geopolitical policy and in some senses that policy is reminiscent of Russia's behavior during the Cold War period. Meanwhile, NATO is trying to recover from the exit of Britain from the EU and the isolationist policy of the US, which is reflected in President Trump's motto of "American First" and his demand that US allies in Europe and the Far East increase their defense expenditures in order to reduce the economic burden on the US.

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2 Organization for Economic Co-operation and Development.

3 The Prime Minister's Office, the National Economic Council, "The formulation of a strategic socioeconomic assessment for the 35th government", a call for the submission of ideas, main characteristics and strategic issues, March 15<sup>th</sup> 2017, as it appears on the website: <http://economy.pmo.gov.il/CouncilActivity/Strategy/Pages/gibosh35.aspx>.

A focus of tension in Asia is the South China Sea, in which the disputes over economic and sovereignty rights between China, Vietnam, Malaysia, the Philippines and other countries are continuing and even intensifying. In order to meet these challenges, the Obama administration in 2009 developed a policy called "Pivot to Asia", which was also manifested in the priority given to the activity of the American fleet in that region over other theaters. Over the years, this policy has become dominant and it appears that the Trump administration is also adopting it since this region is perceived as having a high potential for a superpower confrontation. In view of the global implications of this conflict, we have chosen to provide an update regarding recent developments in this region.

The report then shifts from the global arena to a survey of developments during the past year in the Eastern Mediterranean. The second section presents a survey of foreign navies, the superpowers and the countries in the region. The most prominent phenomenon that characterizes recent developments in the Eastern Mediterranean is the deepening involvement of the Russian navy in our region, which is manifested in, among other things, the extension of the lease agreement for the port of Tartus and the Khmeimim Airport in Syria for an additional 49 years. The deepening involvement of the Russian navy is part of the formation of the Russia-Iran-Syria strategic axis (which indirectly includes Hezbollah), which is likely to impose strategic risks on the State of Israel due to the opening of an Iranian corridor from Iran to the Mediterranean and the deployment of Iranian forces along its length and possibly even in one of Syria's ports. However, the Trump administration has continued in the footsteps of the Obama administration and has limited the involvement of the Sixth Fleet in the Eastern Mediterranean, whether as part of the need to give priority to East Asia or based on an understanding with the Russians to divide up interests in the region. This year, we devoted two articles to Egypt: The first examines "Egypt and the "New Mediterranean": Economics, Security and Culture". The article examines the growing discourse in Egypt since the uprising on January 25<sup>th</sup> 2011 surrounding the weight of the Mediterranean in the rejuvenated identity of the Land of the Nile and the ties between the evolving economic and security interests of Egypt in the Mediterranean and the shifts in its political and cultural orientation. The second article deals with the unprecedented buildup of strength in the Egyptian navy. Even if the diplomatic relations between Egypt and Israel are currently at their peak, Israel has in the past insisted that countries such as the US and Germany not provide Israel's neighbors with weaponry that is liable to reduce its qualitative military edge (QME). The article reviews the program for the buildup of strength in the Egyptian navy and examines this question, among others.

The Red Sea and in particular its southern part near the Strait of Bab el Mandeb has in past years become a dangerous area for ships following incidents related to the civil war in Yemen, which now a failed state. The Houthi rebels, which are supported by Iran, have used coast-to-sea missiles a number of times and have mined the approaches to the Mocha harbor. This has led a number of countries, such as Britain, to issue security



advisories for this area. It is worth mentioning that this is one of the choke points through which passes a large volume of world trade. The State of Israel, which in recent years has increased its trade with East Asia, is not alone in facing this threat but it must also take into account the recent developments in the area.

The section on trends in the buildup of strength opens a window on unmanned sea vehicles. Unmanned systems create new capabilities that can help naval forces achieve a clear advantage in fulfilling their missions. However, the introduction of unmanned vehicles in the sea is proceeding at a much slower pace than in the aerial and land domains and this issue may warrant a comparative study.

As mentioned above, during the past year the Center carried out a study of maritime strategies in a number of countries, with the goal of choosing a model and methodology suited to the process of maritime strategy formulation for the State of Israel. We are pleased to report that we managed to stimulate some interest among officials who have responsibility in this area (in the National Security Council) and we are hopeful that this will lead to an interministerial policy paper and the formulation of a maritime strategy for Israel. The chapter on this issue describes the conclusions reached by the Center with regard to the method and methodology suited to Israel's circumstances.

The third section in the assessment is about maritime law and it surveys three topics: The first is legal aspects of the ongoing dispute with Lebanon on the demarcation of the maritime boundary between Israel and Lebanon. The second is the transfer of the islands of Tiran and Sanafir from Egypt to Saudi Arabia. It is these islands and the straits around them that were one of the causes of the Six Day War. The chapter discusses the question of whether this transfer constitutes "unfinished business". The third topic is the Law of Maritime Zones which is meant to provide greater certainty to investors and foreign companies with respect to the regulation that applies in Israel's economic waters and also to provide a solution to the environmental aspects of planning and licensing in Israel's maritime zones. The proposed law is meant to be voted on in the Knesset in the near future.

The fourth section of the assessment is economically oriented and includes a number of topics: The first looks at Israeli shipping and the trends in Israel's ports. The second describes the Chinese investments in Israel's ports and also the implications of China's "Belt and Road Initiative" for Israel. A researcher from the Center was even invited to an academic conference on the subject held by the Guangdong Institute for International Strategies in the city of Guangzhou in China, thus giving us an opportunity to learn about the initiative at first hand. The third is whether the State of Israel is a start-up nation in the maritime domain and if not how can it become one. Israel is a small country with a population of only 8 million. Nonetheless, it has the highest concentration of start-ups in the world. Each year about 5,000 new start-ups are created. The number of patents Israel registers is one of the highest in the world relative to its population and the

companies in this sector constitute a relatively large source of employment which also affects Israel's continued economic growth. Nonetheless, the maritime domain, in the broadest sense of the term, is not part of Israeli development and innovation. The fourth topic discusses trends in commercial fishing in Israel. During the last two decades, Israeli policy has led to the contraction of the local fishing industry and the loss of livelihood and employment for fisherman. The allocation of certain maritime areas to the needs of defense, shipping and the exploration, production and conveyance of offshore natural gas has exacerbated the trend. The fishing regulations that went into effect in January 2017 constitute a historic change in Israel's policy – from complete freedom of fishing to an approach that establishes marine nature (which includes the fisheries) as having priority. In addition, the responsibility for supervising fishing will be transferred, starting in 2018, from the Fishery Branch of the Ministry of Agriculture to the Nature and Parks Authority. The new regulations include components that apply to all fishing methods. The article makes a number of recommendations for revising the regulations in order to ensure on the one hand the continued existence of this industry and its development and on the other the preservation of the ecosystem.

The fifth section relates to the geostrategic aspects of the energy sector. Offshore natural gas has become an important component in Israel's economy and its resilience. Accordingly, we have devoted a separate chapter to this topic. Maritime environmental security is a topic that is becoming increasingly recognized in the Western world and it encompasses a wide variety of topics, including the prevention of ocean pollution, ship safety, search and rescue at sea, ongoing monitoring of the marine ecosystem and the effect of the changes on the maritime domain. From Israel's perspective, the most important issue to be dealt with at this time is to define the best ways to deal with the development of the natural gas fields, which requires, among other things, cooperation with neighboring countries.

The strategic assessment for this year was planned so as to include an article on the training of manpower for the shipping industry in Israel, which would focus on the topic of the maritime professions and maritime education in Israel. The importance of this need is clear and it has even been recognized in Government Decision 1107 of August 30<sup>th</sup> 2013, which specified, among other things, "that with the goal of improving the ability to compete of Israeli shipping, to preserve the professional knowledge in this area and to continue to maintain essential maritime infrastructure and an Israeli system of sea transport, a plan will be adopted, accompanied by the allocation of resources, with the following goal: to support Israeli shipping." These resources were meant to support the employment of Israeli seamen on Israeli ships, including energy ships, as part of the encouragement to maintain a fleet of Israeli ships. The actual situation is nowhere near what was intended by the aforementioned government decision. For various reasons, we were not able to include such a chapter in the report and as part of the unification of the

Wydra Institute for Shipping and Ports with the Center we intend to make this one of our leading issues, one that is worthy of academic research.

The fifth section in the assessment deals with the interface between man and the sea from the cultural, environmental and historical perspectives: Man, Sea, Environment and Heritage. We chose four topics for this section: The first is the interface between cities and ports. The fifty largest ports in the world (in terms of container flow) are part of the urban landscape and, as of now, are not "islands" in the sea. As a result, the interface between cities and ports leads to numerous conflicts, the first of which is the statutory separation between the two entities, which also includes definition of land ownership and the extent of control and access to the water line and territory adjacent to the shore. Based on research carried out by the Haifa Research Center for Maritime Policy and Strategy and the Heikin Chair for Geostrategic Studies, we decided to include the abstract of a paper on the conflicts and opportunities in the sea-city interface for the case of Haifa. The second topic is "The Ocean Trail – The Connection of Israeli Society to the Sea and the Creation of a Maritime-National Cultural Identity". The initiative and the process of establishing the Ocean Trail were meant to meet the genuine need for a connection between Israeli society and the sea and the need to create a maritime-national cultural identity. The trail also meets a need to expose the public to marine and coastal elements and to deepen its knowledge of them, with the goal of public involvement in the processes that are necessary for the preservation of the environment and the ecological systems in the open sea and on the shore and in the decision making processes that protect the sea and the coast from uncontrolled development and destructive real estate projects. Unfortunately, a large part of the coast between Rosh Hanikra and Gaza is taken up by army bases, ports and electricity and water infrastructure and a great deal of planning work is needed until this project can be implemented. The third topic is "The Past is Alive and Sailing – The Story of the Reconstructed Ship from Maagan Michael". The article presents the story of the reconstructed ship from Maagan Michael (a replica), whose construction was completed this year, and the future plans for it.

This year we added a chapter called "From a Historical Perspective", in which we look at two events: The first is the Six Day War and the second is the jubilee anniversary of the inauguration of the Port of Ashdod. In the chapter on the Six Day War—which occurred 50 years ago this year—we took a retrospective look at the maritime dimension of the war. The second event surveyed in this section is the establishment of the Port of Ashdod somewhat more than fifty years ago. The Ashdod port today is one of Israel's two main ports. Every aspect of the port, like the neighboring city, was planned. The latest of the port's achievements is the completion of a major logistical operation in which the largest container ship ever to enter an Israeli port—with a capacity of 14,080 containers—anchored in the Port of Ashdod. The article reviews the stages of the port's development and construction and also the lessons learned from the construction of the first port in the open sea.

The last section of the report contains policy recommendations for senior-level decision makers in the government and the bureaucracy. These recommendations reflect insights that were obtained from the writing of this report or from other research activity of the Center and which in the opinion of the writers can help Israel deal with the challenges it faces in the maritime domain. Following are the main recommendations:

1. Formulation of a maritime policy and strategy for Israel in preparation for the 35th government.
2. Preserving Israel's commercial shipping and the port infrastructure.
3. Integration of the Mediterranean as part of Israel's strategic depth.
4. Processes to build up Israel's naval forces.
5. Development and exploitation of the sea's energy resources while preserving the environment.
6. Development of professional human infrastructure in order to meet Israel's new maritime challenges.
7. Formulation of Israel's policy in the Eastern Mediterranean and the Red Sea.
8. Advancement and passage of maritime law.
9. Exploitation of opportunities created by the discovery of offshore natural gas in order to strengthen Israel's economy and its international standing.
10. Continued positioning of the Haifa Research Center for Maritime Policy and Strategy as a national knowledge center for maritime policy and strategy.

# Foreign Affairs and Defense

## Global Developments in the Maritime Domain

*Shaul Chorev*

### General

Although the 2017 annual strategic evaluation by the Haifa Research Center for Maritime Strategy focuses on the Eastern Mediterranean and the Red Sea, the events in these two regions are linked to recent global developments in the maritime domain, since there are close connections between events in the global domain and those in Israel's vicinity. This chapter will discuss those connections.

As mentioned in the previous report,<sup>1</sup> we are witnessing a gradual change in the global center of gravity—from the geopolitical, economic and geostrategic perspectives—from the West towards the East and Asia. This change is a result of the growing importance of the East in terms of the global economy.

In this context, it is worth mentioning that China is the main contributor to this shift towards East Asia and in China itself the economy is the main component in the country's growing power. It appears that China will continue to seek ways in which to expand its economic leadership by means of regional development and this will be dictated by the One Belt One Road Initiative, known as the BRI) which currently involves 64 countries. China will try to promote the free trade region (called the Regional Comprehensive Economic Partnership – RCEP) that it has initiated without the involvement of the US. As part of this effort, in May 2017 Chinese President Xi Jinping invited the heads of 28 countries as part of the Belt and Road Forum in order to celebrate the One Belt One Road initiative to which they belong. His ambitious goal is to transform the Eurasia region—in which China is the dominant nation—into an alternative trade and economic bloc to that on the other side of the Pacific, which is led by the US. This is being accomplished by means of this forum of countries, in which China takes the leading role.<sup>2</sup> The expansion of the BRI and its possible implications for Israel can be found in a different chapter of this report. India, whose economy is developing even faster than that of China, is hot on China's heels. On the assumption that this trend indeed continues in coming decades, the region will be responsible for the largest contribution to global GDP.<sup>3</sup>

China with a population of 1.4 billion and India with 1.3 billion remain the largest countries in the world (together accounting for more than one-third of the global population) and the expectation is that within seven years India will overtake China to become the most

1 Maritime Strategic Evaluation for Israel 2016.

2 J.P. What is China's belt and road initiative? The Economist, May 15, 2017, <https://www.economist.com/blogs/economist-explains/2017/05/economist-explains-11>

3 UN Department of Economic Affairs, 21 June 2017, New York <https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html>

populous nation in the world. It is estimated that in two decades the East/Southeast Asia region will account for more than half of the global population. Therefore, it is reasonable to assume that any major change in the region will have implications for global security.

Despite short-term economic fluctuations, it is expected that the economies of the US, China and India will in the future constitute the Group of 3 (G3) – the three largest economies in the world. Each of them will in the future have to deal with a spectrum of challenges, including defense, climate change and sustaining rates of economic and industrial growth.

Although there is a new US administration, it has yet to formulate a clear foreign policy, and there is disagreement between supporters of an active foreign policy (known as internationalists) and supporters of an "America First" policy.

From the American perspective, China is identified as an aggressive and provocative nation, following "the transformation of islands built on reefs in international waters into military bases and the positioning of new systems, most of which are components of maritime power, with prime importance in the shaping of the maritime domain in the Western Pacific in a way that will serve Chinese interests."<sup>4</sup> Also in the case of India, China has not been idle and during the summer of 2017 there were two border incidents between the two in the Sikkim region and in Bhutan whose security is guaranteed by India. In the two incidents, the Chinese challenged the Indians by means of a limited penetration into their territory in order to complete the paving of a local road. North Korea, led by Kim Jong-un, continues to act like a rogue state and is carrying on with the development of its nuclear program. This includes its array of ballistic missiles and the capability of submarine launch.<sup>5</sup> In July 2017, North Korea successfully launched two ballistic missiles with a range that includes the West Coast of the US and has threatened to fire missiles armed with nuclear warheads at the American island of Guam.

In an attempt to coopt China into the effort to resolve the crisis on the Korean peninsula, President Trump hosted the Chinese president at his estate in Florida for a summit meeting. At the conclusion of the meeting, he expressed optimism with regard to the relations with China (including a trade agreement between the two countries). It is worth mentioning that the US has applied pressure (both direct and indirect) on China in order for it to use its influence on North Korea to halt its nuclear program, although it appears that up to the time of writing this effort has not produced any results. The election of Tsai Ing-wen as President of Taiwan and her conversation with President Trump after his swearing in has led to an undeclared change in the traditional American policy towards the issue of "one China", a subject that has been one of the foundations of Chinese policy and has created a great deal of tension between the US and China.

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4 2017 Index of US Military Strength, Conclusion: Global Threat Level, 2016 Assessment, <http://index.heritage.org/military/2016/assessments/threats/conclusion-global-threat-level>

5 Ibid.

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There were high hopes for an improvement in the relations between the US and Russia following Trump's inauguration at the beginning of 2017. So far, these hopes have not been realized. The long meeting between Trump and Russian President Putin, which took place at the G-20 Summit Meeting held in Hamburg, Germany in June 2017, did not lead to a joint statement on any material issues related to the relations between the US and Russia. Furthermore, the imposing of new American sanctions on Russia by the Trump administration in August 2017 increased the tension in relations between the two superpowers, including a Russian announcement of its intention to expel hundreds of American diplomats from Russia as retaliation for the sanctions.

The visit of President Trump to the Middle East in 2017 was meant to, among other things, brand him as an authoritative leader of a superpower; to create a consolidated front against Iran and its activities in the Middle East; and to strengthen and deepen the partnership with a number of Islamic nations against ISIS. In addition, the visit was meant to emphasize that the partnership with Saudi Arabia and the Gulf states is already making a major contribution to the American economy (including the signing of a huge weapons deal in the amount of \$110 billion), which is the fulfilment of the President's campaign promises to create new jobs.

The American attempt to change its image as a weak and indecisive superpower—which was created toward the end of Obama's tenure—has only been partially successful. Thus, the attack on the Assad regime's airport facilities by means of 59 Tomahawk cruise missiles in the spring of 2017—fired from ships of the Sixth Fleet in response to the use of chemical weapons by President Assad against Syrian citizens—and the power projection responses to the provocative testing by North Korea of intercontinental ballistic missiles were primarily intended to convey a message but did not restore the image of US deterrence.

The nuclear agreement with Iran has so far survived in its current form. The Iranians are continuing to develop ballistic missiles (an activity not explicitly mentioned in the agreement with the P5+1, but which does violate a Security Council resolution) and in August 2017 the US expanded the sanctions on anyone connected to this program. In the Persian Gulf region and the Strait of Hormuz, vessels of the Iranian Revolutionary Guard continue to provoke ships of the US Fifth Fleet, which so far has reacted with restraint.

The superpower spheres of influence: China continues to expand its influence in Africa and Asia and its trade balance with Africa came to more than \$200 billion in 2015 while US trade totaled only \$85 billion.<sup>6</sup> Additional countries are trying to expand their spheres of influence: Russia in Eastern Europe, the Caucasus and the Middle East and India in

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6 Yvan Yenda Ilunga, America and China's competition for influence in Africa, The World Economic Forum, 27 Feb 2015 <https://www.weforum.org/agenda/2015/02/america-and-chinas-competition-for-influence-in-africa>

Asia and Africa. India is trying to become a counterweight to the Chinese influence in Africa and in terms of investment and trade it ranks third after China and the US.<sup>7</sup> The focus of the Trump administration on the target of "America first" as a prism through which issues like global security, diplomacy and foreign trade are viewed has raised questions (and sometimes even a downgrading of importance) regarding traditional US allies, from NATO to the South American nations. These allies and in particular those in Europe have declared that they do not view the White House as having moral or leadership authority with respect to what is happening globally.

**Military power:** It is expected that the US will continue to maintain its position as a superpower in coming decades. The Trump administration has announced its intention to increase the defense budget by \$52 billion. It should be mentioned that this move was already planned by the Obama administration and that it is less than the approximately 10 percent increase in the budget that was expected by defense officials and in actuality the increase is only 3 percent. Figure 1 describes the breakdown between the various branches and uses.

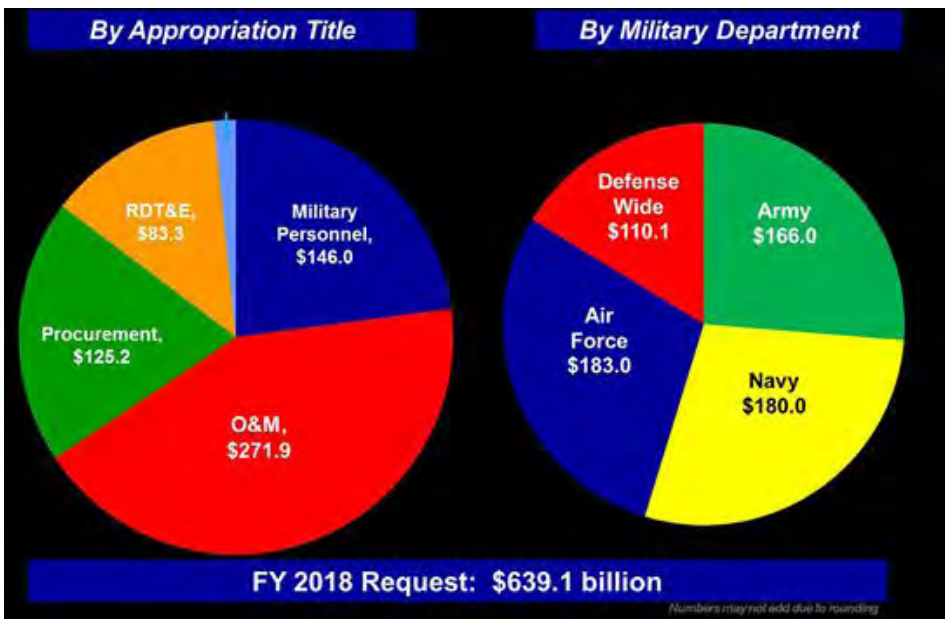


Figure 1 – The Defense Department's requested budget for 2018

China and India, which are continuing to equip themselves with advanced weapon systems of various types, are already considered regional superpowers. The Chinese

<sup>7</sup> Sarah Baynton-Glen, India on a mission to counterbalance China's growing influence in Africa, Standard Digital, July 4<sup>th</sup> 2017 <https://www.standardmedia.co.ke/article/2001245995/india-on-a-mission-to-counterbalance-china-s-growing-influence-in-africa>



defense budget for 2017 was 7 percent larger than in the previous year and totaled \$152 billion (about one quarter of the US defense budget). China's increasing military power alongside its policy of power projection in the maritime domain is causing concern in the region and particularly with respect to its uncompromising position in the dispute over marine sovereignty in the South China Sea. The Indian defense budget for 2017-18 stands at \$53.5 billion. The budget of the Indian navy has declined by about 12 percent relative to the previous budget year.<sup>8</sup>

Although the EU continues to be a significant economic power and also the fourth largest economy in the world, in the absence of any significant ability to project power it does not appear that its status in the international area will meet that of the G-3 superpowers. Despite the British decision to withdraw from the EU, it has promised to remain in NATO, although there are questions regarding the centrality of its position in the alliance. At the time of writing, the EU faced three main challenges: in the East, in response to the possibility of a Russian invasion of the Baltic states; in the South, dealing with the flow of refugees arriving on the Mediterranean shores of the EU; and in the eastern Mediterranean, dealing with the unresolved crisis in Cyprus. President Trump is demanding that the NATO nations increase their defense expenditures and take on a larger role in NATO (while implicitly threatening not to fulfill American commitments to protect the NATO countries from a Russian invasion).<sup>9</sup> Figure 2 presents the proportion of defense spending within the GNPs of the NATO countries over the years and the significantly higher proportion in the US relative to the other NATO members. At a meeting of the EU defense ministers in Munich in February 2017, and in response to pressure from the Trump administration, all of them agreed to increase the size of their defense budgets to 2 percent of GNP. Accordingly, Jens Stoltenberg, the Secretary General of NATO, announced in June 2017 that the NATO countries, including Canada, have increased their defense expenditure by 4.3 percent and in comparison to 2014 it has grown by \$46 billion.<sup>10</sup> The political and military implications of Britain's withdrawal from the EU are still unclear, particularly in view of the fact that it is one of the two leading countries (together with France) in NATO with respect to military power, but it will certainly have an effect on NATO.

8 Laxman K. Behara, India's Defence Budget 2017-18: An Analysis, Institute for Defence Studies and Analyses, New Delhi, February 03, 2017, [http://www.idsa.in/issuebrief/india-defence-budget-2017-18\\_lkbehera\\_030217](http://www.idsa.in/issuebrief/india-defence-budget-2017-18_lkbehera_030217)

9 Sanger David and Habermann Maggie, "Donald Trump Sets Conditions for Defending NATO Allies against Attack", New York Times, July 20, 2016. <http://edition.cnn.com/2017/06/29/politics/nato-members-increase-defense-spending/index.ht>

10 Browne Ryan, NATO members to increase defense spending, CNN Politics, June 29, 2017, <http://edition.cnn.com/2017/06/29/politics/nato-members-increase-defense-spending/index.html>

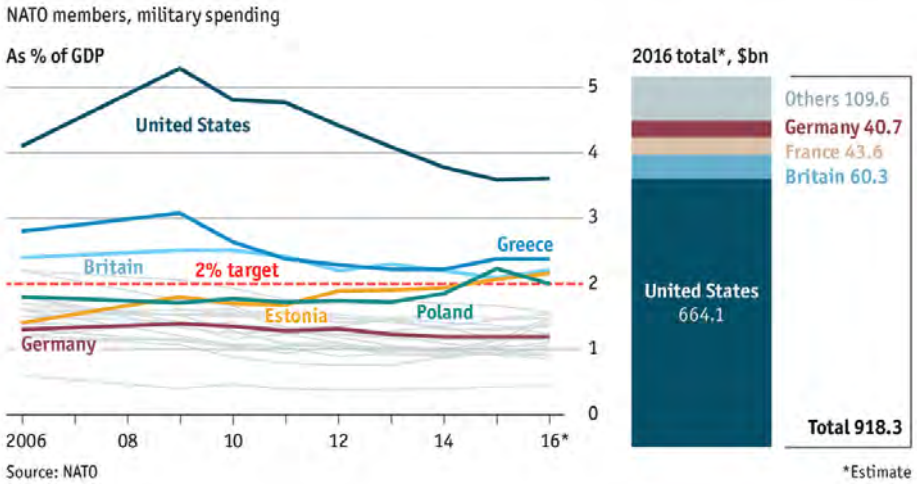


Figure 2 – The contribution of the NATO countries to the organization's budget – long-term trends

The Russian Federation continues to maintain its image and status as a global and regional power despite its political, economic, social and demographic problems. The hope that Putin pinned on the election of Donald Trump as president have not been realized thus far and in particularly with respect to the cancelation of the economic sanctions imposed on Russia. In this context it is worthwhile mentioning that Trump—under pressure from Congress—was forced in early August 2017 to approve new sanctions against Russia as a result of its involvement in the American election campaign. Following several years (since 2011) in which the Russian defense budget increased at a rate of about 20 percent annually, the Russian government decided on a fixed cut during the years 2017-19. There are various estimates of the size of the cut in 2017, from 25 percent (from \$65 billion to \$48 billion), according to the publication HIS Jane's, to only 7 percent according to other estimates. Whatever the case, this reflects the general crisis in Russia, which is partly due to the drop in oil prices. Even in its current economic situation, Russia continues to use the means at its disposal to maintain an opportunistic geopolitical policy and to position itself as a global superpower, particularly in the maritime domain.<sup>11</sup>

Russia's new military doctrine, which was approved by Putin in 2014 was revised on July 20<sup>th</sup> 2017 when President Putin approved the document "Fundamentals of the State Policy of the Russian Federation in the Field of Naval Operations for the Period Until 2030" (for further details, see the section in the report on "The Foundations of Russia's Maritime

11 Craig Caffrey, Russia announces deepest defence budget cuts since 1990s, IHS Jane's Defence Weekly, 16 March 2017, <http://www.janes.com/article/68766/russia-announces-deepest-defence-budget-cuts-since-1990s>

Policy – Continuation of the Soviet and Russian Bureaucratic-Military Tradition"). The doctrine reflects the influence of the crisis in the Ukraine and the Russian reaction to the positions of the US and NATO regarding that conflict. Accordingly, it is expected that from time to time Russia will try to generate dissent among the EU countries with the goal of undermining its unity. Russia will continue to influence the former Soviet countries, by means of both soft power and hard power.<sup>12</sup> Russia will continue to intervene in Ukraine, in the Caucasus and in Central Asia and will oppose any attempt by NATO to expand its influence in the former Soviet countries. In this context, tension increased during the summer of 2017 between Russia and Estonia as a result of concern that Russian forces would invade the country. In response, the US Vice President made a tough statement with the goal of discouraging Russia from making such a move.<sup>13</sup> In mid-September 2017, Russia, together with Belarus, carried out its largest military exercise since annexing the Crimean peninsula in 2014. The exercise was called "Zapad (West) 2017" and was held in Belarus, eastern Russia and the area of Kaliningrad, which serves as a Russian enclave. In the West, there was concern as a result of the large scale of the maneuver, which included about 13 thousand soldiers, armored divisions, destroyers and fighter aircraft. Also in East Asia, Russian has adopted an opportunistic policy with the goal of separating between the US and its traditional allies in the region. An example is the visit in July 2017 of Russian vessels in the Philippines for joint exercises with the Philippine navy, which exploited the policy change by Philippine President Rodrigo Duterte regarding relations with the US, the Philippines' traditional ally.<sup>14</sup>

Russia will seek control in the Arctic region, based on the understanding that this territory is essential for its economic and military future. Europe will remain at the focus of Russian economic activity, with Russian emphasis on the European markets for its energy resources. The drop in the prices of energy, which accounts for about 80 percent of Russian exports, and the sanctions imposed by the West as a result of its takeover of the Crimea have exacerbated the economic crisis in Russia. Russia will continue to be one of the largest exporters of weapons in the world and as a result of its difficult economic situation will be prepared to offer highly sophisticated weapon systems, some of which are even more advanced than those of the West.

The Middle East continued to suffer from instability. The demise of the ISIS caliphate in the Middle East; the alliance between a number of Sunni nations led by Saudi Arabia, particularly against Qatar; and the creation of a Russia-Iran-Syria axis creates a new reality. The combination of the Iranian effort to create a land bridge to the Mediterranean

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12 Soft power: an approach in international relations that is used to achieve economic or cultural influence over a rival country in order to achieve objectives, in contrast to hard power that involves, among other things, the use of military power to achieve objectives.

13 McNeill, Sophie, US Vice President Mike Pence reassures NATO allies in Estonia amid Russian threat, ABC News, July 31, 2017, <http://www.bbc.com/news/world-europe-40779184>

14 Reuters World News, Russian navy visits Philippines as Duterte tightens ties with U.S. foes, April 20, 2017, [www.reuters.com/article/us-philippines-russia-idUSKBN17M0SJ](http://www.reuters.com/article/us-philippines-russia-idUSKBN17M0SJ)

and the conflict between Shiites and Sunnis in the Middle East and the various decisions in response to the crisis will have a significant long-run effect on the Middle East as a whole, particularly on the status of the Iranians and the hopes of the Kurds, and incidentally on the security of the State of Israel.

Defense and security will continue to be the most important issue in both the virtual and physical domains, including space and the cyber domain. The demand to defend the citizens of the various countries will increase its importance as a result of the increase in global population, climate change, the shortage in resources and the lack of stability in the international arena. As a result of these demands, governments will expand their defense capabilities in order to meet the physical needs of existence. Many of these needs are international in nature and are related to the phenomenon of globalization.<sup>15</sup>

In contrast to 2016, during which not a single vessel was seized by pirates, during the first half of 2017 the attempted attacks were again on the rise. This is in spite of the continuing activity of the naval forces, primarily in the Indian Ocean and the Gulf of Aden. Notwithstanding the long-term decline in the number of incidents, the economic burden that is the result of the pirate activity remains high (see Figures 10 and 11). It should be mentioned that certain pirate groups have expanded to other illicit maritime activities, such as the smuggling of weapons and refugees.<sup>16</sup>

Currently, there is still a clear distinction between maritime piracy and maritime terror, according to the characteristics of the attack, the methods used and the means used, in addition to the locations in which maritime terror and pirate activities take place. However, in view of the similarity between them in certain characteristics, such as the attacks on ships, the theft of maritime cargo and the taking of hostages, the boundary between the two activities is expected to become less clear.

## The main trends in global sea trade

More than 80 percent of global trade is by way of the sea and the sea route serves as the most important means of transporting goods. In 2015, the scope of global trade crossed the threshold of 10 billion tons. Nonetheless, the relatively moderate increase (3.5 percent) in 2016 in the carrying capacity of the commercial fleet (in terms of tonnage) is the lowest rate of growth since 2003. The growth in the demand for seaborne transport stood at 2.1%, which led to global overcapacity and financial difficulties among some of the shipping companies. Nonetheless, Chinese container shipping to the West Coast of

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15 The Development, Concepts and Doctrine Centre (DCDC) Global Strategic Trends, Programme analyses the future strategic context. Global Strategic Trends out to 2040, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/49954/20121129\\_dcdc\\_gst\\_regions\\_sasia.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/49954/20121129_dcdc_gst_regions_sasia.pdf)

16 Piracy and Armed Robbery Against Ships in East Africa 2016.

the US and to European ports grew in 2016 by 8 percent. Figure 3 below describes the changes in the various types of seaborne cargo during the period 2011-2016.

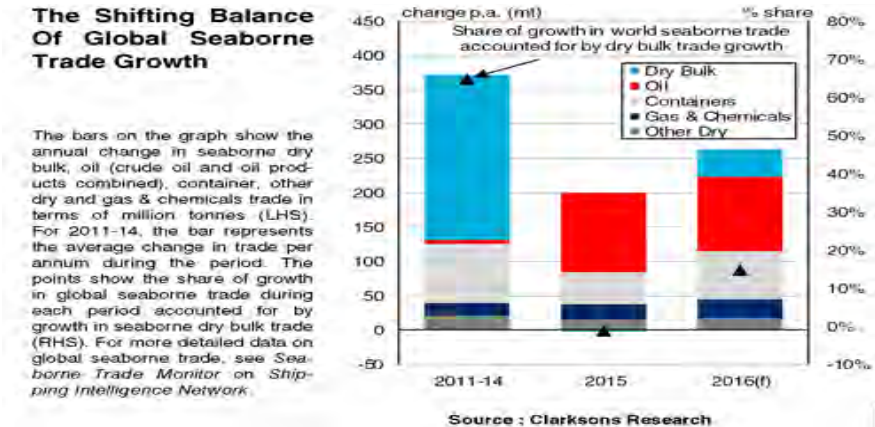


Figure 3 – The changes in global seaborne trade during the period 2011-16

The growth in global demand for seaborne transport in 2011 and 2016 and the main contributors to this growth (i.e. China and India) are presented in Figure 4. The value of annual global trade passing through the South China Sea totals \$5.3 trillion, of which \$1.2 trillion is trade between China and the US. About 80% of China's fuel is transported through the choke points of the Malacca and Lombok Straits, which has led China to consider financing the digging of the Kra canal in the territory of Thailand (see below).

**Global Seaborne Demand: 450 – 550 MTPA Growth Expected by 2016; 8% CAGR** 

**Pacific Demand Growth 85+% of Total Demand Increase**

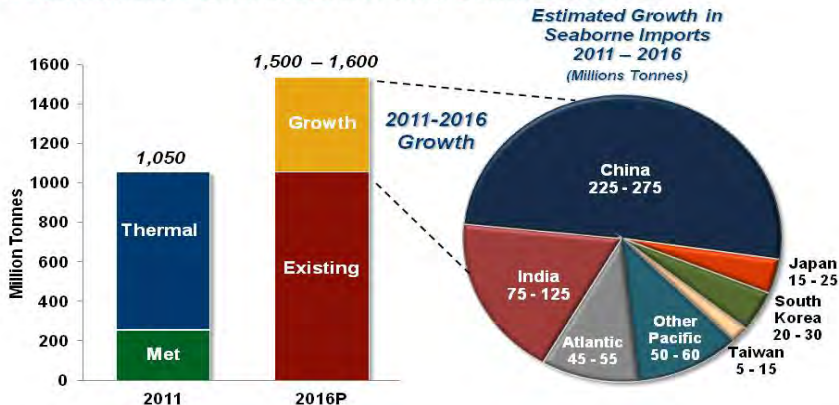


Figure 4 – The global demand for seaborne transport by country/region (MTPA – Millions of Tons per Annum)

The economic situation of container shipping companies has been affected in recent years by the excess supply. This has led to a drop in the prices of transport, which has adversely affected the financial situations of shipping companies and in particular those that transport containers. This has even led to the bankruptcy of Hanjin, a Korean shipping company, in 2016. The leading shipping companies of this type have arrived at the conclusion that in order to survive, and in addition to efficiency measures, they must adopt a policy of mergers and acquisitions. The Hapag-Lloyd company merged in 2016 with UASC (United Arab Shipping Company), thus overtaking Evergreen, a Taiwanese company, to become the fourth largest company in the world, with a market share of more than 20%. COSCO, the Chinese shipping company—which in 2015 merged with the China Shipping Group—is expected to carry out another merger move in 2017. CMA CGM, a French company, has signed an acquisition agreement with Neptune Orient Lines (NOL) and it is reasonable to assume that other companies will join this trend in order to survive in the container shipping business.<sup>17</sup> And indeed, early signs of this can be seen in the fact that shipping prices rose in the second quarter of 2017 by 5.7% relative to the previous year.<sup>18</sup>

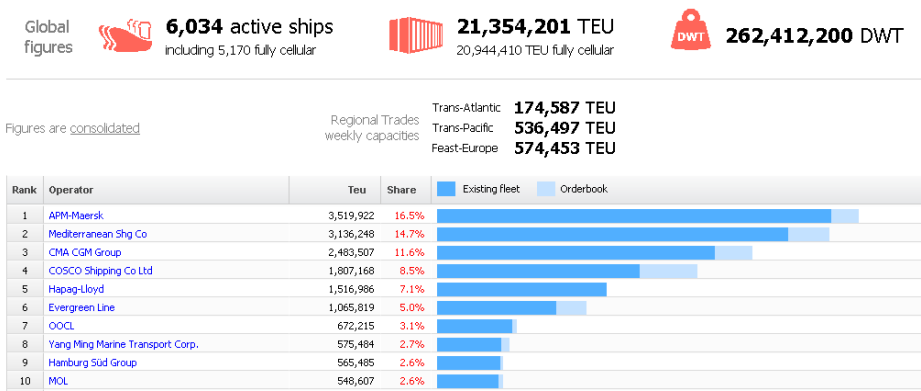


Figure 5: The largest shipping companies and their market share (source: alphaliner)

### New sea routes

The rise in the volume of global trade and the dependency of that trade on choke points has led to a number of initiatives to reduce the pressure, by both increasing the capacity of passage through these points and by creating alternatives to them.

- 17 Handy Shipping Guide, More Container Freight Shipping Line Mergers and Acquisitions, Consolidation is the Name of the Current Game, June 29, 2016, [http://www.handyshippingguide.com/shipping-news/more-container-freight-shipping-line-mergers-and-acquisitions\\_7271](http://www.handyshippingguide.com/shipping-news/more-container-freight-shipping-line-mergers-and-acquisitions_7271)
- 18 Yoram Gabizon, "The efficiency measures at Zim and the improvement in the maritime shipping industry have put the company in black this quarter", The Marker – Capital Market News, p. 29, August 31, 2017. [Hebrew]

The expansion of the Suez Canal in 2015, which added an additional lane of 52 km. thus making the canal two-directional and which increased its capacity, led the EU and OECD in early 2017 to inaugurate a plan in collaboration with the Egyptian government called "Supporting the Development of the Suez Canal Economic Zone". The goals of the plan are to promote investment, to create new jobs and to exploit the advantage created by the fact that 8% of world trade passes through the Suez Canal.

In 2016, work was finished on the expanded Panama Canal. The work included a third lane of traffic that allows for the passage of longer ships, with a displacement of 13 thousand TEU, which will facilitate an increase in China's trade. As a result of the opening of the canal, the shipment of crude oil from Venezuela to China was shortened from 45 days sailing to just 30 and with lower operating costs. The need to deal with the constraints created by choke points both in Central America and in Southeast Asia have led to feasibility studies for the construction of two additional canals: a Chinese-financed plan to dig a canal in Nicaragua that will compete with the Panama Canal and also a plan to dig the Kra Canal in southern Thailand which will compete with the route through the Malacca Strait.

In 2017, work began on the Nicaragua Canal, at an estimated cost of \$50 billion. HKND Group, a Chinese company, has begun the work on the Brito Port on the Pacific Coast side (see Figure 6 below). The canal will be 276 km. long and 230-280 meters wide. The project will include two artificial lakes, two locks, two ports, an airport, a free trade zone and tourist sites.



Figure 6 – The planned route of the Nicaragua Canal

During 2016, an agreement in principle was signed between China and Thailand for the long-term project to build the Kra Canal, which is also called the Thai Canal (see Figure

7 below). The canal, whose planned length is 135 km, is meant to cross the Kra Isthmus in southern Thailand and will provide a new shipping route that shortens the voyage from the East to Europe by about 1200 km, as a result of bypassing the Malacca Strait. The opening of the Kra Canal will enable ships sailing from the Indian Ocean to the Pacific Ocean to avoid using the shipping services provided today by Singapore and will allow the Chinese to establish these services in the vicinity of the canal. The project has not yet been approved by the Thai government, but a group of retired military officers has been formed with the purpose of promoting the project and completing it within five years. The cost of the project is estimated at about \$28 billion and if it is approved some of its components may be financed by Chinese investment through the Maritime Silk Route initiative.<sup>19</sup>



Figure 7 – The planned route of the Kra Canal

The previous report already mentioned the interesting development in the Northwest Passage of the Arctic Ocean. This passage was not feasible for regular commercial ships until now due to the permanent thick layer of ice (see Figure 8 below). In recent years, the ice layer has been reduced in thickness by climate change. If the trend continues, it is predicted that in about two decades it will be possible to sail this route freely most of the year. The voyage along this route from Europe to East Asia will save about 2500 miles relative to the existing route. In addition, the transport of oil from Alaska to the East Coast of the US by tanker will be shortened. In this context, a Russian liquid natural gas (LNG) tanker took this route from Europe to Asia (the Northwest Passage) for the first time in August 2017, without the need for an icebreaker. It completed the voyage in a record time of 6.5 days. The 300-meter ship was built with a lightweight steel reinforced hull that can withstand a layer of ice up to 2.1 meters thick. It is the largest ship to have made

<sup>19</sup> Belmont Lay, Thais called to support S\$38.2 billion Kra Canal construction that will bypass S'pore ports, August 10, 2017, <http://mothership.sg/2017/08/thais-called-to-support-s38-2-billion-kra-canal-construction-that-will-bypass-spore-ports>



this voyage. Nonetheless, it should be mentioned that the voyage was made during the summer.<sup>20</sup>

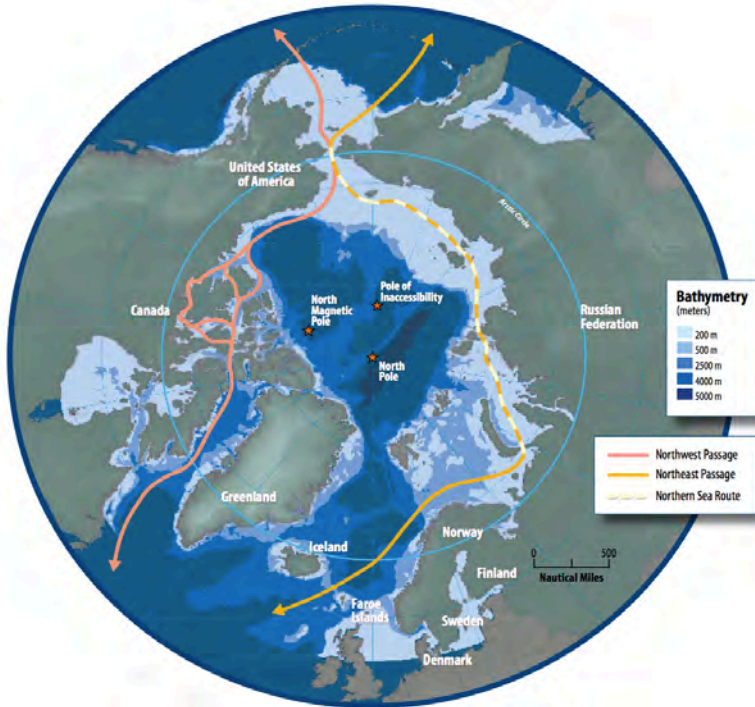


Figure 8 – Possible routes in the Arctic Ocean for the Northwest and Northeast Passages

If indeed the predicted reduction in the thickness of the icecap is realized, it will be possible to save billions of dollars in the costs of shipping. On the other hand, it will be necessary to resolve the dispute between Canada, which views the Northwest Passage as running through its territorial waters, and other countries (including the US). In addition, the challenges involved in protecting the environment and the complex logistic problems in providing technical support and supplies in this region will have to be overcome.

### The Exclusive Economic Zone – EEZ and the exploitation of seabed resources outside it

Since the term "Exclusive Economic Zone" was coined in 1982 and since the UN Convention on the Law of the Sea, there have been dramatic developments in underwater technology related to the discovery, development and production of natural resources in deep ocean mining operations. It is expected that by 2040, developments

<sup>20</sup> Matt McGrath, first tanker crosses northern sea route without ice breaker, BBC News, Science & Environment, August 24, 2017, <http://www.bbc.com/news/science-environment-41037071>

in underwater robotics and deep ocean telepresence will provide access to energy and mineral deposits under the seabed, which until now could not be exploited.<sup>21</sup> A number of countries have begun the process of planning in their maritime zones by means of marine spatial planning, which is intended to bridge and coordinate between objectives that are decided on by governments based on economic and social considerations and the preservation of the ecosystem. However, there still remain numerous disputes between states regarding the delimitation of the EEZs and also with respect to fishing rights in these zones. The most prominent dispute of this type exists in the South China Sea and it appears that despite the verdict of the International Court in Hague in July 2016 against China, it is continuing to create facts on the ground. Further discussion of this subject can be found in the section in this report on developments in the South China Sea.

In the Eastern Mediterranean, there are four major disputes that remain unresolved:

- The claim of North Cyprus (ruled by Turkey) to part of the economic waters around Cyprus.
- The claim of Turkey to part of Cyprus' EEZ.
- The claim of Lebanon that the agreement reached between Israel and Cyprus includes part of the territory belonging to Lebanon (definition of the maritime boundary between Israel and Lebanon). In this context, it should be mentioned that in the spring of 2017 the government of Lebanon called on companies that carry out surveys for the discovery of oil and gas to submit their candidacy to carry out underwater surveys in a number of regions, some of which are located in the territory that is claimed by both Israel and Lebanon. Israel has asked that the UN and the US put pressure on Lebanon to change its decision. If Lebanon's demands are not met the issue could lead to a violent confrontation between the two countries, whether intentionally or otherwise.
- The EEZ boundary between Israel and Egypt, which is meant to demarcate the territories of the two countries for future oil and gas exploration: Although the issue was discussed in a meeting between the Israeli Prime Minister and Egyptian President Abdel Fattah el-Sisi, it is related to a broader package deal that will also decide the amount of compensation to be paid to Israel as a result of the verdict of the International Chamber of Commerce (ICC) in Geneva and the purchase of natural gas (by private companies that are operating in Egyptian territory) from the Tamar and Leviathan fields in Israel's EEZ.<sup>22</sup> In Israel itself, proposed legislation on the issue of the economic waters is in the final stages of approval. Activity to exploit deep-ocean resources in territories outside the EEZs is regulated by the International Seabed Authority, which is an intergovernmental authority located in Kingston, Jamaica. It

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21 2040 timeline contents, Deep ocean mining operations are widespread, Future Timeline Net, <http://futuretimeline.net/21stcentury/2040.htm#deep-ocean-mining-2040>

22 Avi Bar Eli, "The Electricity Company will give up on \$500 million in order enable the export of gas from Leviathan", *Haaretz, The Marker*, September 3, 2017, p. 10. [Hebrew]

was created in order to organize, regulate and monitor deepwater exploration and production of minerals outside the national jurisdictions, which is the main territory of the world's seabeds (see Figure 9 below). The source of its authority is the Law of the Sea Convention, which has been signed by 167 countries. As a result of advances in deep-ocean technology, there is increasing activity to exploit natural resources under the seabed and the potential in the Arctic and other regions has increased the fear of uncontrolled exploitation of the seabed and damage to the ecological system.

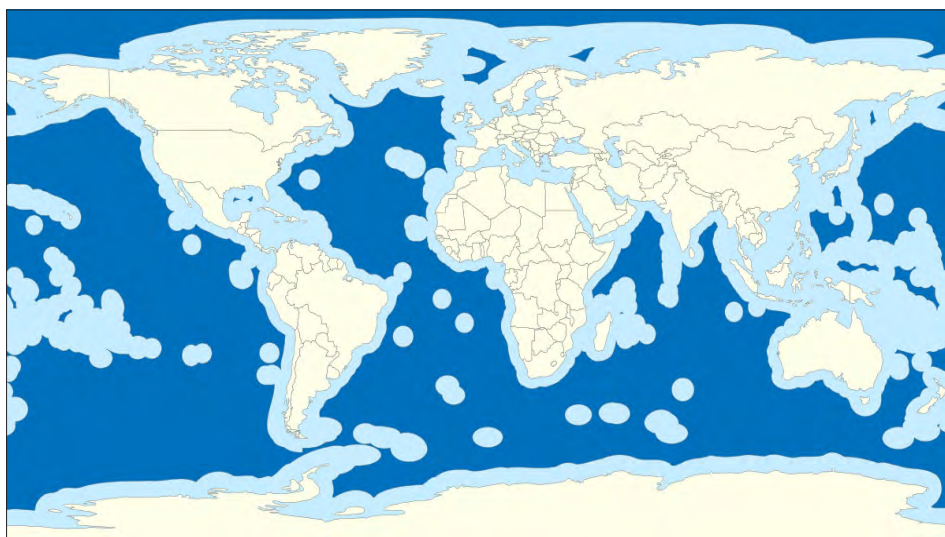


Figure 9 – International waters and their seabeds (in blue)

In recent years, doubts have arisen as to the character and mission of the International Seabed Authority and in particular among countries that are not signed on the Law of the Sea Convention, especially the US. These countries doubt the value of international agreements in this context. They claim that the Authority is not necessary and even that its status is in doubt with respect to its power to grant approvals, its collection of fees related to seabed mining, the distribution of the funds obtained from the granting of licenses and the obligation it imposes for the transfer of technology developed by more advanced countries to less advanced ones. In any case, the ecological damage from uncontrolled exploitation of minerals found under the seabed is a source of great concern among organizations for the protection of the maritime environment. There is no doubt that if this activity is not regulated there will be irreversible damage to the ecological system.<sup>23</sup>

23 Yves Henocque, *The Crafting of Seabed Mining Ecosystem-Based Management, Deep-Sea Mining, Resource Potential, Technical and Environmental Considerations*, Ed. Rahul Sharma, pp 507-526, Springer International Publishing AG 2017

### The main naval fleets – trends and changes

The following surveys the changes and trends in the principal naval fleets with focus on theaters of operation, strategy and plans for the buildup of force.

The US fleet: The US has the largest military budget in the world and as a result the American fleet is also considered to be the most powerful. The US Department of the Navy evaluates the strength of the American fleet on the basis of three indexes: size, capabilities and level of preparedness, which is evaluated as marginal (see Figure 10 below).



Figure 10 – Assessment of the strength of the US navy in 2017 (source: Department of the Navy)

The abovementioned increase of \$52 billion in the defense budget is intended to, among other things, support the long-term program to increase the number of vessels in the US navy to 350. Both the proposed budget and the ability of shipyards to handle the demand cast some doubt on the possibility of realizing this target by the end of the current decade. Figure 11 presents the 2018 budget proposal of the US navy. The request for a budget of \$171.5 billion was submitted for approval to Congress in May 2017. The proposed budget states that it will support the "restoring Navy readiness, and positioning of the Department of the Navy to compete and win against increasingly dynamic, high-tech and aggressive global threats". The budget and the increase implicit within it will enable the navy to acquire two Virginia-class attack submarines at a cost of \$5.5 billion, two DDG 51 destroyers at a cost of \$4 billion and a CVN-78 aircraft carrier at a cost of \$4.6 billion. The Pentagon is meant to be completing its new defense strategy, which apparently will require additional budget starting from 2019.

Richard Spencer, who became the new US Secretary of the Navy on August 1<sup>st</sup> 2017, will need to participate in defining the naval operating priorities for the near future, as well as the requirements of the future navy. The main issues that senior navy officials will have to deal with are the following:

- Space and missile defense.
- The global race in naval capabilities and how they affect the directions for development of the US navy.

- The promotion of international partnerships and particularly in relations with NATO and the order of battle needed by that organization in order to carry out its missions.
- The development of unmanned maritime systems and their ability to play a more significant role in the mission of the Navy.
- Innovation and new systems that are capable of contributing to the execution of the Navy's mission, including new tasks in the civilian domain.

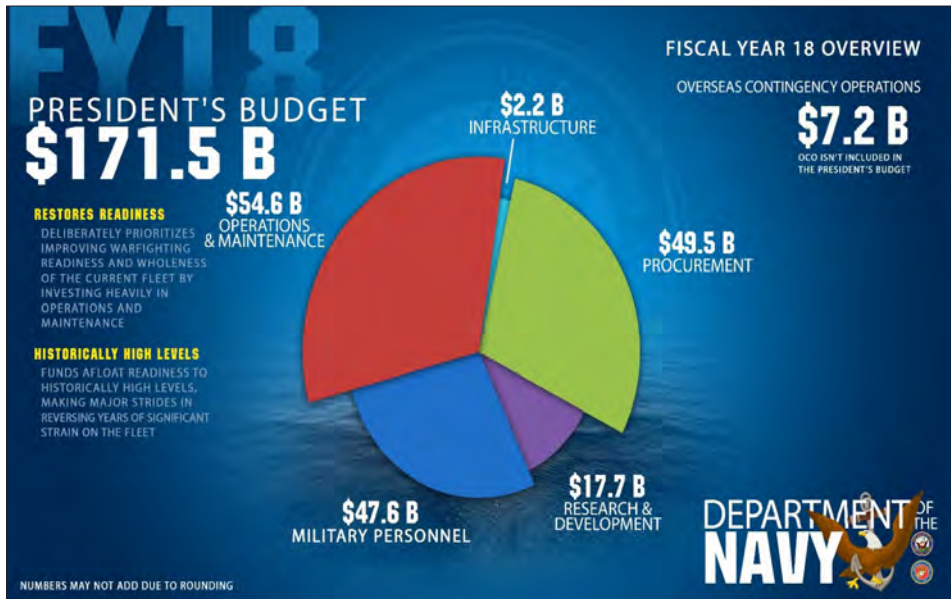


Figure 11 - The US Navy – Requested 2018 budget and its proposed division

In this context, it is worth mentioning that Congress is opposed to the position of the Secretary of the Navy according to which additional budget is to be allocated to increasing the existing types of vessels. Congress has conditioned the additional budget on an analysis to be done by two independent bodies which will determine whether the additional budget will also provide a solution to the new missions in the area of littoral warfare, which the Navy has recently had to deal with in various theaters of operation.<sup>24</sup> Figure 12 below presents the deployment of the US navy in its various theaters of operation in 2016. The chart demonstrates the shift of the US center of gravity towards the Western Pacific and the South China Sea, where about 50 vessels are located. As a result of this shift, the number of warships in the Mediterranean Sea (the Sixth Fleet) has dropped to its lowest level ever and it now includes only one command ship and a number of destroyers.

<sup>24</sup> Phillip Pournelle, A Fleet to do What? War on the Rock, Texas National Security Network, September 14, 2017, <https://warontherocks.com/2017/09/a-fleet-to-do-what>



Figure 12 – The deployment of the US Navy and alternatives for its operations in view of the various threats around the world (source: Department of the Navy FY 2017 President’s Budget)

Figure 13 below presents the estimated strength of the US navy according to type of vessel and the shortfall with respect to the Navy’s requirements. Figure 14 presents the division of the requested budget for 2018 according to use.

Ship Type	Two-Major Regional Contingencies Requirement (plus 20% strategic reserve)	Full Navy Requirement (per 1993 Bottom-Up Review)	FY 2016 Capacity	Score
Aircraft Carriers	13	12	10	3
Surface Combatants	39	124	101	3
Mine Countermeasures Ships	n/a	26	11	2
Amphibious Warships	50	41	31	2
Ballistic Missile Submarines	n/a	14*	14*	5
Attack Submarines	13	55	52	5
Combat Logistics Force	n/a	43	30	2
Support Ships	n/a	22	30	5
Air Wings	13	n/a	10	3

**Average: 3.3**

\* Bottom-Up Review stated a requirement of 16 ballistic missile submarines based on strategic guidance, but the subsequent 1994 Nuclear Posture Review reduced this strategic requirement to 14 boats. For more information on fleet requirement adjustments, see Ronald O'Rourke, "Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress," Congressional Research Service, August 10, 2015, <https://www.fas.org/spp/crs/weapons/RL32665.pdf> (accessed August 26, 2015).

Figure 13 – Estimated strength of the US Navy according to type of vessel and shortfalls<sup>25</sup>

25 Chief of Naval Operations (CNO) Admiral John M. Richardson, in the 2016 document A Design for Maintaining Maritime Superiority <http://index.heritage.org/military/2017/assessments/us-military-power/u-s-navy>

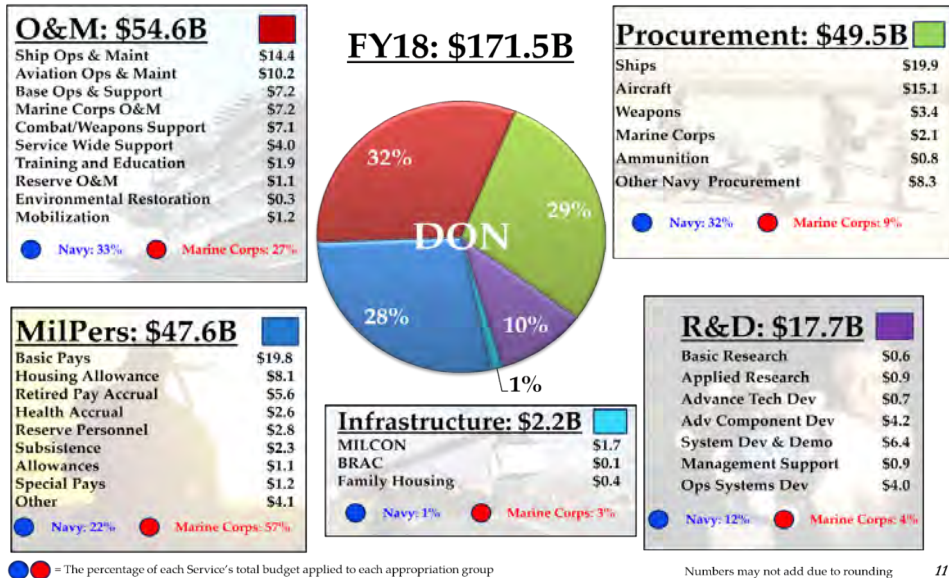


Figure 14 – The US Navy – Breakdown of requested 2018 budget

The US navy is deployed according to the new American maritime strategy entitled "A Cooperative Strategy for 21<sup>st</sup> Century Sea Power", which was published in May 2015 and was jointly written with the Coast Guard and the Marines. The strategy assumes that the navy's forces will need to fulfil a broad spectrum of missions and to prevent war with the same determination as that needed to win a war if it occurs. The strategy mentions the core capabilities needed by the navy in order to achieve the right balance between its peacetime and wartime activities:

- Deployment of forces and presence in distant theaters – forward presence.
- Deterrence.
- Achievement of sea control.
- Power projection.
- Maritime security.
- Humanitarian assistance/disaster response.

The main missions of the US navy during the period 2016-2020 are as follows:

- Protection of the homeland (maintaining nuclear deterrence, fighting terror, protection of the homeland and support for civilian authorities).
- Building security globally (a stabilizing presence all over the globe, activities to maintain this stability, humanitarian and rescue operations in cases of natural disaster).

- Power projection and winning decisively (delay of aggression and its defeat, projection of power despite attempts to deny access to a region, effective activity in the space and cybernetic domains).

The priority assigned by the US to the operations of the Seventh Fleet in the South China Sea region is manifested in two main efforts:

- The creation of a regional coalition with the participation of countries that are a party in the conflict with the Chinese over economic waters.
- Activity of naval vessels and aircraft that will challenge the claim of the Chinese to the economic waters around the series of seven artificial islands that have been and are being built by the Chinese.

During the first few months of the Trump administration, the US navy did not carry out even one freedom of navigation operation in the South China Sea, so as not to disrupt the summit held between President Trump and Chinese President Xi Jinping in Florida in April 2017. At a later stage, the Americans carried out a number of freedom of navigation operations in the South China Sea region. The intensive activity of the Seventh Fleet in East Asia has led to a series of serious maritime accidents. Thus, the USS Antietam ran aground in the Bay of Tokyo; the USS Lake Champlain collided with a Korean fishing vessel and suffered damage; and an American destroyer, the USS Fitzgerald, collided with the ACX Crystal which flies the Philippine flag while leaving the port of Tokyo. Apart from the damage caused to the destroyer, seven American sailors were killed in the accident. Another accident in August 2017 involving an American destroyer, the USS John S. McCain, occurred in the Malacca Strait and resulted in the deaths of ten American sailors. As a result of these incidents, the commander of the Seventh Fleet, Vice Admiral Joseph Aucoin was replaced. The events raise questions as to the level of seamanship of US navy commanders and will undoubtedly require the US navy to draw conclusions with respect to both training and operations.<sup>26</sup>

The possibility of uncontrolled confrontation between the American and Chinese navies in the South China Sea has filtered into the consciousness of senior commanders on both sides. In order to prevent such a situation, the two sides have decided to establish channels of communication that will prevent escalation. In August 2017, General Joe Dunford, the Head of the Joint Chiefs of Staff, and his counterpart, General Fang Fenghui, signed an agreement to maintain communication channels between the two navies for this purpose.<sup>27</sup> The Head of the Joint Chiefs of Staff stated that it is his intention to convince his Russian counterpart to sign a similar agreement.

26 Seth Croysey, Has the Navy Reached Its Breaking Point? Wall Street Journal, August 24, 2017. [https://www.realclearpolitics.com/2017/08/24/has\\_the\\_navy\\_reached\\_its\\_breaking\\_point\\_419219.html](https://www.realclearpolitics.com/2017/08/24/has_the_navy_reached_its_breaking_point_419219.html)

27 Ben Werner, New U.S., Chinese Military Communications Agreement Follows Years of Naval Engagement, USNI News, August 16, 2017, <https://news.usni.org/2017/08/16/new-u-s-chinese-military-communications-agreement-follows-years-naval-engagement>



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During 2017, international attention was focused on the Korean peninsula and the US reinforced its naval forces in the region in order to create a large task force. The tension increased as a result of the aggressive policy of North Korea, which is considered to be a rogue state, and its success in testing the Hwasong 12 ballistic intercontinental missiles in July 2017, as well as the completion of development of a hydrogen nuclear warhead, according to North Korean claims. The range of these missiles threatens the West Coast of the US and its military installation on the Island of Guam. North Korea is continuing its nuclear program and in August it carried out its sixth nuclear test. The bomb was exceptionally powerful and was accompanied by a declaration that it was a hydrogen bomb, despite the heavy sanctions imposed on it by the UN. The US navy boosted its forces in the region and starting from August the US presence consisted of two task forces which include aircraft carriers (the Ronald Reagan and the Karl Vinson). On his first foreign visit, US Secretary of Defense Jim Mattis arrived in Japan and Korea in order to provide reassurance of the US commitment to their security; this was after Trump, during his election campaign, had demanded that they participate in financing the defense burden and he has even threatened to dismantle the defense alliances between them and the US. In the months of August-September 2017, the tension in the Korean peninsula reached a new peak and Mattis arrived for another round of talks with regional leaders.

The activity of the Sixth Fleet in the Mediterranean has been influenced in the past by two main factors:

- The Cold War.
- A main source of energy imports (see Figure 15).

The end of the Cold War and the drop in oil and gas prices, including the expanded sources in the US itself, led to a reduction in US naval presence in the Mediterranean. Even though the USS George W. Bush aircraft carrier paid a visit to the Port of Haifa (17 years after the previous visit), this did not change the Sixth Fleet deployment and after its visit the aircraft carrier left the Mediterranean region for a different theater of operations. In May 2017, two destroyers—the USS Porter and the USS Ross—launched 59 Tomahawk cruise missiles at targets in the Syrian Shariat airport, from which President Assad had launched planes to attack targets in the city of Idlib with Sarin gas. This is the first time that American forces have attacked Assad's army since the beginning of the civil war. The damage to the airport was not serious but the purpose was primarily to send a message. The attack itself did not represent a change in American policy with respect to US presence in the Middle East and in the Astana talks between parties involved in Syria the US understood that it is not in a position of strength and its demands were limited. This was also reflected in the strategy of the US navy which is continuing to give priority to its missions in other theaters, such as Southeast Asia and East Asia, the Persian Gulf and the Baltic Sea, together with the NATO navies.



SOURCE: Heritage Foundation research and analysis provided elsewhere in this *Index* and U.S. Department of Energy, Energy Information Administration, "World Oil Transit Chokepoints," December 2014, Table 1, <http://www.eia.gov/beta/international/regions-topics.cfm?RegionTopicID=WOTC> (accessed August 17, 2015).

Figure 15 – Main choke points in the shipment of oil from the Middle East

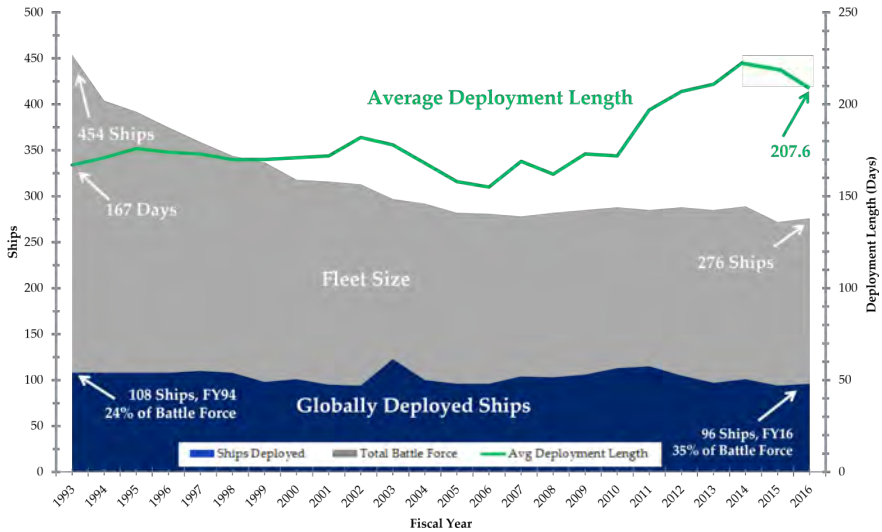


Figure 16 – Trends in the battle force of the US navy from 1993 to 2016 including the average duration of deployment at sea per year

In conclusion, the US Navy is still the largest and strongest navy in the world and also has the largest variety of capabilities. Nonetheless, the budget constraints and the new challenges in the various theaters have forced it to, among other things, set priorities in the use of its strength, to promote new alliances in areas such as Southeast Asia and to urge NATO to adjust its strategy to meet developments in the Atlantic Ocean and the Mediterranean. The tension between the US and North Korea in the second half of 2017 forced the Americans to reinforce their forces also in the region of the Korean Peninsula. The arrival of the new American administration at the beginning of 2017 without a well-formed plan and events in the various theaters led to an ad hoc defense policy in reaction to the various crises that arose.

### **The Chinese navy – (the People's Liberation Army Navy – PLAN)**

The growing importance of Chinese maritime interests and the growth in the Chinese merchant fleet (which is the third largest in the world and numbers 3,600 ships) has led the Chinese navy to increase the frequency of its operations, their duration and their distance from the Chinese mainland. China operates an independent battle force in the Indian Ocean to counter maritime piracy. Following a decade in which the activities of the Chinese navy became more frequent in distant regions and more technically demanding, China published a new strategic White Paper in May 2015 called "Open Seas Protection".<sup>28</sup> Such a drastic change in Chinese strategy—which until now had advocated control over local seas—reflects the growth in China's economic and diplomatic influence throughout the world. China has thus changed its preference for land forces and has essentially abandoned its traditional mentality that land is more important than the sea. The new strategy reflects the growing importance of managing activity in the seas and oceans and effectively protecting China's maritime rights and interests. Accordingly, China must develop a modern naval force that is up to the job of maintaining its national security. In order to allow the Chinese navy to operate far from its coasts, China has completed the construction of its first aircraft carrier, the Lianong, and the second is expected to enter service in 2018.

There appears to be a certain amount of criticism within China regarding the preference given to the navy in the allocation of resources, criticism that the President of China chose to relate to at the meeting of the National Security Council in February 2017. By adopting the concept of "Total Security"—a phrase coined by the President himself in his speech—and giving priority in the allocation of resources to the navy, the President has intensified the debate between the various schools of thought on China's maritime and naval policies. According to him, history has proven that the survival of Communist China

28 Blasko j. Dennis, "The 2015 Chinese Defense White Paper on Strategy in Perspective: Maritime Missions Require a Change in the PLA Mindset." The Jamestown Foundation, May 29, 2015. [http://www.jamestown.org/programs/Chinabrief/single/?tx\\_ttnews%5Btt\\_news%5D=43974&cHash=d67db88687507367b668f71cd4199603#.VjH0IPkrLIW](http://www.jamestown.org/programs/Chinabrief/single/?tx_ttnews%5Btt_news%5D=43974&cHash=d67db88687507367b668f71cd4199603#.VjH0IPkrLIW)

has always been dependent on the balance between naval and land forces, something that should be based on public debate.<sup>29</sup>

The activity of the Chinese navy in the Western Pacific represents a significant step in the realization of a new grand maritime strategy, which also includes elements of defense far from China's shores. This deployment has been carried out at strategic points along essential shipping lanes in the Pacific Ocean (and in the Arctic Ocean in which China has recently shown growing interest) and at choke points in the Indian Ocean and South China Sea.

In recent years, the debate over China's right to define the boundaries of its economic waters has been the center of attention, both on the operative maritime level and on the international level. On July 12th 2016, the international court in The Hague ruled on the ongoing dispute in the South China Sea between the Philippines and China. The verdict rejected China's claim to recognize its control and sovereignty over most of the territory, the islands and the reefs in the South China Sea. China did not accept the verdict and announced on a number of occasions that it does recognize the authority of the court in The Hague. As mentioned, in October 2016 President Rodrigo Duterte of the Philippines decided to change the position of his country and to try to reach a negotiated arrangement with China while at the same time demanding that the Americans evacuate their bases in the Philippines.<sup>30</sup>

In order to facilitate the deployment of the Chinese navy in distant locations, China has been establishing naval bases at various strategic points. In July 2017, the Chinese Ministry of Defense announced the inauguration of the logistic center in the Port of Djibouti which is close to the Horn of Africa and the entrance to the Red Sea. The base is meant to provide logistic support for vessels of the Chinese navy that are patrolling the Gulf of Aden and to provide sailors with rest and rehabilitation during their missions at sea. The vessels of the Chinese navy are involved in broad-scale activities against piracy and some of them also carry hundreds of Chinese marines in the event of a mission that has a land component.<sup>31</sup>

During 2017, the Chinese navy was active in areas where it did not previously have a presence, such as the Baltic Sea, and whose connection to the BRI is unclear. In July 2017, a Chinese force belonging to the South China Sea fleet made up of a missile destroyer, a missile frigate and a supply ship participated in a joint exercise with the

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29 Sherman Xiaogang Lai, The Evolution of Chinese National Security Debates on Maritime Policy, Pt. 2, Center for International Maritime Security, Asia – Pacific, August 10, 2017, <http://cimsec.org/the-evolution-of-chinese-national-security-debates-on-maritime-policy-pt-2/33450>

30 Bodeen Christopher and Wong Gillian, Philippine President announces separation from US, Associated Press, October 21, 2016 <https://www.yahoo.com/news/philippine-leader-meets-Chinas-president-charm-offensive-030041553.html?ref=gs>

31 China Announces Official Opening of Naval Base in Djibouti, Sputnik International, July 11<sup>th</sup>, 2017, <https://sputniknews.com/military/201707111055440843-China-djibouti-naval-base>

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Russian navy in the Baltic Sea. On its way to the joint maneuver, the Chinese task force carried out a live-fire exercise in the Mediterranean against small targets. This voyage was meant to convey three main messages:

- The navy serves as an important component in President Xi Jinping's policy to demonstrate the power of China as a global superpower. In accordance with this policy, the navy will increase its presence in various theaters that are far from China's shores.
- The entry of the Chinese navy into the Baltic Sea proves to the European maritime powers (France and Britain) that they must take into account that if they operate in the South China Sea—"China's backyard"—then China will answer in kind.
- A new configuration of forces that includes the Chinese and Russian navies is taking shape and the two navies will in the future be able to assist one another where their interests converge, such as in the Baltic Sea in the case of Russia and the South China Sea in the case of China.<sup>32</sup>

Another task force of the Chinese navy consisting of three warships visited 20 ports in the Mediterranean during May-July 2017.

In the ongoing conflict between China and Taiwan, the navy has been used to project power a number of times against Taiwan, when the latter has tried to openly demonstrate a policy of secession. In this context, the Chinese aircraft carrier Liaoning carried out a mission of power projection in the Taiwan Strait in June 2017. At the end of the mission, the aircraft carrier went on to convey a message against domestic secession by entering the harbor of Hong Kong in order to participate in the 20<sup>th</sup> anniversary celebration of the return of Hong Kong to Chinese control. In view of the unrest in Hong Kong, the central government exploited the entry of the aircraft carrier into the harbor to convey a forceful message to the citizens of Hong Kong who aspire to achieving independence—as expressed in the violent demonstrations that occurred in the city during 2016—that they will not tolerate separatism of any kind.

## The Indian navy

In 2017, the Indian navy continued to operate according to a maritime strategy that was approved in 2017, called "Ensuring Secure Seas: Indian Maritime Security Strategy".

Accordingly, the Indian navy continued to develop its naval capabilities in order to achieve the following goals:

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32 Goldrick James, Exercise Joint Sea 2017: A new step in Russo-Chinese naval cooperation? Lowy Institute, August 10<sup>th</sup>, 2017, <https://www.lowyinstitute.org/the-interpreter/exercise-joint-sea-2017-new-step-russo-chinese-naval-cooperation>

- Protection of shipping lanes (the sea lines of communication – SLOC) that are utilized to transport India's imports of energy, which essential to India's continued economic growth.
- Expansion of India's political influence.
- To serve as a counterweight to the expanding Chinese activity in the Indian Ocean.

India has made it clear that its navy is not limited to activity in the Indian Ocean and the Bay of Bengal and indeed it has expanded its naval activity to the South China Sea as well. Evidence of this can also be found in the joint declaration of Indian Prime Minister Modi and the US President that was released at the end of the former's visit to the White House, in which he referred to the "Indo-Pacific".<sup>33</sup>

It is India's desire to achieve dominance in the Indian Ocean and the accompanying strategic discourse takes place at the highest levels of the Indian establishment. India's main concern is the territorial aspirations of China, its chief strategic rival, in the Indian Ocean. The Indians are afraid that the Chinese intend to make the Indian Ocean into a "Chinese Lake", by building civilian infrastructures in the ports of other states in the region (such as Seychelles and Sri Lanka) and in this way to expand the ability of the Chinese navy to operate from those ports. In addition, the Chinese are from time to time sending nuclear submarines to patrol the Indian Ocean, which has led India to increase its fleet of marine patrol aircraft with anti-submarine capability. As described at length in the previous report, India is continuing to implement the maritime strategic document published in 2015. Its main components are the following:

- The connection between the Indian Ocean and the Pacific Ocean (Indo-Pacific) and its effect on India's maritime security.
- Expansion of the Indian navy's spheres of interest (both primary and secondary) which reflect India's desire to be a player with a larger number of roles. For example, the Red Sea which was of secondary importance according to the strategy of 2007 has gained primary importance. The Gulf of Aden, the southwest Indian Ocean and East Africa have also gained primary importance for the Indian navy.

In order to successfully implement this strategy, India must tighten its diplomatic ties with countries such as Nepal, Sri Lanka, the Maldives and members of ASEAN with the goal of strengthening its influence in the Indian Ocean.<sup>34</sup> This includes, among other things, the provision of economic assistance to countries such as Sri Lanka in order to prevent them from falling victim to Chinese "debt trap" diplomacy, whereby countries that are in default on their debts receive assistance in exchange for obedience.

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33 Samir Saran and Paul Kapur, How India and the US can lead in the Indo-Pacific, Observer Research Foundation, August 18, 2017, <http://www.orfonline.org/research/how-india-us-can-lead-indo-pacific>

34 ASEAN – The Association of Southeast Asian Nations, Includes: Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei Darussalam, Viet Nam, Lao PDR, Myanmar and Cambodia.

India is adopting pro-active maritime diplomacy in the Indian Ocean theater and is active in maintaining free passage of goods to and from India, particularly at the choke points at the entrances and exits of the Indian Ocean. By means of this strategy and closer relations with the US (without neglecting its special relationship with Russia in the buildup of the Indian navy), India hopes to block the Chinese threat which is perceived by its leaders as the main threat in the Indian Ocean. In order to maintain its economic growth, India must import growing quantities of energy (oil and gas), which has led the Indians to take part in the effort to counter maritime piracy. India is worried by the possibility of terrorist organizations based in Pakistan making use of the sea lanes, as happened in Mumbai in 2014.

India has upgraded its strategic nuclear capability during the past year with the entry into service of the nuclear submarine INS Arihant. It will be outfitted with ballistic missiles with a range of 750 km that were developed by the Indian Defense Research and Development Organization (DRDO) and at a later stage they will be upgraded with K-4 missiles with a range of 3500 km and K-15 missiles with a range of 750 km.<sup>35</sup> India is planning to complete the building of three additional submarines of this class and thus to create a nuclear triad that will provide second strike capability. This ability is important to India since its strategy for the use of its nuclear capability is to prevent first use.

The Indian navy carried out its main annual exercise in January 2017 in the Indian Ocean and its main goal was the detection, identification and destruction of Chinese submarines. There were 60 surface vessels, five submarines and 70 aircraft participating in the exercise.<sup>36</sup> The Indian navy carried out a number of naval exercises in 2017 which demonstrated its desire to create an alliance with regional naval forces with similar foreign policy objectives. In May 2017, an Indian naval task force that included a frigate, a corvette and a refueling ship carried out a week-long exercise with the Australian navy in the area of the port of Fremantle in Western Australia. On its way to Australia, the force carried out a joint exercise with a naval force from Singapore in the South China Sea from May 21-24. Although these exercises have been carried out since 1994, Singapore—which is careful to maintain proper relations with China—made sure to maintain balance by means of a goodwill visit by a Singaporean frigate to the Chinese port of Qingdao.

In view of the efforts by India to increase its influence in the Indian Ocean and the stress it places on its presence and activity in the Indian Ocean, Pakistan initiated an international naval maneuver called "Aman 17" in February 2017, which included vessels from nine navies (American, Australian, Russian, Chinese, British, Japanese, Indonesian, Sri Lankan and Turkish) and a conference that followed which was attended

35 Naval Technology.com, SSBN Arihant Class Submarine, India, Arihant armament, <http://www.naval-technology.com/projects/arihant-class>

36 Franz-Stefan Gady, Indian Navy Practices Sinking Chinese Subs in Largest-Ever Military Exercise, the Diplomat, February 10<sup>th</sup>, 2017, <http://thediplomat.com/2017/02/indian-navy-practices-sinking-chinese-subs-in-largest-ever-military-exercise>

by representatives of 37 navies. The Indian navy did not participate. Nawaz Sharif, the head of the Pakistani delegation, who greeted the participants, stated that "Pakistan, being a major stakeholder in maritime security of the Arabian Sea, is fully committed to ensuring freedom of navigation and lawful maritime order." Sharif mentioned that the security challenges in the Indian Ocean are multifaceted and include terror, drug smuggling and piracy.<sup>37</sup> Sartaj Aziz, the aide to the Pakistani Prime Minister, also spoke at the conference and declared that the "evolving expansionist maritime security strategy is a cause for concern for peace in the Indian Ocean", and that "nuclearisation of the Indian Ocean (led by India – S.H) has also led to further instability in the region."<sup>38</sup>

Buildup of power – The Indian armed forces in general and the Indian navy in particular are the largest importers of arms in the world and they are also making progress towards the creation of their own military industrial infrastructures. The Indian defense budget for 2017-18 is about \$53.5 billion (see Figure 17). The budget grew by about 6.5 percent relative to the previous year (which also reflects the increase in India's GNP); however the budget of the Indian navy is lower this year by about 6.4 percent than in the previous year. It should be remembered that the budget of the research and development organization (which accounts for about 6 percent of the defense budget) includes more than a few projects for the navy (which essentially increases the total budget allocated to the navy).

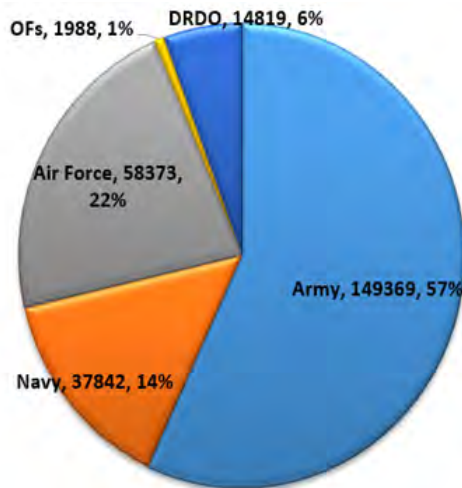


Figure 17 – Breakdown of the Indian defense budget for 2017-18 between the branches of the military (source: Institute for Defense Studies and Analyses, New Delhi)

37 NDTV, Exercise Aman 17: Pakistan Begins Naval Drill In The Arabian Sea, February, NDTV Press Trust of India. 10, 2017, <http://www.ndtv.com/world-news/exercise-aman-17-pakistan-begins-naval-drill-in-the-arabian-sea-1658176>

38 NDTV, India's Maritime Strategy in Indian Ocean 'Expansionist', Alleges Pak, Talks of 'Threat', All India, Press Trust of India, February 13, 2017, <http://www.ndtv.com/india-news/indias-maritime-strategy-expansionist-alleges-pak-talks-of-threat-1658757>



In May 2017, the Indian government launched "The New Strategic Partners Policy" which called for the choosing of international strategic partners that will collaborate with private Indian industry in order to produce weapon systems. Thus, for example, India issued an international tender for the development of a new sea-to-sea missile that will go into service in 2024 with a budget of one billion dollars. The main condition is that the missile will be built by local industry and that India will receive the technology that is developed. The same applies to a procurement deal for 230 naval helicopters at an estimated cost of about \$10 billion.<sup>39</sup>

The program for the buildup of Indian naval power (which by 2027 will reach 197 vessels) is an ambitious plan whose goal is to deal with Chinese expansionism and also to develop deterrence (non-conventional) that will support the maintenance of regional stability. Currently, India has a navy numbering 137 vessels and so far contracts have been signed with local shipyards for the building of another 48. In order to preserve the special relationship between the Indian and Russian navies—or perhaps for some other reason—India decided to build two Krivak-class stealth frigates in Russia and two additional ones in the Goa Shipyards in India.<sup>40</sup>

## The Russian navy

Since the beginning of the last wave of reforms in the Russian armed forces in 2009, the Russian leadership has been broadcasting the message that the Russian navy has come out of its crisis, is returning to its former greatness and is capable of fulfilling the missions of a superpower navy. This was recently manifested in two events:

- The annexation of the Crimea and the achievement of Russian control over the port city of Sevastopol, which is also the home port of the Russian navy in the Black Sea and is close to the navy shipyards that play an important role in the navy's maintenance.
- The expansion of the navy's mission in its six theaters of operation (the Atlantic, the Arctic, Antarctica, the Indian Ocean, the Caspian Sea and the Pacific Ocean) while giving priority to a permanent presence of the Russian fleet in the Mediterranean and increasing its power in the Atlantic Ocean and the Arctic Ocean.

As mentioned in the previous report, President Putin approved "The Maritime Doctrine of the Russian Federation" on July 26<sup>th</sup> 2015. The document describes the strategy of the Russian fleet, its mission and its plan for the buildup of power. The doctrine replaces the previous one approved in 2001. In addition, in July 2017 Putin approved a document

39 Vivek Raghuvanshi, how 'Make in India' could impede India's global hunt for anti-ship missiles, DefenceNews, August 26, <http://www.defensenews.com/naval/2017/08/24/how-make-in-india-could-impede-indias-global-hunt-for-anti-ship-missiles>

40 Vivek Raghuvanshi, Goa Shipyard nominated to build two stealth frigates for the Indian navy, Getac, March 15, 2017, <https://www.defensenews.com/naval/2017/03/15/goa-shipyard-nominated-to-build-two-stealth-frigates-for-the-indian-navy>

entitled "Basic Principles of the State Naval Policy up to 2030". This document replaced the "Basic Principles of Naval Policy" that was approved in 2012 and which was meant to remain valid until 2020. For a survey of the implications of this document, see the section on "The Principles of Russian Maritime Policy" in the current assessment.

With respect to the buildup of power in the Russian navy, there is a conceptual revolution currently taking place which is the result of the fact that maritime warfare is now more focused on littoral warfare. Accordingly, the Russians are preparing to abandon the construction of capital ships and—based on a radical change in operational thinking—to characterize, plan and build smaller vessels that are equipped with advanced warfare systems that will produce an advantage over enemy vessels on the strategic, systemic and tactical levels. In the plan for Russian military buildup for the period 2011-20 the Russian navy was allocated 25 percent of the budget for procurement, modernization and R&D, which is more than any other branch. The navy has become the preferred branch among politicians, which is also a reflection of the Russian maritime strategy published in July 2015 (called *Morskala Strategii*). Despite the aforementioned, the Russian navy possesses seven large vessels that were built prior to the collapse of the USSR: the Admiral Kuznetsov, two nuclear-powered warships and three Slava-class cruisers, all of which are old vessels with high maintenance and operating costs. Nonetheless, these ships are meant to operate in "blue water" and therefore they still enjoy the prestige that comes with their size and the image that creates. Russian President Vladimir Putin who views such vessels as a geostrategic and geopolitical asset would like to build new ships of this type, but Russia's current economic situation does not make this possible and the plan has been deferred into the future. In addition, it is worth mentioning that Russia does not have shipyards of the type that can produce these vessels and in the past these ships were built in Ukraine. Although the capability for producing submarines remained in Russia itself and therefore the program for the buildup of strength is restricted to the capabilities of the Russian shipyards, i.e. submarines (both attack and ballistic), frigates and corvettes.

The second constraint is economic: The budget for the buildup of strength is a constraint, particularly in view of the low price of oil. The third problem is the abovementioned vulnerability of large ships in the absence of appropriate forces to escort and protect them.

Thus, according to the strategy announced in 2015 the Russian navy is focusing on the following three missions: nuclear strike capability by means of submarines carrying nuclear missiles; the integration of the navy within land attacks by means of cruise missiles (as was demonstrated in the attack on targets in Syria); and the protection of the homeland's coasts (including territory held by Russia in the Eastern Mediterranean) by means of anti-access/anti-denial (A2/AD). The former two missions can be carried out well by submarines and by small surface vessels such as frigates and corvettes. Therefore,

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according to the current Russian naval strategy the missions of the aforementioned large surface vessels is quite limited.

In 2017, the Russian navy maintained its presence in the Eastern Mediterranean and further consolidated its presence in Syria. The Russians renewed their lease agreement for the port of Tartus for another 49 years and continued with the construction of infrastructures in the Russian part of the port. The Russian aircraft carrier Kuznetsov, which participated in the Russian operation in Syria in November 2016, left the region at the beginning of January 2017. The Russian navy in the Eastern Mediterranean is based primarily on the Black Sea fleet, which ranges from 8 to 15 vessels of various types. In April 2017, following the American attack on the Syrian airports using Tomahawk cruise missiles fired from two destroyers permanently stationed in Rota, the Black Sea fleet sent the Admiral Grigorovich guided missile frigate to the Eastern Mediterranean. The frigate is one of eight Russian vessels outfitted with Kalibr NK cruise missiles used for attacking land targets. In August 2017, the Russian navy reinforced its forces in the Eastern Mediterranean with two Improved Kilo-class conventionally-powered submarines. The Russians have boasted of the stealth abilities of these submarines, although up until their arrival in the Eastern Mediterranean they were tracked continuously by NATO.<sup>41</sup>

Researchers claim that this Russian strategy is intended to transform the Eastern Mediterranean into an inaccessible region for the American fleet and those of its allies during a crisis. If indeed the Russians accomplish this, then the US and its allies will be limited in their access to the Suez Canal, the Black Sea and the Eastern Mediterranean.

The Russian fleet of attack submarines, which is larger than at any time during the last two decades, has in recent years patrolled a number of theaters of operations: off the coasts of Scandinavia and Scotland, in the Mediterranean and in the North Atlantic. This activity is perceived as competing with the dominance of US and NATO submarines in those regions until now. In the autumn of 2015, Admiral Mark Ferguson, the commander of US forces in Europe, remarked that: "The number of patrols by Russian submarines has grown by almost 50% relative to the previous year in these regions."<sup>42</sup> As part of the littoral warfare being carried out by the Russian fleet in the Eastern Mediterranean, it demonstrated its ability to carry out an attack against land targets by launching cruise missiles from both the Caspian Sea and the Mediterranean. American observers point to the fact that the launch of cruise missiles from the Caspian Sea or from the Black Sea

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41 AFP, Russia sends new submarines to Mediterranean, the Economics Time, August 28, 2017, <http://economictimes.indiatimes.com/news/defence/russia-sends-new-submarines-to-mediterranean/articleshow/60263050.cms>

42 Schmitt Eric, Russia Bolsters Its Submarine Fleet, and Tensions with U.S. Rise", The New York Times, April 20, 2016

where the Russians have complete maritime and air control provides these vessels with almost complete survivability.<sup>43</sup>

In sum, despite Russia's economic situation in recent years, the Russian navy has been given priority over other branches in the allocation of resources for the buildup of force and its use. The navy serves geopolitical and geostrategic goals and in some sense exhibits patterns of behavior towards the US and NATO that are reminiscent of the Cold War. Furthermore, the number of vessels in the fleet (272 as of August 2016) is similar to that of the US navy. In 2015 and 2016, the Russian navy upgraded its relations with the Chinese navy and held joint exercises in the Mediterranean, a joint amphibious exercise on the eastern coast of Russia and a joint exercise in September 2016 in the South China Sea. Despite the statement by the Russian navy spokesman that "the joint exercise is not aimed against any third party and is not related to the geopolitical changes in the region", the facts proved otherwise.<sup>44</sup> In July 2017, the Russian and Chinese fleets (including a destroyer, a frigate and a supply ship) carried out a joint maneuver in the Baltic Sea. It followed the annual joint maneuver of the US and NATO (BALTOPS), which was held in 2017 and included about 50 vessels and aircraft. The Chinese presence in the Baltic Sea can be viewed as part of the Chinese desire to demonstrate its global maritime interests, rather than as part of a return to the Cold War that characterizes the behavior of the Russian navy with respect to NATO forces.

As part of the restoration of Russian naval power, President Putin instructed the navy to organize a naval flotilla on Navy Day along the Neva River which connects St. Petersburg to the Baltic by way of the Gulf of Finland. About 50 surface vessels and submarines participated in the special event, which was attended by President Putin on the deck of a coast guard boat. From there, he declared that a great deal of resources are being invested now in order to transform the Russian navy into a modern fighting force. He also mentioned that "The navy is not only dealing with its traditional tasks but also responding with merit to new challenges, making a significant contribution to the fight against terrorism and piracy."<sup>45</sup> Smaller flotillas were organized in the Black Sea and the Crimean Peninsula, which was annexed to Russia, and in the port city of Vladivostok in the Far East.

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43 Fink Andrew, *Troubled Waters, Russia, Iran and Inland Seas – A bastion strategy for the second nuclear age*, *The American Interest*, April 15, 2016

44 Sputniknews, *Russian-Chinese Naval Exercise Cooperation 'Highly Effective'*, *Sputnik Military & Intelligence*, September 12, 2016. <https://sputniknews.com/military/20160912/1045205912/russia-China-naval-cooperation-effective.html>

45 AFP, *Putin displays Russian navy strength in its first ever parade at Syrian base*, *Deccan Chronicle*, July 30, 2017, <http://www.deccanchronicle.com/world/europe/300717/putin-displays-russian-navy-strength-in-its-first-ever-parade-at-syrian-base.html>



Figure 18 – President Putin observes a flotilla of honor on Russia's Navy Day. (Source: Kremlin website)

With regard to the export of naval weapon systems, Russia is still a supplier of vessels and advanced weapons to numerous navies, including the Indian navy, which despite its closer relations with the US navy continues to maintain its special relationship with the Russian navy. As part of the effort to alleviate its economic crisis, Russia is interested in expanding the export of naval platforms and weapon systems. Vladimir Kozhin, the Presidential Aide for Military Technical Cooperation, expressed this in an interview with Russian television in March. Kozhin particularly emphasized Russia's intent to accelerate the export of vessels and naval systems, which today account for the smallest portion of Russia's military exports (aeronautics account for more than 50%, land vehicles for more than 20%, while defense and electronic warfare systems and naval systems are at the bottom of the list).<sup>46</sup>

### The NATO naval forces

A number of events this year had an effect on NATO in general and on its naval forces in particular:

- The continuing shift in the focus of activity of American naval forces in the direction of the Pacific Ocean.
- The demand by the new American President that the NATO nations increase their investment in the defense budget and his attitude toward NATO as an outdated organization.<sup>47</sup>

46 Russia Plans to Increase Export of Naval Equipment – Putin's Aide, Sputnik International, March 23, 2017, <https://sputniknews.com/russia/201703231051901526-russia-naval-equipment>

47 Martin Bank, Defense spending increased 'significantly' among NATO allies, defenseneews.com, Europe, June 30, 2017, <https://www.defenseneews.com/global/europe/2017/06/30/defense-spending-increased-significantly-among-nato-allies>

- The expected exit of Britain from the EU by May 2019.

These events are fueling the concerns of NATO leaders and the political leaders of the member nations in dealing with the developing naval challenges on the eastern and southern flanks of NATO. In February 2017, at a conference held in Munich the NATO defense ministers decided to increase their defense budgets to a level of 2 percent of GNP.

The challenges that NATO are meant to deal with in the near future:

- The challenges created by Russia (although it is not an enemy, its policy is confrontational).
- The complicated challenges in Syria and the Eastern Mediterranean.
- The lack of certainty in the region of the Black Sea.
- The deepening instability on the southern coasts of the Mediterranean, including the situation in Libya.
- In the North – the region of the North Sea and the Baltic Sea and its importance to NATO security.

Indeed, there are many challenges which vary in their nature and geographic location and they require the creative use of NATO forces and an appropriate plan for the buildup of force.<sup>48</sup>

One of the questions that arises in view of the planned withdrawal of Britain from the EU is whether its senior status in NATO will remain unchanged (including the location of the Allied Maritime Command in Northwood in Britain) or that France, which rejoined NATO in 2009 after withdrawing in 1966, will exploit the opportunity in order to replace it. Britain has since 1951 filled the position of Deputy Supreme Allied Commander and France has already initiated unofficial enquiries to the US in order to propose its candidacy to replace Britain in this role.<sup>49</sup>

As mentioned already in the previous report, NATO lacks an up-to-date doctrine and method of operation in order to deal with the challenges that have developed, particularly in the Mediterranean. As a result, the leaders of the NATO nations decided at a NATO summit meeting in Warsaw in July 2016 to change their operational plan. The new operational plan (which replaced Operation Active Endeavour from 2001) was given the name Operation Sea Guardian and its goal was defined as "cooperation with Mediterranean stakeholders to deter and counter terror and to mitigate other threats to

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48 France 'aiming to take Nato leadership role from Britain after Brexit', The Telegraph News, January 10, 2017, <http://www.telegraph.co.uk/news/2017/01/10/france-aiming-take-nato-leadership-role-britain-brexit>

49 Vice Admiral Clive Johnstone, CB CBE, Commander Allied Maritime Command, NATO's Maritime Moment: A Watershed Year in Alliance Sea Power, January 13, 2017, <http://mc.nato.int/media-centre/news/2017/nato-maritime-moment-a-watershed-year-in-alliance-sea-power.aspx>

security."<sup>50</sup> The control center for the taskforces which is responsible for making situation assessments is located in Northwood in Britain.

In the Eastern Mediterranean, a NATO naval force carried out an exercise given the name "Sea Guardian". Participating were ships from the French, Spanish and Italian navies. The missions for the exercise were defined as response to terror threats, maritime situation awareness and buildup of naval operating ability in the region. This is the first time that the commander of the exercise was French, which may be an indication of the status that the French navy is seeking in NATO.<sup>51</sup>

During 2017, the Italian navy and coast guard were intensively involved in preventing the flow of refugees from Libya to Italy. In actuality, this mission became an operation to rescue refugees in distress. Up until June 2017, more than 40,000 refugees reached Southern Italy, of which more than 10,000 were rescued from the sea in the area north of the Libyan coast by the Italian coast guard. Italy has initiated activity to strengthen the ability of the Libyan navy to prevent refugees from leaving Libya in the first place, which includes training of its crews and the acquisition of suitable vessels. Ships of the Italian navy even anchored in the port of Tripoli in Libya a number of times in order to encourage cooperation in this effort.<sup>52</sup> Accordingly, it is widely believed that the flow of refugees to Italy will decline by 50 percent relative to the previous year.

In February 2017, NATO and Ukrainian forces carried out a joint naval exercise (called Sea Shield 2017) in the Black Sea under the watchful eye of Russia. There has been tension in the Black Sea region between NATO and Russia since the latter annexed part of the Crimean Peninsula in 2014. Participating were forces from Ukraine, Romania, Bulgaria, Greece, Turkey, the US, Canada and Spain and it included, among other things, warfare against aerial threats, surface vessels and submarines.

In June 2017, a large-scale NATO exercise, called BALTOPS, was completed in the Baltic Sea region. Participating were 50 vessels from 14 countries and it included a variety of missions, including amphibious landings. The exercise was observed by the Russian navy by means of both ships and aircraft and at its conclusion a joint exercise of Russian and Chinese naval forces was carried out in the area (whose goals were mentioned above).

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50 Fact Sheet, Operation Sea Guardian, Allied Maritime Command Northwood UK, Media Center, <http://www.mc.nato.int/media-centre/fact-sheets.aspx>

51 Allied Maritime command, NATO Maritime Task Group in Western Mediterranean for Operation Sea Guardian, June 1, 2017, <http://www.mc.nato.int/media-centre/news/2017/nato-maritime-task-group-in-western-mediterranean-for-operation-sea-guardian.aspx>

52 Libya: Italian navy personnel man ships on migrant 'search-and-rescue' mission, Tripoli's port, Thursday, as part of the Italian mission to give assistance, Ruptly YouTube channel, August 10, 2017.

## Naval warfare to counter terror and piracy in the Indian Ocean

Maritime piracy and terror represent a serious threat to shipping, human life and human welfare and can also cause harm to the relations between countries when the attacks originate from a specific country. At the time of writing, it was still possible to differentiate between pirate activity and terror activity according to the nature of the attack, the methods of attack and the means used, as well as the areas from which the attacks originate, although there is similarity between their methods of operation (attacks on ships, theft of maritime cargo and taking of hostages). Maritime piracy has different goals than maritime terror: terror activities have an ideological motive and therefore the element of publicity is important in order to create psychological pressure on governments and the public, while piracy captures property and hostages for purposes of profit.

During 2017, the activity of the Combined Maritime Force continued in its efforts to prevent maritime piracy and terror in the area of the Persian Gulf, the Indian Ocean and the Horn of Africa. The force is made up of three sub-forces: taskforce 150 which is a joint French-British force that focused in 2017 on projecting power and carrying out patrols in the area of Bab el Mandeb Strait in order to guarantee free passage in the area, following a number of incidents at the beginning of the year;<sup>53</sup> Force 151's mission is to ensure security in the area of the Red Sea, the Gulf of Aden and the Gulf of Oman; and Force 152 operates in the Persian Gulf. It should be mentioned that apart from this force there are a number of countries, such as China, Japan and India, for example, which carry out this mission independently in order to preserve their commercial interests, though they do not hesitate to provide assistance in response to calls of distress by commercial ships from other countries.

During the first six months of 2017, 87 incidents (in all parts of the world) of maritime theft and piracy against commercial ships were reported to the IMB Piracy Reporting Center. As a result of these incidents, four ships were hijacked and 63 crew members were taken hostage. In the area east of the Somali coast, in the Gulf of Aden and in the Red Sea, there was somewhat of an increase during 2017 and there were reports of seven cases of attempted hijacking of ships, as a result of which three ships were actually hijacked by pirates.<sup>54</sup> Figure 19 below presents the areas of pirate attacks in East Africa and the Gulf of Aden during the first half of 2017 and Figure 20 below presents the overall cost of fighting maritime piracy in the Horn of Africa and the Gulf of Aden during the period 2010-16, the cost of hostage taking and the direct economic price.

53 Combined Maritime Forces, Warships Operating in Support of CTF – 150 Continue Presence patrols in the Western Gulf of Aden, August 10, 2017, <https://combinedmaritimeforces.com/2017/08/10/warships-operating-in-support-of-ctf150-continue-presence-patrols-in-the-western-gulf-of-aden>

54 ICC International Maritime Bureau, Piracy and Armed Robbery against Ships, Report for the Period of 1 January – 30 June 2017, Trends, P. 27, July 2017, [https://www.icc-ccs.org/index.php?option=com\\_fabrik&view=plugin&q=form&plugin=redirect&method=displayThanks&task=pluginAjax](https://www.icc-ccs.org/index.php?option=com_fabrik&view=plugin&q=form&plugin=redirect&method=displayThanks&task=pluginAjax)



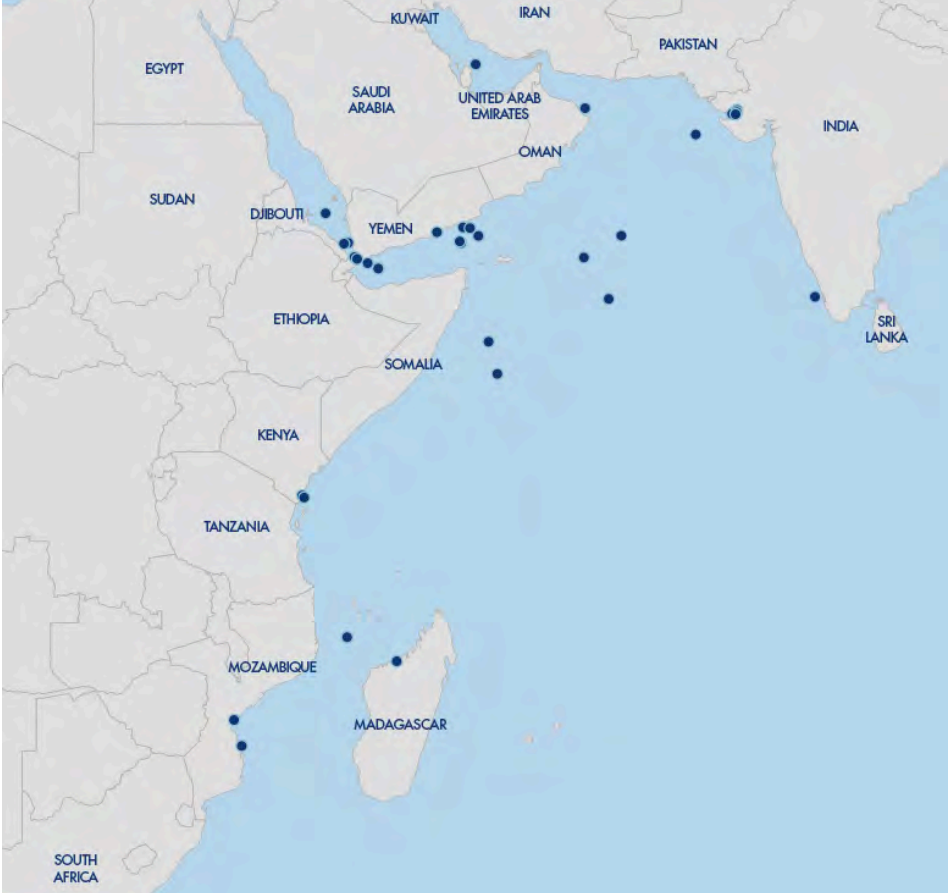


Figure 19 – The areas of pirate attacks in East Africa and the Gulf of Aden (source: <http://oceansbeyondpiracy.org/reports/sop/east-africa>)

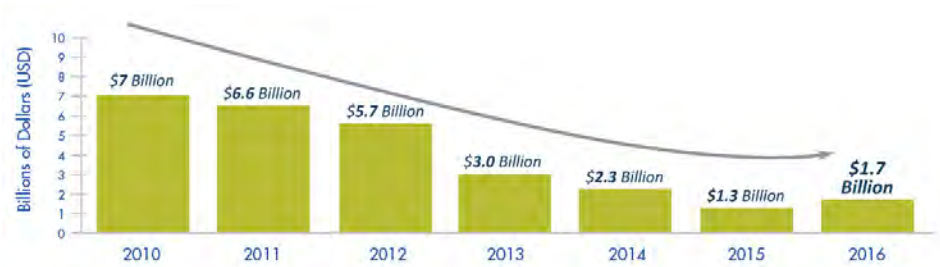


Figure 20 – The cost of countering maritime piracy in the Horn of Africa and the Gulf of Aden during the period 2010-2016, the costs of hostage taking and the direct economic price

The economic price, which includes activity to counter maritime terror in the Western Indian Ocean, is estimated at about \$1.6 billion (as compared to \$1.3 billion in 2015). The coalition forces have begun to reduce their activity, although navies that are operating independently in the region (China, India and Japan) continued to patrol during most of the year. In order to reduce the costs of security, the commercial shipping companies have begun to employ private companies that provide armed guards (3-4 per ship).<sup>55</sup> The conditions and the social-political environment in Somalia (including the lack of economic opportunity, governance and law enforcement) that have allowed piracy to flourish have unfortunately remained basically unchanged.

The probability of terrorist attacks by organizations such as el Qaida and ISIS in this region is estimated to be high and is based on the declared intentions of these organizations to disrupt the movement of commercial ships through critical shipping lanes. The results of a terror attack of this type in the area of the Gulf of Aden are liable to adversely affect trade and the global economy. There are three choke points in this region that are important to global trade: the Suez Canal, the Strait of Bab el Mandeb and the Strait of Hormuz (see Figure 21), through which about 20 percent of the world's oil flows. The shipping at these points can easily be disrupted (for example using sea mines).<sup>56</sup> The war being waged in Yemen has increased the instability in the region. Thus, the blockade imposed by the navies of Saudi Arabia and the Emirates on Yemenite ports in order to prevent supplies reaching the Houthi rebels has been answered by the Houthis with the firing of a C-802 coast-to-sea missile at a ship of the United Arab Emirates which was carrying humanitarian equipment and was sailing near the port city of Mocha. They have also sent explosive boats against a Saudi frigate.<sup>57</sup> In addition, in October 2016 the USS Mason, an American destroyer which was patrolling in the Strait of Bab el Mandeb area, had to defend itself and the USS Ponce against a number of similar missiles fired at them from the coast of Yemen by firing anti-missile missiles and activating a decoy and deception system.<sup>58</sup> In February 2017, the US Office of Naval Intelligence published a warning to all ships of the danger of mines in the area of the Strait of Bab el Mandeb. The Americans believe that in January 2017 the Houthi rebels planted sea mines in the coastal water of the port of Mocha in Yemen. The British government released an advisory in August 2017 that included a warning to commercial ships that were intending to pass through the Strait of Bab el Mandeb and the Gulf of Aden which states that there

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55 Oceans Beyond Piracy OBM, The State of Maritime Piracy 2016, Assessing the Economic and the Human Cost, Executive Summary, <http://oceansbeyondpiracy.org/reports/sop/summary>

56 Church Chris, Naval commanders warn of terror threat against commercial shipping, Stars and Stripes April 9, 2016.

57 Charkatli Izat, UAE warship obliterated off the coast of Yemen, Al-Masdar Al-Arabi AMN, October 1, 2016. <https://mobile.almasdarnews.com/article/uae-warship-obliterated-off-coast-yemen>

58 LaGrone Sam, USS Mason Fired 3 Missiles to Defend From Yemen Cruise Missiles Attack, The US Naval Institute, October 11, 2016. <https://news.usni.org/2016/10/11/uss-mason-fired-3-missiles-to-defend-from-yemen-cruise-missiles-attack>

is a possibility that they will be attacked by remote controlled explosive boats or rockets or grenade launchers.

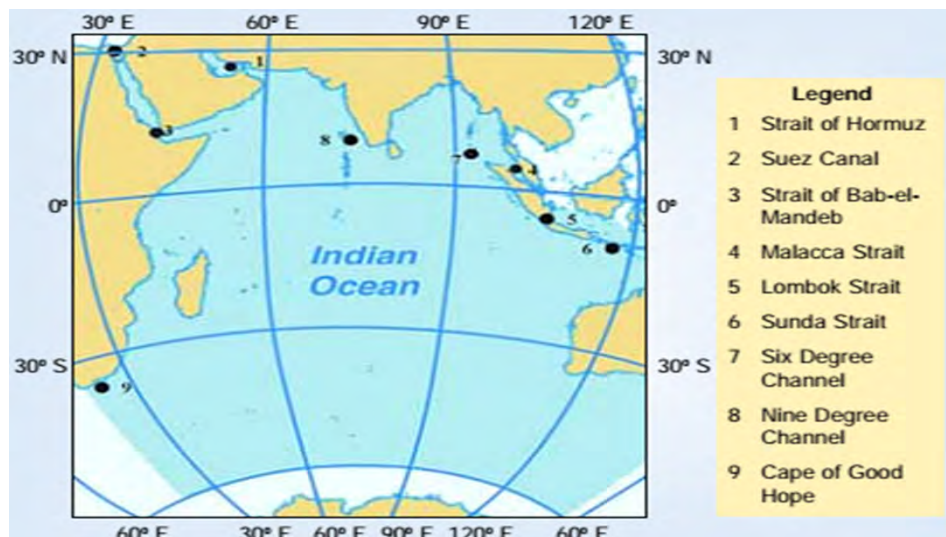


Figure 21 – Main choke points in the Indian Ocean region

The British government released the advisory after two commercial ships were attacked at the southern entrance to the Strait of Bab el Mandeb. The advisory also stated that the two attacks, one near the Strait of Bab el Mandeb and the other in the Gulf of Aden, demonstrate the danger of sailing in the area of the straits. The US navy and Force 150, composed of French and British ships, are busy trying to ensure freedom of passage in the Strait of Bab el Mandeb. It can be said that this situation has all the elements of both asymmetric warfare and littoral warfare.

The forces of rogue nations such as Iran and North Korea are operating in a similar manner to that of terrorist organizations. In spite of the nuclear agreement signed in 2015 between the West and Iran, the aggressive behavior of Iran's Islamic Revolutionary Guard continued this year in and around the Persian Gulf. This activity was backed up by the threat voiced by the Iranian Deputy Chief of the General Staff Ali Shahdmani in July 2016 to close the Strait of Hormuz.<sup>59</sup> In July 2017, an American task force led by the USS Nimitz aircraft carrier, which was sailing in an area near the offshore oil rigs in the Gulf

<sup>59</sup> TheTower.org Staff, Iranian General Threatens to Shut Down Straits of Hormuz if U.S. "Makes a Small Mistake", the Tower Magazine, July 29, 2016, <http://www.thetower.org/3712-iranian-general-threatens-to-shut-down-straits-of-hormuz-if-u-s-makes-a-small-mistake>

was forced to send out helicopters and shoot warning flares when speed boats of the Revolutionary Guard approached them threateningly and at high speed.<sup>60</sup>

In sum, although the frequency of attacks on ships by terrorist organizations has been on a smaller scale than maritime piracy events, a broader view indicates that these organizations have both the ability and the desire to carry out this sort of attack. The existence of three choke points in the Middle East (the Strait of Hormuz, the Strait of Bab el Mandeb and the Suez Canal) near strongholds of ISIS and el Qaida give those organizations easy access to shipping and raises the probability of these attacks. Evidence of the concern among American officials can be seen in the task assigned to the Brookings Institute to produce an assessment of a scenario in which tankers carrying liquefied natural gas, oil and chemicals are attacked, with the goal of producing recommendations of how to deal with this threat.<sup>61</sup>

Immigration by sea routes – The flow of refugees by way of the Mediterranean to Europe is not a new phenomenon in this decade and has already claimed the lives of many refugees. Nonetheless, the flow of refugees has grown in magnitude during the last decade as a result of the civil war in Syria and the African refugees that arrive by way of the Libyan coast. This immigration has been described by the International Organization for Migration "as the biggest movement of people since World War Two."<sup>62</sup> In 2017, the Mediterranean continued to serve as the migration route from the southern Mediterranean countries (primarily Libya) to Europe and although the agreement signed in March 2016 between the 28 EU members and Turkey (the EU-Turkey Refugee Deal) indeed reduced the flow of refugees arriving by sea, and in particular by way of Greece, the ultimate effect of the agreement is still unclear. The crisis in Syria in recent years has had a major effect on the level of migration and its characteristics and it has affected several European countries. The migration from Syria during the period 2010-15 totaled about 4.2 million, the largest part of which arrived in neighboring countries (Turkey, Lebanon and Jordan) while more than one million arrived in Europe in 2015. As a result of the aforementioned agreement, the flow of Syrian refugees by way of Turkey to Europe ceased almost completely in 2017 and some of them even returned to Syria. Nonetheless, there is an attempt to open a new and dangerous route for refugees by way of the Black Sea (from Turkey to the shores of Romania) although at this stage only

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60 France 24, International News, Tense stand-off between US Navy and Iran in Gulf, The Iranian Revolutionary Guards said on Saturday that U.S. Navy ships came close to their vessels in the Gulf and shot flares, July 30, 2017, <http://www.france24.com/en/20170730-tensions-flare-between-iranian-revolutionary-guards-us-navy-trump-administration-hardline-m>

61 Alex Hall, Tess Hellgren. Lucia Retter, Giacomo Persi Paoli, Examining the Possible Consequences of a Deliberate Attack on Tankers, Rand Corporation Europe <http://www.rand.org/randeurope/research/projects/tanker-attack-consequences.html>

62 The Economist, Europe's boat people for those in peril, April 25<sup>th</sup>, 2015

a few hundred refugees have used this option.<sup>63</sup> In contrast, the flow of refugees from the coast of Libya, which is the gathering point for refugees arriving from the southern Sahara or countries such as Eritrea and Sudan, has intensified. In 2016 alone, 181,000 refugees were rescued from the sea and brought to the shores of Italy, at a cost to the Italian government of 3.5 billion euro. If the flow of refugees arriving in Italy remains at its present level, then 2017 may be the record year for refugees arriving in Italy by sea and the cost to the government of Italy may reach 4.5 billion euro.<sup>64</sup> Figure 22 presents the number of refugees arriving by way of the Mediterranean in 2017, including those who drowned or who are missing.



Figure 22 – Number of immigrants arriving by way of the Mediterranean in 2017 including immigrants that drowned or are missing (The Global Migration Data Analysis Centre (GMDAC) of the International Organization for Migration (IOM))

In total, 118,227 refugees arrived in Europe during 2017 up until mid-August (in comparison to 278,201 in 2016), of which 2408 drowned or are missing (compared to 3151 in 2016).

## Protecting the marine environment and global trends in marine planning

Oceans, seas and coastal areas constitute an essential and interconnected component of the global ecosystem and they are crucial to the continuing use of the sea's resources. There is a need to monitor the continuing exploitation of the oceans and seas and

63 BBC News, Syria war: Almost 500,000 refugees return in 2017 – UN, June 30, 2017, <http://www.bbc.com/news/world-middle-east-40460126>

64 Nick Squires, more than 8,000 migrants rescued in Mediterranean and brought to Italy over Easter long weekend, The Telegraph, April 18, 2017 <http://www.telegraph.co.uk/news/2017/04/18/8000-migrants-rescued-mediterranean-brought-italy-easter-long>

the resources they contain, even if it appears that they can provide the means to end poverty, increase economic growth and food security and create employment. Alongside monitoring the use of these resources, there is a need to protect all aspects of the marine environment, including efforts to deal with climate change.

The Regional Sea Conventions and the Three-Year Action Plans are meant to achieve these goals, by deepening the involvement of the signatory countries. This is manifested in appropriate legislation being passed in these countries and their adoption of appropriate mechanisms for monitoring and enforcement. All of this requires the involvement of society, including the private sector, the buildup of capabilities, the earmarking of national and international sources of funding and the creation of mechanisms and processes to assess progress.

The Three Year Program 2013-2016 is about to end and the plan for 2017-2020 has been formulated and approved by 143 member countries in 13 regions throughout the world. The problems in implementing the plan are primarily political and financial. Since this report focuses on the Eastern Mediterranean, the most relevant environmental threat to the sea originates in activities that pollute the marine environment and affect both human quality of life and fisheries in the region.

Israel is signed on the Barcelona Convention whose goal is to prevent pollution in the Mediterranean and which includes six Regional Activity Centers (RAC); however, the civil wars in some of the Eastern Mediterranean countries and/or the hostile relations between countries—particularly between Israel and its neighbors—has hindered the implementation of the plan. Israel has signed the Convention but has not ratified all of its protocols, nor has it declared 10 percent of fisheries in its sovereign waters as protected maritime areas, despite its signing of the Convention on Biological Diversity (CBD) which requires this to be done by 2020.

## Conclusion

The world is in the midst of geopolitical and global changes that will have far-reaching effects on the maritime domain in its widest sense. Furthermore, some of the changes are the result of developments in the maritime domain and particularly the rising status of China and India as naval superpowers in Southeast Asia.

In addition to the US, which remains the strongest naval superpower, China and India are becoming regional superpowers, a trend reflected in their growing number of vessels and their quality. These two superpowers are expanding the nuclear deterrence capability of their submarine fleets. The new interests of their policies, as expressed in the operating strategies they have formulated, emphasize the aspiration to expand their naval activity to the open seas.

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The new US administration has not published a clear statement of their future defense strategy in general and their maritime strategy in particular. This leaves unclear how some of the issues discussed in this report will be dealt with or that the responses to the current situation will be ad hoc, at least until a revised strategy has been put together.

In terms of the classic strategic approaches, the question that arises with respect to China and India (between whom there has been rivalry since the military conflict in the Himalayas in 1962) is whether they both choose to “discard their continental images and envisage a maritime role.” Or alternatively—and in spite of the huge investment of resources in the creation of fleets with the capabilities of deterrence and power projection—they will remain loyal to the land-based element, which has greater geostrategic importance.<sup>65</sup>

In spite of the economic crisis being experienced by Russia, the Russian navy is rebuilding its capabilities and primarily those of its strategic branch (i.e. submarines) and of new vessels that are better suited to littoral warfare. In this way, it is challenging the US and NATO navies in theaters such as the Black Sea and the Eastern Mediterranean, the Baltic Sea and the North Pacific. The Russians are fully exploiting geopolitical opportunities (such as those in Syria and Iran) in order to deploy naval and aerial forces and in this way are creating a situation (even if in appearance only) that the American fleet is being displaced from the region.

During 2017, relations improved between the Russian and Chinese navies and they carried out joint exercises in the Mediterranean, in the South China Sea and on the eastern coast of Russia. Thus, a naval axis is developing that constitutes a counterweight against the coalition that the US is trying to create with the countries in the region.

Climate change in the Arctic Ocean is creating opportunities to exploit resources and to shorten shipping routes. These phenomena serve as a catalyst for countries such as Russia and China who are building up naval forces for future activity in this region, as well as commercial fleets that will use these routes.

The effort to counter maritime piracy in the Indian Ocean was fairly successful in 2016, although in 2017 there was somewhat of an increase in pirate activity. The anti-piracy activity will continue and will require the ongoing investment of resources. Despite the nuclear agreement between the superpowers and Iran, the Revolutionary Guard navy continues to operate in a provocative manner in the Strait of Hormuz and is embarrassing Western navies that are present in the region.

Maritime terror has still not had any significant achievements, as in countries such as Syria, Iraq and Afghanistan, but this is expected to change with support from rogue countries and terror organizations, particularly in the waters of countries such as Yemen,

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65 Zorawar Dault Singh, India's Geostrategy and China: Mackinder versus Mahan? *Journal of Defence Studies*, Vol. 7, Issue-3. pp. 137-146, 2013

a failed state where a civil war is being fought. This situation is reflected in asymmetric warfare that is being waged by the Houthis in Western Yemen and it is already affecting shipping in the Strait of Bab el Mandeb.

Cyber warfare has already appeared in the maritime domain when in July 2017 the database of Maersk, the largest shipping company in the world, was attacked. Such attacks have the potential to disrupt global container shipping, which is a major component of global trade.

During 2017, the US fleet experienced four maritime accidents which involved loss of life and raised questions as to the level of seamanship in the US navy. The US navy will undoubtedly have to draw conclusions in this area, especially in view of the increased safety risk in littoral activity.

There is growing activity to mine the seabed for energy and mineral resources and the only factors taken into account in this activity are economic, without any consideration given to the ecosystem. This is liable to bring about irreversible damage and therefore it is important to understand the implications of this activity and its effect on the economic system ahead of time.



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## Asian culture and developments in the South China Sea

**Benny Ben Ari**

On 12 July 2016, the International Court of Justice in The Hague ruled on the issue of the ongoing conflict in the South China Sea between the Philippines and China, "sent China into a corner" in a state of "loos face" and left its government with two options: to adhere to its position or to accept international law. The ruling was made (in a complaint filed by the Philippine government on January 22, 2013 on the violation of its sovereignty by China in the exclusive economic zone – EEZ) as a unanimous decision of all five members of the Court, based entirely on the 1982 United Nations Convention on the Law of the Sea – to reject China claims of sovereignty over most of the territory, the islands and the southern Chinese mainland. China's claim was entirely based on "historical rights" and the "nine dashes line" (NDL).

China, which did not cooperate in the discussions in any way, immediately rejected the ruling, and again announced that it did not recognize the jurisdiction of the tribunal and added that it will take all the means necessary to protect its territorial sovereignty and maritime rights. "

The Chinese also noted in their initial response that the court did not take into account the culture of the East (as long as there was no jurist from Asian state), ignored "basic truths" and "trampled" international laws. At the same time, the Chinese president stressed that China is committed to resolving the dispute. It seems that the Chinese have moderated their position after setting up political and military facts in the South China Sea, and are ready to discuss a "code of conduct" and arrangements that will be a joint document between China and the Association of Southeast Asian Nations<sup>1</sup> (ASEAN).

The Chinese president responded by saying that China's territorial sovereignty and maritime rights will not be affected by the ruling. In rejecting the legality of the ruling, China even claimed that the decision was a political one.

About a year and a half have passed since the ruling of the International Court of Justice in The Hague on the South China Sea dispute, in which all Chinese claims were rejected, and it looks as nothing was changed. Only recently has China changed the basis of its sovereign claims and replaced NDL with a new definition, the "four sandbars". The new definition, introduced on August 28, 2017, is more limited in size and is called "Four Shas" (Chinese: the four sand bars). The claim includes the four disputed island groups: the requirement for sovereignty over the Paratas Islands (controlled by Taiwan), the Paracel Islands (in the sovereignty dispute between China, Taiwan and Vietnam), the Spratly Islands (in the sovereignty dispute between China, Malaysia, the Philippines, Taiwan

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1 China vows to protect South China Sea sovereignty, Manila upbeat. <http://www.reuters.com/article/us-southchinasea-ruling-stakes-idUSKCN0ZS02U>

and Vietnam) and Macclesfield Bank (in the sovereignty dispute between China and Taiwan).

China is seeking this change to raise again, in what appears to be a more "legal" and "diplomatic" form, the claim that the 'four sand bars' are historically Chinese maritime territory and part of the continental shelf of China and China's exclusive economic zone. Again, there is no presentation of convincing legal arguments or historical evidence to support those demands.



Figure 1 – Chinese line of claim based on the nine dashes line and claims areas for exclusive economic zones of the countries surrounding the South China Sea.

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## Summary of processes during the conflict, China's position and the situation in the South China Sea

In 2012, China took control of the Scarborough Shoal at the island of Spratly in the exclusive economic waters of the Philippines and prevented Filipino fishermen from fishing in the area. Since 2014, China has been changing the face of the South China Sea, building seven artificial islands based on reefs, coral atolls and small islands. Despite China's claims that there are no military bases, the airports strips, the structures and the positions of weapons systems, which are clearly visible in aerial photographs and satellites images, show otherwise.

China's insistence, including statements made by heads of state at high-level political meetings, that non-military construction is clearly "polite lies" (see below). The President of China Xi, declared during his visit to President Obama at the White House that China will not turn the region into a military zone(he meant and noted the Spratly Islands), it is reasonable to say that the Chinese announcements on the subject are mainly for domestic needs to strengthen the Party's status among the citizens.

In addition to China, four other states – Vietnam, the Philippines, Malaysia and Brunei – claim sovereignty over various parts, islands and sand bars in the South China Sea, and Taiwan also claims sovereignty and effectively controls the large island of Taiping in the center of the South China Sea.

Chinese construction is concentrated mainly in the Spratly Islands group in order to demand in due course the economic waters surrounding this group of islands. The whole process is done at a relatively slow pace, according to Confucius' theory: "It does not matter how slow you go as long as you do not stop." Only recently, intelligence sources announced that the construction of the missile posts had ended and that the islands were ready for the placement of the weapons systems. China is not the only country to establish facts on the ground, and at the same time, the situation is complicated by the fact that other countries in the region are also engaged in the construction of artificial islands, including landing strips and weapon posts.<sup>2</sup>

The conflict has been "active" in a tense atmosphere for several years, but the atmosphere has calmed down in recent years, mainly because of China's assertive policies and behavior with its adversaries. Thus, on August 3, 2015, the Chinese foreign minister announced that China was willing to guarantee and maintain five commitments on the South China Sea conflict: 1) maintaining peace and stability in the region; 2) Resolving peaceful differences of opinion through negotiations and consultations. 3) Control and management of differences of opinion in accordance with the laws and rules. 4) Maintain freedom of navigation, including flights, in the area. 5) Achieving common benefits to the parties through cooperation.

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2 China Completes Construction Of New Missile Shelters On Disputed South China Sea Islands. <http://www.zerohedge.com/news/2017-07-01/china-completes-construction-new-missile-shelters-disputed-south-china-sea-islands>

The five commitments were an improvement in the Chinese traditional concept of "double track" announced by China in August 2014, according to which the disputes would be resolved in friendly negotiations only between the countries directly involved in the conflict, and peace and stability in the South China Sea would be maintained by China and ASEAN countries.<sup>3</sup>

## The Nine Dash Line

A series of maps conducted by Persian and Arabian geographers between the 9th and 17th centuries shows that the conflict zones in the South China Sea were under Chinese sovereignty from ancient times.<sup>4</sup> In contrast, in marine maps drawn by European geographers from 1525 to 1833 Hainan Island is marked as the southernmost part of the Chinese Empire to its dynasties.<sup>5</sup>

After the surrender of Japan in World War II, the Republic of China (Taiwan) took control of several islands and sand bars in the South China Sea under Japanese occupation and declared sovereignty over the South China Sea, the islands and the provinces. In 1947, the area was delineated by a dashed line consisting of 11 dashes from the southern coast of China and Taiwan and south to the Philippines, Brunei, Malaysia and Vietnam. With the establishment of Communist China, the government adopted the South China Sea area, but the line of dashes was reduced to nine dashes with the cancellation of two hyphens in Tonkin Bay. This was after the Chinese Communist Party allowed North Vietnam in 1957 to build a radar station and one of the islands in the Parcel Group On the basis of "Comradeship and Brotherhood". While Taiwan holds a military base on the largest island in the Spratly group also the Philippines and Vietnam claim sovereignty over this island.



Figure 2 – The Taiwan Island of Taiping, Distance from Taiwan 1637 km<sup>6</sup>

- 3 Explaining China's New 'Commitments' on the South China Sea. <https://thediplomat.com/2015/09/explaining-chinas-new-commitments-on-the-south-china-sea/?allpages=yes&print=yes>
- 4 China Exclusive: Ancient Persian maps show South China Sea islands part of Chinese territory. <http://english.cctv.com/2016/07/11/ARTIknyvNOK1OxVb1tqnLTMyl60711.shtml>
- 5 The South China Sea Dispute. <http://muriellovelardemap.com/wp-content/uploads/2017/05/SCS-WPS-Dispute-Non-Interactive.pdf>
- 6 South China Sea: Taiwanese lawmakers land on Taiping Island in sovereignty, fishing rights push. <https://www.democraticunderground.com/10141524524>

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China, which has joined the Convention on the Law of the Sea since 1996, has never defined the legal meaning of the "nine dashes" line, which extends up to 2,000 kilometers from the southern Chinese coast. Also, no geographic coordinates are defined for the location of the "hyphens" that make up the line, nor how to connect them. Although the Chinese presented maps from the Ming dynasty and other documents in an attempt to prove their claim, but apparently without success, their arguments for rights in the region were "historical rights" and "traditional Chinese fishing grounds"

### **Aspirations of China**

China's interest in both the "economic" areas of the South China Sea and the "marine silk road" is not only economic, as can be seen from the Chinese declarations, and also includes geopolitical and security elements. The importance of the sea lines of communication in the south china sea are also related to the efforts of the Communist Party, the sole control of China, to meet the needs of 1.5 billion people in the provision of food, energy and raw materials for the development of the country, while preserving cultural and historical values, including self-respect, identity and state status. Improvement and success in these three areas: geopolitical, economic and cultural / historical together with the events for several years in the South China Sea are the components of the Chinese strategy to become a major marine power. The third factor, the historical factor was the main basis for the claim of China's sovereignty. But the historical cultural issue has not been taken into account by the United States and other countries, including the International Court, in efforts to find a solution to the crisis.

### **Chinese navy, missions and naval strategy of China**

The Chinese navy has a history of commercial and operational activity for thousands of years. The development of China's naval, military and commercial activities since the 11th century onwards is undoubtedly one of the most important phenomena in the history of Asia, positioning China as the world's largest maritime power.<sup>7</sup>

The modern Chinese navy was established in September 1950 with Soviet help. Navy missions were mainly against Taiwan, both in defense missions and attack capabilities, in parallel to the presence of the US Navy in the East Asia region.

The significant change in the improvement of the navy's status began in 1977 as part of the modernization plan of President Deng Xiaoping (who success Mao Zedong). Deng who understood the importance of the navy, although this role was still limited to the protection of China's shores from an amphibious invasion of the Soviet Union And possibly Taiwan, anti-piracy, smuggling, and illegal immigration.

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7 Gernet, J. 1999, A History of Chinese Civilization, Cambridge University Press.

About 20% of the defense budget was devoted to the development of a fleet that grew dramatically. The construction of large vessels, including vessels supporting and assisting open oceans voyages, and the development of nuclear-powered attack Submarines (SSN) and nuclear-powered ballistic missile-carrying submarine (SSBN) began.



Figure 3 – China nuclear-powered attack Submarines (SSN) and nuclear-powered ballistic missile-carrying submarine (SSBN) class 090 and 094<sup>8</sup>



Figure 4 – on the right of the Amphibious Mobile dock (Type 071 Amphibious dock) and on the left a Chinese destroyer Type 052 (Luhu class)



Figure 5 – The first Chinese aircraft carrier Liaoning (CV-16)<sup>9</sup>

8 Pictures of vessels from Wikipedia: [https://en.wikipedia.org/wiki/List\\_of\\_active\\_People%27s\\_Liberation\\_Army\\_Navy\\_ships](https://en.wikipedia.org/wiki/List_of_active_People%27s_Liberation_Army_Navy_ships)

9 Analysis: China's New Aircraft Carrier. <https://scout.com/military/warrior/Article/Analysis-Chinas-New-Aircraft-Carrier-101457386>

A study published in November 2017<sup>10</sup> concludes: "Observers believe that efforts to improve and upgrade the Chinese navy are aimed at developing capabilities to counter Taiwan's military position, if necessary, to claim or defend the sovereignty demands in the South China Sea and the East China Sea, and generally to gain a higher level of supervision and control of the South China Sea, to enforce China's position that it has the right to operate militarily 200-mile in the exclusive economic zone, to protect China's commercial sea lines (SLOCs), especially those linking China to the Persian Gulf, to replace the United States' position of influence in the Western Pacific and the position the status of China as a regional power and a leading international force."<sup>11</sup>

The Chinese fleet is ranked second in the world in term of size, after the United States and before Russia, Britain and Japan. In the fleet serves about 133,000 sailors (in addition to the 35,000 naval personnel of the Navy, some 60,000 Marines, 40,000 Coast Guard personnel and tens of thousands of Marine Militia personnel). The Navy, which has become a fleet of blue waters, is expected to operate and defend along 14,500 kilometers of coastline and protect more than 2030 merchant vessels sailing under Chinese flag, with 714 operational vessels, of which 232 are auxiliary vessels and the others are offensive and defensive vessels.<sup>12</sup>

Although the Navy's main first roles were defensive, the development of a fleet of blue water has necessitated the construction of large vessels, including aircraft carriers, which could operate at longer distances, including airborne capability on board the vessels. This is how the current fleet is being built, which is still in the process of development and numerical strength, including missile systems, modern weapons and advanced command and control systems, utilizing all the latest military technologies. The tasks of the modern Chinese navy are dictated by China's foreign and defense policy, emphasizing the need to become a maritime power, a policy defined by President Hu Jintao (2002-2012):

We need to do more to take interest in the sea, understand the sea, and strategically manage the sea, and continually do more to promote China's efforts to become a maritime power.<sup>13</sup>

One of the tasks of the modern Chinese navy is to cooperate with fleets of other countries and to join international activities both in order to accumulate experience in activities away from the coast of China and to cooperate and study. Since 2008, the Chinese navy has sent a task force consisting of two destroyers carrying missiles and helicopters, a

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10 China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress, Ronald O'Rourke

11 China Naval Modernization: Implications for U.S. Navy Capabilities – Background and Issues for Congress <http://www.dtic.mil/docs/citations/ADA590423>

12 China Naval Modernization: Implications for U.S. Navy Capabilities – Background and Issues for Congress <http://www.dtic.mil/docs/citations/ADA590423>

13 The PLA Navy – New Capabilities and Missions for the 21st Century. <http://www.oni.navy.mil/Intelligence-Community/China>

marines force and a supply ship to the Gulf of Aden to take part in naval activities against pirates off the coast of Somalia. The Chinese navy's ships took training and diplomatic trips as far as Britain.

### Fishermen and China's Maritime Militia

Most of the attention from the beginning of the conflict in the South China Sea and during it was given to the strategic and military issues and the construction of artificial islands and their equipment. However, a quiet but dangerous fishing war is fought within this conflict and is one of the main elements that led to confrontations and clashes. China is increasing its power and influence in the region by establishing an aggressive fishing fleet operating in full cooperation with the Chinese Navy and the Coast Guard.<sup>14</sup> This is how the fishermen are at the front line of the conflict. The 2015 estimate is that China's fishing fleet includes more than 200,000 boats and ships and provides employment for more than 1.8 million fishermen.



Figure 6 – Chinese fishing vessels departing from the port of Shipu in southern China<sup>15</sup>

The realization of the Chinese "aggression" is carried out by the naval militias. China is developing and increasing the "military" role of its fishing fleet, and as of 1949, the "Marine Militia" was established. Fishing vessels armed with light weapons or without weapons are accompanied by navy or coast guard ships for protection and are operating aggressively against fishermen from other countries in the region. Also participating in this militia are research vessels, drilling vessels and other vessels. The activity of the fishing fleets and the marine militia to achieve military objectives, including taking control of islands or sand dunes, is effectively defined as the activity of non-military forces or activities in a "gray area." This type of activity causes difficulties in decision-making and ambiguity about the use of appropriate strategies against this 'gray' military activity. For example, there is a difficulty in distinguishing between an enemy and a friend or a

14 Massive fishing fleet forms sharp edge of china's south china sea expansion. <http://en.asiamaritime.net/massive-fishing-fleet-forms-sharp-edge-of-chinas-south-china-sea-expansion>

15 Fishing boats set out to fish from the Shipu harbour after the fishing moratorium ended in Xiangshan county, Ningbo city in east China's Zhejiang province. <http://www.telegraph.co.uk/news/picturegalleries/picturesoftheday/11869968/Pictures-of-the-day-17-September-2015.html?frame=3442965>



neutral player, and there is the danger of showing aggression if the US, for example, uses military means against non-military targets. The options available to the US Navy are very few in the 'gray area', as Barry Maryland of the US Coast Guard noted:

It's too painful to admit that the United States allowed China to seize sovereign maritime rights from a U.S. ally while we did nothing about it. It was an armed robbery in broad daylight, but 'gray zone operation' sounds much better.<sup>16</sup>



Figure 7 – A collisions between a Vietnamese ship and a Chinese ship in the "gray zone" and a water cannon battle between a Chinese coast guard ship and a Vietnamese ship.<sup>17</sup>



Figure 8 – The Chinese marine militia, based on fishing vessels and fishermen and trained by the Chinese navy.<sup>18</sup>

16 China's Maritime Operation: The 'Gray Zone' in Black and White. <https://thediplomat.com/2017/05/chinas-maritime-operation-the-gray-zone-in-black-and-white>

17 ASYMMETRIC MARITIME DIPLOMACY: INVOLVING COASTGUARDS, MARITIME MILITIAS IN CHINA DEALINGS. <http://cimsec.org/asymmetric-diplomacy-time-maritime-nations-involve-coastguards-maritime-militias-dealings-china/23842>

18 China's Uniformed, Navy-Trained Fishing "Militia". <https://www.maritime-executive.com/editorials/chinas-uniformed-navy-trained-maritime-militia>

## Asian Culture and Traditional Cultural Value System in China Reflecting in Chinese politics

In light of the conclusion of the 19th Congress of the Chinese Communist Party on Oct. 24, 2017, in which the main consideration of President Xi's thoughts on "Socialism with Chinese Characteristics for a New Era"<sup>19</sup> was reaffirmed that Chinese cultural values and traditions are a structured part of the concept Chinese policy, since Mao Zedong's communist teachings.

China's foreign policy, and at the same time domestic policy, rely heavily on Chinese culture, with the main intention of returning China to its heyday. Thus, the administration's (almost always) conduct of decision-making and policymaking continues to be clearly influenced by China's cultural and historical values. Today, this clear trend is also part of the Chinese Communist Party's constitution,<sup>20</sup> and so is the administration of the conflict in the South China Sea.

In Chinese diplomatic history, there are many cases of ambiguity and vagueness in Chinese government statements and policies (typical of Far East culture in countries other than China, including permitting the use of "white lies" or "polite lies"). The same ambiguity has led to a large part of China's population, especially since the 1970s, convinced that the areas within the "nine dashes" line are areas of Chinese sovereignty.

For thousands of years, the culture and decision-making process in China in particular, and in the Far Eastern countries in general, have been based on Asian religions and Confucian doctrines, Sun Chu and other philosophies. The conduct based on this culture is realized and reflected in both routine and business, political and diplomatic life. China's conduct in the conflict is based, among other things, on Sun Cho's statement from the art of war. "The greatest art of war is to weaken the enemy without a fight".<sup>21</sup>

Confucius's writings served as a model of Chinese rule until communism came in the middle of the twentieth century. After the end of Mao Zedong's reign, Confucius returned to China in a new and "modern" structure. With the retreat of the Chinese nation from Mao's communism, the new Confucianism provided a convincing solution to the partial adoption of Western liberalism so that China could integrate into the global economy, for example, in the form of a partially free market. However, the basic principles of the hierarchy in the various relationships, the decision-making process, respect and proper behavior remain within the cultural values of harmony, generosity, justice, honor, wisdom,

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19 Full text of resolution on amendment to CPC Constitution. [http://news.xinhuanet.com/english/2017-10/24/c\\_136702726.htm](http://news.xinhuanet.com/english/2017-10/24/c_136702726.htm)

20 China Focus: Xi's thought enshrined in CPC Constitution. [http://news.xinhuanet.com/english/2017-10/24/c\\_136702802.htm](http://news.xinhuanet.com/english/2017-10/24/c_136702802.htm)

21 The supreme art of war is to subdue the enemy without fighting <https://www.brainyquote.com/quotes/quotes/s/suntzu383158.html>

trustworthiness, and respect for the fathers. "Traditional Chinese thought emphasizes harmony, balance, compromise and perfection, stability and the maintenance of the existing order." Thus, the Chinese system of values today includes three components: the traditional value system ("modern Confucianism") – the "existing"; the socialist system of values (communism) – the "ruling"; And the Western value system is often considered as a "Status". Generally speaking, the elements of tradition and culture are part of the conceptual conception of Chinese communism that opposites, contradictions and conflicts will prevail forever and anytime, and there is a need for harmony and balance.

Traditional cultural values are embodied in Chinese diplomacy within the framework of harmony. Issues of preferring negotiations (but avoiding "give and take"), dialogues, compromise and consensus in decision-making are also rooted in the religious outlook (especially Buddhism), which calls for patience and an aspiration to avoid conflict. The rules of courtesy and respect are binding, and a real effort is made to avoid causing a "loss face" or to publicly embarrass even those in dispute. In the Code of Business and Diplomatic Conduct it is even permissible to lie "Polite Lies" that do not cause "loss face", and in some cases are even accepted and expected, and are therefore used. These behavior characteristics lead to a demonstration of patience and solutions to issues of discussion or dispute may take a long time. The processes themselves are also carried out in stages and in measured steps.

### Position and activity by in the United States

For a long time, since the beginning of Chinese activities in the takeover of the South China Sea, the Obama administration has been passive in its position and concentrated mainly on diplomatic protests. Since October 2015, US Navy patrols in the region have been conducted in the form of a FONOP – Freedom of navigation operation. But the US Navy did not take any active action to prevent the movement of ships of the Chinese navy.



Figure 9 – Freedom of navigation operation – the only operational activity of the US Navy in recent years in regards to the conflict

Admiral Harry B Harris, who was commander of the US Army's Pacific Command, said that the patrols were not planned as military threat operations, but were intended to

protect the rights, freedom, and legality of the use of seas and airspace by all states in accordance with international law, So the FONOP in the disputed areas are being carried out because China's demands for sovereignty are illegal, and this is in stark contrast to previous statements and the US position in the dispute that it does not take sides or express a position on China's sovereignty claims.<sup>22</sup>

The effectiveness and importance of the FONOP are also controversial regarding their purpose, how they are performed and how they are reported. In some cases they are defined by observers and commentators as provocation. The FONOP considers, for better or worse, the 12 mile area of the islands that the Chinese have declared as sovereign waters surrounding the islands. The Chinese, for their part, condemn the tours (once every few months) in harsh language and also claim that the FONOP damage the strategic understanding between China and the US.

The main conclusion of Asian countries, including China, from the nature of the US activity and the accompanying statements is the US is deploying "cannon ships diplomacy."

The China Daily newspaper referred to the conflicting statements made by Secretary of Defense and State Secretary in the Trump's administration: "Such comments are not as serious as they are a mish-mash of naivety, shortsightedness, eroded prejudice and unreal political fantasie ... The comments of the Secretary of State undoubtedly attest to the lack of understanding of the Asian culture and still diminish the status and capabilities of China".<sup>23</sup> The words of the Trump administration are defined as "speaking first and perhaps thinking later" in contrast to Confucius' position: "The exalted man acts before he speaks, and then speaks in accordance with his actions." As the Chinese have done in recent years.

During the November 9, 2017 Chinese President's visit to the US, the subject of the conflict and China's activities in the South China Sea was raised as a secondary issue in comparison to the crisis with North Korea. According to reports, there was honest exchange of views on the subject,<sup>24</sup> but apparently did not reach any agreement, and the position of the United States remained the same, namely, the demand for absolute freedom of navigation in accordance with international law (which actually exists), the cessation of construction on the artificial islands, and the searching for diplomatic negotiation in order to find a peaceful solution.

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22 The Hypocrisy of US Freedom of Navigation Operations in the South China Sea. <https://thediomat.com/2015/11/the-hypocrisy-of-us-freedom-of-navigation-operations-in-the-south-china-sea/?allpages=yes&print=yes>

23 Tillerson's animosity toward China bodes ill if acted upon. [http://www.chinadaily.com.cn/opinion/2017-01/13/content\\_27941924.htm](http://www.chinadaily.com.cn/opinion/2017-01/13/content_27941924.htm)

24 <http://www.reuters.com/article/us-trump-asia-china-southchinasea/u-s-has-frank-exchange-on-south-china-sea-during-trump-visit-idUSKBN1D910E?il=0>

At the ASEAN Foreign Ministers' Conference in Manila in August 2017, the atmosphere toward China was very comfortable and "diplomatic," without any criticism of China's armaments the islands and its ongoing efforts to occupy, reclaim and expand its control in the region. Philippine President Duterte, who led a very moderate line, has prevented harsh criticism or disagreements. The result is that ASEAN is becoming virtually irrelevant to its impact on the situation, discussions and results on security in the region, and with the passage of time, ASEAN is becoming a second violin for China, instead of leading the fight for the rights of its countries in the region.<sup>25,26</sup>

### The demand of the four sand bars

Since the conflict began, China has achieved all its goals and has not withdrawn from any activity or position, despite the court's ruling in The Hague and the continued pressure and talks with the countries of the region and the US Navy's FONOP policy. Violates international law, takes control of islands and territories belonging legally to other countries, seams islands and lands, and establishes seven artificial islands on the ground and continues to arm them with anti-aircraft systems and anti-ship missiles, including control and communication systems, contrary to the promises of its leaders.

China recently changed the basis of sovereignty claims and replaced the "nine dashes" line with a new definition, the "four sandbars," to advance its territorial claims. So far, no practical or official responses have been received from anyone to the change China's position.

China's new legal justifications, which ostensibly support the demand for sovereignty, are no better or more persuasive than the arguments that were supposed to support the legality of the "nine dashes" line. Some scholars argue that the arguments are even weaker and clearly violate the UNCLOS Convention. The claim that these island groups belong to China was already published by it in 1992 within the framework of the law defining territorial waters and again in 2016 in white paper that disagrees with the Philippines' demands in the arbitration process and defines China as the sovereign "based on the internal waters of the four groups (S4), Territorial waters, the contiguous zone, the EEZ and the continental shelf [...] ". But despite the weaknesses of the new tactic, which replaces the "nine dashes line ", China is able to achieve several advantages for the continuation of the process and possible future negotiations. The demand based on the "dashes line" is unique and no state has claimed sovereignty on a historical basis, and therefore this approach is unacceptable. On the other hand, the use of the "law of the sea" and the use of UNCLOS terms, such as determining water areas around the islands, are more acceptable and may reduce international criticism.

25 World's eyes on Manila: What happened at ASEAN meetings? <http://www.philstar.com/headlines/2017/08/09/1726110/worlds-eyes-manila-what-happened-asean-meetings>

26 Beijing's Asean diplomatic coup. <http://www.straitstimes.com/opinion/beijings-asean-diplomatic-coup>

The chance that China will enter into "give and take" negotiations is probably very low, since it is not part of Chinese tradition and culture of management. And the facts so far prove that the opponents will continue to complain and protest, including FONOP, and China will continue to do as it wishes, while China is gaining time and stabilizing the facts on the ground.



Figure 10 – A new definition of China's sovereign claims in the South China Sea – "The Four Sand bars"<sup>27</sup>

## Summary

Chinese Foreign Minister Wang Yi warned at a press conference in Australia that "both sides, China and the United States, will lose from a military confrontation in the South China Sea, and both sides cannot afford it." He said China would continue its efforts to resolve differences by diplomatic means.

The basis of US policy in the South China Sea is support and backing for international law and the principle of freedom of navigation and in the sea (and airspace). China has claimed that it supports the freedom of navigation as well, but makes a distinction, mainly in the South China Sea, between ships and civilian aircraft and military vessels and aircraft.

<sup>27</sup> Beijing Adopts New Tactic for S. China Sea Claims. <http://freebeacon.com/national-security/beijing-adopts-new-tactic-s-china-sea-claims>

The agreements reached by the President of the Philippines with China, both economic and the return of Filipino fishermen to the fishing areas from which they were expelled by the Chinese, actually lifted the wind from the sails of the prosecution and the verdict. If the Philippines gave up, why should the Americans fight to evacuate the Chinese and even use military force to do so? The Chinese artificial islands have no military chance of confronting American forces, so it is highly doubtful whether the Chinese will indeed fight and try to protect them. Therefore, perhaps it is correct to conclude that the activity in the South China Sea is intended mainly for domestic purposes in China, to preserve and strengthen the Party's standing and authority vis-a-vis the citizens, in the spirit of the Asian culture and the system of government in China, and of course to be part of the overall maritime strategy for the benefit of the economy and trade, And in particular to maintain open and protected waterways for the supply of food and raw materials to a billion and a half citizens. Another reason for China's position and increasing its activity is the desire to complete the construction and arming of the islands as part of the Chinese strategy of anti-access area denial (A2 / AD).

In addition to its aggressive activities in the construction of the islands and its attempts to control the South China Sea, China maintains diplomatic and economic ties with all the countries in the region and is particularly concerned with developing relations and dependence with countries directly related to the conflict, including the sale and supply of arms and vessels.

China's activities in building and arming the islands, ASEAN conferences in recent years, the China Maritime Silk Road Initiative, agreeing to begin discussions on codes of conduct, China's new vision and the fact that China is "managing" the countries involved in the conflict, including the reduced importance of the issue and extensive economic and military assistance to various countries in the region – all of these factors actually determined China's success in freezing the situation and not requiring any changes or return. There is no doubt that China's policy, based on thousands of years of culture, has shown absolute superiority over the policies led by the United States in the region. And so we can conclude that the same policy will actually make the decisions making proses to stretch and the situation in the South China Sea is not likely to change soon.

## Epilogue

Recently, a new reason has been created to increase tension between China and its neighbors to the west, with the publication of a new world map by the Chinese Ministry of Education which marked the "251 dashes line" in the Pacific Ocean, from Asia to the North and South American continents. According to this line, China appears to include the islands of Hawaii and Micronesia, and many other islands in the Pacific under its territory. The Chinese Ministry of Education has instructed the use of this map, which he claims is backed by documents from the Qing Dynasty, the last imperial dynasty of 1644–1911

And as Confucius said: " Study the past, if you would divine the future".



Figure 11 – The "251-dashes" line <sup>28</sup>

<sup>28</sup> <https://www.elitereaders.com/china-claims-hawaii-micronesia-new-map>



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## Strategic Developments in the Eastern Mediterranean

*Eyal Pinko*

### Background

The past year has been one of global changes that have had a significant effect on the Eastern Mediterranean.

It was a year in which a new US President came into office (1/2017), as well as a new President of France (5/2017). It was a year in which Europe reexamined the EU and its value, and is still doing so. It was a year of Islamic terror in Europe and the US. It also saw rising tension, both military and diplomatic, between the US and North Korea and continued fighting in Syria, which tilted in favor of the Syrian regime. It was a year in which Russia and Iran<sup>1</sup> achieved growing influence in what goes on in Syria and Iraq and in which China increased its influence in the South China Sea, the Persian Gulf and other locations and has also dramatically developed its military capabilities and its ability to project power from the sea.

The world that we knew has undergone major strategic shifts and changes that have direct and indirect effects on the Middle East and in particular the State of Israel and its maritime boundaries.

This survey touches on the global strategic changes and on the strategic changes in the maritime domain in the Mediterranean. On the global level, it will describe the main global strategic changes and processes that have had an effect on the Eastern Mediterranean, including developments in Southeast Asia and also in the US, Russia, China and Europe.

The survey will also include a description of the strategic changes in the Mediterranean, including those in Syria and the involvement there of Russia, Iran, Egypt, Turkey and others.

### Strategic trends – the Eastern Mediterranean

The Eastern Mediterranean continued this year to be a focus of international attention and apparently this will continue in the coming year. In this region—and particularly in Syria and Lebanon—there are naval forces from a number of countries, including Russia, the US, France, Turkey and Italy, as well as from UNIFIL and NATO, whose objectives are to enforce international conventions and decisions (such as Security Council Resolution 1701), maintain a presence, intelligence gathering and projection of power.

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1 Dumba Ami, Head of Intelligence: An unwanted escalation is possible in the North, from: [www.israeldefense.co.il/he/node/30895](http://www.israeldefense.co.il/he/node/30895) (8/2017). [Hebrew]

In this region, there remain unresolved disputes between states regarding the boundaries of the Exclusive Economic Zones (EEZ), the use of energy resources and also fishing rights. The disputes that remain unresolved include the claim by Northern Cyprus (under Turkish sovereignty) to part of the economic waters around Cyprus, the claim of Turkey to part of Cyprus' EEZ and the claim of Lebanon that the agreement between Israel and Cyprus includes within it part of the territory belonging to Lebanon (demarcation of the maritime boundary between Israel and Lebanon). These disputes are likely to have an effect on the maritime domain and on future conflicts in the region.

The fighting in Syria continued with greater intensity and this year the Syrian regime, with assistance from Russia, Iran and Shiite forces, managed to tip the balance in its favor. The Russian and Iranian forces are providing the Assad regime with financial assistance and weapons and are even participating in the fighting.

There was no unusual activity of the Syrian navy reported in the media nor were there any reports that it had taken a significant part in the fighting (apart from the use of naval helicopters to lay mines against ISIS forces) and it is reasonable to assume that the Syrian navy was involved in ongoing security tasks along the Syrian coast. The Syrian navy's fighting ability is unclear but it is reasonable to assume that, in view of the Russian and Iranian involvement in Syria and its ports, its vessels and weaponry are in better condition than in the past.

In Syria, the Russian Black Sea fleet has increased its presence and strength. This presence is making it possible for Russia to project its power, to influence the course of events in Syria and to broadcast its involvement in the region. Within this context, Russia signed an agreement with Syria for the lease of a naval base within the Tartus port and the Hmeimim Air Base for a period of 49 years with an automatic 25-year extension.



Figure 1 – Firing of an Iranian Noor naval missile from a Syrian Tir-2 missile boat (made in Iran) as part of a Syrian naval maneuver (2016)<sup>2</sup>

2 From <http://spioenkop.blogspot.co.il/2016/08/photo-report-syrian-arab-navy.html>

Russia began work on the port and its expansion with the intention of stationing about 10 vessels there.<sup>3</sup> According to the agreement, the defense of the base from the sea and from the air is Russia's responsibility while Syria is responsible for defense on land.

The central role of the Black Sea fleet in the fighting in Syria has been to maintain a presence by means of naval patrols and responsibility for the Russian supply of weapon systems and weaponry to Syria. In addition, the Russian navy carried out an attack on high-quality land targets in Syria by means of cruise missiles fired from submarines and surface vessels in the Mediterranean, the Black Sea and the Caspian Sea.

In this context, it is worth mentioning the presence of the Russian aircraft carrier in the Mediterranean and off the coast of Syria in particular from November 2016 until late January 2017. The aircraft carrier, which was escorted by a large taskforce (and possibly a submarine), launched attack aircraft from its deck to carry out attacks in Syria. Despite the fact that two aircraft that took off from it crashed and their retrieval from the sea involved several technical mishaps (a large amount of black smoke was observed from the ship's funnels), the presence of the aircraft carrier in the Mediterranean and particularly off the shores of Syria had a major impact from the viewpoint of Russia's ability to project power and its desire to be a major player in the Mediterranean theater.



Figure 2 – The Russian aircraft carrier "Admiral Kuznetsov" on its way to the Mediterranean.<sup>4</sup>

Iran has been involved in the civil war since late 2011 and during the past year has been a significant and influential player in the fighting in Syria. Iran is operating side by

3 Sputnik, Russia to Expand Capabilities of Naval Base in Syrian Tartus (20/1/2017).

4 From <http://www.ynet.co.il/articles/0.7340.L-4868028.00.html>

side with the Syrian regime in order to stabilize it and restore its control of Syria. Iran is seeking to carve out a place for itself in Syria as part of its grand strategy to become a regional superpower with control and presence in the theater and to expand the Shiite axis from Iran by way of Iraq and Lebanon, as well as achieving territorial continuity from the Persian Gulf by way of Iraq and Syria to the Mediterranean.

The involvement of Iran in Syria and its assistance to the Syrian regime are manifested in a number of elements, the main one being economic assistance and the supply of weapons and ammunition to the fighting forces. Iran has also deployed military forces that include the Revolutionary Guard, Hezbollah fighting forces and Shiite militia forces from Iraq, all of which are fighting alongside Syrian forces.

Iran is making use of sea routes in order to supply weaponry (including naval weaponry and vessels) and its senior officials have recently declared that it is their intention to establish a permanent base in Syria. In this context, it should be mentioned that in recent years Iranian military vessels have arrived in Syria as a port of call.

The expanded involvement of Iran in Syria in the maritime domain may be a signal of its part in the maintenance of the Syrian navy's fighting ability and Iranian assistance in the execution of its missions, the supply of new weaponry and platforms (such as miniature submarines) and the implementation and adoption of asymmetric naval tactics in Syria and Lebanon. The involvement of Iran in Syria will also allow it to develop the Hezbollah's naval power with respect to the buildup and supply of naval weaponry, including unmanned vessels (like those supplied by Iran to the Houthi rebels),<sup>5</sup> and in addition it will enable the Hezbollah's naval force to accumulate operational experience and higher levels of operational capability.

The proximity of Iran to the State of Israel will allow it to operate in the theater (by means of its own forces and by means of the Hezbollah's naval force); to carry out commando operations and gathering of intelligence in times of both peace and war (for example, by landing fighters from commercial ships or other vessels on the shores of Israel); and to create the ability to project power from the sea (and at relatively short ranges) onto the State of Israel. Moreover, Iran (or Hezbollah's naval force) will be able to operate miniature submarines in the theater which will have the ability to gather intelligence off the shores of Israel and carry out special missions. During actual military conflict, the submarines will be able to assist in imposing a naval blockade on Israel's ports.

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5 In late January 2017, during a routine patrol in the Gulf of Aden, a Saudi naval vessel was damaged in an attack carried out by the Houthi organization by means of an unmanned suicide vessel. The suicide vessel was apparently controlled from a distance. The Americans believe that the vessel was provided to the rebel forces by Iran. Cavas Christopher, *New Houthi Weapon Emerges: A Drone Boat* (19/2/17), retrieved from: <https://www.defensenews.com/digital-show-dailies/index/2017/02/19/new-houthi-weapon-emerges-a-drone-boat>, accessed 9/2017.

As Iran's foothold in Syria becomes more established and as Iran gains confidence, we can apparently expect to see an increase in the number of arrivals of Iranian naval vessels in Syria and increased presence of the Iranian navy in the Eastern Mediterranean.

The Egyptian navy is the largest in the Middle East and it operates in two theaters: the Mediterranean (the Northern Command) and the Red Sea (the Southern Command). Its missions are to protect Egypt's essential maritime interests, including the defense of shipping and trade routes; the protection of Egypt's essential infrastructure in the Mediterranean and in the Red Sea (oil and gas rigs); to protect the Suez Canal; and to maintain fighting ability in the above-water and the underwater domains against its rivals. The responsibility for protecting its ports against terror and prevention of smuggling is in the hands of the Coast Guard.<sup>6</sup>

In recent years, the Egyptians have come to view the Red Sea as a strategic zone that is essential to its national security, with emphasis on the Bab el Mandeb strait, which is the main route of entry into the Suez Canal, and the oil rigs found there.<sup>7</sup> The Egyptian navy has in recent years been operating joint task forces (air force, navy and marines) and also in collaboration with the Saudi navy, with the goal of guarding maritime strategic assets and the shipping lanes in the Bab el Mandeb strait against the Houthi rebels.

In the Mediterranean theater, the Egyptian navy is threatened by missile attacks from ISIS forces located in Sinai (such as the attack carried out using Coronet anti-tank missiles against an Egyptian patrol ship in July 2015).

The Egyptian navy, which is carrying out Egyptian strategy, has during the past year established a new and expanded headquarters for the Southern Command at the Safaga naval base and is building up its forces, including an expansion of the naval commando force and the deployment of submarines, helicopter ships and other types of vessels.<sup>8</sup> This year, the Egyptian navy carried out intensive operations in the Red Sea and the Gulf of Aden, as well as joint naval maneuvers with various nations (such as the US, France, Greece, Germany and others).

With respect to the buildup of force, the Egyptian navy has this year assimilated new vessels acquired in recent years. These include a Mistral helicopter ship with the ability to carry up to 50 attack helicopters of various types (apparently Ka-52 Russian attack helicopters will be stationed on its deck), as well as armored vehicles and soldiers.

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6 Eleibe Ahmed (2016), The Suez Canal and the Egyptian Navy, *Canadian Naval Review*, 11(3), 27–29.

7 Egypt Expands Navy with Formation of Southern Navy Fleet Command (1/2017), retrieved from: <http://www.worldtribune.com/egypt-expands-navy-with-formation-of-southern-fleet-command>, accessed 1/2017.

8 Shaul Shay (1/2017), Egyptian Navy in the Red Sea, retrieved from: [http://www.herzliyaconference.org/\\_Uploads/dbsAttachedFiles/ShaulShay16\\_1\\_17.pdf](http://www.herzliyaconference.org/_Uploads/dbsAttachedFiles/ShaulShay16_1_17.pdf), accessed 1/2017.

In addition, construction has begun of French Gowind missile ships, one in France and the other in Egypt (with the construction of another two is the works). The first ship is expected to come into service towards the end of 2017. The Egyptian navy is also completing the absorption of US-made Ambassador missile ships and it will be absorbing an additional advanced French-made Fremm corvette. As part of the acquisition contracts with France, the Egyptian navy will also receive advanced Exocet missiles and Aster aerial defense missiles.

In the underwater domain, Egypt received a second U-209 submarine, which was acquired as part of a contract to purchase four submarines from Germany. Egypt has begun the construction of infrastructure for operation and maintenance of the submarines at Alexandria. According to the contract, Egypt purchased additional American Harpoon submarine-launched missiles and the advanced German SeaHake torpedo. The Egyptian navy has also upgraded their submarine detection capabilities by means of the US-made Lfats sonar systems which are installed on Chinese Heinan submarine hunters.

During the coming year, the Egyptian navy is expected to continue its buildup of strength with the delivery of new advanced vessels and new weapon systems and the construction of operational, training and maintenance infrastructure for them. The absorption of these weapons—with emphasis on submarines and helicopter ships—represents a quantum leap for the Egyptian navy and it apparently will update and upgrade its operational doctrine based on the capabilities of the systems and the vessels, the operational tasks that it faces and the operational experience that it has accumulated and continues to accumulate, primarily in the Red Sea.



Figure 3 – French-made Egyptian navy Mistral helicopter ship<sup>9</sup>

9 <https://foxtotalpha.jalopnik.com/why-is-egypt-buying-two-orphaned-mistral-class-aircraft-1732595299/>

In the Gaza Strip, Hamas continues to build up its maritime force through development of a naval commando unit, which is based on the ability to attack with divers and fast-moving boats. It should be remembered that during the Protective Edge operation five fighters managed to land on Zikim beach; they were identified and killed by IDF forces. In late 2016, it was discovered that Hamas had even established a military base for naval commandos in the port of Gaza. The buildup of the commando force is continuing with the acquisition of weapons, fast-moving boats and intensive training with Iranian assistance. There are no indications in the media that the Hamas or other groups in Gaza possess anti-ship missiles, but the possibility cannot be ruled out.

As part of its modernization program, the Turkish navy is continuing with the buildup of its naval force as the long arm of Turkey and the buildup of a blue water navy. The Turkish navy operates 16 frigates, 9 corvettes, 18 missile ships, 12 submarines, 15 patrol ships, 33 amphibious ships and other vessels. Turkey is seeking to achieve independent production infrastructure for vessels and weaponry, including missiles, communication systems, control and monitoring systems, etc.



Figure 4 – A Milgem vessel in the Turkish navy<sup>10</sup>

## Conclusion

The world is in the midst of far-reaching global changes, including the rise of new superpowers, globalization and growing world trade, expansion of maritime economic

<sup>10</sup> <http://navalanalyses.blogspot.co.il/2017/09/turkish-navy-modernization-and.html>

zones, tension, crisis and military conflict between states, etc. These global changes will have major effects on the maritime domain in its broadest sense.

China and India, in addition to the US, which remains the strongest naval power, have become regional superpowers and perhaps even global ones. The buildup of naval force by China and India is manifested in the growth of their navies, the large number of their vessels and their advanced weaponry. These two superpowers are also expanding their deterrence by developing the ability to launch nuclear missiles from submarines.

The US in the Trump era is trying to restore its strength and prestige as a superpower with significant naval power and the current administration is again investing a huge budget in the navy and its weaponry, which is becoming increasingly outdated (a prime example is the Harpoon sea-to-sea missile developed in the 1990s which is expected to be going out of service).

The Russian navy (with emphasis on the Black Sea fleet) is restoring its capabilities, is increasing its number of vessels and is adopting a new operational doctrine. It is posing operational challenges to the navies of the US and NATO in the Black Sea and in the Eastern Mediterranean, the Baltic Sea and the North Pacific. Russia is fully exploiting geopolitical opportunities (such as those in Syria and Iraq) in order to deploy naval and aerial forces and thus is also creating a situation in which the US navy is pushed out of the region (even if that is only a perception).

As in previous years and even more so this year, relations became closer between the Russian and Chinese navies, which are holding joint naval maneuvers. The maritime axis which the two have started to build and which constitutes a counter-weight to the American coalition with countries in the region is taking shape. In this context, it is worth mentioning the increasingly close relations of Russia and China—each independently—with Egypt.

There are signs of success in the fighting against maritime piracy in the Indian Ocean, although this effort still requires the investment of huge resources. In spite of the nuclear agreement between the superpowers and Iran, the Iranian Revolutionary Guard navy continues to operate provocatively in and around the Strait of Hormuz and is embarrassing Western navies in the region, primarily the US navy.

In our region, the Syrian regime has regained control under Russian and Iranian patronage. Russia is reinforcing its stronghold in Syria and is establishing a major military base at Tartus, where numerous vessels are assisting the Syrian regime and the Russian forces in Syria by transporting weapons, supplying ammunition and carrying out other tasks, including defense and the projection of power from sea to quality inland targets.



Iran is also strengthening its presence in Syria and in coordination with Russian and Syrian forces is taking part in the fighting on the side of the Assad regime. This includes supplying weapons, financial assistance and participation in the fighting itself by Revolutionary Guard forces, Hezbollah fighters and other Shiite coalition forces. Iran, like Russia, aspires to establish a home port in Syria that will give it access to the Mediterranean and will serve as a base for its activity. The activity of Russia and Iran in this region enables the Syrian navy and Hezbollah's naval force to maintain a high level of fighting ability, while being equipped with advanced Iranian and Russian weapons and maintaining operational readiness.

In this context, it should be mentioned that Iranian involvement is liable to facilitate the introduction of advanced missiles, unmanned naval vessels for intelligence gathering and attack and even miniature submarines.

Egypt is in the midst of a buildup of force that began several years ago and which includes the absorption of new and advanced weapons and new naval vessels with emphasis on French-made corvettes, two French helicopter ships (which carry advanced Russian helicopters) and the reinforcement of its underwater forces in the form of advanced American sonar systems and four German submarines. These capabilities enable the Egyptians to project power at distant locations and to confront the challenges it faces in Yemen, Sudan, Libya and Iran.

Turkey is also in the midst of a major buildup of force (with emphasis on the ability to independently develop weapons, aircraft and naval vessels) and the creation of a large navy with the ability to operate for long periods in blue water and the ability to project power on a broad scale.

As is characteristic of the Middle East, it is difficult to predict what tomorrow will bring, but an analysis of the processes leaves no doubt that the region is experiencing an arms race to build up significant naval forces, with littoral operational capability, air defense from the sea and also the ability to operate in blue water and in the underwater domain.

## Unmanned Vehicles in the Maritime Domain: Missions, Capabilities, Technologies and Challenges<sup>1</sup>

Eyal Pinko



### Background

In January 2017, during a routine patrol in the Gulf of Aden, a vessel of the Saudi navy was damaged in an attack carried out by the Houthis using an unmanned suicide vehicle. The vehicle was apparently controlled from a distance. American sources believe that it was supplied to the rebel organization by Iran.<sup>2</sup>

This event is highly significant in the domain of maritime warfare, even if it did not gain much media attention, since for the first time an unmanned vehicle was operated from a distance in a real warfare environment and its full operational capability was demonstrated. This event has the potential to change the configuration of the future maritime battlefield, its strategies and its tactics and will contribute to the understanding that major changes are occurring within it.

1 From <http://gentleseas.blogspot.co.il/2016/02/us-diesel-remote-multi-mission-vehicle.html>

2 Cavas Christopher, New Houthi Weapon emerges: A Drone boat (19/2/17), retrieved from: <https://www.defensenews.com/digital-show-dailies/index/2017/02/19/new-houthi-weapon-emerges-a-drone-boat>, accessed 9/2017

The changes in the maritime battlefield are related, on the one hand, to the increasing application of asymmetric fighting doctrines<sup>3</sup> (that are implemented primarily by China, Iran and their allies) and to littoral warfare (primarily the protection of national infrastructures and economic waters); and on the other hand to the application of technologies and integration of unmanned platforms in naval warfare, which will in the future occupy an increasingly important place in this type of warfare.

It is the view of the US Department of Defense that unmanned vehicles (in the air, on land and at sea) are and will continue to be the preferred option as fighting systems for scenarios and missions that are characterized as “dirty”, dangerous or “boring”.<sup>4</sup>

In the aerial domain, both in Israel and other countries, unmanned vehicles have in recent decades increasingly occupied a permanent and central place on the battlefield and even in the civilian sector. In times of peace and in a variety of systems, unmanned aerial vehicles are used for gathering intelligence, observation, attacking targets, electronic warfare and more.

Furthermore, in various countries around the world, unmanned aerial vehicles are expected to replace manned aircraft in coming decades. The unmanned aerial vehicle technology is becoming increasingly advanced and they provide a huge economic advantage and the capability of carrying out a diversity of missions, for relatively long durations, at long ranges, with a low signature and without endangering human lives.

Experts claim that the level of sales of unmanned aerial vehicles is expected to reach \$15 billion in 2020 (for both military and civilian uses).<sup>5</sup>

In the maritime domain, unmanned vehicles are used on a smaller scale and mainly in civilian missions (usually for academic and applied oceanographic research), policing tasks and protection of ports.

3 Asymmetric warfare includes attempts to bypass or undermine the strengths of an adversary, while exposing its weaknesses and points of vulnerability. The weak side does this by using methods that are significantly different from those used by the stronger side. Asymmetric warfare includes almost any action used by the weak side in battle in order to overcome the strong side, particularly if the action is creative and can surprise the other side.

The weak side makes use of non-conventional tactics, weapons or technologies, which can be used at all levels (strategic, tactical, and operational), over the entire spectrum of military operations and at all ranges of fighting. It will even use technologies that neutralize those of the stronger adversary. Naval asymmetric warfare constitutes a challenge and a major threat to modern navies and puts into question their traditional roles.

Navies are being forced to deal with asymmetric abilities and tactics for which they have no response. They were not built to deal with them and naval warfare tactics have not been developed that are effective against adversaries that make use of these tactics.

4 DoD, U. S. *Unmanned systems integrated roadmap: FY2013-2038* (2013)

5 Salame David, “Unmanned Vehicles in the Maritime Domain: Challenges and Trends”, *Maarahot* 456. [Hebrew]

The operation of unmanned maritime vehicles in military missions is relatively uncommon and among the countries that do make use of them are Israel, Jordan, Singapore, Iran, the US, Britain and various countries in Europe.

A number of countries are carrying out research to test and develop concepts, fighting doctrines and applications for unmanned maritime vehicles, and a number of countries, primarily in Europe, have begun processes to test unmanned platforms, which are used in the development of capabilities and technologies and in scenario testing, as well as the development of methods of operating unmanned platforms in warfare and in peacetime uses.

Israel is involved in the development (and even the limited use) of a number of unmanned maritime vehicles in two main types of missions: the detection and destruction of submarines (including the already proven capability of firing torpedoes); and the protection of ports, including the ability to fire cannons and short-range missiles, as well as the ability to implement electronic warfare measures.

The transition to the development of unmanned platforms is the result of several factors: The first is the need to operate in littoral warfare situations and asymmetric warfare situations. The second is the existence and maturity of technologies that enable the development of unmanned maritime vehicles. The third is the reduction in defense budgets, particularly in the Western nations, which has motivated navies to reduce their costs. Unmanned vehicles make it possible to reduce costs considerably in terms of both acquisition of vessels and their operation and maintenance.

The final factor behind the accelerated development of unmanned platforms is the desire to reduce manpower and to minimize the risk to human life as much as possible.

This chapter presents an up-to-date overview of unmanned vehicles, including the mapping of potential missions, required capabilities, advantages and disadvantages of their use, key technologies in use and the challenges of integrating unmanned maritime vehicles in navies and military applications. The article will not deal with the civilian uses of these vehicles.

## Definitions and classifications

A maritime unmanned system (MUS) operates without a crew onboard and includes at least one unmanned maritime platform with the ability to operate autonomously (i.e. entirely without the intervention of an operator during the mission) or is operated from a distance during part of a mission or its entirety.

Unmanned maritime vehicles can be classified according to a number of criteria:

1. Type of vehicle.
2. The dimensions of the vehicle: length and displacement (weight).
3. Level of autonomy.

#### 4. Type of mission.

There are three types of maritime unmanned vehicles:

1. **Unmanned Surface Vehicles (USV):** These are vehicles that are self-propelled and sail above the water. The vehicle can be controlled by a distant operator or can be autonomous.
2. **Unmanned Underwater Vehicles (UUV):** These are essentially submarines that are self-propelled and usually operate with full autonomy.
3. **Glider:** This is an unmanned vehicle without its own propulsion system.

There are four levels of autonomy for unmanned maritime vehicles:

1. **Non-autonomous:** only human operation in all stages of the mission. The operation is carried out by means of a communication channel from a distant operating station to the vehicle and usually according to information and indications received through the channel of communication from the vehicle (for example: video images, sensors that provide the location and situation of the vehicle, etc.).
2. **Autonomy according to authorization:** The vehicle has the ability to carry out certain functions according to predetermined authorization of the operator (or it is determined during the mission), where the functions are planned and programmed ahead of time (or example: a predetermined course).
3. **Controlled autonomy:** A vehicle with the ability to carry out numerous functions independently according to logical protocols; although certain functions require approval of an operator before being carried out (such as approval to open fire).
4. **Full autonomy:** A vehicle with full capability to carry out its missions, including decision making during them, according to the conditions of the environment or the situation of the vehicle.



Figure 1 – Underwater unmanned vehicles<sup>6</sup>

6 <http://cimsec.org/wp-content/uploads/2015/05/LDUUV-18-Nov-2014.jpg>

## Potential missions

The potential military applications of unmanned maritime vehicles can be divided by type:

1. Unmanned surface vehicle (USV)
  - **Detection of sea mines** with emphasis on the entrances to ports or in their vicinity (Mine Countermeasures – MCM).
  - **Anti-submarine warfare (ASW)** which includes the detection of submarines and firing of torpedoes or dropping of depth charges
  - **Guarding essential facilities**, ports or commercial sea lanes (Maritime Security – MS).
  - **Surface warfare (SuW)** includes capabilities of detection and firing of missiles or cannons and electronic warfare capabilities.
  - **Gathering of intelligence** at long ranges by means of passive detection systems (such as SIGINT or ELINT systems), gathering of acoustic signatures of sea vessels (ACINT) and/or visual observation systems (Intelligence, Surveillance and Reconnaissance – ISR).
  - **Special operations support (SOS)** includes capabilities of detection, electronic warfare, conveyance of cargo, target saturation, etc.
  - **Electronic warfare (EW)** whose goal is to disrupt the adversary's detection systems and support manned vessels in the interception of enemy missiles.
2. Unmanned underwater vehicles (UUV)
  - **Gathering of intelligence** by means of passive detection systems (such as SIGINT or ELINT) and gathering of vessels' acoustic signatures (ISR).
  - **Detection of sea mines** (MCM)
  - **Anti-submarine warfare** including detection and attack (ASW).
  - **Mapping of the ocean floor** in order to build an underwater database to be used for navigation of submarines and the mapping of navigation obstacles in the sea for maritime vessels.
  - **Conveyance of cargo** and supplies.
3. Gliders
  - Relay for communication channels.
  - Mapping of the ocean floor.
  - Detection of sea mines.



Figure 2 – The Protector unmanned Surface vehicle, which carries the Typhoon gun mount and Spike antitank missiles.<sup>7</sup>

### Advantages of unmanned maritime vehicles

The contribution of unmanned vehicles to maritime military operations is derived from the missions that the vehicle is capable of and its operational advantages:

Nonetheless, a number of generic advantages of unmanned maritime vehicles can be defined:

1. **Autonomy:** The ability to independently carry out missions of prolonged duration can be a force multiplier for a navy and can assist it in carrying out important and complex missions.
2. **Risk reduction:** Reducing exposure of combatants to risk (from adversaries or natural phenomena).
3. **Deployment and operation** from various platforms: unmanned vehicles can be sent from other maritime vessels to a wide variety of missions.
4. **Perseverance:** dealing with various ocean situations and ability to continue the mission, without risk to crew or of mission interruption in severe weather conditions.
5. **Cost:** The cost of unmanned platforms is low relative to manned platforms, in terms of both acquisition and manpower needed for maintenance and operation on the one hand and training and maintenance on the other.
6. **Genericity:** Use can be made of existing civilian platforms and other civilian components that are cheap and accessible (without having to develop them), as well as robots.

<sup>7</sup> <https://armadainternational.com/2017/03/rafael-launches-spike-missiles-from-protector-usv>

7. **Modularity:** Various modules can be combined in unmanned maritime vehicles (such as attack, submarine warfare, gathering of intelligence and electronic warfare) and thus their function and mission can be changed with relative ease.

### Required capabilities

The main capabilities required of unmanned maritime vehicles (both surface and underwater) are the following:

1. The ability to work and **survive** in stormy seas (surface vehicles and gliders) and in strong currents (emphasis on underwater vehicles).
2. Long operating duration (primarily underwater vehicles).
3. **Robustness** and ability to endure long-term and long-range missions with respect to reliability, performance and energy.
4. **Versatility and modularity:** Modular ability to be fitted with various weapons and equipment and according to the mission required of the vehicle.
5. **Stealth:** Low signature which hinders the adversary's detection systems (optical, acoustic and radar).
6. **Physical protection** of the vehicle (against hostile takeover or being fired upon).



Figure 3 – Seagull unmanned surface vehicle fire torpedo<sup>8</sup>

8. <http://elbitsystems.com/pr-new/elbit-systems-seagull-successfully-completes-torpedo-launch-trials>



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## Technologies

In recent decades, a large amount of research has been carried out and technologies have been developed for various autonomous systems, including aerial, ground and maritime systems. A large portion of the technologies have already reached maturity and can be installed on unmanned maritime platforms while others are still in the processes of R&D.

The key technologies required for the application of unmanned maritime vehicles are the following:

1. Sensors (radar, optical and electronic warfare).
  - Miniaturization of sensors while maintaining their performance (or improving it).
  - Minimizing fuel consumption.
  - Endurance of difficult environmental conditions.
  - Reliability and high availability.
2. High-capacity energy sources, of dimensions that enable their installation on a relatively small unmanned maritime vehicle and which allow for long-term and long-range operations.
3. Communication that is immune to attempts at disruption, is secure and encoded in high-speed transfer files and is capable of long distance transmission (including underwater).
4. Dynamic mission-planning ability prior to and during a mission, including artificial intelligence abilities.
5. Ability for coordination and autonomous activity between platforms and coordinated activity in a network.
6. Precise navigating technologies (specially designed for unmanned maritime vehicles) and protection from disruption and deception.
7. Autonomous steering ability, including exact navigation (by means of cross-referencing information from the vehicle's sensors and GIS data) and avoidance of navigation obstacles (dynamic or static).
8. Technologies to reduce the vehicle's signature (radar, acoustic and thermal).

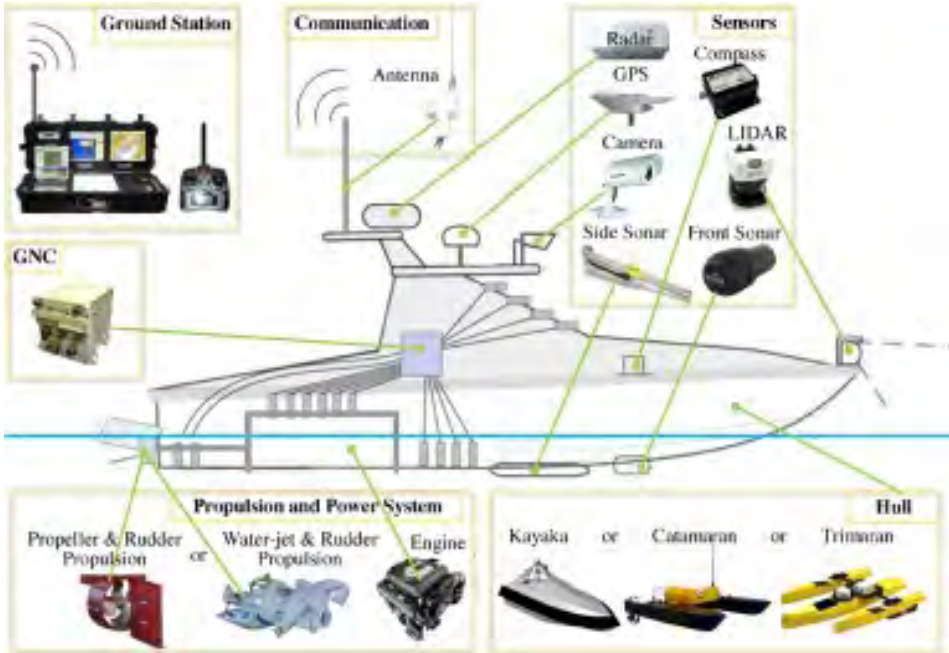


Figure 4 – Systems and technologies of a unmanned surface vehicle<sup>9</sup>

## Development of battlefield doctrine

There is need to learn, define, develop and test the maritime warfare doctrine for the integration of unmanned maritime vehicles within the navy's missions (whether independent missions or missions in which manned vessels and unmanned vehicles are combined).

The battlefield doctrine that includes use of unmanned vehicles may include a number of components:

1. Guarding and security:
  - Short ranges: protection of port entrances and infrastructure sites along the coast.
  - Intermediate ranges: protection of critical state infrastructures in Exclusive Economic Zones.
2. Warfare:
  - Assistance in the protection of manned vessels on the open sea ("blue water") against surface and underwater threats.
  - Assistance in the protection of manned vessels in littoral warfare.
  - Assistance in special operations.

<sup>9</sup> <http://www.sciencedirect.com/science/article/pii/S1367578816300219#fig0001>

3. Intelligence and infrastructure:

- Gathering of information.
- Mapping (oceanography).
- Logistical support.

The integrated maritime warfare doctrine should take into account a number of criteria:

1. Identification and mapping of missions in which unmanned vehicles are a significant force multiplier.
2. An analysis of missions and study of performance with regard to the required number of vessels that need to operate simultaneously, the number of vessels required for backup (logistical redundancy), etc.
3. Time at sea and definition of mission lengths that are characteristic of the platforms.
4. Motion: speed and maneuverability.
5. Degree of autonomy and degree of involvement of the operator.
6. Modularity and ability to carry out a variety of missions.
7. Ability to destroy targets and killing power that is required and can be created by the vessels (for missions that are part of a naval battle).
8. Effectiveness of the use of the various sensors (such as the range of detection by radar, optical means or the detection range of sonar for detection of submarines). Consideration of the effectiveness of the sensors is important since the mast height of an unmanned vehicle is usually very low and the installation of detection instruments on the vehicle will lead to relatively low detection ranges. In the underwater dimension, the vehicles are usually acoustically noisy and their noise is liable to lessen detection ranges (although there are technological solutions for this as well).
9. Compatibility and integration within the navy's other systems (command and control systems, communication systems, encoding, electromagnetic capability and the like).
10. Transport: The requirements for transport of the vehicles on other vessels and the manner of their launch and pickup after the mission.
11. Survivability of the vehicle from the perspective of environmental conditions.
12. Mapping of the threats to the vehicles and assessment of the protection required (physical protection against hostile takeover, protection against cyber attack on the vehicle's systems by way of its communication and control systems and protection against other threats such as attacks using various types of weapons).
13. Identification of existing technologies and of technological leads that need to be developed.

## Challenges

Navies that wish to integrate unmanned maritime vehicles as part of their capabilities face a number of challenges. These can be divided into a number of categories:

The first challenge is cultural. Navies throughout the world are by nature conservative, particularly at the level of decision makers, and find it difficult to accept change and in particular changes involving the introduction of unmanned vehicles that will replace manned vessels or will operate together with them.

The second challenge is the formulation of strategies and an overall operational doctrine, including the definition of missions for unmanned vehicles, their integration within the navy's missions and the operational strategy in various warfare scenarios (for ongoing security tasks and in conflict) and formulation of command and control processes (including the authority to open fire from unmanned vehicles that combine weapons and command and control positions on the shore or on another vessel), etc.

The third challenge is to protect the vehicles, which has a number of elements: The first is the physical protection of the vehicle, particularly vehicles with a high level of autonomy, from capture and takeover. In this context, it is worth mentioned as an example the capture of an American unmanned underwater vehicle by the Chinese navy in December 2016. The second element is protection of the vehicle against various types of weapons (bullets, shells and even missiles). Another element is protection against cyber threats and electronic warfare, particularly in the case of vehicles controlled through communication channels.

There is another group of challenges which are technological and which make possible the development of the vehicle's capabilities. Among the most significant technological challenges are: energy (prolonged operation of the vehicle and its systems); precise navigation systems (particularly for underwater vehicles); miniaturization of sensors (to reduce power output and to be able to fit them on the vehicles) while maintaining high levels of performance and reliability; secure, secret and encoded communication; and the ability to work autonomously in a network, including coordination between all of the vessels.

## Conclusion

The maritime domain plays a central role in a country's economy, its level of prosperity and its choices. Maritime trade grows every year and the reliance of coastal countries on maritime commerce and the production of offshore energy is increasing. Thus, for example, there has been a massive increase in recent years in the declaration of Exclusive Economic Zones and in the production of oil and gas in these territories.

The character of maritime warfare has also changed and navies who in the past built up blue water firepower and fighting capabilities are now placing emphasis on the development of capabilities and the buildup of force in scenarios of littoral warfare and protection of offshore assets. These scenarios are usually asymmetric and require naval power to deal with naval forces of terrorist organizations or countries that adopt asymmetric tactics, such as China and Iran.

Another prominent characteristic of modern maritime warfare is the ability to project force from sea to land at long range from the coast (such as the attacks carried out from sea to land in Syria by the Russians and Americans, attacks by the allies in Libya, etc.).

The traditional missions of navies, such as escorting convoys in time of war and maritime warfare against other navies, are diminishing in scope, nearly to the point that they don't exist at all. It can be said, for example, that there has not been a classic sea battle (i.e. one that includes one ship firing on another) for many decades, while asymmetric battles and scenarios for protecting critical infrastructures in economic waters, as well as the projection of power from the sea, are becoming increasingly common.

The characteristics of maritime warfare and the emphasis on naval missions in the modern era indicate that naval power must be versatile and must possess diverse capabilities. It must be able to operate in situations of high risk and particularly in situations of littoral warfare.

Unmanned maritime vehicles may be one of the main solutions in the development of diverse capabilities in modern maritime warfare situations.

Many countries, including Israel, the US, France, Iran, Holland and others, have begun to develop unmanned maritime vehicles for various applications and missions, some of them underwater and some of them above the surface.

Unmanned maritime vehicles, perhaps like unmanned aerial vehicles, have a huge potential in carrying out complex military maritime missions, with long durations and at long ranges from the coast. This potential has grown significantly alongside the potential reduction in risk to human life and significant savings in manpower, budgets and resources for the acquisition of vessels and their systems and their maintenance.

The realization of this potential will expand as supporting technologies reach maturity or to the extent that existing civilian technologies are integrated within unmanned maritime vehicles, that autonomous operating capability is improved and that the cultural barriers to the use of unmanned vehicles and the replacement of humans are lowered.

The use of unmanned vehicles will increase with the level of understanding that current and future maritime warfare situations are expected to be asymmetric and will primarily involve littoral warfare. In these types of warfare scenarios, unmanned vehicles have

the ability to carry out relevant missions, at the required level of operational efficiency, at relatively low cost (of acquisition and maintenance) and without risk to human lives.

Our recommendation is to continue with the development of unmanned vehicles for naval missions, including the development of operational concepts and the integration of unmanned maritime vehicles within fighting doctrines and training exercises, as well as the development of capabilities to protect unmanned vehicles (i.e. electronic warfare measures) and the integration of attack capabilities within the vehicles, including the firing of missiles and cannons.

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## A Model and Methodology for a Grand Maritime Strategy for Israel

*Oded Gour Lavie*

Over the course of the last decade, we have witnessed a rise in the level of engagement with issues of maritime policy and strategy in many countries around the world. The motives for this have been global processes that magnify the importance of the seas and oceans as a common domain that has strategic importance for the world's states and that is related to all issues of global trade, economy, energy, and the movement of goods and people from one end of the world to another.

In addition to these processes, there has been a major improvement in the ability of technologies to track, develop, and exploit natural resources that lie deep within the ocean and underground, including in areas that were once difficult to access.

The global maritime arena has seen new challenges develop alongside geostrategic changes among the powers following the end of the Cold War, the collapse of the Soviet Union, and the conversion of the United States into a sole superpower. In the last decade, local powers such as China and India have developed global strategies, whereas in the past, they made due with wielding local influence. These changes stem from the fact that their needs obligate them to look at the global arena as part of their playing field. The Russian Federation has also returned to the maritime playing field as the third most powerful sea power.

Smaller countries need to shape their strategies in such a way that will enable them to integrate with the global system and deal with the challenges and changes in this dynamic global environment.

Israel requires a grand maritime strategy that suits its unique needs and sensitive geostrategic-security situation in the eastern Mediterranean. Israel's strategic location between continents and between seas has created a special role for it in the history of the nations of the world. Israel's location has not changed, but the geostrategic environment has greatly changed over the years. It is now in a state of instability regarding the countries around Israel's borders, particularly Syria and Lebanon, which are experiencing internal wars; a lack of governance in substantial areas; a lack of clarity regarding the stability of Egypt; and a high potential for instability in Jordan.

The State of Israel does not have a defined grand policy and strategy, and this is also the case regarding a grand maritime strategy that will provide a solution to the challenges in the maritime domain in a manner that takes into account all of the national needs and interests for a period of years and that creates sustainability for future generations through a long-term vision. This gap can be felt in all matters linked to the building of naval



power, which occurs opportunistically instead of being done in an organized manner and in a way that is linked to a fundamental approach.

In addition, the lack of a suitable maritime strategy affects decision-making in the field of energy and gas in the maritime arena, as well as all matters tied to the construction of advanced ports, an Israeli trading ship fleet that will provide a response to the challenges facing the country, and the issue of sea-based infrastructure, which includes, among others, the issue of artificial islands. If Israel wishes to be a significant player in global development, and in the maritime domain specifically, the state should define a grand maritime strategy and develop the maritime domain in all of its aspects, using a wide and long-term perspective.

All of these, together with continuous friction with the Palestinians and with Iran and its nuclear program waiting in the background for the window of opportunity to burst forward toward activation, obligate Israel to weigh its steps carefully and to act to strengthen Israel's national security and economy. An assessment of Israel's situation finds that the model for a grand maritime strategy that is suitable for it is the engagement model, but that under certain circumstances, Israel will have to use the denial strategy.

This methodology is designed to enable Israel to define a grand maritime strategy that will lead to economic growth and prosperity for Israel, which would be nourished from the maritime domain and all of its aspects. There is a need to set out on this path now because Israel could find itself in a position in which it has no influence and cannot utilize the maritime domain, a development that would harm its future at a time when countries and powers around it are designing strategies and acting to realize them. They could be doing this without taking Israeli interests into consideration, or they may even be acting contrary to them.

An analysis of the environment and challenges that emerge in the annual assessment of the Haifa Center for Maritime Strategy and Policy for 2017 clearly shows that the scope of challenges requires a great deal of cooperation with regional countries and with influential powers in the region.

The United States reduced its presence in the Mediterranean following the initiative of President Obama, known as the "Pivot to East Asia." It is important to stress in talks with the new US administration that this policy should change.

At the same time, the United States continues to have interests in the Middle East. Russia is increasing its involvement in all matters that are linked to Syria. It is involved in the internal war in Syria and Iraq against opposition groups and ISIS, together with Hezbollah, with Iranian support.

China is actively maintaining a strategy of prevention, and to a great extent it is taking over ports in the eastern Mediterranean Sea to consolidate and ensure continuous

sea trade on behalf of the Chinese economy. China markets its products to the West, particularly to Europe and the United States.

Between all of these is Israel, located at an important geographic and geopolitical intersection.

From the vantage point of international relations and non-Israeli players, Israel should choose a strategy of engagement as a leading strategy, though in pinpoint events and specific issues, it has the power to operate in line with a strategy of prevention, for example, regarding Israel's maritime border with Lebanon or the sea sector in Gaza. But usually, the use of a strategy of prevention places Israel in the path of a political and sometimes legal and international dialogue that extracts a price and requires a response, and therefore, a cooperative approach is preferable, so long as national interests remain unharmed.

In addition to threats, it is important to stress opportunities that stem from inter-power cooperation, such as occurred in the disarmament of chemical materials in Syria, in which the United States, Russia, and other European countries took part.

Israel should know how to respond correctly in such situations, out of national long-term interests and a defined grand strategy. From a regional perspective vis-à-vis its sea neighbors, Israel has a variety of relationships. On the one hand, regarding Lebanon, Syria, and sectors in the Red Sea, we face a security threat, and, since this is a sea domain, distant threats can also approach us, such as the patrol by Iranian ships in the eastern Mediterranean on their way to visit Syria.

On the other hand, Israel enjoys close relations with Cyprus, China, European countries on the Mediterranean, and improving relations with Turkey. Israel lives in peace with Egypt and Jordan, and holds security coordination in the maritime domain. At the same time, there is no institutionalized or organized cooperation in the area that allows for the creation of a regional strategy in the eastern Mediterranean Sea, and it is difficult to expect one to take shape in the near future. As a result, Israel must choose a model of engagement strategy, out of a view of, and integration with, the global strategies of the United States, Europe, and China, and out of an ongoing examination of the influence of India and Russia. The strategy should be built in a way that will allow for future regional cooperation. A model that takes the local arena into account, and tries to safeguard global and regional cooperation, necessitates a cooperative approach.

The methodology and entire process need to be built along three central and integrated channels that support one another: government support, a maritime cluster, and a research academic body.

The first course of action is to lead a process at the government level, from the top down. In line with the current structure that exists today, it seems right for this process to be led

by the National Security Council. Other government ministries that must supply input for building a strategy are: the Ministries of Energy, Transport – Administration of Shipping, Foreign Affairs, Environmental Protection, Agriculture (fishing and sea farming), Tourism, Defense, Finance, and Strategic Affairs.

The second course of action is the creation of a maritime cluster that will house most of the interested parties and that will create the dialogue and the most updated assessment on the maritime arena. This can lead to an expectation of high quality awareness that will enable decision-making based on professional and updated information and cumulative knowledge.

The third path to action is to set up a supporting research body that will deal with the field of maritime strategy, which will accompany and support academic research for all those engaging the issue. In light of the existence of the Mediterranean Sea Research Center of Israel at the University of Haifa, which houses the Haifa Research Center for Maritime Policy and Strategy, setting it as the research body would be the right thing to do.

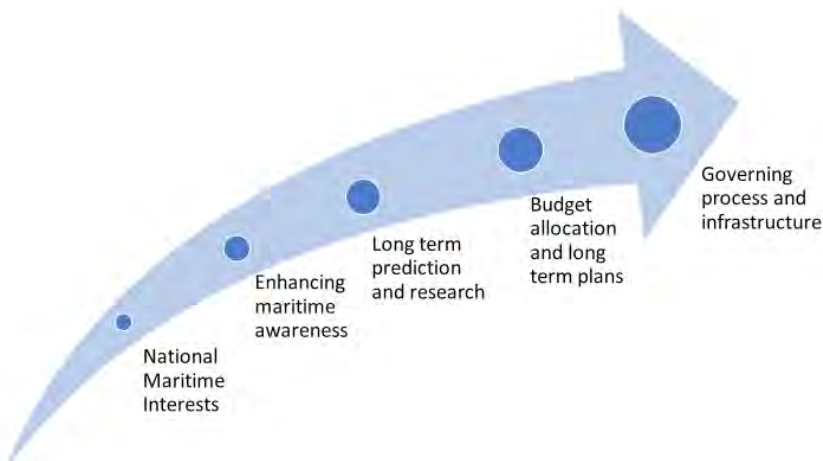


Figure 1 – Methodology and Process for Building a Grand Marine Strategy

The required methodology to reach a high level of external cooperation vis-à-vis international elements is built on a number of stages:

1. Israel must define its interests for the maritime domain as an anchor for planning – every strategy depends on the infrastructure of national interests, and the country's target audiences. Without an orderly and agreed upon definition at the level of government regarding these interests, we will continue to maintain solutions to problems without direction and guidance. It is better to begin with the national general interests, but even in their absence (in the lack of other option), it is right and

necessary to define the interests in the maritime domain, and from there, to continue building a grand maritime strategy for Israel

2. A sturdy internal infrastructure should be built, but only after gathering updated information and knowledge. Then it will be possible to deal with the range of internal needs and interests of every sector that touches upon the maritime domain. Furthermore, it will be possible to deal with conflicting interests, or those that make conditions difficult, such as the development of a port by China, during a time when there is an Israeli interest for the Americans to view Haifa Port as an American home port, which strengthens and tightens the United States' ties and commitments to Israel. Or, for example, the tension that exists between the wish to develop islands into national infrastructure and the desire to maintain an open fishing area or large-scale maritime infrastructure. To that end, a need arises to set up a maritime cluster, which will assemble together all of the various interested parties and enable an open professional dialogue among the bodies and the government, to create an infrastructure of common and deep knowledge for taking decisions, and setting the priorities of the interests for the maritime domain.
3. There is a need to build an analytic system and long-term analytic tool, since the pace of change in the world is fast, and the maritime domain is also changing with relative speed. International law influences the ability of states to act to secure shipping lanes vis-à-vis piracy, and vis-à-vis maritime terrorism, and therefore there is a need to create an ability to have long-term influence from a legal perspective, and to be in partnership with the states of the world on this issue. In addition, technological development on all matters is gaining momentum, such as the navigation systems and automation of ships, advanced communication systems, cyber in the maritime domain, the structure of ports and pace of activity in them, local and global command and control systems (see the automatic identification system), etc. All of these are expected to influence the Israeli maritime arena in different ways, to the point of breaching the ability to realize the chosen strategy and achieve Israel's interests. Therefore, a long-term forecast and analysis ability must exist for these and other fields that influence Israel's grand strategy, allowing for repairs in time, and to prevent wasting future resources by choosing appropriate responses, to the extent that this is possible.
4. A need exists to direct resources and define priorities. After national interests are well defined for the maritime domain, information can be assembled and knowledge embedded, for the creation of a clear picture of challenges and priorities, including a long-range analysis on the basis of a professional forecast. Decisions can subsequently be taken regarding the allocation of needed resources for realizing the strategy.
5. Finally, a process for building organizational inter-ministerial processes needs to be developed, which will allow efficiency and an optimal utilization of processes. This allows for a supervised process of realizing the strategy, and ensuring that there

is correct exploitation of the resources made available on the one hand, and on the other, it enables a process of ongoing updates in line with the information that continues to accumulate during the process.

An overall structure for such a strategy is offered in Figure 2.

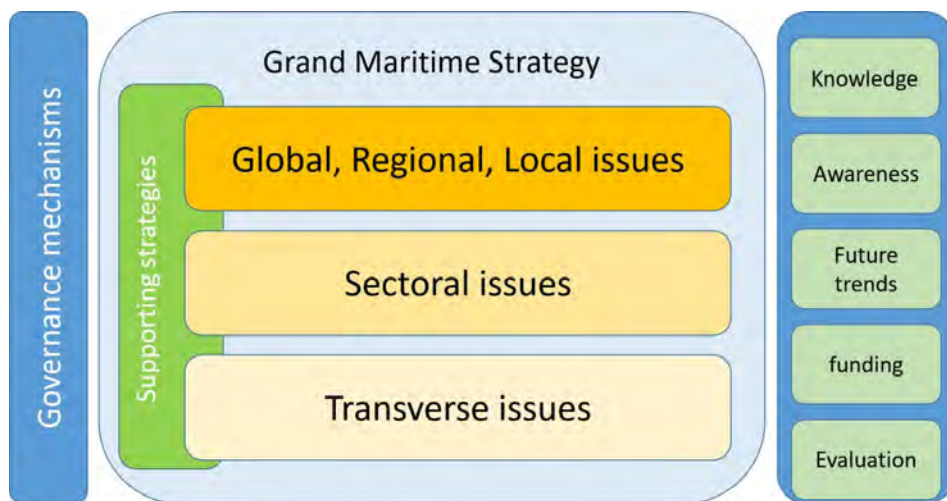


Figure 2 – Comprehensive structure for a grand marine strategy

The proposed structure is divided into three main parts:

1. A grand strategy and supporting strategies with an additional division according to topics:
  - Geographic – The strategic response must look at three different sectors that interface with one another in the maritime domain. The first is the global view and an examination of cooperation and points of possible friction vis-à-vis the maritime strategies of countries in powers in our region. The second relates to a regional perspective of neighboring states and creating cooperation or prevention in points where interests do not line up. Finally, there is a local internal perspective, in terms of taking advantage of Israel's location between the Red Sea and the Mediterranean Sea, and between Israel's different ports, each one in its location, environment, and influence on the coastal region, and areas of potential artificial islands, etc.
  - Broadside issues – These secondary strategies influence previous divisions simultaneously. Central topics for this division are the security aspect for the maritime domain, regulations and guidelines, international law, the way in which these are interpreted, etc.
2. Government mechanisms and managing processes – This issue is a critical component in every methodology, as building a strategy of this type, with a multiplicity

of interested parties, creates an obligation for an integrative process that requires determination and commitment at the phase of defining national interests for the maritime arena and continues to the buildup of knowledge and ongoing awareness, which allow for the setting of targets and the realization of a grand strategy.

3. **Broadside tools** – These include mechanisms for building up information on the maritime domain from research studies and gathering statistics on all topics tied to this area. In addition, tools are needed to gain a broad maritime awareness that allows for updates, and a rapid ability to deal with the processes or targets in any secondary strategy. An ability to forecast and analyze developments is required, which will allow for general updates to the grand strategy, together with optimal adjustments to the defined interests. Finally, resources need to be directed to the budget, and should be used to create a tool for supervision and results assessment.

The preferred model for a grand maritime strategy, therefore, is the engagement strategy model, with a methodology of international cooperation. This calls for the setting up of a maritime cluster in Israel under the leadership of the government and other bodies, which will provide the knowledge development components, and an increase in general awareness of all matters linked to the maritime domain.

This is the derivative of a national maritime vision, which will allow Israel to invest correctly in industries and in ties with bodies and states in the region and beyond it. By doing so, it will take advantage of its geographical location to improve its political geostrategic situation, while creating regional and international cooperation to strengthen economic fortitude and the ability to influence its distant future.

## Recommendations

Drawing up a national strategy is a complex matter, which demands professional and authoritative leadership by the government and the institutions responsible for the maritime sector. In order to build a strategy that is adjusted to these needs, there is a need to collect information and knowledge, to study, in an in-depth manner, the challenges of the maritime domain, and only after that, to set the strategy.

Gathering information and knowledge requires cooperation between many organizations that compose Israel's maritime cluster, and those of countries in its region. Setting up a maritime cluster as part of the process of building an infrastructure of maritime information is advisable.

This cluster must be set up (as in the case of Portugal) by a government or a party under it, and be a source of mutual influence on the institutions of the players in the cluster. It must be repeatedly nourished by the government and by the players, thereby creating an obligation for a joint process for managing strategy that is forward-looking in the maritime arena.

The University of Haifa's Center for Maritime Policy and Strategy forms a source of knowledge and an academic resource that can partner with institutions in Israel in the process of calculating and analyzing the possibilities, as well as managing the methodology for building the strategy, in line with the proposed model.

## Maritime Cyber Warfare – Developments in the Past Year

**Eitan Yehuda**

During the last two years, there have been a number of noticeable trends that have changed the approach of governments and military organizations, as well as private companies, to the world of maritime cyber. However, this awareness has apparently not yet reached a level that will lead to concrete systemic steps to counter the threats. This is in contrast to what is happening, for example, in the financial and defense realms:

1. There are a large number of attacks and disruptions of systems on both military and civilian ships and also on mega-yachts.
2. The rapid development of Internet of Things technology (IoT),<sup>1</sup> partly as a result of a number of attacks on sensors (which constitute the IoT network) and the adaption of defensive solutions to the maritime world.
3. Global technological development of autonomous vessels and the understanding that the capture of such a vessel is a serious threat since there is no crew on board in order to react to an attack.

The article published by the Corporate & Specialty Allianz Group (AGSC),<sup>2</sup> which describes the main risks in the shipping world and analyzes the main cases of financial losses in 2017 in the shipping domain, reports that cyber attacks on ships and in particular on ports are on an upward trend and that thought and effort need to be invested to counter this threat.

### Examples of cyber attacks in the maritime domain in 2017

1. A type of malware called "Zombie Zero" was introduced into the scanners used in maritime shipping, which are used to check the content of packages and cargo for security purposes and the detection of explosives. The malware, which apparently was introduced by Chinese hackers, makes it possible to remotely take control of the computer systems of ports where the scanners are installed. The malware exploits a known weakness in the outdated Microsoft XP operating system. By way

1 The Internet of Things (IoT) is a network between objects or "things that enables advanced communication between the objects and the ability to gather and exchange information. The IoT includes among other things the "smart house" and the "smart city", smart cars, smart management of the electricity grid, wearable accessories (such as watches and shoes), monitoring of instruments (heart implants, security systems, etc.) and more, and can relate to a wide variety of appliances both inside and outside the home. The development of the IoT in coming years is expected to facilitate automation in many walks of life. At this stage, the IoT market is only in its infancy; however, according to the Gartner research company, by the end of 2020, the number of instruments that are connected to the Internet worldwide will reach about 26 billion. According to the McKinsey consulting company, "the global market for IoT is expected to grow to \$620 billion by 2025." (Know2 magazine, March 2016).

2 Safety and Shipping Review 2016 by Allianz Global Corporate & Specialty (AGCS) available at [www.agcs.allianz.com](http://www.agcs.allianz.com), page 34.



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of this scanner, the Chinese hackers remotely took control of the communication and information systems of the shipping companies. It is worth mentioning by the way that the development of the malware was financed by the Chinese government, which was revealed by the TRAPX cyber company.

2. South Korea reported that hundreds of its vessels were forced to return to port due to the remote takeover by North Korean hackers of their GPS systems.
3. On June 17<sup>th</sup> 2017, a commercial ship called the ACX Crystal collided with the USS Fitzgerald. Eleven minutes before the collision, malware called "WannaCry" attacked Maersk, one of the largest shipping companies in the world. Another commercial ship, the Evora, which belongs to Maersk and which was in radio contact with the ACX Crystal at that time was in the area of the collision (see the appendix for a map showing the collision and the location of the Evora). Seven crew members of the Fitzgerald were killed and in the official report published by the US Navy, it was claimed that there is no connection to any cyber attack and that the reason for the collision was human error.
4. Twenty commercial ships that belong to American companies reported that their GPS systems were disrupted while in the Black Sea.
5. In July 2017, Apple and Google released a security update against the malware "BroadPwn" which enables remote takeover of communication components installed on the systems of ships.
6. In August 2017, a commercial ship called the Alnic MC collided with the USS John S. McCain. As a result, 17 American sailors were killed and also in this case the investigation concluded that the reason for the collision was human error rather than a cyber attack.
7. An article published in *The Guardian* on November 11<sup>th</sup> 2017 reported that Clarksons, one of the largest shipping companies in the world, was attacked by ransomware which encoded its database. The company refused to pay the ransom demanded and requested that the authorities deal with the attack.

The events described above were published in much of the media, a fact that increased the exposure to the subject of cyber security in the realm of ports and shipping and to a deeper understanding, primarily among governments, that the threat is real and can cause economic damage and even loss of life.

The exposure has led venture capital funds and hi-tech companies that are involved in information security to devote thought to the subject and to develop protective measures also in the maritime domain. The common approach is currently to adopt protective technologies that are developed for IoT sensors for all of those systems in which there are sensors that control the main components of the ships (see the appendix for a list of the main systems in a ship in which sensors are installed).

According to this approach, the solution is provided starting from the level of the sensor (for example, an antenna that receives GPS signals), encoding of the communication range, upgrade of the operating systems and hardware and up to the level of the application.

### Conclusion

The large number of cyber events in the maritime realm in 2017 led to a change in awareness of the threat. This can be seen in the allocation of funds by venture capital funds and the creation of a number of startup companies that are developing protective measures.

The development of IoT technology and the creation of business solutions that are based on this technology will be accompanied by development of the protection of these systems and in the future it will be possible to more easily adopt these solutions also in the maritime realm.

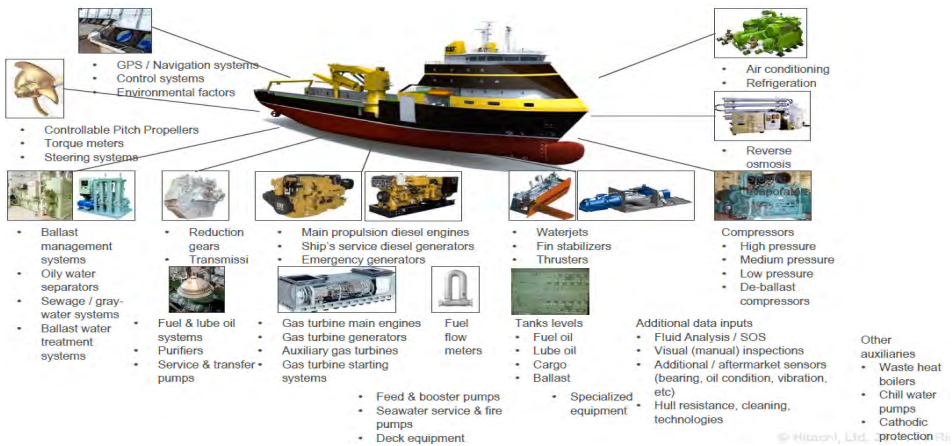


Figure 1 – List of main ship components equipped with sensors

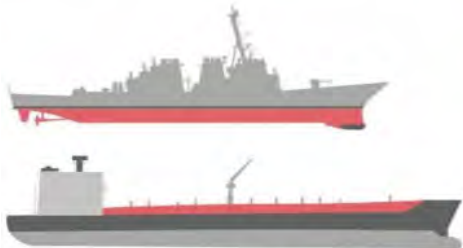


Figure 1 – Relative size of USS JOHN S MCCAIN



Figure 2 – Illustration Map of Approximate Collision Location

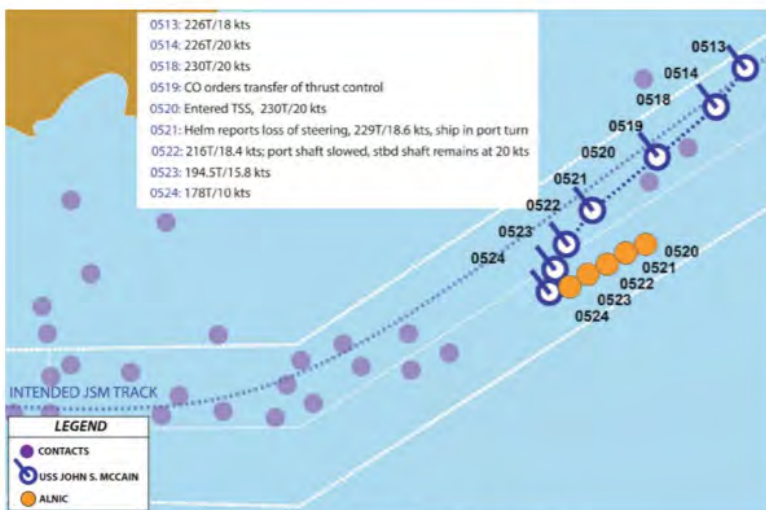


Figure 3 – Illustration Map of Approximate Collision Location

Figure 2 – The collision of the commercial ship Alnic MC with the USS John S. McCain<sup>3</sup>

3 DEPARTMENT OF THE NAVY OFFICE OF THE CHIEF OF NAVAL OPERATIONS 2000 NAVY PENTAGON WASHINGTON, DC 20350-2000.

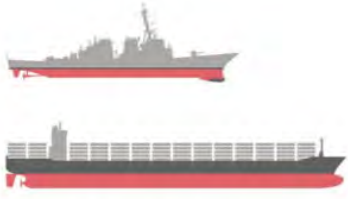


Figure 1 – Relative size of the USS Fitzgerald



Figure 2 – Illustration Map of Approximate Collision Location

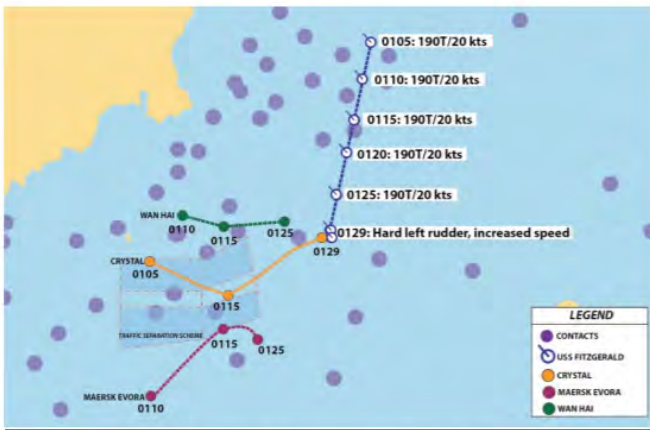


Figure 3 – Illustration Map of Approximate Collision Location

# Foreign Fleets, the Great Powers and Countries in the Region

## US Policy in the Eastern Mediterranean

***Shaul Chorev and Ehud Gonen***

At the time of the previous Israeli Maritime Strategic Evaluation (end of 2016),<sup>1</sup> it was already known that a new US administration would be taking over at the beginning of 2017 and it was thought that this would perhaps herald a change in US foreign policy, including its policy in the Eastern Mediterranean.

The joint report published by Haifa University and the Hudson Institute in the autumn of 2016 also recommended that the new administration examine several issues related to US policy in the Eastern Mediterranean.<sup>2</sup>

It appears that the new Trump administration has not yet managed to formulate a formal doctrine for US foreign policy and this is evident in its policy in the Eastern Mediterranean. This can be seen in, among other things, the activity of the US fleet in the region. American responses appear to have been ad hoc and American policy is driven by events and reactive, rather than being the result of a clear strategy.

In Trump's speech on December 18<sup>th</sup> 2017, in which he presented the new national security policy of "America First", he did not relate to this issue and preferred to give an overall view of American policy. In this context, the President presented four principles on which national security policy is based: First, the priority given to protecting the nation's citizens (including the building of a US-Mexico wall and the termination of US visa lotteries); second, the promotion of US economic security in order to maintain growth on the basis of fair trade; third, the promotion of peace by means of power, including the modernization and reconstruction of the military and the initiation of a missile defense plan, as well as the creation of alliances with countries that share values with the US; and fourth, increasing US influence in the world by means of collaboration with countries that share US goals.

President Trump did not relate to the situation in the Middle East in his speech, but in an earlier briefing it was mentioned that the US administration is changing its approach to Israel's role in the region. It was stated that the threats from extreme Jihadist terror organizations and from Iran had led to the understanding that Israel is not the source of problems in the region and that the countries in the region have common interests with Israel in dealing with common threats. With respect to Russia and China, the President stated that they are trying to undermine US status in the world and promised that his policy would maintain relations with them only as long as US interests are not harmed. The speech did not therefore herald any change in the strategy of the US navy in the

1 The Maritime Strategic Evaluation for Israel 2016.

2 Report of the Commission on the Eastern Mediterranean sponsored by University of Haifa and the Hudson Institute, September 2016.

Eastern Mediterranean and recent events in East Asia also indicate that the main priority of the US remains in that region.

Accordingly, it can generally be concluded that the policy of previous US President Barak Obama—which was declared in 2011 under the title “Pivot to Asia” and which represented a major change in course for US foreign policy—remains in place. This implies a major shift in resources—diplomatic, military, economic, etc.—in the direction of Asia, at the expense of other theaters, primarily Europe and the Middle East. The visit by a number of American ships to Israel’s ports, including the visit of the George H.W. Bush aircraft carrier to the Port of Haifa, does not represent a change in the existing situation.

From the perspective of maritime presence, the situation in East Asia and primarily the dispute over the Exclusive Economic Zones in the South China Sea, as well as the tension in the Korean Peninsula, are tying down much of the American navy, including at least two battle groups which include two to three aircraft carriers. In addition, there are other areas of tension in Taiwan and the Persian Gulf.

The diminished geo-economic importance of the Middle East from the US perspective is primarily the result of its reduced dependence on Middle East oil and the increased energy diversification of the American economy. The implication in the maritime domain in the Eastern Mediterranean has been the reduction of US naval presence and the fact there is no aircraft carrier permanently deployed in the region. The new US Secretary of the Navy, Richard V. Spencer, visited the USS Mount Whitney (LCC 20), the flagship of the US Sixth Fleet, in November 2017 while it was anchored at Napoli in Italy. He did not mention any change in American policy, not with respect to the order of battle of the Sixth Fleet nor with respect to its activity in the Eastern Mediterranean.<sup>3</sup>

Towards the end of 2017, the Mount Whitney operated in the Eastern Mediterranean, including in the Souda Bay in Greece together with the San Antonio-class USS San Diego (LPD 22), which is an amphibious transport dock. On the latter’s deck is a rapid-response force of Marines which is able to operate in situations of military crisis or humanitarian disasters.<sup>4</sup> Nonetheless, it is important to mention that in addition to the Mount Whitney there were only four other ships under the command of the Sixth Fleet at the end of 2017 (USS Ross, USS Carney, USS Donald Cook and USS Porter).<sup>5</sup>

3 CNA-CNA-C6F Public Affairs, SECNAV Visits USS Mount Whitney, US Naval Forces Europe/Africa/Sixth Fleet, November 21, 2017, <http://www.c6f.navy.mil/news/secnav-visits-uss-mount-whitney>

4 Justin Schoenberger, USS San Diego Arrives In Souda Bay, Greece, November 28, 2017, <http://www.public.navy.mil/surfor/lpd22/Pages/USS-San-Diego-Arrives-In-Souda-Bay-Greece-.aspx>

5 U.S. Naval Forces Europe-Africa / U.S. 6th Fleet, Our Ships, <http://www.c6f.navy.mil/organization/ships>



Figure 1 – The USS Mount Whitney (LCC 20) – the command vessel of the US Sixth Fleet (Source: Sixth Fleet Site)

The Fifth Fleet, whose base of command is in Manama in Bahrain, continued in 2017 to carry out its mission to protect shipping in the region, while at the same time being forced to deal with complex challenges in the area of the Strait of Hormuz (the provocative activity of Iran's Revolutionary Guard naval forces) and the Bab el Mandeb Strait (an increase in naval incidents related to the fighting against the Houthis in Yemen) and also participated in the attack on ISIS land targets in Syria and northern Iraq.

In view of the aforementioned, it appears that no change is to be expected in the deployment of American forces in our region and in particular naval forces. The US navy is facing challenges in a number of theaters east of here: the crisis on the Korean peninsula; the ongoing tension and friction in the area of the Persian Gulf with the Revolutionary Guard navy; the dispute in the South China Sea over China's territorial demands; and in the area of Taiwan.

Nonetheless, there were a number of events and major statements in the Israeli context:

1. In May 2017, there was an attack on targets in Syria using cruise missiles fired from two American destroyers, the USS Porter and the USS Ross, in reaction to the use of chemical weapons by Assad's army in the city of Idlib.
2. Iran: A number of militant declarations by Trump that there is a need to modify, rather than cancel, the agreement, alongside the visit of the American President to the Middle East (in May 2017) in order to strengthen the Sunni axis (led by Saudi Arabia) against Iran, did not lead to a change in Iranian policy. The provocations by Revolutionary Guard ships on the US navy in the Persian Gulf continues.

3. In the summer of 2017, the USS George H.W. Bush aircraft carrier visited the port of Haifa (17 years since the last similar visit), but this did not signal a change in the deployment of the Sixth Fleet, which remained thin.
4. In December 2017, Trump declared that the US is recognizing Jerusalem as the capital of Israel. This is primarily a declarative move since it describes the existing situation and does not involve the transfer of the US Embassy to Jerusalem in the immediate term. However, the declaration led to a wave of reactions and unrest in the Arab and Moslem world, whose outcome is difficult to predict.

The wide dispersal of the US navy and its sparse presence in the area of Europe and the Mediterranean have apparently led to a revised approach to maritime power. In accordance with the aforementioned third principle in President Trump's speech (modernization of the military and its rebuilding), the US administration is interested in increasing the defense budget, including the budget of the navy. This includes increasing the number of vessels to 350 (in contrast to 277 today and 302 according to the long-term master plan of the Navy for coming years). The budget implication is an addition of more than \$4 billion to the naval budget beyond the addition that was already planned and this is even before the yet-to-be estimated budget that will be required for the armaments, maintenance and manpower needed for these new vessels. If this plan is indeed implemented, then it appears that the intention is to deploy these ships primarily in the Atlantic and Mediterranean theaters:

"[...] a key potential reason for increasing the planned size of the Navy ... would be to re-establish a larger U.S. Navy forward-deployed presence in the European theatre, and particularly the Mediterranean<sup>6</sup>."

However, in parallel to the demand to build up maritime force that can provide solutions in additional theaters, there may be political problems in passing the necessary budget, in addition to technical issues, such as the ability of existing shipyards to build the additional ships and submarines without compromising the quality of these vessels and their safety.

It can be predicted that major naval platforms (ships and submarines) in addition to those already appearing in the 30-year plan for the build-up of the navy will enter service only at the beginning of the next decade and therefore it can be expected that the deployment of the US navy will not be changing in a significant way in coming years.

The Haifa Research Center for Maritime Strategy will present an analysis of American policy in our region and primarily its maritime implications in the strategic evaluation for the coming year (2018–2019).

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6 Navy Force Structure: A Bigger Fleet? Background and Issues for Congress <https://fas.org/spp/crs/weapons/R44635.pdf>



## "Guideline of Russia's Naval Policy" as a Continuation of the Soviet and Russian Bureaucratic-Military Tradition

*Tzevy Mirkin*

During 2017, Russia continued its military support of the Assad regime in Syria. As a result, Russian naval forces maintain a dominant presence in the Eastern Mediterranean with a relatively significant order of battle. In January 2017, it was even reported that an agreement had been signed for the leasing of the Port of Tartus in Syria by Russia for a period of 49 years.<sup>1</sup>

Russia's military presence in close proximity to Israel and the activity of its naval vessels in the maritime domain near Israel requires close monitoring, as well as an understanding of Russia's motives and its policy for the use of naval force in our region. The documents related to naval doctrine that are published by Russia's political and military leadership can help us to understand Russia's naval policy.

During the first half of 2017, there were apparently no changes in Russia's naval policy relative to the preceding year. Russia's leadership continued a policy of showcasing the rejuvenation of the Russian navy and its return to the "club" of leading navies.

At the center of this activity was the voyage of Russia's only aircraft carrier, the "Admiral Kuznetsov", from the Barents Sea to the Mediterranean. The voyage, which also included a number of accompanying vessels, continued from November 2016 until February 2017, when the Kuznetsov returned to its home base at Severomorsk. In addition, during 2017 the Russians used their warships, including submarines, to launch cruise missile at targets in Syria, as it did during the previous year, as part of their support for the Assad regime.

Nonetheless, after the return of the Kuznetsov to its home base, it became known that it would be inactive due to a "scheduled renovation". According to the media, the initial estimated cost of the renovation is about \$350 million<sup>2</sup> (and it is possible that the actual amount will be much higher; for example, several months later there were rumors of the cost reaching about \$800 million<sup>3</sup>). The renovation itself (which has been referred to in a number of publications as a "renovation with modernization") is meant to last several years. At the same time, it became known that during 2018 a general renovation would begin of the "Peter the Great" nuclear missile cruiser, the flagship of the Russian North

1 Russia Signs Deal for Syria Bases; Turkey Appears to Accept Assad <https://www.nytimes.com/2017/01/20/world/middleeast/russia-turkey-syria-deal.html>

2 March 17th, <https://www.vedomosti.ru/politics/galleries/2017/03/17/681637-admiralu-kuznetsovu-vedomosti-remont#/galleries/140737493184478/normal/1>

3 Interfax, October 7<sup>th</sup>, 2017 <http://www.interfax.ru/russia/582205>.

Sea fleet, which together with the Admiral Kuznetsov serves as the last remnant of the large Soviet ships.

In practice, this will lead to a situation in which the Russian navy will be based on only "small" ships", namely destroyers and frigates. This situation has been indirectly confirmed by Sergey Shoygu, Russia's Minister of Defense, who stated on the launch of the "Admiral Gorshkov" frigate, that ships of this type would constitute the main component of the Russian navy. It was also stated that the navy is meant to receive six such ships.<sup>4</sup>

In spite of these developments, the most important event related to the future of the Russian navy occurred not at sea but rather in the Kremlin. On July 20<sup>th</sup>, 2017, Russian President Putin approved a document entitled "Foundations of Russia's Naval Policy during the Period up to 2030". This document replaced the "Foundations of Naval Policy" document that was approved in 2012 and was meant to remain valid until 2020.



Figure 1 – President Putin reviews honor flotilla on Russian Navy Day (source: Kremlin website)

The official goal of the new document is to map the direction for development of Russia's naval forces, as a continuation of previous documents on the subject: "Foundations of

4 The Russian Ministry of Defense television station "Zvezda", April 21<sup>st</sup>. <https://tvzvezda.ru/news/forces/content/201704211312-mdxg.htm>

Naval Policy" of 2012 and the "Naval Doctrine of the Russian Federation", in its original version from 2001<sup>5</sup> and its later versions.

Like the previous documents, this document specified the role of the navy within Russia's military policy, its objectives and the main directions for the buildup of naval power, as well as the geographic scope of the naval operations. The document also includes a description of potential threats. Essentially, it states that the source of the main threat at sea is the US and NATO, which are seeking a dominant position in the ocean and complete sea supremacy.<sup>6</sup> It also states that the Russian navy must be able to deal with advanced rival navies from a technological perspective and must be equipped with high-precision weaponry" and also that Russia "will seek to a situation in which the Russian navy is able to maintain its number two position in the world from the viewpoint of fighting ability."<sup>7</sup> Seeking to maintain second place is based on the recognition that the US navy is in first place and that it is unfeasible for Russia to build a navy equal to it.

Nonetheless, it is possible that the true purpose of the document differs from its declared purpose. First and foremost, it is meant to change (or even cancel) some of the main decisions in the previous documents, though without explicating announcing that intention. In addition, it can be assumed that its publication is a sign that the implementation of the previous plans has encountered problems.

It is possible that the purpose of the document can be explained not by changes in the economic or political situation—of which there were signs already when the doctrine was approved and therefore the document may have been a very late response to those changes—but rather by the tradition according to which the Russian regime operates and in particular its military-bureaucratic branch.

The main difference between the aforementioned document and the previous ones is in the Russian navy's scope of activity in the various theaters. The "Naval Doctrine of the Russian Federation" from 2015, which is the main document that sets out Russia's naval policy, describes most of the existing naval theaters in the world.<sup>8</sup> The list of "the main directions of national naval policy", which is presented in the "Doctrine", includes all of the oceans and even the Antarctic theater.<sup>9</sup> The new document therefore discusses in a general way the need for operational capability in all of the theaters ("Ensuring the possibility of extended presence of naval forces in the domain of a strategically important

5 "The Naval Doctrine of the Russian Federation for the Period up to 2020", approved by the Russian President on July 2001, published on the Russian Foreign Ministry website: [http://www.mid.ru/foreign\\_policy/official\\_documents/-/asset\\_publisher/CptlCk6BZ29/content/id/462098](http://www.mid.ru/foreign_policy/official_documents/-/asset_publisher/CptlCk6BZ29/content/id/462098).

6 "Principles of Russia's Naval Policy for Period up to 2030", Chapter 2, Paragraph 24, subparagraph A.

7 Ibid., Chapter 5, Paragraph 39.

8 "The Naval Doctrine of the Russian Federation", Paragraphs 49–72. Published on the official website of the Russian President – [www.kremlin.ru](http://www.kremlin.ru).

9 Ibid., Paragraph 50.

ocean"),<sup>10</sup> but in a specific manner only in the theater of the Black Sea/Mediterranean<sup>11</sup> and in the Arctic theater. The other theaters are defined as "other directions that have strategic importance."<sup>12</sup>

In contrast to the chapter devoted to a description of the fleet's theaters of operation, which differs from that appearing in the "Doctrine", the chapter that discusses the buildup of force is in fact not very different. In 2015, it was stated that the Russian shipbuilding industry must deal with its technological lag and work to develop modern "homemade" technologies for implementation in the building of ships, both civilian vessels and warships.<sup>13</sup> The 2017 document includes identical missions, but in greater detail. It calls for the navy to raise its level of technology in general and of its weaponry in particular, such that modern weapons and ammunition will occupy a prominent place in the navy's arsenal.<sup>14</sup>

In principle, the changes appearing in the presidential directive relative to the previous documents are not significant enough so as to justify the publication of the document. In our opinion, the explanation for the document can primarily be found in what it does not explicitly say and understanding that requires a familiarity with the bureaucratic tradition according to which the Russian system operates, as well as its Soviet roots.

Despite the extent to which Russia has changed since the breakup of the Soviet Union in 1991, the basic structure and bureaucratic methods in the Soviet system remain fundamentally intact. In contrast to some of the other countries in the former Communist bloc, the leaders of post-Communist Russia decided not to rebuild the system, but rather to adopt the system inherited from the USSR and keep the bureaucrats that had started their careers as part of the Soviet system. As a result, during the post-Soviet period Russia inherited to a large extent the administrative methods, the bureaucratic language and the manner in which problems that require solution on the systemic level are handled.

One of the main principles of the Soviet system was to avoid direct mention of existing problems and to deny the possibility of a mistake having been made by any part of the government. According to the official perspective, this was liable to inflate the importance of "individual problems" and of "localized deficiencies" and would harm the reputation of the socialist system. Nonetheless, the leadership needed the option of expressing its dissatisfaction with the relevant parties and also to inform them and those they report to of the demands and the policy changes that constituted a response to the problems.

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10 "The Foundations of Russia's Naval Policy for the Period up to 2030", Chapter 3, Paragraph 30, sub-paragraph D.

11 Ibid., Chapter 4, Paragraph 37, sub-paragraph F and G.

12 Ibid., Chapter 4, Paragraph 37, sub-paragraph G.

13 "The Naval Doctrine of the Russian Federation", Paragraphs 77–78, published on the official site of the Russian President [www.kremlin.ru](http://www.kremlin.ru).

14 "The Foundations of Russia's Naval Policy during the Period up to 2030", Chapter 5, Paragraph 43.

Although this was possible to accomplish by means of distributing confidential documents among the relevant parts of the system, not all of its representatives had the necessary clearance to read such documents. Furthermore, some of them (such as those in the lower echelons who were responsible for propaganda or, in the case of the army, junior political officers) had to explain the "party line"<sup>15</sup> to people that did not have access to the confidential material. In addition, there was a need to inform the public of the policy's general flaws, at a time when the system essentially lacked any transparency.

The main policy principles were described in speeches by senior leaders at gatherings of the Communist Party leadership.<sup>16</sup> These speeches served as the basis for more specific decision making of all types.<sup>17</sup> Afterwards, the decisions of the leadership were published in editorial articles or "headline articles" written by senior functionaries. These articles appeared in the "Krasnaya Zvezda" ("The Red Star") newspaper, the official newspaper of the Ministry of Defense. Its content and publication were the responsibility of the army's office for political affairs and the magazine was received by all officers in the Soviet army. In addition, it published a monthly called "Morskoy Sbornik" ("The Naval Collection"), which was the official magazine of the navy. This publication was also exploited when the leadership felt the need to draw attention to one subject or another and the instructions to the relevant bureaucrats were not sufficient to do so.

An important principle in the operation of the Soviet system, both the civilian and the military echelons, is the desire to avoid not only the mention of problems but also the cancellation of previous decisions, since this could create the impression that a mistake was being admitted. Therefore, in the case that one decision or another appeared to be incorrect or outdated, a new decision was issued in its place and from the moment it was issued it essentially replaced the previous decision.

If the leadership identified a problem whose scope required a response beyond simply notifying a number of relevant parties, the instructions on how to resolve the problem were never given directly. Thus, for example, at the end of the 1970s a "Daily Collection" was published that contained a series of articles on the importance of safety in the Soviet navy. The articles also included mention of units that had excelled in this area. The articles appeared over a period of about nine months, with the rank of the official signed on the article rising over time. Thus, if the first article was signed by a mid-ranked officer, the last was signed by the Head of the Political Department of the "Main Naval Headquarters", i.e. the headquarters of the Soviet navy. This constituted clear evidence that the level of safety in the fleet was deteriorating and the publishing of the article by the head of the political apparatus of the navy was a sign that the problem was serious.

15 The term "semi-official" which described the Communist Party's policy at any given moment.

16 Hough, J.F., Fainsod, M., *How the Soviet Union is Governed* (Cambridge, MA, 1979), p. 449.

17 Черняев, А. Шесть лет с Горбачёвым – Chernyayev, A. *Shest let s Gorbachevym (Six Years with Gorbachev)*, (Moscow, 1993), p. 128.

In view of the aforementioned, the document that was signed by President Putin in July has significance beyond the simple interpretation of what is written:

1. The focusing of attention on the Mediterranean and the Black Sea and the lack of mention (or just "by the way" mention) of other theaters (apart from the Arctic theater, whose place in this document is less important than that of the Mediterranean theater) is a signal that most of the resources and the main part of naval activity will be concentrated there. In other words, this is an instruction to reduce operations in other naval theaters that are not mentioned directly.
2. The repetition of instructions regarding the buildup of force that already appeared in the previous documents and in greater detail than previously is probably a sign that the implementation of the policy outlined previously has been too slow and there is a need to clarify the instructions. The fact that this clarification originated from the highest level, namely the President who is the supreme commander of the armed forces, is apparently a signal of the seriousness of the delay.

Therefore it is very possible that the document "Foundations of Naval Policy" does not indicate the start of a new stage in the buildup of Russia's naval power, but rather the accumulation of problems and their level of severity. This also places in doubt the achievements of the "current stage", as well as the feasibility of the goal set down in the document, namely to transform the Russian fleet into the second most powerful in the world.

The restriction of naval operations to one or two theaters is, first and foremost, an indication that the navy has given up its aspirations of being a global force. Moreover, in the main designated theater of operation (i.e. the Black Sea and the Mediterranean) the Russian fleet has played only a support role and according to the document that role remains unchanged.

In addition, although the concentrations of resources will be on operations in the Mediterranean, it is doubtful whether this will lead to the expansion of activity, since such an expansion is not mentioned in the document even in a "declaratory" manner. Moreover, the solution of problems in the buildup of force described indirectly in the document will also require the investment of significant resources, and until progress is made in solving these problems, it is unlikely that there will be any upgrade in the practical quality of operations.

For Israel, this means that the idea of Russian presence in the Eastern Mediterranean is reaffirmed by this document and even reinforced. Therefore, it can be expected that the Russian fleet will continue to sail in our region, whether or not the civil war in Syria continues and whether or not the Assad regime regains control of most of the country's territory.

However, it is possible that in view of the problems hinted at in the buildup of naval power the renovation of the large naval vessels (the "Admiral Kuznetsov" and the "Peter the Great") and the problems that apparently exist in the equipment of the new ships, it is reasonable to assume that the Russian presence will not involve large battle groups but rather other ships most of which will be brought from other theaters (and primarily the Black Sea and North Sea theaters) for limited periods of time.

## Force Buildup of the Egyptian Navy

*Eyal Pinko*

### Background

The Egyptian navy is the largest in the Middle East. It operates in two theaters: the Mediterranean (the Northern Command) and the Red Sea (the Southern Command). Serving in the Egyptian navy are about 18,000 officers and sailors with another 14,000 in the reserves.

At the beginning of 2017, the Egyptian navy was rated as the six strongest navy in the world.<sup>1</sup>

The missions of the Egyptian navy are to protect the country's vital interests at sea, including the protection of shipping lanes, essential maritime infrastructures in the Mediterranean and the Red Sea (oil and gas rigs) and the Suez Canal, as well as warfare in the above-water and underwater domains against its adversaries. It is the responsibility of the Coast Guard to protect the ports against terror and prevent smuggling.<sup>2</sup>

In recent years, Egypt has come to view the Red Sea as a strategic zone that is essential to its national security, with emphasis on Bab el Mandeb Strait, which is the main entrance to the Suez Canal and the oil wells within it.<sup>3</sup> The Egyptian navy, which is implementing the Egypt's strategy, recently created a new and expanded headquarters for the Southern Command at the Safaga base and is reinforcing its forces there, including expansion of the naval commando force and the stationing of submarines, an aircraft carrier and other vessels.<sup>4</sup>

In its theater of operations, the Egyptian navy operates four Chinese Romeo-model submarines, 47 missile-carrying ships (frigates, corvettes and missile boats), eight anti-submarine ships, more than 20 mine sweepers and numerous auxiliary vessels. In addition, the Egyptian navy operates commando forces (at the Red Sea base<sup>5</sup> and they possess a number of capabilities, including the operation of speedboats and diving

- 1 Eleibe Ahmed (1/2017), *Egypt's Naval Operations Expanding Southwards*, retrieved from: <https://www.tesfanews.net/egypt-navy-operations-expanding-south>, accessed 1/2017.
- 2 Eleibe Ahmed (2016), The Suez Canal and the Egyptian Navy, *Canadian Naval Review*, Vol. 11 No.3, 27–29.
- 3 *Egypt Expends Navy with Formation of Southern Navy Fleet Command* (1/2017), retrieved from: <http://www.worldtribune.com/egypt-expands-navy-with-formation-of-southern-fleet-command>, accessed 1/2017.
- 4 Shaul Shay (1/2017), *Egyptian Navy in the Red Sea*, retrieved from: [http://www.herzliyaconference.org/Uploads/dbsAttachedFiles/ShaulShay16\\_1\\_17.pdf](http://www.herzliyaconference.org/Uploads/dbsAttachedFiles/ShaulShay16_1_17.pdf), accessed 1/2017.
- 5 Shaul Shay (1/2017), *Egyptian Navy in the Red Sea*, retrieved from: [http://www.herzliyaconference.org/Uploads/dbsAttachedFiles/ShaulShay16\\_1\\_17.pdf](http://www.herzliyaconference.org/Uploads/dbsAttachedFiles/ShaulShay16_1_17.pdf), accessed 1/2017.



vessels). In addition, it operates batteries of Italian-made Otomat missiles and Russian-made Styx missiles for protection of the coasts.<sup>6</sup>

The Egyptian navy also operates a large number of aircraft, including 20 SH-2G helicopters, Super Sea Sprite, Gazelle naval helicopters and F16 fighter aircraft, which are equipped with US-made Harpoon anti-ship missiles with a range of up to 120 kilometers.<sup>7</sup>

The Egyptian navy cooperates with numerous navies and holds joint annual exercises with a large number of countries, including the US, Britain, Saudi Arabia, Greece, France, Italy and NATO.<sup>8</sup> During these exercises, the Egyptian navy improves its operational capabilities and its fighting doctrine, while developing operational experience, learning and adopting Western military tactics for surface and submarine warfare.

Since 2011 and the removal of Mubarak from power, and with greater intensity since al Sisi came to power in 2013, Egypt has been carrying out a program to modernize the various branches of the Egyptian armed forces, which has involved acquisitions in the tens of billions of dollars. This process includes not only the purchase of new weapons but also significantly improved operational capabilities.<sup>9</sup>

The major buildup of force is occurring in all branches of the armed forces, including the air force, the army, the special forces and the navy, but special emphasis has been placed on the air force and the navy, as the strategic branches that can project power and operate in distant locations.

## The force buildup of the Egyptian navy – highlights

The military force buildup in Egypt, with emphasis on the navy (and also the air force), is based on acquisitions from a number of sources, the main ones being the US, France, Russia, Germany and even China.

6 *Egyptian Navy*, retrieved from: [https://www.ihs.com/pdf/IHS-Janes-Amphibious-and-Special-Forces-Egyptian-Navy\\_175592110913044232.pdf](https://www.ihs.com/pdf/IHS-Janes-Amphibious-and-Special-Forces-Egyptian-Navy_175592110913044232.pdf), accessed 1/2017.

7 *Order of Battle – Egypt*, retrieved from: <http://www.milaviapress.com/orbat/egypt/index.php>, accessed 1/2017.

8 Detailed descriptions of the exercises of the Egyptian navy can be found at the following sites: *Egyptian Navy*, retrieved from: <http://www.marsecreview.com/tag/egyptian-navy>, accessed 1/2017; *Egyptian Navy, NATO Maritime Group Conduct Joint Exercises*, retrieved from: <http://www.sis.gov.eg/Story/104536?lang=en-us>, accessed 1/2017. *Russia Announced 2<sup>nd</sup> Round of Naval Exercises with Egypt*, retrieved from: <http://www.dailynewsegypt.com/2016/06/25/russia-announces-2nd-round-naval-exercises-egypt>, accessed 1/2017. *Medusa 2016 Military Exercise: Egypt, Greece to Begin Joint Drills*, retrieved from: <http://www.ibtimes.com/medusa-2016-military-exercise-egypt-greece-begin-joint-drills-2454961>, accessed 1/2017.

9 Khan Bilal (9/2015), *The Egyptian Military's Build-Up*, retrieved from: <http://quwa.org/2015/09/18/egyptian-military-build-up>, accessed 1/2017.

The US dominance in Egyptian acquisitions is a result of the American financial assistance, in the amount of \$1.3 billion per year (since 1987).<sup>10</sup> According to the report of the US Government Accountability Office, since 2006 US military assistance has amounted to about 80 percent of the cost of Egyptian arms acquisitions. The 2013 report of the research service of the Congress states that US military support is estimated at one-third of Egypt's total defense budget. During 2014, the American support was frozen as a sign of dissatisfaction with the regime change; however, in 2015, the freeze was gradually lifted and the assistance continued.<sup>11</sup>

The freeze on US military assistance affected all areas (acquisition of weapon, training, support and techno-logistical systems) and led the Egyptians to the understanding that relying solely on the US is risky and that the sources of military equipment need to be diversified as much as possible. Therefore, Egypt turned to Russia, France and China for military assistance and acquisition.

The return of Egypt to Russian military assistance and its view of Russia as a strategic partner in place of the US were symbolically manifested in the joint naval maneuver held by the two countries in June 2015 and the delivery of vessels as a gift from Russia.<sup>12</sup>

Apart from the US financial assistance and the restoration of strategic relations with Russia, it is worth mentioning the massive Egyptian acquisition of weaponry and platforms based on Saudi financing and with a French guarantee of deals signed with France in the amount of about 3.3 billion euro.<sup>13</sup> In recent years, France has become the main source of arms for Egypt.

In the French context, it is worth mentioning that the air force has also benefited from the best French weapon systems and platforms and the acquisition of the Rafale aircraft which are equipped with advanced battle systems and missiles (including Scalp cruise missiles for the attack of ground targets).<sup>14</sup>

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10 Jeremy M. Sharp (2/2016), *Egypt: Background and U.S. Relations*, U.S. Congressional Research Service, retrieved from: <https://www.fas.org/sgp/crs/mideast/RL33003.pdf>, accessed 1/2017.

11 Shafir Yiftach, Peripiani Kashish (10/2013), *Egypt is Arming Itself*, *Strategic Update* 19:3, pp. 53–55. [Hebrew]

12 Shaul Shay, *Egypt's Arm Diversity Strategy*, retrieved from: <http://www.israeldefense.co.il/en/content/egypts-arms-diversity-strategy>, accessed 1/2017.

13 Tran Pierre, *In France, Relief Over Rafale Sale to Egypt* (2/2015), retrieved from: <http://www.defensenews.com/story/defense/air-space/strike/2015/02/15/france-relief-rafale-sale-to-egypt/23353207>, accessed 1/2017.

14 Rogoway Taylor (9/2015), *Why Is Egypt Buying Two Orphaned Mistral Class Aircraft Carriers from France?* Retrieved from: <http://foxtrotalpha.jalopnik.com/why-is-egypt-buying-two-orphaned-mistral-class-aircraft-1732595299>, accessed 1/2017.

During this period, the Egyptian navy's buildup of force included massive acquisitions of ships, including one French-made Fremm frigate,<sup>15</sup> four other French-made Go-Wind<sup>16</sup> frigates (one of which was built in France and three of which will be built in Egypt, including the transfer of infrastructure and shipbuilding capability to Egypt and advanced naval Exocet MM40 anti-ship missiles). The acquisitions also included four American-made<sup>17</sup> Ambassador (FMC) missile boats.<sup>18</sup>

In addition to the aforementioned, Egypt received a gift from Russia in the form of a Molniya missile boat.<sup>19</sup> This boat carries ultrasonic Moskit missiles (which went into service in the 1980s, have a range of up to 250 kilometers and a speed of Mach 3 and are outfitted with a self-guided radar head).<sup>20</sup> The ship was handed over, as mentioned, to Egypt as part of growing Egyptian-Russian cooperation and in particular after the aforementioned Egyptian distancing from the US.

In the underwater domain, which is becoming increasingly developed in the Egyptian navy, four advanced German U-209 submarines have been acquired (with possibly another two in the future). The new Egyptian submarines, like the old Romeo submarines, will be equipped with the Harpoon anti-ship missile, as well as advanced German torpedoes and sea mines.<sup>21</sup> This purchase of the submarines was part of the continuing upgrade of the old submarines that began in the late 1990s and the acquisition of American submarine detection sonar, which was installed on the Chinese Heinan submarine hunters.<sup>22,23</sup>

- 15 The Fremm frigate is a ship with a displacement of 6000 tons., with anti-ship capabilities (using Exocet MM40 missiles with a 200 kilometer range), air defense capabilities (by means of Aster-15 missiles with a 30-kilometer range) and anti-submarine capabilities.
- 16 This Go-Wind 2500 frigate has a displacement of 2600 tons and includes anti-ship capabilities and air defense capabilities (by means of MICA missiles).
- 17 Four FMC vessels were acquired as part of an American assistance contract (FMS), in the amount of \$807 million. The ship, which is 62 meters long, is equipped with Harpoon missiles, advanced surface-to-air radar and RAM and CIWS air defense systems.
- 18 *Egyptian Navy – Modernization*, retrieved from: <http://www.globalsecurity.org/military/world/egypt/navy-modernization.htm>, accessed 1/2017.
- 19 *Russia Hands Egypt Key to Brand New Corvette Warship* (6/2016), retrieved from: <https://sputniknews.com/world/201606251041953909-russia-egypt-corvette>, accessed 1/2017.
- 20 *P-270 Moskit*, retrieved from: [https://en.wikipedia.org/wiki/P-270\\_Moskit](https://en.wikipedia.org/wiki/P-270_Moskit), accessed 1/2017
- 21 *Germany delivers first of four attack submarines to Egypt* (12/2015), retrieved from: <http://www.middleeasteye.net/news/germany-delivers-first-four-million-dollar-attack-submarines-egypt-1822200022>, accessed 1/2017.
- 22 Four of eight Chinese Romeo submarines were upgraded by the Lockheed-Martin company in 1996, as part of a \$133 million contract. As part of the contract, the submarines were upgraded with the ability to fire Harpoon missiles, improved sonar and the ability to fire NT37 torpedoes. Retrieved from: Shay Shaul (12/2015), *Egypt's New Modern Submarine Fleet*, retrieved from: <http://www.israeldefense.co.il/en/content/egypts-new-modern-submarine-fleet>, accessed 1/2017.
- 23 Toppen Andrew, *World Navies Today: Egypt*, retrieved from: <http://www.hazegray.org/worldnav/africa/egypt.htm>, accessed 1/2017.

The acquisitions of the Egyptian navy are centered on two French-made Mistral<sup>24</sup> helicopter and troop carriers at a cost of 950 million euro. The ships carry Russian Ka-52 attack helicopters<sup>25</sup> (around 50 were purchased) and ground forces—mechanized and infantry. These ships provide the Egyptians with the capability to amphibiously land troops and tanks and to carry out air attacks deep in enemy territory.



Figure 1: A Fremm frigate<sup>26</sup>

The need for helicopter and troop carriers is apparently for the fighting in Yemen (about 600 Egyptian troops are participating in the war there) and the operational need to project power in Yemen and in the Red Sea. This is part of an overall strategy to create a naval force that controls the Red Sea and the Bab el Mandeb Strait with the goal of protecting vital shipping and Egyptian strategic assets in the Red Sea.<sup>27</sup>

24 The Mistral ships were originally destined for Russia, but prior to delivery France decided that it is not prepared to hand them over to Russia and they were again put up for sale. These ships can carry up to 16 helicopters, 24 tanks or armored vehicles and hundreds of troops.

25 Shay Shaul, *The Egyptian Navy is Stronger than Ever Before* (9/2016), retrieved from: <http://www.israeldefense.co.il/en/content/egyptian-navy-stronger-ever>, accessed 1/2017.

26 Retrieved from: <http://navaltoday.com/2015/04/16/italian-navy-to-receive-two-more-fremm-frigates-after-2020>

27 *Egypt sends up to 800 ground troops to Yemen's war – Egyptian security sources* (9/2015), retrieved from: <http://uk.reuters.com/article/uk-yemen-security-idUKKCN0R91I720150909>, accessed 1/2017.

28 Retrieved from: <http://www.veteranstoday.com/2014/12/05/russia-warns-france-over-mistral-class-warship-delivery-presstv>



Figure 2: Left – A cross-section view of the vessel including the configuration for carrying landing craft, armored vehicles and helicopters. Right – Ka-52 attack helicopter takes off from the deck of a Mistral<sup>28</sup> ship.

The buildup of the Egyptian navy will within the next few years bring it up to 8 submarines (German and Chinese) and 56 missile-carrying ships (in addition to other vessels).

### Principles of the Egyptian naval force buildup

The force buildup of the Egyptian navy, including the development of infrastructures for maintenance and production, while relying on diverse sources for the acquisition of arms, is based on a number of principles:

1. The increased importance of the Red Sea as a route for commerce and the transport of petroleum, with emphasis on the race between countries (the US, China, France, Saudi Arabia, Oman and Japan) to control its shipping routes (and in particular the Horn of Africa and Bab el Mandeb Strait). Egypt aspires to achieve regional hegemony in this theater based on an economic and strategic vision.<sup>29</sup>
2. The military challenges and threats facing Egypt have grown in recent years. These include the fighting in Sudan and Yemen and the potential threats from the direction of Libya and the growth of ISIS in Sinai. Together with these threats, which are asymmetric from Egypt's point of view, it has also come to regard Iran and Israel as threats, even if not in the immediate term.<sup>30</sup>
3. Egypt wishes to strengthen and consolidate its independence from foreign sources so as not to develop dependency on one source of arms. This desire is in particular the result of a feeling of isolation and disappointment with the US, which "abandoned" Egypt during the Arab Spring.<sup>31</sup>

29 Eleibe Ahmed (1/2017), *Egypt's Naval Operations Expanding Southwards*, retrieved from: <https://www.tesfanews.net/egypt-navy-operations-expanding-south>, accessed 1/2017.

30 Rogoway Taylor (9/2015), *Why Is Egypt Buying Two Orphaned Mistral Class Aircraft Carriers From France?*, retrieved from: <http://foxtrotalpha.jalopnik.com/why-is-egypt-buying-two-orphaned-mistral-class-aircraft-1732595299>, accessed 1/2017.

31 *Egyptian Navy – Modernization*, retrieved from: <http://www.globalsecurity.org/military/world/egypt/navy-modernization.htm>, accessed 1/2017.

4. The development of independent capabilities and infrastructure for the construction and maintenance of ships.
5. Egypt's desire to strengthen its image as a regional superpower and in particular as a naval superpower.<sup>32</sup>
6. Strengthening of the army's image and prestige both internally and externally.



Figure 3: The ceremony for the delivery of the Egyptian U-209 submarine in Germany<sup>33</sup>

### Analysis of the buildup of power and future trends

The force buildup of power in the Egyptian navy is intended to help transform Egypt into a regional superpower, with emphasis on the maritime domain, which for Egypt is the lifeline to commerce, energy infrastructure (oil and gas), food (fish) and major transportation routes for international trade, which is a primary component in the Egyptian economy. It should be mentioned that Egyptian economists expect that the Suez Canal and the adjoining industrial and commercial parks will account for up to one-third of the Egyptian economy.<sup>34</sup>

The Egyptian force buildup of power is directed toward the development of capabilities to meet the main symmetric threats it will need to deal with in the future, i.e. Israel and

32 Copley Gregory R. (10/2015), *Egypt's Return to Strategic and Economic Centrality*, retrieved from: <http://oilprice.com/Geopolitics/Middle-East/Egyptys-Return-To-Strategic-And-Economic-Centrality.html>, accessed 1/2017.

33 Retrieved from: <http://aagth1.blogspot.co.il/2016/12/type-2091400.html>

34 Egypt sees Suez Canal zone making up 30–35 pct of economy—minister, from REUTERS (<https://www.reuters.com/article/egypt-canal-minister/egypt-sees-suez-canal-zone-making-up-30-35-pct-of-economy-minister-idUSL5N0W74WT20150305>)

Iran. At the same time, the Egyptian force buildup also involves the development and reinforcement of capabilities for the regional power projection capabilities in all of its theaters of operation (the Mediterranean and the Red Sea) and the fighting against terrorist organizations that use asymmetric methods of warfare and which constitute an immediate threat to the Egyptian navy originating from Libya, Sudan and Sinai.

In other words, the force buildup is directed at providing a solution against symmetric threats and warfare against other navies, but at the same time it is directed at developing diverse capabilities that will provide rapid and flexible solutions against asymmetric threats, often at locations distant from Egyptian shores.

Another growing trend in Egypt is the increasing strength of the navy's Southern Command (the Red Sea) which is necessary in order to protect a 1500-kilometer coast and Egypt's aforementioned economic and strategic interests, primarily in the Horn of Africa and the Bab el Mandeb Strait.<sup>35</sup>

Following are the most prominent elements in the Egyptian buildup of power:

1. The reinforcement and development of above-water fighting capabilities, by means of acquiring additional vessels from various countries (as mentioned, the US, France, Russia and Germany). The new ships have highly advanced capabilities, including advanced detection systems, air protection capability against attacking aircraft and advanced missiles, as well as diverse attack capabilities (anti-ship missiles of various types, such as Exocet MM40, Moskit and Harpoon).
2. A major upgrade of outdated air defense systems for its ships (such as the use of French Aster-15 air defense missiles).
3. The development of underwater battle capabilities. Egypt views the sea as a strategic domain on the one hand (gathering of intelligence, implementation of commando operations, attacking of ships, with emphasis on supply convoys, and perhaps also maritime blockades). On the other hand, Egypt apparently views the underwater domain as a significant risk factor to its forces. Evidence of this is the number of ships with anti-submarine weaponry and mine detection capability.
4. Maintaining integrated battle capabilities for the attack of ships from the air, by means of F16 aircraft that carry the Harpoon anti-ship missile.
5. The development of capabilities for projection of power from the sea, maneuvering and firepower from helicopter and troop carriers, which enable the Egyptians to attack deep in enemy territory and to maneuver at sea in order to land ground forces on a significant scale.

35 Eleibe Ahmed (1/2017), *Looking south: The expansion of Egypt's naval operations*, retrieved from: <http://english.ahram.org.eg/NewsContent/1/64/255116/Egypt/Politics-/Looking-south-The-expansion-of-Egypt%E2%80%99s-naval-opera.aspx>, accessed 1/2017.

6. The development of advanced naval commando capabilities by means of a large number of speedboats and underwater vessels for the transport of invading troops.

The advantages of this buildup of force lie in the broad development, as mentioned, of battle and attack capabilities both on the surface and under the water, together with the development of survival capabilities of the naval forces (by means of air defense systems).

The buildup of power involves a diversity of vessels and weapons and is the practical implementation of Egyptian policy, according to which Egypt should not rely on only one source of arms and must develop its own production capabilities.

This policy creates major differences between the various systems and platforms and forces the Egyptian navy to create separate and different maintenance facilities (with a high degree of complexity and a high cost) and to create operational doctrines and technological capacities that will enable integration between the systems and between the vessels. This constitutes a major disadvantage of the Egyptian acquisition strategy.

The coming years will be critical for the Egyptian navy. The fighting in Sudan and Yemen in which Egypt is involved requires the investment of attention, effort and resources. Nonetheless, the fighting enables the navy to accumulate valuable operational experience in projection-of-power scenarios in distant locations, while coordinating and integrating between the various branches.

In contrast and at the same time, the Egyptian navy will have to deal with the assimilation of new platforms and with them the development, integration and modification of new battle doctrines, which will be based on the acquired operational experience and the assimilation of the new capabilities. In parallel, it will have to maintain its old capabilities and vessels.

Another major issue that the Egyptian will have to deal with is the development and assimilation of infrastructures and maintenance facilities for the new platforms and systems, together with support for the old systems and platforms, such as the OHP, Knox and other types of ships. The development and preservation of maintenance and technological support capabilities for a highly diverse collection of vessels and systems will constitute a major challenge in terms of budget, logistics and infrastructure, as well as the training of manpower.

The last item on this list is the outdated coastal defense system, which is based on Russian Styx missiles and Italian Otomat missiles. These systems are several decades old and it appears that preference has not been given to upgrading them. It is possible that in coming years Egypt will take steps to upgrade these systems as well. In this



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context, it is worth mentioning reports in the Egyptian press during 2014 which concerned the possible acquisition of Russian Yakhont coast-to-sea missiles.<sup>36</sup>

## Summary and Conclusions

The force buildup is allowing the Egyptian navy to upgrade its vessels at a rate unprecedented in recent decades.

This process is making it possible for Egypt to rapidly consolidate its position as a regional maritime superpower, with major offensive capabilities to face both its symmetric and asymmetric adversaries and also in distant theaters, based on the ability to project power on land and sea and under an air defense umbrella.

This process is based on the Egyptian navy as the strategic long arm of Egypt, with emphasis on the ability to operate in the Red Sea and eastward.

The diversification of sources for military acquisitions makes it possible on the one hand for Egypt not have to rely on only one source of arms and on the other hand enables it to obtain advanced weapons and platforms and to create strategic collaborations with a variety of countries.

The diverse acquisitions and the international collaborations (acquisitions, training and exercises) enables Egypt to improve its capabilities and its military tactics, although it creates complexity in the maintenance of vessels and systems and requires it to create techno-logistical infrastructures and advanced training programs, particularly if Egypt wants to maintain its older vessels.

The fighting in Yemen and Sudan, in which Egypt is involved, and cumulative operational experience are enabling Egypt to improve its operational capabilities, its military tactics and also its ability to coordinate with the other military branches, with emphasis on the air force and the marines. The vessels that have been acquired, with emphasis on the Mistral ships, will in my opinion affect not only the navy's military tactics but also those of the Egyptian military forces as a whole.

The integration between the new platforms, the new weapons systems, Western training, joint maneuvers with international forces and the operational experience accumulated in recent years will lead to major strategic and operational changes in the navy's military tactics.

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36 *Russia's defense talks with Egypt part of regional arms drive* (2/2014), Retrieved from: <http://www.upi.com/Russias-defense-talks-with-Egypt-part-of-regional-arms-drive/12071392746896>, accessed 1/2017.

## Egypt and "the new Mediterranean:" Economy, security, and culture

*By Ofir Winter*

The history of Egypt has for thousands of years been intertwined with reciprocal relations that existed between the land of the Nile and the armies, trading goods, religions, ideas, and values that came from it, and to it, via the Mediterranean Sea.

Modern Egypt has been greatly influenced by the arrival of Napoleon's navy at Alexandria's shores at the end of the 18<sup>th</sup> century, from the digging of the Suez Canal that connected the Mediterranean and Red Seas, toward the Indian Ocean, in the mid-19<sup>th</sup> century, and liberal ideas that stemmed from mutual contacts with the overseas West in the first half of the 20<sup>th</sup> century. In the Nasserist era, the influence of the Mediterranean Sea declined, but a renewed and substantial Egyptian look northwestwards could be discerned from the start of the 1990s, and increasingly so since the January 25, 2011 revolution.

The Mediterranean, which will be the focus of this essay, has in recent years turned into one of the most important circles of national security guiding Egyptian policy. Additional circles that face decision makers in Egypt consist of the Arab circle, the center of which are the mutual intimate ties with Saudi Arabia and the UAE, and the common struggle against regional threats from Iran, Islamist forces, and Salafi-jihadist forces; the African circle, centered on Libya and the states of the Nile basin, through which the river that forms the "artery of life" flows; the Red Sea circle, which extends from the Bab El-Mandeb Straits to the Suez Canal; and the international circle, in which Egypt manages a complex fabric, consisting of a variety of support pillars, in its ties with the powers, chief among them the US, Russia, China, and the countries of the European Union (EU).

The return of the Mediterranean Sea to the center of the political and public agenda in Egypt is tied to economic, security, and cultural aspects: The discovery of gas reserves off Egyptian coasts, and the New Suez Canal project, have amplified the importance of the Mediterranean Sea regarding the financial present and future of Egypt; whereas concerns from terrorist threats to the maritime economic assets that are tied to the Mediterranean Sea created a change in the Egyptian defense concepts, and led to a force build up program on the part of the Egyptian navy. These economic-security aspects increased the importance of regional cooperation with countries that have shared interests, chief among them Greece, Cyprus, and Israel. In addition, they stimulated a profound internal debate about Egypt's national and cultural identity, and the desired level of its affiliation to the Mediterranean and to the countries that border it.

## Historical background: Egypt as a "Mediterranean country"

The standing of the Mediterranean Sea in modern Egypt is both a political and a cultural issue. A series of Egyptian thinkers in the first half of the 20<sup>th</sup> century emphasized Egypt's historical and geographical affiliation to the Mediterranean Sea, as part of calls to apply Western models of society, religion, and government. Thus, for example, the well-known Egyptian author and historian, Taha Hussein (1889–1973), found a basis for authenticity, within a legacy that links Egypt to the Mediterranean basin, for his vision of founding a modern Egyptian nation-state, as a cosmopolitan, liberal and advanced country, which is oriented towards Europe.<sup>1</sup>

In his writings from the 1930s and 40s, he argued that "the Egyptian spirit" is composed, from a historical perspective, of three intertwined elements, whose levels vary: The pure Egyptian element, the Arab element, and the foreign element whose roots are in the maritime reciprocal relations of ancient times with Greece and Rome that relate to art, policy, and economy. Modern Egypt – so he argued – can view itself as an integral part of Europe and its culture, without self-deprecating itself, or disconnecting from its past.<sup>2</sup>

The conceptualization of Egypt as a Mediterranean state, which served as a bridge in Hussein's contemplation between East and West, dropped off the agenda of the Egyptian establishment during the Nasserist era of the 1950s and 1960s, in favor of cultivating alternative national identity circles – Arab, Islamic, and African. The Mediterranean returned to the Egyptian discourse only in the 1990s, among others, as a counterweight to the "new Middle East" vision of Israel's Shimon Peres, which was perceived in Cairo as an attempt to enforce Israeli hegemony in the region, and to challenge Egypt's standing.<sup>3</sup> As an alternative to "the Middle East," Egypt preferred to take part in the promotion of Mediterranean frameworks, chief among them "The Barcelona Process," which was launched in 1995 with the participation of European Union states, alongside 12 Mediterranean region states (Israel, Egypt, Algeria, Tunisia, Turkey, Jordan, Lebanon, Malta, Morocco, Syria, Cyprus, the Palestinian Authority, and Libya as an observer).<sup>4</sup>

Egyptian thinkers who have been preaching for the past two decades for a revival of the Egypt's Mediterranean orientation, tended to consider the deep impression left by Nasserite Arab nationalism on the country's identity. The Coptic intellectual Milad Hanna (1924–2012) recognized the superiority of Egypt's Arab identity over its Mediterranean identity. Still, he defined them as complimentary, even overlapping identities, which

1 Immanuel Koplewitz, *Taha Hussein and the Revival of Egypt: Selections from his Writings* (Jerusalem: Bialik Institute, 2001), pp. 80–81.

2 *Ibid.*, pp. 228–229, 232–238.

3 Muhammad Afifi, "The Historical Roots of the Mediterranean Idea in Egypt, *al-Hayah* (November 19, 1988): <https://goo.gl/X6cV4a>

4 Ohad Leslau, "Israel and the EU," The Israel Democracy Institute (January 14, 2004): <https://www.idi.org.il/parliaments/9899/10718>

can be aligned without great difficulties. In his book, "The Seven Pillars of the Egyptian Identity," which was published in 1999, he argued that residents of Egyptian coastal cities (similar to the residents of coastal cities in other Arab countries like Syria, Lebanon, and Morocco) excel at a mentality, dress, and customs that are indistinguishable from those of coastal cities in Cyprus, Greece, Turkey, and Italy. In a rough division, he assessed that "Egypt is half European, a third Asian, and a sixth African. Europe starts in Alexandria, Asia starts in Cairo, and Africa starts at Aswan".<sup>5</sup>

Other writers emphasized the range of identities that Egypt contains, sharing the utilitarian assessment, according to which, fencing Egypt into an exclusive identity will make it difficult for it to utilize its national interests throughout the overlapping circles in which it strives to operate – the Arab, the Islamic, and the regional-geographic.<sup>6</sup>

### **Egypt and the Mediterranean after the "Arab Spring"**

The strengthening of Egypt's Mediterranean orientation following the "Arab spring" stemmed from a consolidation of functional and cultural elements: In the functional dimension, a consolidation of Egyptian interests in the eastern Mediterranean Sea, particularly in the energy sector, which has amplified the geo-strategic importance of the Mediterranean circle. The finding of gas reserves, and the widening of the Suez Canal, provided a concrete dimension to the historical-cultural discussion of Egypt's Mediterranean identity, which touches on economic and security interests; in the cultural dimension, the revolutions that Egypt underwent on January 25 2011 and June 30 2013 placed national identity questions on the agenda, with competing forces seeking to exploit the liminal period<sup>7</sup> that they found the state to be in, and to shape its image in line with their world view.

In the face of the ongoing decline of pan-Arabism, and the failure of the Muslim Brothers in their attempt to realize their Islamist vision, a liberal discourse has appeared that calls for reviving the Mediterranean ideas from Taha Hussein's school. In the face of an unsettled regional environment, which has pointed the threats of terrorism and anarchy at Egypt, the Mediterranean stood out as a positive horizon of security, prosperity and hope.

The functional and current importance of the Mediterranean Sea area for Egyptian national security is derived from the two significant economic assets that are tied to it –

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5 Milad Hanna, *The Seven Pillars of Egyptian Identity* (October 6: Nahdat Masr, 1999), pp. 61, 130–132.

6 For example: Ahmad Hasanein al-Hasaniyya, "Egypt doesn't have an Exclusive Identity," *al-Hewar al-Mutamaddin* (June 15, 2007): <http://www.ahewar.org/debat/show.art.asp?aid=99709>

7 Liminality is an anthropological concept that describes situations and periods that are unclear, in which the self-identity of the individual or the group is unclear and lacks an orientation. Liminality can form a transition stage, in which the regular confines of thought and behavior are more flexible to changes.

the gas fields, and the Suez Canal. Added to these are the ports and tourist sites that are dispersed along the Egypt's north coast. The Zohr gas field, which Egypt reported on in August 2015, is the largest discovered thus far in the Mediterranean, containing 850 billion cubic meters (BCM) of gas. The field should allow Egypt to gradually decrease its dependency on gas imports from external sources, and in the future, to also export gas.

The new and expanded Suez Canal, which was unveiled in August 2015 after a grand national project, was designed to maximize the royalties that comes from ship passages, through increasing the number of ships that sail through the Canal, and shortening their waiting period. In addition, alongside the renovated Canal route, a series of projects are being planned in the sectors of logistics, technology, and industry.

The development of maritime arenas has been accompanied in recent years by a strengthening of the Egyptian Navy, through the acquisition of submarines, helicopter carriers, and warships, which are designed to protect sea and trade routes in the Red Sea and Mediterranean Sea against symmetric threats (from potential rivals like Iran and Israel), and asymmetric threats (from terror groups).<sup>8</sup>

According to the Egyptian government-affiliated press, the major purpose for the military acquisitions program is to allow Egypt to defend the Suez Canal and the gas rigs in the Mediterranean. The massive investment in weapons, at a time when Egypt is suffering from a serious economic crisis, is based on the need to deter potential enemies and to develop a "long arm" that will defend these sea assets, which are responsible for the country's economic strength in the coming years. The declared goals of the naval force build-up are not offensive, and it is accompanied by means to reach diplomatic understandings with Greece, Cyprus, and Israel, in order to prevent future conflict over maritime borders.<sup>9</sup>

The Mediterranean interests that are now forming have led to a significant tightening of the triangle of relations between Egypt, Greece, and Cyprus, which was encouraged by the tensions between these three countries and Turkey. The leaders of the three countries met between 2004 and 2017 on five occasions for joint summit meetings, dedicated to coordination, in a series of economic issues, including: Forming economic borders, setting up a joint gas pipeline, connecting electrical grids, trade, tourism, maritime agriculture, technology and science, communications, and housing. This growing triangle of ties assists in the promotion of Egypt's interests vis-à-vis the European Union, and makes it easier for Greece and Cyprus to promote their own interests in Africa.

8 See: Eyal Finko, "The build Up of the Egyptian Navy," Haifa Research Center for Maritime Policy and Strategy: (Hebrew) [https://poli.hevra.haifa.ac.il/~hms/images/Articals/Egyptian\\_Navy.pdf](https://poli.hevra.haifa.ac.il/~hms/images/Articals/Egyptian_Navy.pdf)

9 Samir Farag, "Egyptian National Security Circles," *al-Ahram* (January 7, 2016): <http://www.ahram.org.eg/NewsQ/522767.aspx>

In addition, the bilateral and trilateral ties between the three countries include coordinating responses to the crises in Libya and Syria,<sup>10</sup> the war on terrorism and illegal immigration, and joint military training involving navies and air forces.

The discovery of gas, and the renovated Suez Canal, have therefore placed the Mediterranean Sea at the center of the Egyptian administration's diplomatic, security, and economic agenda for the first time in years. An expression of the growing importance given by the Egyptian establishment to the Mediterranean arena can be found in an article by Liwa' (Major General) Samir Farag, formerly head of the Department for Moral Affairs in the Egyptian Armed Forces, who stated that "in the current era the Mediterranean Sea has turned into the most important circle influencing Egyptian national security". In light of the meteoric rise in its position, Farag advised Egypt in his article for the government affiliated Al-Ahram daily newspaper to strengthen its diplomatic, economic, and cultural ties with Mediterranean states, and to sign agreements with them that will serve supreme Egyptian interests.<sup>11</sup> Ahead of the Egyptian-Greek-Cypriot trilateral summit held in November 2017, Al-Ahram used an official editorial to describe the Mediterranean as "the most important bridge" between Egypt and European countries, and expressed hope that leaders will promote the concept of "Mediterranean Sea security".<sup>12</sup>

The shared interests of Egypt with Mediterranean countries, and the discernible move towards Greece and Cyprus, promoted an official discourse in the Egyptian press regarding the country's Mediterranean orientation, in which security and economic considerations were mixed with cultural and historical perspectives. Former Egypt's Culture Minister, Hilmi Al-Namnam, presented cooperation between the shores of the Mediterranean in the fight against terrorism as a security need, which reflects a deeper common denominator between forward-looking forces against forces that seek to drag civilization back by hundreds of years.<sup>13</sup> The Executive Chairman of the Al-Masri al-Youm daily newspaper, Abdel Monem Said, viewed the Egyptian interest in the Mediterranean as a signal of a desired transition of Egypt from a "river country" to a "sea country". According to Said, this is not only a benefit aimed at creating private and collective profit for Egypt and its citizens, but rather, a complex advantage that touches on the way of life, on the employment sector, and most of all, on replacing a conservative mentality into an

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10 For example: Ayman Samir, "Egypt, Cyprus and Greece: The 5<sup>th</sup> Summit Writes the Future of the Triangle Cooperation," *al-Ahram al-Masa'i* (November 18, 2017): <http://massai.ahram.org.eg/NewsQ/81012/246650.aspx>

11 Samir Farag, "Egyptian National Security Circles: The Mediterranean," *al-Ahram* (February 11, 2016): <http://www.ahram.org.eg/NewsQ/476079.aspx>

12 Al-Ahram, "Egypt and the Mediterranean," *al-Ahram* (November 19, 2017): <http://www.ahram.org.eg/NewsQ/623580.aspx>

13 Hilmi al-Namnam, "On both Shores of the Mediterranean," *al-Masry al-Youm* (May 9, 2017): <http://www.almazryalyoum.com/news/details/1131127>

innovative way of thinking.<sup>14</sup> The literary critic Yusri Abdallah, in his article for Al-Ahram, called for the renewed adoption of the link offered by Taha Hussein between Egypt's Mediterranean identity, and a revival based on the values of modernism and progress: "In a climate of darkness and religious extremism, we must go back to the path of Taha Hussein, through a renewal of the Egyptian and Arab modernization project on the one hand, and defending the rationality that is at the heart of enlightenment on the other. Taha Hussein was and remains an authentic speaker of the progressive Egyptian spirit, which is still awaiting practical actions, dreams, and adventures".<sup>15</sup>

The establishment's perspective sought to rely on the vision of Taha Hussein, in order to reinforce functional policies being pursued by the el-Sisi administration for the changing national Egyptian interest in the Mediterranean. Egyptian liberal thinkers, in contrast, saw in the vision of their spiritual father a source of inspiration and legitimization for the call to apply a democratic-Arab model in post-revolutionary Egypt, and to promote a political and cultural alternative that will challenge the existing authoritarian order.

An example of this can be found in the articles of Abd al-Gawad Sayed, who suggested the introduction of a political party under the name "Mediterranean Egypt", and formulated a potential platform for it. According to his vision, the party would etch on its flag the following principles: Founding a civilian and democratic state, in which the military will focus on defending society and the law; encouraging a plurality of parties; tying the future of Egypt to three circles – the Middle Eastern, the Mediterranean, and the African – and not to the Arab world alone; a fight against religious fundamentalism; freedom of religion and separating religion and state; a free market economy with social safety networks; and founding a Middle Eastern League and a Mediterranean League in place of the current Arab League.<sup>16</sup>

## Israel – Egypt relations and "the new Mediterranean"

The Egyptian discourse on the country's Mediterranean identity has had a positive effect on Egypt – Israel relations on three levels: First, it placed on the Egypt's public agenda the economic potential concealed in bilateral cooperation between Egypt and Israel in the eastern Mediterranean Sea, particularly in the gas fields (although this has also raised concerns of a struggle between the countries over energy resources); secondly, it assisted in the internalization of the mutual Egyptian Israeli interest that lie in turning flourishing trilateral cooperation that exists between both countries, each one separately, with Greece and Cyprus, into a four-way cooperation (although political limitations have

14 Abdel Monem Said, "from the River to the Sea Once More?!", *al-Masry al-Youm* (August 7, 2017): <http://www.almasryalyoum.com/news/details/1173524>

15 Yusri Abdallah, "Taha Hussein and the Renewed Egyptian Spirit," *al-Ahram* (November 6, 2017): <http://www.ahram.org.eg/NewsQ/621410.aspx>

16 Abd al-Gawad Sayed, "Towards the Establishment of Mediterranean Egypt Political Party," *al-Hewar al-Mutamaddin* (October 30, 2016): <http://www.ahewar.org/debat/show.art.asp?aid=536296>

thus far prevented this interest from being realized); thirdly, it upgraded the position of the Mediterranean circle that includes Israel at the expense of traditional circles, Arab and Islamic, which exclude Israel. In general, this discourse has created an opening for Israel's future integration in Mediterranean cooperation frameworks alongside Egypt, which is subordinate to common economic-security interests, and ripening of essential political conditions.

Indeed, Egypt and Israel have for a number of years been holding contacts ahead of potential gas deals. The Tamar and Leviathan gas partnerships signed a long-term contract and memorandum of understanding with the Egyptian Dolphinius company in March and November 2015 (respectively) worth billions of dollars for the export of natural gas to Egypt, and through it, to European destinations, with the assistance of the LNG plants in Egypt. Although there are still unsolved technical obstacles on the way to realizing the transactions, the leaders of the Egyptian government stood behind the agreements in the name of the economic interests that they serve, and despite objections that exist among sections of the Egyptian public to normalization.<sup>17</sup>

The discussion on founding a four-way Mediterranean cooperation framework, which will include Israel, stressed with great vigor the tension that exists in Egypt between the functional consideration and the political-cultural barriers. At a time when Egypt and Israel each hold prosperous trilateral relations with Greece and Cyprus, creating a four-way regional front – despite its security and economic logic – is still controversial. The reservations held by the Egyptian administration about this process mainly stem from the concern over public criticism, against the background of setting precedents in cooperation with Israel, in the absence of simultaneous progress in the Israeli – Palestinian conflict. For this reason, the Egyptian Foreign Minister Sameh Shoukri refused to confirm reports, according to which he met with the Israeli Energy Minister Yuval Steinitz in March 2016, to promote a four-way regional energy alliance.<sup>18</sup> In addition, Egyptian officials denied reports that appeared in October 2017 regarding a joint military exercise involving the four countries.<sup>19</sup>

The discourse in the establishment Egyptian media demonstrates a growing internalization of the interest in setting up Mediterranean frameworks with Israel, alongside a lack of readiness for the transition to move this idea to the operative field. The dominant stance

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17 See: Ofir Winter and Eyal Razy-Yanuv, "Pipelines to Normalization in the BDS Era: The Natural Gas Deals with Egypt and Jordan as a Case Study", in Einav Yogev and Gallia Lindenstrauss (eds.), *The Delegitimization Phenomenon: Challenges and Responses* (Tel Aviv: INSS, 2017), pp. 77–90.

18 Itamar Eichner, "Senior Israeli Minister Meets with Egyptian Foreign Minister," *Ynet* (April 1, 2016): <https://www.ynetnews.com/articles/0,7340,L-4786033,00.html>; Misbah Qutb, "The Foreign Minister denies an Alliance with Israel and Turkey Concerning the Gas of the Mediterranean," *al-Masry al-Youm* (April 5, 2016): <http://www.almasryalyoum.com/news/details/923456>

19 Ahmed Fouad, "Analysts Weigh Prospects of Egypt-Israel Military Exercises", *al-Monitor* (October 24, 2017): <https://www.al-monitor.com/pulse/originals/2017/10/news-on-israeli-egyptian-drill-raises-criticism-at-president.html>



holds that Egypt would be inclined to cooperate with Israel in regional-level frameworks (even if not in a "regional alliance"), in line with progress in the Israeli – Palestinian peace process.<sup>20</sup> Other voices have insinuated their support for the setting up of Mediterranean cooperation systems, in which Egypt and Israel would take part, even without explicit conditions. For example, Ahmed Qindil, head of the Program for Energy Studies at the Al-Ahram Center, underlined the need for "real cooperation" through the setting up of an upper regional framework that will allow for the extraction of profits that exist in the gas discoveries.<sup>21</sup> Muhammad Kamal, an expert in international relations and a columnist in al-Masry Al-Youm, was even more daring, when he hinted that Egypt will miss the "Mediterranean train" unless it formulates a new and revolutionary regional outlook: "For many years, Egyptian diplomacy was imprisoned in traditional foreign policy circles, some of which were unproductive and became a burden. Hence, the hour has come to see the eastern Mediterranean as a new circle for Egyptian policy, which should be given priority in vision and in action, in light of the economic and strategic opportunities that are latent in it. In short – the future lies in the eastern Mediterranean Sea".<sup>22</sup>

Liberal Egyptian thinkers have exhibited even more explicit openness for the need to get closer to Israel, as part of a wider orientation towards the West. Abd Al-Gawad Sayed called for the Arab League to be changed into the "Middle Eastern League" and to bring Israel into it, when the time is right, as part of a trend to increase the framework of regional cooperation. He also suggested setting up a "Mediterranean League" that will utilize the reciprocal relations between the Mediterranean countries through a "cultural, advanced and organic framework [rooted] in the history of the region".<sup>23</sup> In an extensive essay dedicated to the issue, Sayed defined three Mediterranean sectors that require cooperation between regional states: The security-political sector, including a resolution of territorial conflicts and the fight against extremist Islam; the economic-social sector, which requires regional integration, free trade, investment, and technology; and the cultural sector, which deals with cultivating trends and values of accepting the other, peaceful coexistence, and a mutual understanding of cultures belonging to the peoples in the region.<sup>24</sup>

20 See: Ofir Winter, "An Egyptian Take on the 'New Middle East'," *INSS Insight* 826 (June 7, 2016): <http://www.inss.org.il/publication/an-egyptian-take-on-the-new-middle-east>

21 Ahmad Qindil, "Gas Findings in the East Mediterranean Sea: Will They Push into Cooperation or Incite Conflict?," *al-Ahram* (March 11, 2013): <http://www.ahram.org.eg/NewsQ/135998.aspx>

22 Muhammad Kamal, "The Future of the East Mediterranean," *al-Masry al-Youm* (November 27, 2016): <http://www.almasryalyoum.com/news/details/1047903>

23 Sayyid, "Towards the Establishment of Mediterranean Egypt Political Party".

24 Abd al-Jawwad Sayyid, "Egypt and the Mediterranean", al-Hewar al-Mutamaddin (June 19, 2016): <http://www.ahewar.org/debat/show.art.asp?aid=521262>

## Summary

Since the revolution of January 25 2011, an increasingly dominant discourse has been occurring in Egypt about the role of the Mediterranean Sea in the renewing identity of the Land of the Nile, and about the link between the varying economic and security interests of Egypt in the Mediterranean and the changes in its political and cultural orientation. An analysis of this discourse raises two principal perspectives: The Egyptian administration sees the Mediterranean as one of the most important national security circles for Egypt in light of its economic importance, and dedicates many resources to its development and protection, as well as promoting joint regional cooperation frameworks with Greece and Cyprus based on issues tied to it; by comparison, Egyptian liberals strive to go a step beyond this, seeking to channel the current circumstances offered by the Mediterranean Sea – and the liminal transitional phase that Egypt is experiencing, against the background of internal and external unrest – to lead to a deeper turning point in Egypt's identity, from Arabism and Islam towards Europe and the West.

The above discourse also touches on futures ties between Egypt and Israel. The latter is referred to as a rival, but chiefly as a partner, in actual terms, to pragmatic Egyptian interests in the Mediterranean – and sometimes, as a potential *de facto* ally – as part of the discussion on establishing joint regional cooperation frameworks in the coming years.

The relative openness that exists today in Egypt for pragmatic cooperation with Israel around common interests in the Mediterranean Sea forms a historic opportunity for a relative expansion of relations between the countries. Yet pursuing this necessitates an overcoming of the sensitivities that still exist in Egypt regarding the question of normalization.

A series of Israeli steps could make it easier for the Egyptian administration to endow more legitimacy for establishing common cooperation frameworks with Israel, including: Progress in the Israeli – Palestinian peace process; integrating the Palestinians in Mediterranean Sea frameworks that are forming; Israel's refraining from leading the regional processes, while third parties such as Greece and Cyprus becoming intensively involved in getting these going; choosing appropriate semantics that will make it easier for the marketing of Mediterranean cooperation frameworks (such as a "forum" rather than an "alliance"). Liberalization processes in Egypt, should they occur, are also expected to create a more comfortable political and cultural climate for breakthrough ideas.

# Law of the Seas

## The Dispute over the Israel – Lebanon Maritime Border – Legal Perspectives

*Nadia Tzimerman,<sup>1</sup>*

### Background – The basic principle for delimiting economic waters in agreement between states

The significant discoveries of natural gas reserves in the maritime region of the eastern Mediterranean have boosted the need of states in the area to delineate their exclusive economic zones (EEZs),<sup>2</sup> with a view to developing and exploiting the resources in their areas.<sup>3</sup> In cases where there is an overlap between the EEZs of neighboring states, the United Nations Convention on the Law of the Sea 1982 (UNCLOS),<sup>4</sup> which is the international legal constitution that regulates the various maritime zones, stipulates that the issue should be solved through an agreement between the countries, in accordance with the principles of international law, in order to obtain a just and fair solution.<sup>5</sup> The Convention states that as long as the agreement is pending, the states should make a joint effort to reach a temporary practical arrangement.<sup>6</sup>

This formulation constitutes a comfortable compromise for the countries, as it allows them to conduct negotiations on reaching a desired delineation of the borders, in line with their special circumstances.<sup>7</sup> At the same time, due to the vagueness of this principle, it seems that it on many occasions countries tend to base their actions on the "median line"

1 Translated by Yaakov Lapin

2 EEZ – Exclusive Economic Zone

3 The exclusive economic zone stretches out beyond the territorial sea of a coastal state, and up to 200 nautical miles from the baseline, or up to a distance agreed upon with another coastal state. A state does not have full sovereignty in this area, but it receives sovereign economic rights, including rights to explore for and exploit gas and oil resources. For more on various maritime areas, see Nadia Tzimerman "Chapter 16: Managing Israel's maritime areas – a view of the legal situation" **A Grand Maritime Evaluation for Israel 2016** 188 (Shaul Horev, Ed.), 2017 <https://poli.hevra.haifa.ac.il/~hms/images/2016.pdf>

4 United Nations Convention on the Law of the Sea (UNCLOS)

5 The provision on this matter is similar to the EEZ and continental shelf. See Articles 74(1) and 83(1) of the Convention: "The delimitation... between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law... in order to achieve an equitable solution".

6 See Articles 74(3) and 83(3) of the Convention: "Pending agreement as provided for in paragraph 1, the states concerned, in a spirit of understanding and co-operation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation".

7 For an analysis of the various techniques for delimiting maritime borders see: Nugzar Dundua, *Delimitation of maritime borders between adjacent States* (United Nations – The Nippon Foundation Fellow 2006–2007).

technique,<sup>8</sup> as a starting point for negotiations.<sup>9</sup> The median line technique has been used as a basis for agreements in our region.<sup>10</sup>

Although Israel has not signed UNCLOS, it has stated on more than one occasion that it "accepts the customary provisions of the Sea Convention (UNCLOS), including those that deal with maritime zones".<sup>11</sup> In addition, the Maritime Zones Bill of 2017 adopts the basic principle set in UNCLOS, regarding the delineation of EEZ by the agreement of states.<sup>12</sup>

To delineate its maritime borders, Israel relies on two bilateral agreements that Cyprus is a side to: The Cyprus–Egypt agreement from 2003,<sup>13</sup> and the Cyprus–Lebanon agreement from 2007,<sup>14</sup> which was not ratified by Lebanon.<sup>15</sup> The agreement signed between Israel and Cyprus in 2010 in effect corresponds with those agreements – as can be seen in figure 1, coordinate 12 in the south and coordinate 1 in the north.<sup>16</sup> However, Article 1(e)

- 8 The equidistance (or median) line technique is also the set formula in the Convention for the delineation of territorial sea of states. See Article 15 of the Convention: "Where the coasts of two states are opposite or adjacent to each other, neither of the two states is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the median line every point of which is equidistant from the nearest point on the baselines from which the breadth of the territorial seas of each of the two states is measured...". For a technical manual on the median line technique, see: ABLOS, *A Manual on Technical Aspects of the United Nations Convention on the Law of the Sea–1982* (4<sup>th</sup> ed., 2006).
- 9 For more on the principles set in the Convention, see also: Tullio Scovazzi, *Maritime Borders in the Eastern Mediterranean Sea*, Policy Brief 3–5 (The German Marshall Fund of the US, June 2012).
- 10 See further on the agreement between Israel and Cyprus, the agreement between Cyprus and Egypt, and the agreement between Cyprus and Lebanon.
- 11 See explanatory comments to the memorandum of the Maritime Zones Law–2013, p. 4. See also the agreement between the Government of the State of Israel and the Government of the Republic of Cyprus regarding delineation of the exclusive economic zone from December 17, 2010.
- 12 Article 9(B) in the bill stipulates the following: "Where the State of Israel's EEZ... overlaps with the EEZ of another country, the State of Israel's border for its EEZ will be set in the overlapping area between the EEZs, in agreement with the state in question, and so long as the said agreement is not reached – in accordance with the principles of international law."
- 13 Agreement between the Republic of Cyprus and the Arab Republic of Egypt on the Delimitation of the Exclusive Economic Zone (17 February 2003) appears on the UN website: [www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/EGY-CYP2003EZ.pdf](http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/EGY-CYP2003EZ.pdf)
- 14 Agreement between the Government of the State of Lebanon and the Government of the Republic of Cyprus on the Delimitation of the Exclusive Economic Zone (17 January 2007). The agreement was ratified by Cyprus, but not by Lebanon. The agreement's details can be seen on the website of the Middle East Economic Survey: <https://www.mees.com/2012/9/28/op-ed-documents/cyprus-lebanon-cyprus-israel-offshore-delimitation/f994d750-6d1a-11e7-9675-d5a0b0510107>.
- 15 For the implications of the lack of the ratification over the dispute between Israel and Lebanon, see further discussion.
- 16 The agreement between the government of the State of Israel and the government of the Republic of Cyprus regarding the delineation of the exclusive economic area from 17.12.2010. The agreement was ratified in Government Decision No. 2794 on 3.2.2011. The agreement appears on the UN website: [www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/cyp\\_isr\\_eez\\_2010.pdf](http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/cyp_isr_eez_2010.pdf)

of the agreement stipulates that Coordinates 1 or 12 are not conclusive, and that they are subject to change in a future agreement between the three relevant countries.<sup>17</sup> In addition, Article 3 of the agreement allows the partners to conduct negotiations to set the borders of the EEZ with other states, through consultations in case the borders are linked to coordinates 1 and 12. In the absence of an agreement between Israel and Lebanon and Israel and Egypt, this situation creates uncertainty regarding the northern and southern borders of Israel's EEZ.



Figure 1 – Appendix 2 to the agreement between Israel and Cyprus

In light of the fact that for the time being, an open dispute exists between Lebanon and Israel, this chapter will focus on the dispute regarding the northern border alone.<sup>18</sup> The basis of the dispute centers on the northern border point (coordinate 1), which touches on the three countries – Israel, Cyprus, and Lebanon. While Israel relies on the agreement with Cyprus as an anchor for delimiting its northern border, coordinate 1 is not recognized by Lebanon, and it is subject to international dispute. This dispute has led Israel and Lebanon to submit conflicting unilateral declarations to the UN regarding the delineation of their maritime borders. This series of events will be detailed below.

17 See Article 1(e) of the agreement: "Taking into consideration the principles of customary international law relating to the delimitation of the Exclusive Economic Zone between States, the geographical coordinates of points 1 or 12 could be reviewed and/or modified as necessary in light of a future agreement regarding the delimitation of the Exclusive Economic Zone to be reached by the three States concerned with respect to each of the said points".

18 Regarding the southern border – Israel has yet to declare its southern maritime border (which of course raises questions in relation to the maritime border line with the Palestinian Authority). As stated, the southern coordinate in the agreement between Israel and Cyprus (coordinate 12) touches on a point specified in the agreement between Cyprus and Egypt. Today, there is no Egyptian claim regarding this point. At the same time, it is possible that Egypt will raise claims in the future of the kind that Lebanon has raised regarding the joint border points between the three countries.

## How events unfolded surrounding the dispute over the delimitation of the maritime border between Israel and Lebanon

In July and October 2010, Lebanon unilaterally submitted to the UN its coordinates for delimiting the EEZ borders with Israel and Cyprus respectively.<sup>19</sup> In effect, continuing on from the (non-ratified) agreement between Lebanon and Cyprus, Lebanon declared 3 additional coordinates south of Point 1 (upon which Israel relied in the agreement with Cyprus). Lebanon claimed that "coordinate 23" is the southernmost point, which forms the median line between the three states.

Despite this declaration, as stated, in December 2010, an agreement was signed between Cyprus and Israel, in which "coordinate 1" was set as the northern border point of the delimitation of the maritime border between the countries. Coordinate 23, which Lebanon declared to be located some 17 kilometers south of coordinate 1, and which in effect creates a triangular area of 850 square kilometers, forms the disputed area. Figure 2 illustrates the dispute between Lebanon and Israel.

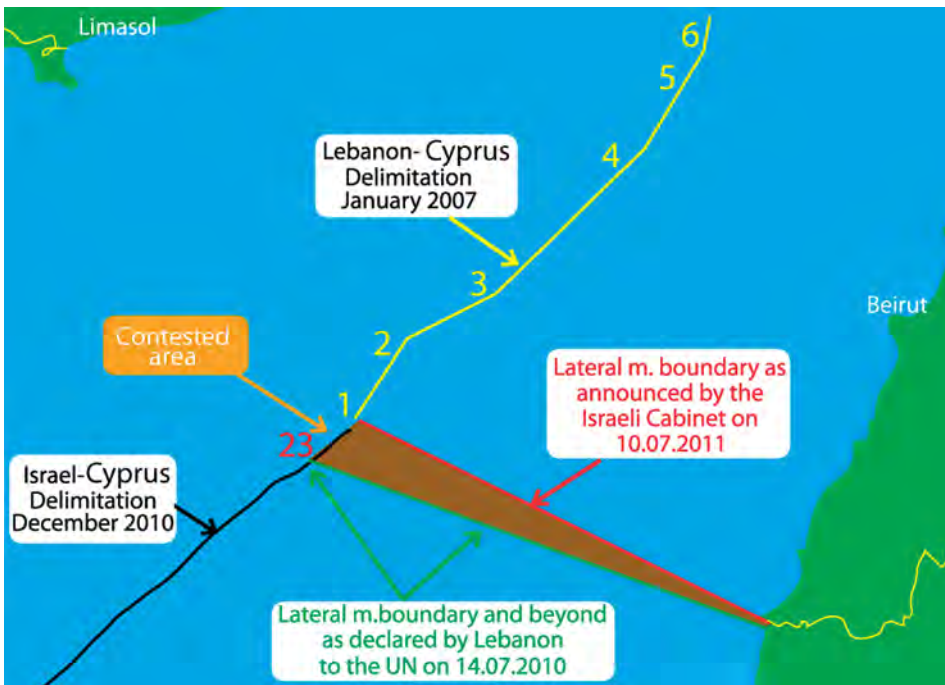


Figure 2: The border dispute with Lebanon (the disputed areas of some 850 square kilometers). Source: Daniel Meier Lebanon's Maritime Borders: Between Economic Opportunities and Military Confrontation (June 2013).

<sup>19</sup> See: [www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/DEPOSIT/lbn\\_mzn79\\_2010.pdf](http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/DEPOSIT/lbn_mzn79_2010.pdf); [www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/DEPOSIT/lbn\\_mzn79add1\\_2010.pdf](http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/DEPOSIT/lbn_mzn79add1_2010.pdf)

Following the agreement signed between Israel and Cyprus, Lebanon sent a letter to the UN in June 2011 objecting to the agreement with Cyprus, based on the claim that "coordinate 1" does not form the median line between the states, but rather, "coordinate 23" does.<sup>20</sup> A month later, in July 2011, Israel unilaterally submitted to the UN a list of coordinates that mark the country's northern maritime border, with "coordinate 1" listed.<sup>21</sup> In September 2011, Lebanon reiterated its rejection of the maritime border line between Israel and Lebanon according to the coordinates submitted by Israel to the UN. In its letter, Lebanon repeated its demand to replace "coordinate 1" with "coordinate 23." In addition, Lebanon expressed its objection to the land coordinate from which the maritime border was stretched, as it appears in the Israeli document (marked in the government's decision as "coordinate 31."). Lebanon claimed that this coordinate violated international agreements on the land border between Israel and Lebanon.<sup>22</sup>

In line with media reports, the Americans tried in the past to create a compromise map, on the basis of the Israeli and Lebanese versions, but thus far, unsuccessfully. According to geological surveys, it appears as if the disputed area contains the potential for discernible discoveries of natural gas. Up to now, Israel has not awarded gas and oil exploration rights in the disputed area, but from time to time, media reports surface indicating Lebanon's intention to distribute licenses in this area.<sup>23</sup> These developments should be monitored, as a lack of response by Israel could be seen by international law as consent to Lebanon's activity.<sup>24</sup>

There is no doubt that the dispute over the maritime border conceals within it diplomatic, security, and economic aspects, but in this list, we will only focus on the legal aspect.

20 See: [www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/communications/lbn\\_re\\_cyp\\_isr\\_agreement2010.pdf](http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/communications/lbn_re_cyp_isr_agreement2010.pdf)

21 Israel declared its northern maritime border in the 32<sup>nd</sup> Government's Decision No. 3452, "Setting the northern maritime delimitation line of the coastal waters and the exclusive economic zone of the State of Israel in the Mediterranean Sea." (10.7.2011). This decision was sent to UN institutions. <http://www.pmo.gov.il/Secretary/GovDecisions/2011/Pages/des3452.aspx>; [www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/isr\\_eez\\_northernlimit2011.pdf](http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/isr_eez_northernlimit2011.pdf)

22 See: [www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/communications/lbn\\_re\\_isr\\_listofcoordinates\\_e.pdf](http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/communications/lbn_re_isr_listofcoordinates_e.pdf)

23 See, for example, Amiram Barakat, "Lebanon will grant drilling rights in an Israeli maritime area," *Globes*, 29.9.2013 (Hebrew): [www.globes.co.il/news/article.aspx?did=1000881564](http://www.globes.co.il/news/article.aspx?did=1000881564)

24 For further readings on the development of the division between Israel and Lebanon, see: S. Abu Gosh and R. Leal-Arcas, *Gas and Oil Explorations in the Levant Basin: The Case of Lebanon and Israel*, Oil, Gas & Energy Law Intelligence (2013); Martin Wählisch, *Israel-Lebanon Offshore Oil & Gas Dispute – Rules of International Maritime Law*, 15 ASIL Insights (2011) Daniel Meier, *Lebanon's Maritime Borders: Between Economic Opportunities and Military Confrontation* (Center for Lebanese Studies, University of Oxford, June 2013).

## The legal dispute

As stated, Israel relies on its stance in relation to "coordinate 1" in the agreement for delimiting the EEZ between Cyprus and Lebanon from 2007, which marks coordinate 1 as the southernmost coordinate in this agreement. According to Israel's claim, the agreement between Israel and Cyprus in effect touches on the agreement between Cyprus and Lebanon in "coordinate 1".<sup>25</sup>

At the same time, relying on the agreement between Lebanon and Cyprus holds number of legal difficulties. The first central difficulty lies in the fact that this agreement has never been ratified by Lebanon, and did not actually entered into force. As a result, its provisions are neither obligatory for Lebanon and Cyprus, nor do they have any legal validity for third parties (Israel).<sup>26</sup>

However, beyond the fact that the agreement has not entered into force, it appears as if there is a significant difficulty in relying on coordinate 1 set in the agreement between Lebanon and Cyprus as a conclusive coordinate for delimiting the border line between three countries. Lebanon claims that coordinate 1 does not represent the median line between the countries. According to its claim, this is only a temporary coordinate, which was deliberately set north of the median line between the three countries, in order to allow the relevant countries to negotiate over the final median line between them.<sup>27</sup> It appears as if Lebanon's stance matches international practice on this issue.<sup>28</sup> Also, the agreement between Lebanon and Cyprus states that coordinate 1 is not conclusive, and does not have legal validity regarding third parties.<sup>29</sup>

In light of the above, it seems as if Israel's claim regarding the validity of coordinate 1 is flawed, and lacking a substantial legal basis beyond relying on the agreement between Lebanon and Cyprus. As stated, Lebanon bases its claim in relation to coordinate 23 on

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25 See comments made by Prime Minister Benjamin Netanyahu on the day of the verification on setting the northern delimitation line, above, endnote 19, <https://news.walla.co.il/item/1839248>

26 For more on the legal standing of the agreement between Lebanon and Cyprus see endnote 23 above.

27 This is Lebanon's claim as it appeared in the letter sent to the UN in June 2011, see endnote 19 above: "Point 1 does not therefore represent the southern end of the median between the Lebanese Republic and the Republic of Cyprus that separates the exclusive economic zones of each country, and can only be viewed as a point that is shared by Lebanon and Cyprus. It is not a terminal point and therefore may not be taken as a starting point between Cyprus and any other country, particularly given the fact that it is just one point like any of the others on this line."

28 See Leal-Arcas and Abu Gosh, in endnote 23 above, pages 14–16. As stated, clause 1(e) to the agreement between Israel and Cyprus adopts this practice. See endnote 16.

29 Article 1(e) of the agreement states that: "Taking into consideration article 74 of the United Nations Convention on the Law of the Sea...the geographical coordinates of points (1) and (6) could be reviewed and/or extended and duly revised as necessary in light of future delimitation of the Exclusive Economic Zone with other concerned neighboring States and in accordance with an agreement to be reached in this matter by the neighboring States concerned."



the median line technique. In light of the fact that Israel itself adopted, in the agreement with Cyprus, the median line technique for delimitating EEZ,<sup>30</sup> it seems that this system can help as a basis for negotiations between the sides in relation to three-way convergence point. Of course, the median line technique is not the only technique for delimiting EEZ, but as stated, it appears to be an acceptable technique in international practice, which has been adopted in prior agreements between states in the area. Although the Maritime Zones Bill that is currently being legislated does not deal with the desired technique for basing an agreement between the sides for delimiting EEZ, Israel has declared that it will act in this manner in line with international law.

### **Delimitation of the EEZ through a conflict-resolution mechanism**

In light of the lack of diplomatic relations between Lebanon and Israel, it seems as if the solution of the dispute through an agreement, as required by the principles of UNCLOS, will be difficult to impossible. In the absence of an agreement between the states, UNCLOS directs the parties to solve the dispute through a conflict resolution mechanism, as stated in Part 15 of UNLOS.<sup>31</sup>

Article 287 of UNCLOS lists four different possibilities for resolving conflicts in the absence of an agreement between states (by the International Court of Justice, by the International Tribunal for the Law of the Sea, and two kinds of arbitration). In the absence of an agreement on a desired mechanism, the Convention states that the default option is arbitration (Article 287(5)).

In light of the fact that Israel is not a party to UNCLOS, an international procedure cannot be forced on it to solve disputes without its agreement. Therefore, an agreement is required between Lebanon and Israel, including an agreement over the preferred procedure. Without this agreement, no international procedure for resolving the dispute can be activated. As stated, in light of the relations between the states, it seems as if difficulties will exist in obtaining an agreement on this issue.

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30 See Article 1 of the agreement. It is also worth noting that on 6.9.1961 Israel ratified the Geneva Convention on the Continental Shelf from 1958.. Article 6 of this convention set a different provision regarding the delimitation of continental shelf borders: The convention states that the rule is an agreement between states and in the absence of an agreement, the median line will be the border between the countries. In light of the fact that Israel has not signed UNCLOS, it can be claimed that the issue of delimiting the continental shelf is still subject to the Geneva Convention. See clause 311 of the UNCLOS that defines relations between the Geneva Convention and UNCLOS.

31 Articles 74 (2) and 83(2) to the Convention state that: "If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV".

## Policy recommendations

In light of the dead-end reached at this time, and due to a desire to bring about a peaceful resolution to the conflict, an in-depth examination is recommended, which simultaneously examines four different options for action:

1. Israel should monitor developments in the region and respond through diplomatic channels to developments such as the allocation of gas and oil exploration licenses by Lebanon in the disputed area, as a lack of a response by Israel could be interpreted by international law as consent to this activity.
2. As a basis for negotiations between the parties, it is advisable to examine and base a desired technique for the delimitation of Israel's EEZ, in line with accepted international practice.
3. An examination is recommended of international precedents for the solution of similar conflicts. In line with the results of the examination, Israel should consider joining UNCLOS which include, as stated, an obligatory arbitration procedure in the absence of an agreement between the states. Alternatively, Israel should consider the possibility of agreeing to appear before an international tribunal on this issue, without joining UNCLOS.
4. Other alternatives should be considered for joint management of the disputed area without an agreement on the actual delimitation of EEZ. Thus, for example, joint development agreements on overlapping maritime areas that are in dispute have turned into accepted practice in recent years. In this context, and in the absence of direct negotiations between the sides, Israel should examine the possibility of conducting negotiations via a third party.

## The Transfer of the Tiran and Sanafir Islands to Saudi Arabia and Freedom of Navigation in the Straits of Tiran – an Unsolved Story<sup>1</sup>

**Benny Spanier**

### Introduction

Straits and gulfs are sensitive places that present challenges in a location where geography, trade and politics meet.<sup>2</sup> The Straits of Tiran are located at the southern end of the Gulf of Eilat and serve as an essential waterway for all ships making their ways to the port of Eilat and Aqaba. Therefore a blockade of the Straits constitutes a serious threat to the State of Israel and was part of the reason for the outbreak of the Sinai War in October 1956 and the Six Day War in June 1967.<sup>3</sup> As a result of these two wars, Israel captured the Straits of Tiran, including the islands of Tiran and Sanafir. In both cases, Israel withdrew from the Straits some time later after signing agreements and understandings regarding freedom of navigation through them.

Freedom of navigation in straits and gulfs has developed and changed over the years from the perspective of international law (herein: the Law of the Sea). In this context, the freedom of navigation in the Straits of Tiran has been studied intensively and there is an expansive literature on the subject. However, the lion's share of the research is concerned with the period up to just after the peace agreement with Egypt in 1979.<sup>4</sup> An article published within the framework of the Heikin Chair for Geostrategy presented

- 1 This essay is part of the article: "Fifty years since the Six Day War: Freedom of navigation in the Straits of Tiran from the Law of the Sea perspective – an unsolved story", published by the Heiken Chair for Geostrategy (herein: the "article"). [Hebrew]
- 2 See Yoel Goginski, Galia Lindenstrauss, Yehonatan Shecter, "'Bottlenecks' and the vulnerability of the straits in the Middle East", *Strategic Affairs* 14(2) 73, 82 (2011). [Hebrew]
- 3 See Shaul Shai, "The battle over the Straits of Tiran – the Yarkon Operation", *Sixty Year since the Sinai War – A Collection of Articles* 13, 13 (Shai Shaul ed., 2016) (herein: Shai). [Hebrew]
- 4 See, among others: Sara Weiss Moadi, "Laws of the Sea", *International Law* 525 (Cybil Rubi and Ronen Yael, eds, 2016) (herein: Weiss Moadi); Ruth Lapidot (Eshelbecher) "Freedom of passage in the Straits of Tiran", *Hapraklit – Jubilee Book* 224 (Arnona Gavrieli and Migal Duetch eds., 5754) (herein: Lapidot); Eithan Barak, "Between Reality and Secrecy: Israel's Freedom of Navigation through the Straits of Tiran, 1956 – 1967", 16(4) *Middle East Journal* 657 (2007) (herein: Barak); Ann Ellen Danseyar, *Legal Status of the Gulf of Aqaba and the Strait of Tiran: From Customary International Law to the 1979 Egyptian-Israeli Peace Treaty*, 5 B. C. Int'l Comp. & L. Rev. 127 (1982) (herein: Danseyar); L.M. Bloomfield, "Egypt, Israel and the Gulf of Aqaba" in *International Law* (1957) (herein: Bloomfield); Leo Gross, "Passage Through the Strait of Tiran and in the Gulf of Aqaba", 33 *Law & Contemp. Probs.* 125 (1968) (herein: Gross 1968); Ruth Lapidot, "The Strait of Tiran, The Gulf of Aqaba, and the 1979 Treaty of Peace Between Egypt and Israel", 77 *Am. J. Int'l L.* 84 (1983) (herein: Lapidot 1983); Lapidot Ruth, *Freedom of Navigation, With Special Reference to International Waterways in the Middle East* (1975) (herein: Lapidot 1975); Shabtai Rosenne, "The Strait of Tiran and the Gulf of Aqaba" (1957) (herein: Rosenne); Mohamed El Baradei, "The Egyptian-Israeli Peace Treaty and Access to the Gulf of Aqaba: A New Legal Regime", 76 *Am. J.*

a geopolitical and legal survey of freedom of navigation in the Straits of Tiran over the years. In what follows, we present part of that article which explains the significance of the transfer of the Tiran and Sanafir islands to Saudi Arabia in 2016 as it relates to freedom of navigation in the Straits from the viewpoint of the Law of the Sea.

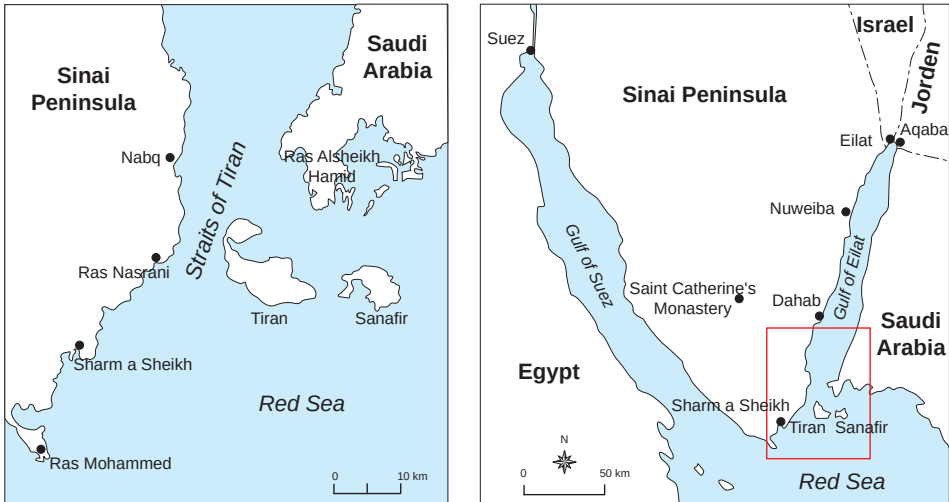


Figure 1. Map of the Straits of Tiran and the Sinai Peninsula

### The transfer of the Tiran and Sanafir islands to Saudi Arabia and the Freedom of Navigation in the Straits of Tiran

Towards the end of 1949 and following the ceasefire between Israel and Egypt, the latter began to take an interest in the importance of the Straits and the islands near them. At that time, an agreement was signed between Egypt and Saudi Arabia,<sup>5</sup> according to which Egypt was allowed to station military equipment on the island in order to protect them from being captured by Israel. The agreement was never fully disclosed, as far as is known.<sup>6</sup>

In 1982, during the withdrawal of Israel from the Sinai Peninsula, Saudi Arabia claimed ownership of the Tiran and Sanafir islands. This can be seen in statements by the

*Int'l L.* 532 (1982) (herein: El Baradei); Leo J. Bouchez, "The Regime of Bays in International Law" (1964) (herein: Bouchez); see also: Ali A. El-Hakim, *The Middle Eastern States and the Law of the Sea* (1979) (herein: El Hakim).

5 See Bloomfield, footnote 4 above, on page 8; see El-Hakim, footnote 4 on page 136.

6 See Rosenne, footnote 4 above, on page 22. Among other things, artillery was deployed on Ras Nasrani; see El-Hakim, footnote 4 above, p. 137.

former Israeli Ambassador to Egypt.<sup>7</sup> According to him, Mubarak asked the Saudis not to bring up the matter at that time in order not to endanger the completion of the Israeli withdrawal; however, the Saudis continued to put pressure on Egypt, which led to a presidential order published by President Mubarak in 1990 that specified the coordinates of the maritime boundaries of Egypt in the Mediterranean and the Red Sea and these did not include the Tiran and Sanafir islands. At the request of the Saudis, the document was submitted to the UN.<sup>8</sup>

On April 8<sup>th</sup> 2016, during the visit of the King of Saudi Arabia to Egypt, Egypt and Saudi Arabia signed an agreement demarcating the maritime boundary between the two states. The agreement specified that the Tiran and Sanafir islands would be transferred to the Saudis. It also included significant economic assistance from Saudi Arabia to Egypt, estimated at \$22 billion, including the construction of a bridge between Saudi Arabia and Egypt across the islands and connecting to the Sinai Peninsula.<sup>9</sup> According to reports in the El Ahran newspaper, Egypt notified Israel of the signing and it was also reported that Israel was notified of the intention of the Saudis to respect the agreements between Israel and Egypt and not to make any military use of the islands.<sup>10</sup> On August 17<sup>th</sup> 2017, El Ahran reported that the agreement between Egypt and Saudi Arabia includes maritime maps according to which the islands are located within the territory of Saudi Arabia. The document that was published also includes an exchange of letters between Saudi Arabia and Egypt and between Egypt and Israel which promise continued freedom of navigation for Israel in the Straits of Tiran.<sup>11</sup> Israeli Defense Minister Moshe Yaalon admitted that Israel had confirmed and even signed on its consent to the transfer of the islands.<sup>12</sup>

In the announcement by the Egyptian government, it was stated that the signing marks the end of a six-year process that included eleven meetings. On December 29<sup>th</sup> 2016, the Egyptian Council of Ministers approved the agreement subject to the approval of the Parliament. According to the agreement, Saudi Arabia would control the Tiran and

7 See Zvi Mazal, "The transfer of Tiran and Sanafir to Saudi Arabia – a violation of the peace agreement with Egypt?" (April 14, 2016); and also "The Transfer of Tiran and Sanafir to Saudi Arabian sovereignty" (August 24, 2017), *Blog – The Jerusalem Center for Public Affairs*, <http://jcpa.org.il/author/zvi/> (herein: Mazal) (last accessed November 2017). [Hebrew]

8 See Baselines of the maritime areas - Decree of the President of the Arab Republic of Egypt No. 27 (1990) Concerning the baselines of the maritime areas of the Arab Republic of Egypt, 9 January 1990, <http://www.un.org/depts/los/LEGISLATIONANDTREATIES/STATEFILES/EGY.htm> (accessed in November 2017).

9 See the Washington Institute, <http://www.washingtoninstitute.org/policy-analysis/view/the-israeli-angle-to-the-saudi-egyptian-island-deal>, (last accessed November 2017).

10 See Jacky Huri and Gili Cohen, "The gift of al Sisi to the King of Saudi Arabia: the Tiran and Sanafir islands in the Red Sea", *Haaretz*, April 11, 2016. [Hebrew] According to the article, Jordan was also informed of the signing.

11 See Mazal, footnote 7.

12 See Shai, footnote 3 above, pp. 13-14. It should be mentioned that it was not reported whether the consent is part of the records of the agreement.

Sanafir islands which had been under Egyptian control until then.<sup>13</sup> On January 2<sup>nd</sup> 2017, the Parliament's Constitution Committee announced that it would hold a discussion of the agreement.<sup>14</sup>

The agreement met widespread opposition in Egypt and therefore a group of lawyers filed suits in the Administrative Court to have it cancelled. Their main claim was that Tiran and Sanafir have always been under Egyptian sovereignty and that the Egyptian constitution prohibits the handing over of any Egyptian land. It was also claimed in the suit that public officials who violate the Constitution are committing a criminal act.<sup>15</sup> The Supreme Administrative Court that discussed the State's appeal of the verdict of the Administrative Court accepted the claims and rejected the government's appeal. During the discussion, representatives of the government provided new evidence supporting the position of the State that the islands are not part of Egypt and that they were received from Saudi Arabia as islands that still belong to Saudi Arabia.<sup>16</sup> It was reported that the government possesses a letter from 1957 in which Saudi Arabia demands the islands and a British book was presented which places the islands in the territory of Saudi Arabia. As mentioned, the court did not accept the position of the State and ruled that the islands cannot be transferred to Saudi Arabia and that doing so is in violation of the Egyptian Constitution. However, the Court of Urgent Matters ruled on April 2<sup>nd</sup> 2017 that the agreement is legal and can be implemented.<sup>17</sup> Thus, the court cancelled the decision of the Supreme Administrative Court and opened the way for the approval of the agreement by the Parliament with an absolute majority in June 2017 and its subsequent approval by the President of Egypt.<sup>18</sup>

This essay does not examine the verdicts of the Egyptian courts and will assume that the islands are now lawfully under Saudi sovereignty. We are interested in the questions that are brought up by the transfer of the islands from the viewpoint of the Law of the Sea.

On April 24<sup>th</sup> 1996, Saudi Arabia ratified the 1982 Convention on the Law of the Sea (herein: the 1982 Convention). On this date, it submitted detailed Declarations and

13 See <http://www.dailynewsegypt.com/2016/12/29/cabinet-approves-red-sea-lands-demarcation-sends-bill-parliament> (last accessed June 2017).

14 See <http://www.dailynewsegypt.com/2017/01/02/demarcation-agreement-will-discussed-full-transparency-parliaments-judicial-committee> (last accessed June 2017).

15 See <http://www.dailynewsegypt.com/2016/12/30/sending-red-sea-islands-agreement-parliament-violation-malek-adly/> "The Arab Republic of Egypt is a sovereign state, united and indivisible, where nothing is dispensable, and its system is democratic republic based on citizenship and the rule of law...." (last accessed June 2017).

16 See <http://www.dailynewsegypt.com/2016/12/19/administrative-court-postpones-red-sea-island-deals-final-verdict-16-january/> December 19, 2016 (last accessed June 2017).

17 See: Aljazeera <http://www.aljazeera.com/news/2017/04/egypt-court-voids-block-islands-transfer-saudis-170402132102057.html> April 4, 2017 (last accessed June 2017).

18 See Mazal, footnote 7 above; and see also <http://www.bbc.com/news/world-middle-east-40278568> (last accessed June 2017).

Statements regarding the Convention and this included the Saudi reservations regarding a number of points.<sup>19</sup> It is worth dwelling on what is stated in the declaration.

The first reservation declares that Saudi Arabia is not obligated by, committed to or bound by any demand regarding maritime territory handed over to it by other countries at the time they signed the Convention.<sup>20</sup> The exact intention of the Saudi reservation and also whether it relates to the Egyptian declaration regarding the consistency between the peace agreement and the Convention is unclear.<sup>21</sup> From the reservation's language, it appears that the Saudis want to disassociate themselves from any agreement that it is not a party to and which is related to rights to its maritime territory. The second Saudi reservation supports this understanding and states explicitly that Saudi Arabia does not accept any agreement that infringes on its maritime rights.<sup>22</sup>

In 1957, Saudi Arabia declared that the Gulf of Eilat is an internal sea (within a country's territory), along whose shores dwell only the Arab nation. This meant that they do not recognize the State of Israel as a country that borders on the shores of the Gulf of Eilat.<sup>23</sup> It has not abandoned this position until today. An echo of this position can be found in the third reservation in which Saudi Arabia relates to paragraphs 122 and 123 of the Convention on the Law of the Sea which discusses an enclosed or a semi-enclosed

19 See Vienna Convention on the Law of Treaties (1969), 1155 UNTS 331: in paragraph 2(d): "'Reservation means a unilateral statement, however phrased or named, made by a State, when signing, ratifying, accepting, approving or acceding to a treaty, whereby it purports to exclude or to modify the legal effect of certain provisions of the treaty in their application to that State". See also Yoram Dinstein, *International Conventions* (1974), pp. 41-50.

20 See Oceans & Law of the Sea United Nations, Declarations and Statements, Upon ratification [http://www.un.org/depts/los/convention\\_agreements/convention\\_declarations.htm#Saudi](http://www.un.org/depts/los/convention_agreements/convention_declarations.htm#Saudi) (last accessed June 2017)(herein: Declarations and Statements), Saudi Arabia, in paragraph 1: "The Government of the Kingdom of Saudi Arabia is not bound by any domestic legislation or by any declaration issued by other States upon signature or ratification of this Convention. The Kingdom reserves the right to state its position concerning all such legislation or declarations at the appropriate time. In particular, the Kingdom's ratification of the Convention in no way constitutes recognition of the maritime claims of any other State having signed or ratified the Convention, where such claims are inconsistent with the provisions of the Convention on the Law of the Sea and prejudicial to the sovereign rights and jurisdiction of the Kingdom in its maritime areas."

21 In 1983, when Egypt signed the Convention on the Law of the Sea of 1982, it attached a declaration that the provisions regarding passage in the Straits of Tiran and the Gulf of Aqaba (this is how it appears in the original), which are included in the peace agreement with Israel, are consistent with the norm set down in the Convention regarding the Straits.

22 See Declarations and Statements, footnote 20 above, paragraph 2: "The Government of the Kingdom of Saudi Arabia is not bound by any international treaty or agreement which contains provisions that are inconsistent with the Convention on the Law of the Sea and prejudicial to the sovereign rights and jurisdiction of the Kingdom in its maritime areas."

23 See A/3500 G.A.O.R., 11th Session, 15 January 1957, 233, the speech of the Saudi representative to the General Assembly of the UN: "...I turn now to the question of the Gulf of Aqaba. Basically, this is not an international question. I bring it to the attention of the General Assembly only to disprove its international character. The facts are simple to state. The Gulf of Aqaba is a national inland waterway, subject to absolute Arab sovereignty..."

sea.<sup>24</sup> Paragraph 123 states that the countries along the coasts of such a sea must cooperate but Saudi Arabia makes clear in the reservation that it will only cooperate with countries that are signed on the Convention.<sup>25</sup> Out of all of its many maritime neighbors only Israel is not signed on the Convention.

In the fifth reservation, Saudi Arabia states that it does not recognize the right of innocent passage through its territorial waters as long there are alternative routes.<sup>26</sup> This is consistent with what it is stated in paragraph 38(1). Therefore, it appears that Saudi Arabia will not prevent Israel from passage through its territorial waters in the Straits of Tiran since there is essentially no alternative water passage. In the last reservation, Saudi Arabia states that it will act according to Saudi law and will enforce these laws in the areas under its maritime sovereignty.<sup>27</sup>

## Discussion

Prior to the discussion, it is necessary to mention that it was not possible to examine the original agreements (as opposed to what was reported in the press) between Israel, Egypt, Saudi Arabia and the US regarding the transfer of the islands.

Saudi Arabia has borders with a large number of countries, including maritime borders. This is true in the case of Kuwait, Bahrein, Qatar, the United Arab Emirates, Yemen and Jordan. With other countries it shares a common gulf, which is the case for Iran, Eritrea, Sudan, Egypt and Israel. It appears that this is how the large number of declarations, reservations and clarifications that it sought to include when ratifying the 1982 Convention is to be understood. For Saudi Arabia, the Convention on the Law of the Sea is a highly important matter. It is also worth remembering that Saudi Arabia's maritime borders are all located in complex areas from the maritime and geopolitical viewpoints. In other words, according to the Saudi government, the fact that its shores are located along these gulfs and straits required making the clarifications that it did. As a result, it appears

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24 See United Nation Convention on the Law of the Sea dates December 10<sup>th</sup> 1982, 1833 U.N.T.S.3 (herein: the 1982 Convention): "enclosed or semi-enclosed sea" means a gulf, basin or sea surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal states."

25 See Declarations and Statements, footnote 20 above, Saudi Arabia, in paragraph 3: "The Government of the Kingdom of Saudi Arabia considers that application of the provisions of Part IX of the Convention concerning the cooperation of States bordering enclosed or semi-enclosed areas is subject to the acceptance of the Convention by all States concerned."

26 Ibid., Saudi Arabia, in paragraph 5: "The Government of the Kingdom of Saudi Arabia considers that innocent passage does not apply to its territorial sea where there is a route to the high seas or an exclusive economic zone which is equally suitable as regards navigational and hydrographic features."

27 Ibid., Saudi Arabia, in paragraph 7: "The Kingdom of Saudi Arabia shall issue its internal procedures for the maritime areas subject to its sovereignty and jurisdiction, so as to affirm the sovereign rights and jurisdiction and guarantee the interests of the Kingdom in those areas."



that in the matter of the transfer of the islands Saudi Arabia is attempting to preserve its maritime borders and its sovereignty. From the perspective of the 1982 Convention, Saudi is not recognizing agreements that were not signed by it. The implication is that, from its point of view, the peace agreement between Israel and Egypt does not apply to the islands from the point in time that they were returned to its sovereignty.

Egypt and Israel, by signing the peace agreement, adopted a very expansive regime of passage relative to what is stated in the 1982 Convention; however, the islands were essentially not under the sovereignty of Egypt at the time of the signing of the agreement. And even if they were, the islands transferred to Saudi sovereignty in 2016. Saudi Arabia has declared, in the aforementioned second reservation, that it is not bound by any agreement that contravenes the 1982 Convention or its sovereignty. The agreement with Egypt is not consistent with the Convention because it is overly broad and in Saudi Arabia's opinion, it violates its right to the islands and straits in Saudi territorial waters. It appears therefore that in this situation Saudi Arabia can claim that paragraph 311 of the Convention (which gives priority to an agreement between countries over the Convention to the extent that it does not infringe on the right of a third country) is not fulfilled with respect to the peace agreement infringing on their sovereignty and therefore Saudi Arabia is not bound by it.

With respect to the Straits, the Convention describes the case of the Straits of Tiran, i.e. a passage from the open sea/an economic zone (the Red Sea) to the territorial waters of the various countries in the Gulf of Eilat by way of a narrow passage.<sup>28</sup> According to the Convention, the countries with shores on a semi-enclosed sea are to determine among themselves the policy of rights and obligations.<sup>29</sup> Saudi Arabia conditions its necessary cooperation on the signing of the Convention by all of the countries with shores on the sea. Thus, since Israel is not signed on the Convention, essentially there is no possibility of a resolution in the matter of passage through the Gulf of Eilat and the Straits of Tiran.

The full article discusses the fact that the restrictions on passage through the Straits of Tiran due to a state of war that were put in place by Egypt (in 1957 and 1967) are not consistent with the UN Charter due to the termination of the state of war between Israel and Egypt according to the 1949 ceasefire agreement. The situation with respect to Saudi Arabia is different. It never recognized Israel and at least from the point of view of international law, it is still in a state of war with Israel.<sup>30</sup> In the seventh reservation of Saudi Arabia, which is appended to the acceptance of the 1982 Convention, it is specified that Saudi Arabia's maritime territory is subject to its laws. Paragraph 30 of

28 See the 1982 Convention, footnote 24 above, paragraph 122: "For the purposes of this Convention, "enclosed or semi-enclosed sea" means a gulf, basin or sea surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal States."

29 Ibid., paragraph 123.

30 See Lapidot, 1983, footnote 4 above, p. 102.

the 1982 Convention discusses the passage of warships through the territorial waters of a country.<sup>31</sup> Passage through the Straits of Tiran requires passing through the coastal waters of Saudi Arabia, at least partially. Since Saudi Arabia is not bound by the peace agreement it can in theory enforce its laws and paragraph 30 of the Convention and prevent the passage of Israeli warships through the Straits of Tiran in order to protect itself.<sup>32</sup> However, in this situation it is possible to claim that there is a right of innocent passage for warships based on the Corfu verdict.<sup>33</sup> Nonetheless, it appears that at this point maritime law makes it possible to act against Israel and to at least hinder passage through the straits.

## Conclusion

This essay demonstrates that since the founding of the State of Israel the Straits of Tiran have been a source of friction between Israel, Egypt and Saudi Arabia. Over the years, both the geopolitical situation in the region and the Law of the Sea have changed. In the case of the former, partial agreements were signed between Israel and Egypt in 1949, 1956 and 1967, until in 1979 a peace agreement was signed between the two countries. This contract brought to an end the struggle over freedom of navigation in the Straits of Tiran between the two countries. From the viewpoint of the Law of the Sea, the issue of passage through the Straits went through a process of consolidation from customary law to the Geneva Convention of 1958 and was reinforced by the 1982 Convention. These two processes determined the situation in the region and created certainty and security with respect to passage through the Straits of Tiran. Moreover, the peace agreement is fully valid even after the 1982 Convention.

The transfer of the Tiran and Sanafir islands to Saudi Arabia can and is changing the situation. The return of the islands to Saudi Arabia raises major questions from the

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31 See the 1982 Convention, footnote 24 above, paragraph 123: "If any warship does not comply with the laws and regulations of the coastal State concerning passage through the territorial sea and disregards any request for compliance therewith which is made to it, the coastal State may require it to leave the territorial sea immediately."

32 See El Baradei, footnote 4 above. In El Baradei's opinion, Saudi Arabia can claim that the peace agreement included freedom of passage, not freedom of navigation. In his opinion, it can—in the name of the peace agreement that all of the sides are bound by and according to the limited interpretation—prevent the passage of warships or ships that threaten peace.

33 See *The Corfu Channel Case (Merits) (United Kingdom vs. Albania)* ICJ. Reports, 1949, 3–4. In this affair, a claim was made by Britain against Albania regarding the channel between Albania and the Greek island of Corfu. The suit concerned the fact that two British warships were damaged on October 22<sup>nd</sup> 1946 in the Corfu Channel by sea mines and 45 British sailors were killed. The claim was made that the mines were placed by Albania. The court was asked to rule on the interpretation of innocent passage. Albania claimed that it has the authority to determine right of passage in the channel. Among other things, the court was asked to decide whether the passage of two warships had infringed on the sovereignty of Albania. The court ruled that in times of peace warships have the right of innocent passage in international straits. The court thus formalized and expanded the meaning of innocent free passage. See also: Lapidoth 1975, footnote 4 above, on p. 39

viewpoint of the Law of the Sea, at least with respect to Saudi territory. Even if according to media reports Saudi Arabia has committed itself to respecting the agreements, it is not bound by the peace agreement since it is not a party to it, at least according to international law. Israel is not signed on the 1982 Convention and therefore Saudi Arabia does not view itself as bound to grant it rights based on the Convention. Moreover, Saudi Arabia does not recognize the State of Israel and there is a state of war between the countries.

It appears possible—at least from the viewpoint of the Law of the Sea—that the situation could again deteriorate to a point where Saudi Arabia may deny the right of passage through the Straits along the length of its coast to Israeli ships and ships making their way to or from Israel. Without an explicit agreement between Israel and Saudi Arabia, it may be that we are again exposed to a threat to freedom of navigation in the Straits. In this sense, the existing situation—fifty years after the Six Day War—is an unsolved story.

## The Proposed Marine Areas Law 5777 – 2017 and its Impact on the Energy Sector

*Orin Shefler*

### What is the background to the Proposed Law?

This chapter discusses the proposed draft **Marine Areas Law 5777–2017** (herein: the "Proposed Law") according to the version approved by the Ministerial Committee for Regulation on August 7<sup>th</sup>, 2017. This proposal became valid as a government decision on August 24, 2017<sup>1</sup> and was approved by the Ministerial Committee for Legislative Affairs on September 17, 2017.

For over a decade, with the dramatic increase in economic activity in the territorial waters and economic waters of Israel as a result of the discovery of natural gas, there is increasing need for legislation that will clarify the extent of Israeli law in the Marine Areas. Legal uncertainty has negative economic and national implications to various domains and therefore the State wishes to formalize the extent of Israeli law in the Marine Areas. The government believes that, amongst other things, the lack of clear legislation regarding the Marine Areas may eventually "expose the State to claims that the Planning and Building Law, 5725–1965<sup>2</sup> (herein " Planning and Building Law") should be applied outside the territorial waters which in its current format does not fit the nature of the activity conducted in the Marine Areas."<sup>3</sup>

The government believes that enacting the Proposed Law at this time will help create a regulatory environment that encourages investment by foreign entities in Israel's Exclusive Economic Zone (herein "the EEZ") and will contribute to the success of the Offshore Bid Round<sup>4</sup> initiative (i.e. a competitive process to issue new offshore licenses for oil and gas exploration) which is being implemented. In addition, the Proposed Law will increase economic certainty in the fields of taxation, labor laws, safety, regulation and environmental protection, and will improve the readiness for emergencies in the Marine Areas.

1 See Government Decision No. #2983.

2 See the Planning and Building Law, 5725–1965.

3 See the explanation of the Proposal Law as submitted to the Ministerial Committee for Regulatory Affairs dated August 3, 2017 on the subject of "The Law that Applies to Marine Areas of the State of Israel", p. 2, clause e.

4 See the designated internet site of the "Offshore Bid Round" initiative at <http://www.energy-sea.gov.il>

## What are the goals of the Proposed Law?

The goals of the Proposed Law are to establish the extent of Israel's sovereignty over the Marine Areas: the **Territorial Waters**;<sup>5</sup> the **Internal Waters**;<sup>6</sup> the **Contiguous Zone**;<sup>7</sup> and the **Exclusive Economic Zone**<sup>8</sup> (herein combined: the "Marine Areas") and to improve the ability to prevent and detect territorial violations, to exploit rights in the EEZ, to ensure the development and exploitation of the Marine Areas (including natural resources) and to ensure the protection of the marine environment.<sup>9</sup>

The Proposed Law will extend the reach of specific laws to the Marine Areas by means of establishing a legal hierarchy using the method of addendums to the law. This formal extension of certain laws to the Marine Areas will provide a permanent solution to the temporary status that has prevailed since a legal opinion by the Assistant Attorney General (Economic-Fiscal), Adv. Avi Licht was published in 2013 titled "The Law That Applies To the Marine Areas"<sup>10</sup> (herein: the "Legal Opinion of the Assistant Attorney General"). This legal opinion offers legal commentary and interpretation of existing law that have existed since the 1950s.<sup>11</sup>

The Legal Opinion of the Assistant Attorney General provides a temporary solution to the complex legal issues at hand until the enactment of the Proposed Law which has already been deferred a number of times. In this Legal Opinion, the Assistant Attorney General concludes that "according to the law and until the enactment of the Marine Areas Law, Israeli law with respect to exploration, production and transmission of natural resources, environmental protection and the regulation of fiscal matters applies to the Marine Areas ... on the surface, the subsurface and to installations that fulfil a direct or indirect function in the exploration, production and transmission of natural resources in the Marine Areas."<sup>12</sup> Furthermore, the legal opinion states that "Israeli oil & gas regulation, environmental and fiscal laws are enforceable in the Marine Areas."<sup>13</sup>

5 See the Proposed Law, Section 3(1). "Territorial Waters. The stretch of the Mediterranean Sea that is 12 nautical miles from the baseline, including the seabed within such stretch and the airspace above."

6 See the Proposed Law, Section 4, "Internal Waters of the State of Israel are the waters in the areas from the baselines to shore, including the seabed underneath and the airspace above."

7 See the Proposed Law, Section 6. "Contiguous Zone of the State of Israel is the stretch of the Mediterranean Sea beyond the territorial waters up to 24 nautical miles from the baseline"

8 See the Proposed Law, Section 9. "The Exclusive Economic Zone of the State of Israel is the stretch of the Mediterranean Sea beyond the territorial waters up to a distance of 200 nautical miles from the baseline, including the seabed in that area."

9 See Proposed Law, Section 1 – Objectives of the Law.

10 See Legal Opinion "The Law Applying to the Marine Areas" by Adv. Avi Licht, the Assistant Attorney General (Economic-Fiscal) dated January 15, 2013.

11 See for example, The Coastal Waters Law 5717-1956 and also The Subsea Areas Law, 5713-1953.

12 See the Legal Opinion of the Assistant Attorney General, p. 11, Paragraph 57.

13 See the Legal Opinion of the Assistant Attorney General, p. 1, Paragraph 4.



Figure 1 – The Marine Areas of Israel (Unofficial Map)<sup>14</sup>

## The Application of Israeli Law to the Marine Areas

Under the Proposed Law, several existing Israeli laws<sup>15</sup> will be replaced by a new law that will define the **Territorial Waters** as "The stretch of the Mediterranean Sea that is 12 nautical miles from the baseline, including the seabed within such stretch and the airspace above."<sup>16</sup> "The Territorial Waters and the Internal Waters are within the sovereign territory of the State of Israel and legislation that applies in the State of Israel will apply to them, unless otherwise specified."<sup>17</sup>

14 See Stage I Report, "Policy Paper for Israel's Maritime Domain, the Mediterranean Sea", November 2015, p. 20.

15 See amongst others, the Coastal Waters Law, 5717–1956.

16 See the Proposed Law, Section 3.

17 See the Proposed Law, Section 5 (a-b). The current international rule (12 nautical miles from the coastline) replaces the Dutch Freedom of the Sea principles that was established in the 17<sup>th</sup> century developed from the "Cannon Shot Rule, i.e. a distance of three nautical miles as a state's sovereign domain into the sea". This rule was expanded a number of times over the years by various agreements (also in Israel) up to 12 nautical miles, which is the accepted standard today.

## Historical background

In 1958, the Convention on the Continental Shelf<sup>18</sup> was formulated and for the first time formalized the principle that a country's sovereignty extends beyond its territorial waters. This ideal is based on the principle of "Sovereign Rights" that extend to the continental shelf. This convention also established the possibility for exploitation of natural resources in the Marine Areas. Israel joined this international convention in April 1958 and ratified it in September 1961.<sup>19</sup>

In 1982, the United Nations Convention of the Law of the Sea (herein: UNCLOS) was formulated.<sup>20</sup> UNCLOS regulated, amongst other things the following: the definition of the Marine Areas;<sup>21</sup> General rules for Innocent Passage in the Territorial Sea;<sup>22</sup> Methods for measuring the baselines of the Marine Areas in Coastal States;<sup>23</sup> Rights and powers in the Marine Areas; Rules for Protection and Preservation of the Marine Environment<sup>24</sup> and in addition established an international mechanism for Settlement Of Disputes and Advisory Opinions.<sup>25</sup> The list of rights includes the right to explore and exploit, conserve and manage the natural resources in the EEZ<sup>26</sup> and to establish and use artificial islands, installations and structures.<sup>27</sup> Israel chose not to officially join UNCLOS, although de facto the state operates according to recognized international practices under UNCLOS (for example, the State of Israel declared its northern maritime border with Lebanon and submitted notification the UN institutions).<sup>28</sup> In contrast, Cyprus, Lebanon and Egypt are members of the UNCLOS, as are the Palestinian Authority (which joined in January 2015).<sup>29</sup> Turkey and the US have yet to join UNCLOS, each for its own reasons.

The fact that Israel did not join UNCLOS is related to Israel's foreign and domestic policy over the years and international developments. This policy was derived from, amongst other things, security considerations due to obligations imposed on Coastal States under UNCLOS. Israel's considerations are unofficially summarized in a legal opinion written

18 See the Convention on the Continental Shelf – 1958 (signed in Geneva on April 29, 1958).

19 See the list of countries that have ratified the Convention of the Continental Shelf.

20 See The United Nations Convention on the Law of the Sea – UNCLOS – 1982.

21 See the UNCLOS, Part II (Territorial Sea and Contiguous Zone) and Part V (Exclusive Economic Zone).

22 See the UNCLOS, Passage in the Territorial Sea (Part II, Section 3) and international arrangements for passage.

23 See the UNCLOS, Article 7 – Straight Baselines.

24 See the UNCLOS, Part XII – Protection & Preservation of the Marine Environment.

25 See UNCLOS, Section 186–191.

26 See UNCLOS, Part V, Section 56.

27 See UNCLOS, Part V, Section 60.

28 See Government Decision No. #3452 dated July 10, 2011.

29 See the list of countries that have ratified the UNCLOS.

by Adv. Moshe Shachal, the former Minister of Energy, which was published in 2009<sup>30</sup> as part of his private law firm's response to a previous draft of the Marine Areas Law. Such considerations included the desire to avoid exposure to international intervention on the delimitation of the final maritime boundaries in the International Tribunal of the Law of the Sea,<sup>31</sup> the desire to steer away from claims and conflicts with neighboring countries following the major discoveries of natural gas in Israel's waters in the region, the adoption by Israel of practices accepted among regional UNCLOS members which have traditionally abstained from declaring their EEZ's and the fact that Israeli law had not yet been applied to the Marine Areas, which could hinder the momentum of exploration that was taking place at the time. This legal opinion is not an official document but perhaps clarifies the thought process behind Israel's decision not to join UNCLOS.

### Delimitation of Israel's Maritime Boundaries

The Proposed Law changes the method of measuring the Israeli baseline from which the Marine Areas are measured. The Proposed Law will give the government the authority to determine geographic points along the coastline, or near to it, which will be used to determine the baseline from which the Marine Areas are measured. This strays from the current method under which the baseline is measured from the low tide line along the coast. In addition, the government will be authorized to determine the outer edges of the Marine Areas.<sup>32</sup>

This change has major national and international significance. The government will have the authority to determine geographic points along the coastline or near it (in consultation with the Israel Mapping Center) and to draw an "imaginary line" between them in order to determine the areas up to the edge of the EEZ.

The edge of the Israel's EEZ overlaps the boundaries of neighboring countries EEZ's therefore overlaps must be resolved by diplomatic means. At the time of writing, the official geographic points have not yet been published for determining Israel's future baselines (although possible geographic points have unofficially been presented in public by the former director of the Israel Mapping Center, Dr. Haim Svaro, at a convention held by the Institute for National Strategic Studies (INSS) on February 22, 2014).<sup>33</sup>

30 See the legal opinion published in the media in 2009 on the subject of "The Law that Applies in the Maritime Zones", written by Adv. Moshe Shachal.

31 The underlying assumption on this matter is that Israel is usually discriminated against in international organizations and when issues are brought for discussion in international organizations Israel's position is challenged by hostile countries, usually in a way that has nothing to do with the issue itself but rather for political reasons.

32 See the Proposed Law, Section 27. "The government, after receiving the opinion of the Israel Mapping Center, will decide on the geographic points along the coastline or near to it that will be used to determine the baselines from which the Marine Areas are measured and may announce by decision the edges of the Marine Areas, in their entirety or not."

33 See the program of the INSS event on February 27, 2014.



The Straight Baseline method is only one of the several internationally accepted methods under international law for determining maritime boundaries and is in compliance with UNCLOS.<sup>34</sup> There is however academic debate over the extent to which the Straight Baseline method is appropriate for use on the geographic characteristics of Israel's coastline.<sup>35</sup> For further information on this matter refer to literature on technical aspects for determining baselines found in the draft Proposed Law.<sup>36</sup>



Figure 2 – The Eastern Mediterranean Sea and their EEZs

### Israel's EEZ and the first Offshore Bid Round Initiative of 2017

The government has stated that among other things the current Offshore Bid Round initiative is one of the reasons for advancing the Proposed Law at this time. Israel is in the midst of a competitive proceeding to grant twenty four (24) new exploration licenses in the EEZ. The deadline for participating in this process has been deferred a number of times and is currently November 15, 2017.<sup>37</sup> Israel is interested in promoting exploration for a variety of reasons, including to increase competition among natural gas suppliers,

34 See UNCLOS, Article 7 – Straight Baselines.

35 See Maritime Strategic Evaluation for Israel 2016/17, Full Report, Chapter 16: "Management of Israel's Maritime Zones: A Review of The Legal Situation", P. 191, Adv. Nadia Tzimerman. "It appears that decision makers in Israel are aware of the fact that the geographic characteristics of the Israeli coast are not in harmony with the straight baseline method of the Convention, however ... Israel is basing itself on the accepted practice among neighboring countries in the region."

36 See A Manual on Technical Aspects of The United Nations Convention on the Law of the Sea – 1982.

37 See Announcement of the Commissioner for Petroleum Affairs dated June 22, 2017.

to attract new players to Israel, to diversify sources of energy, to increase sources of revenue and to achieve energy independence.

Most of the new exploration blocks are located in the center of Israel's EEZ (rather than near its boundaries – see the green areas in Figure 3). Until now, Israel has adopted a gradual strategy in the EEZ which has led to the discoveries of Leviathan, Tamar and other gas fields.

However, in this context it is important to recognize existing exploration blocks close to the maritime boundaries such as the **Alon D** license<sup>38</sup> opposite Lebanon, the **Yishai** discovery<sup>39</sup> opposite Cyprus (which is part of the Aphrodite reservoir on the Cypriot side) and the **Royee** license<sup>40</sup> opposite Egypt (herein: the "Licenses Near The Maritime Boundaries").

The Licenses Near The Maritime Boundaries were granted according to a formal work plan drawn up by the State and may constitute an incentive to formalize the maritime boundaries in the future. Under the Proposed Law, natural resources found in Israel's waters (including the areas of the Licenses Near The Maritime Boundaries) should be regarded state assets according to the State Assets Law, 5711 – 1951, including restrictions that apply to them.<sup>42</sup>

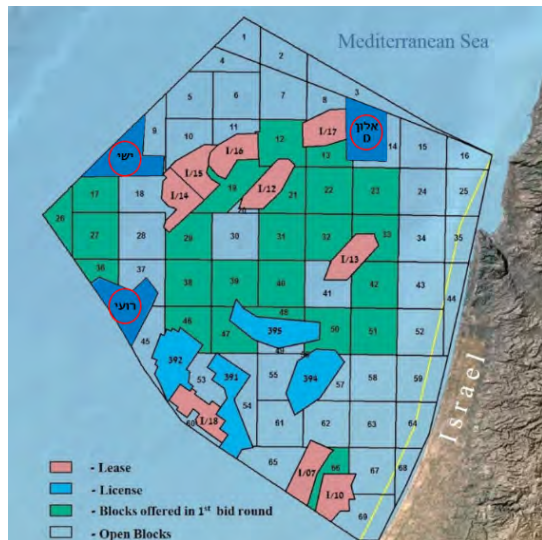


Figure 3 – Israel's New Offshore License Map<sup>41</sup>

38 See the article in Globes on August 27, 2017 which stated that: "The work plan has recently been extended by the Minister of Energy after granting an appeal submitted by the license holder claiming that they could not pursue exploration for policy and security reasons related to the EEZ border dispute between Israel and Lebanon and their desire to avoid aggravation until this dispute is resolved by international mediators".

39 See the article in Globes on November 22, 2015 on the declaration of the Yishai as a commercial discovery.

40 See the Updated Report on Drilling Work Plan for the Royee License dated June 18, 2017 (the deadline for drilling was extended to March 1, 2018).

41 See the New Offshore License Map for the Offshore Bid Round initiative by the Ministry of Energy dated December 20, 2016.

42 See the Proposed Law, Key Point 3 – The Application of Laws in the Marine Areas and the Status of Natural Resources.

Optional future arrangements for maritime boundaries will be to enter Maritime Delimitation Agreements,<sup>43</sup> Unitization Agreements<sup>44</sup> and/or the Joint Development Agreements<sup>45</sup> with Israel's eastern Mediterranean neighbors.

In 2010, Israel signed a maritime delimitation agreement with Cyprus using the Median Line standard<sup>46</sup> following the execution of a delimitation agreement between Lebanon and Cyprus earlier on. In 2011, the Israeli government decided to unilaterally declare its northern maritime boundary of the territorial waters and the EEZ with Lebanon and a list of geographic coordinates was published.<sup>47</sup>

Lebanese opposition to this declaration came swiftly. Lebanon submitted a protest to the UN regarding the delimitation agreement between Israel and Cyprus, which according to the Lebanese complaint includes part of Lebanon's marine area. Thereafter, Lebanon froze the ratification of their agreement with Cyprus.

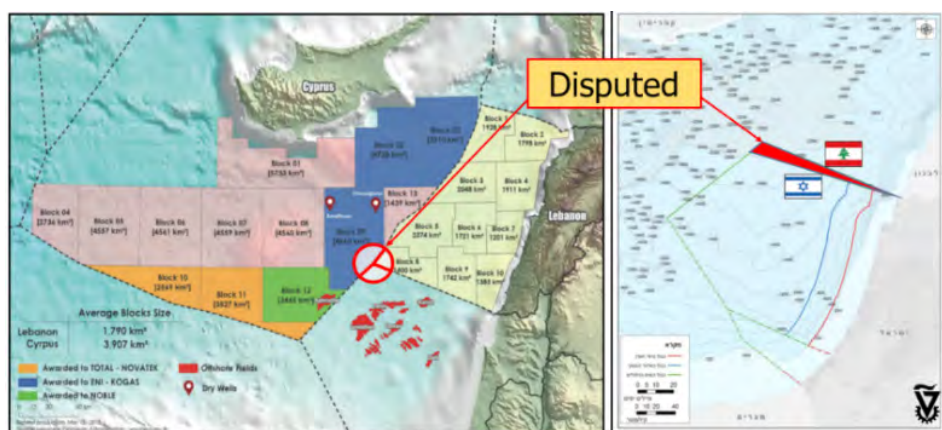


Figure 4 – The disputed area between Israel and Lebanon (which is also affected by Cyprus' maritime boundary)<sup>48</sup>

- 43 See A Manual on Technical Aspects of The United Nations Convention on the Law of the Sea – 1982, p. 137, paragraph 58.
- 44 See the definition: "Joint operations to maximize recovery among separate operators within a common reserve"
- 45 See Cross-Border Unitization And Joint Development Agreements: An International Law Perspective, Bastida Et Al, Houston Journal Of International Law, 2007.
- 46 See the Agreement Between The Government of the State Of Israel and The Government of the Republic of Cyprus on The Delimitation of the Exclusive Economic Zone - 2010.
- 47 See the Government Decision of July 10, 2011.
- 48 See the map of the Cypriot EEZ – Executive Magazine, Renewed Dynamism, Dated December 25, 2015 and also Israel's new map according to The Marine Plan for Israel by the Technion December 2015.

In this context, a call for action was issued by the government of Lebanon in the spring of 2017 for companies to carry out exploration surveys for oil and gas in a number of areas, some of which are located in the disputed area between Israel and Lebanon.

On October 13, 2017, the government of Lebanon announced that as part of the exploration license round currently underway, a consortium of ENI (an Italian company), TOTAL (a French company) and Novatek (a Russian company) had submitted a request to carry out seismic surveys in Block 4 and 9<sup>49</sup> (Part of Block 9 is located within the maritime territory of Israel according to Israel's position – see Figure 5).

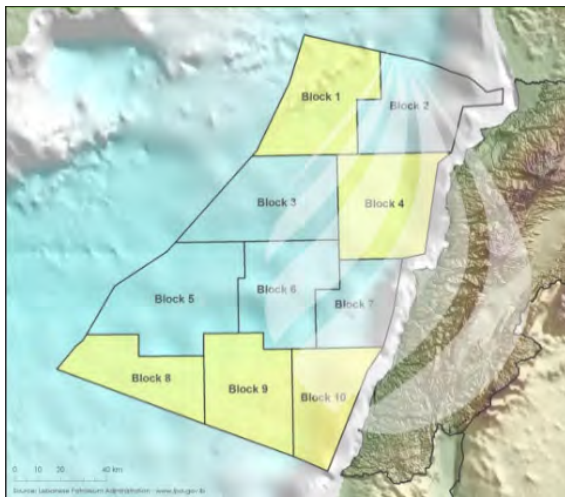


Figure 5 – Open blocks in the first round of granting of exploration licenses by Lebanon<sup>50</sup>

With regard to the southern maritime boundary between Israel and Egypt, current views believe that delimitation will be part of a broader package deal that will also resolve a number of issues between the countries, including final status of the ICC arbitration verdict against EGAS and EGPC (two Egyptian companies) in favor of the Israel Electricity Company and others due to the cessation of gas exports to Israel (following the sabotage of the gas pipeline in Sinai).<sup>51</sup> Furthermore, there is a possibility that export permits will be granted for the sale of natural gas from the Tamar and Leviathan reservoirs to Egypt and/or by way of its facilities as part of this package deal. It is also possible that the deal will be linked to the delimitation of the maritime boundary between Egypt and the Palestinian Authority.

49 See the Reuters Agency Press Release dated October 13, 2017.

50 See the maps posted on the Lebanese Petroleum Commissioner website dated January 2017.

51 See the article in Globes on December 6, 2015.

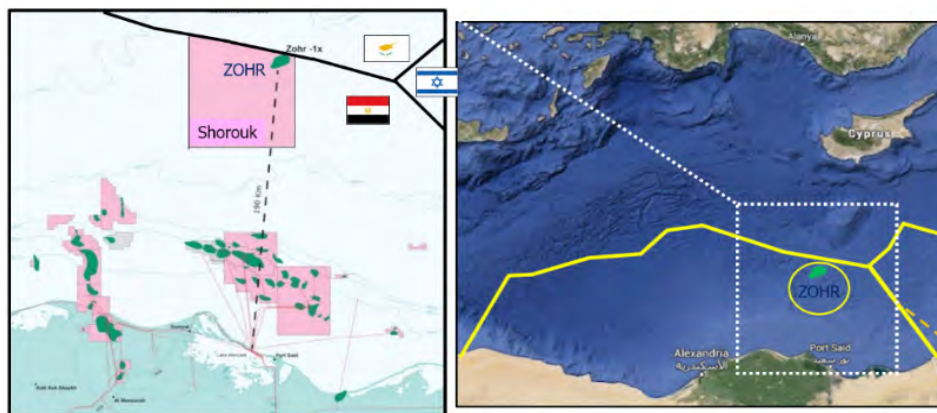


Figure 6 – Exploration activity in Egypt (the Zohr discovery near the maritime boundary with Cyprus and Israel)

Egypt is currently gaining momentum in developing natural resources in its EEZ (where the Zohr reservoir was discovered). Egypt and Israel have mutual interests for cooperation in their Marine Areas but often conflicting interests as well. On the one hand, the discoveries of natural gas have created new opportunities for cooperation between Israel and Egypt, which will require investment in infrastructure that will benefit both countries and the delimitation of their maritime boundary; on the other hand, the two countries are competing for natural gas markets and international investments. The diplomatic and economic history between the two countries has been characterized by ups and downs.

In parallel to the geopolitical and diplomatic activity in the region, leaseholders of exploration blocks located near the edges of the EEZ must also negotiate commercial agreements for the development of cross-border reservoirs. At this stage, commercial entities will find it difficult to reach such agreements for fields near Israel's maritime boundaries with Lebanon and with the Palestinian Authority due to the tense geopolitical status between the countries at this time. Therefore, it appears that the best opportunity at this point in time for cross border commercialization and development is between Israel and Cyprus.



Figure 7 – The Marine Plan Map of Israel by the Technion (on which are marked the border areas in the south)



Figure 8 – The maritime boundary with Gaza and agreements<sup>52</sup>

### The Marine Areas: Territorial Waters & Internal Waters

The Proposed Law will restate Israeli law on the matter of Israel's territorial waters including its internal waters.<sup>53</sup> The change will include a newly defined body of internal waters measured from the Israeli coastline to the baseline. Currently, under law the internal waters include the Sea of Galilee and waters within the ports' wave barriers. This change becomes relevant due to the adoption of the new Straight Baselines methodology.

### Examples of application of Israeli law on offshore projects within the Territorial Waters

At this point, the most significant offshore project within the territorial waters is the construction of the gas production platform for the Leviathan field (including a shore crossing to the receiving station through the Dor beach). In view of the platform location within the territorial waters, key portions of the project are subject to the full extent of Israeli law, including the Planning and Building Law.

52 Figure 8. Source: the Vox website which is referenced from the Policy Paper Stage I (p. 188).

53 See the Proposed Law, Section 4. "The Internal Waters of the State of Israel are the waters in the areas from the baselines to shore, including the seabed underneath and the airspace above."



Figure 9 – The Leviathan Production Platform within the territorial waters of Israel (Platform currently under construction in the US)

The construction of the Leviathan Production Platform and shore crossing through the Dor beach was approved according to the National Zoning Plan (Tama) 37H by the National Council for Planning and Building according to the Planning and Building Law. The procedural elements of the zoning plan were also affirmed in Supreme Court proceedings.<sup>54</sup> Subsequently, the field development plan as a whole was approved by the Ministry of Energy and building permit were granted.

The Leviathan subsea production facilities and subsea infrastructure located on the seabed are located outside the territorial waters of Israel and therefore are not subject to Tama 37H and/or the Planning and Building Law.

In the future, more offshore facilities (fixed and/or floating) may be positioned in Israel's Marine Areas and therefore it is important to finalize the legal and planning aspects as soon as possible.<sup>55</sup>

54 See Supreme Court Case 7737/14 Municipality of Yokneam et al versus the National Council for Planning and Building and others.

55 See the draft Proposed Law, "The goal of the Proposed Law and the need for it" (Draft Law – Explanations), P.2. "...In the future, activities carried out with the encouragement of the State of Israel in Marine Areas may go beyond the context of natural resource exploration. For example, Government Decision #4776 dated June 17, 2012 initiated a feasibility study to deepen the governments understanding of establishing artificial islands for infrastructure installations."

## The Contiguous Zone

Under the Proposed Law, Israel will formalize the extent of its laws to the Contiguous Zone.<sup>56</sup> New arrangements will include, amongst other things, expansion of specific laws such as the Antiquities Law<sup>57</sup> and associated regulation beyond the territorial waters. Furthermore, the new status will extend laws governing the entry and exit to and from the Contiguous Zone making it identical to entering and leaving Israel. In addition, policing, oversight and enforcement powers will be extended as will laws listed in the First Addendum<sup>58</sup> of the Proposed Law. The First Addendum includes a list of laws focusing on obligatory payments, such as tariffs, immigration and public health laws that will apply in the Contiguous Zone. The Planning and Building Law is not included in the First Addendum, since the Proposed Law will not extend beyond the territorial waters. As an alternative, the Proposed Law proposes a "Quasi-Planning Mechanism" described below.

### Examples of application of Israeli Law on Projects in the Contiguous Zone

For the energy sector, the extension of Israeli laws to the Contiguous Zone will constitute a change to the existing situation. For example, in the southern area of Israel's Contiguous Zone there are currently two fixed offshore platforms (the Mari B and Tamar platforms). The Proposed Law will affect the management of these platforms located about one (1) or two (2) km outside the territorial waters within the Contiguous Zone.



56 See the Proposed Law, Section 6. "The Contiguous Zone of the State of Israel is the stretch of the Mediterranean Sea beyond the territorial waters up to 24 nautical miles from the baseline."

57 See the Antiquities Law, 5738–1978.

58 See the Proposed Law, First Addendum, "Laws concerning oversight and enforcement powers in the Contiguous Zone."



Figure 10 – The Tamar and Mari B Platforms in Israel's Contiguous Zone<sup>59</sup>

These Production Platforms were positioned by the State and the Operator in the Contiguous Zone for a number of reasons such as the geographic plateau of the continental shelf on which the facilitates rest in waters up to 300m; also, their location outside the territorial waters and other practical reasons such as their proximity to the Ashkelon lease, existing shore facilities and entry point to shore, planning and building constraints, protest of residents in the North, several legal proceedings, etc.

### The Exclusive Economic Zone<sup>60</sup>

The Proposed Law will extend Israeli laws to the EEZ<sup>61</sup> i.e. the "...the stretch of the Mediterranean Sea beyond the territorial waters up to a distance of 200 nautical miles from the baseline, including the seabed in that stretch"

At the points where Israel's EEZ overlaps the EEZ of neighboring countries (Cyprus, Lebanon, Egypt and/or the Palestinian Authority) the Proposed Law specifies that settlement of overlaps will be determined by agreement and in absence of an agreement according to international law. At this point in time, only the maritime border with Cyprus has been anchored in an agreement.<sup>62</sup> Some scholars now question whether the adoption of the Straight Baselines methodology in the Proposed Law will have implications that require changes in the agreed-upon maritime boundary with Cyprus. This agreement includes conditional and limited terms for modifications and amendments specifically on the geographic points 1 and/or 12 of the Median Line.<sup>63</sup> The countries have agreed on an arbitration mechanism in the event of a dispute.

The Proposed Law will formally adopt the Supreme Court verdict in the case of **Davidian**,<sup>64</sup> namely that oil and gas fields are state-owned assets by law<sup>65,66</sup> (even though a legal debate has not yet been concluded with respect to the status of "New Property Rights"

59 Photo by Moshe Shai as published in Yisrael Hayom on May 27, 2015.

60 See the Proposed Law, Chapter E, Mark a, Sections 9–10 which include the definition of the EEZ and also of the continental shelf for legal reasons.

61 See the Proposed Law, Section 9(a). "The Exclusive Economic Zone of the State of Israel is the stretch of the Mediterranean Sea beyond the territorial waters up to a distance of 200 nautical miles from the baseline, including the seabed in that stretch."

62 See the Proposed Law, Section 9(b).

63 See the agreement between Israel and Cyprus, Article 1(c).

64 See Supreme Court Case 3734/11 Haim Davidian and others versus the Knesset of Israel, paragraph 28.

65 See the State Assets Law, 5711–1951, paragraph 1.

66 See the Subsea Areas Law, 5713–1953, paragraph 1a.

(as defined)<sup>67</sup>. According to the Proposed Law, the State will manage the fields as state assets "including restrictions on executing deals relating to these assets and the grant of rights to exploit them by the government, unless otherwise provided by law."<sup>68</sup>

The **Second Addendum**<sup>69</sup> of the Proposed Law lists the activities and accompanying activities<sup>70</sup> (and the list of assets related to these activities) for which Israeli laws will apply in the EEZ. The list includes, among others the Petroleum Law,<sup>71</sup> the Natural Gas Sector Law,<sup>72</sup> the Antitrust Law,<sup>73</sup> the Ports Ordinance,<sup>74</sup> the Regulation of Security in Public Organizations Law,<sup>75</sup> environmental protection laws and others.

In addition, in the **Third Addendum** in the Proposed Law formalizes the extent of laws applying to "Marine Installations"<sup>76</sup> in the EEZ<sup>77</sup> including laws concerning employment, social welfare, obligatory payments, immigration, safety and health. Furthermore, the **Fourth Addendum**<sup>78</sup> contains a list of laws that apply to "Permanent Marine Installations"<sup>79</sup> in the EEZ, for which specific laws are necessary due to the extended period of activity of these installations, with the appropriate limitations (see also preparedness for emergencies).

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67 See Supreme Court Case 3734/11 Haim Davidian et al vs the Knesset of Israel, Paragraph 28: "A right with economic value that originates from the government authorities."

68 See the Proposed Law, Section 11 and Introduction – Key Point 3.

69 See the Proposed Law, Second Addendum, "Laws that apply to the Exclusive Economic Zone."

70 See the Proposed Law, Section 12 (a) "Exploration, production, exploitation, preservation or management of natural resources and also, laying cables and pipelines, carrying out scientific research, constructing marine installations, maintaining the safety and security of marine installations and environment protection."

71 See the Petroleum Law, 5712–1952.

72 See the Natural Gas Sector Law, 5762–2002.

73 See the Antitrust Law, 5748–1988.

74 See the Ports Ordinance [new version], 5731–1971.

75 See the Security in Public Bodies Law, 5758–1998.

76 See the Proposed Law, Section 2. Definitions. "A Marine Installation is a structure or facility including rigs in the Exclusive Economic Zone, whether connected to the seabed or not, which is necessary to carry out the list of activities as described, even if such vessel meets the definition of a Marine Vessel according to the Shipping Law (Vessels), 5720–1960.

77 See Proposed Law, Third Addendum, "Laws applying to marine installations located in the Exclusive Economic Zone."

78 See the Proposed Law, Fourth Addendum, "Laws that apply to Permanent Marine Installations in the Exclusive Economic Zone."

79 See the Proposed Law, Section 2. Definitions. "A Permanent Marine Installation is an installation planned to remain in place permanently or for an extended period of time for which the Minister of Justice has announced in the Reshumot to be necessary to conduct the activities listed in Section 1 of the definition of a "Marine Installation" – and for which the Minister of Justice has declared to be necessary after consulting with the Minister of Energy."

## Examples of Application of Israeli law to Projects in the EEZ

The following is an example of the effect of the Proposed Law on the Karish and Tanin offshore fields located in the EEZ, which is currently in development.

During the project development phase, drilling rigs and/or drilling ships and/or other vessels will operate in the EEZ carrying out the construction tasks and installation for short periods of time. Upon completion of the work these vessels will leave the area. Such vessels are "Marine Installations"<sup>80</sup> and are defined in the Proposed Law and subject to the laws appearing in the Second and Third Addendums accordingly (with the appropriate limitations).



Figure 11 – A drilling ship



Figure 12 – Drilling rig ("Marine Installation")

Subsequently, at the conclusion of the construction and installation phase and thereafter during the production phase, a Floating Production Storage and Offloading (FPSO) installation will be positioned, according to the plan, in the EEZ with characteristics of a "Permanent Marine Installation", i.e. a fixed installation that will remain in the area over time and will serve as a strategic installation for the production of natural gas for Israel. Therefore, the list of laws appearing in the Second, Third and Fourth Addendums of the Proposed Law will apply to a FPSO (with the appropriate limitations).

The extension of Israeli law to the EEZ in the manner described above has major economic implications for companies in the energy sector and the implications should be examined carefully.

<sup>80</sup> See the Proposed Law, Chapter II. Definitions. "Marine Installation".



Figure 13 – An FPSO in the EEZ as Proposed for the Karish and Tanin fields<sup>81</sup>

On the one hand, the Proposed Law creates regulatory and legal certainty in the Marine Areas in accordance with international law, increases the oversight and governance of the State and formalizes the division of responsibility between the State and other parties, such as the production and exploration companies; on the other hand, the Proposed Law increases the cost of development, construction and operations for offshore projects and may affect long-term profitability.

Furthermore, as already mentioned, another controversial issue related to the Proposed Law is that the Planning and Building Law will not apply beyond the territorial waters. This controversy recently came to light with respect to Karish and Tanin after the field development plan was submitted to the National Planning Council by the Director General of the Ministry of Energy on August 8, 2017 and approved shortly afterwards by the Ministry of Energy on August 30, 2017.<sup>82</sup> The opponents to the Proposed Law as presented (and to the manner in which the Karish and Tanin plan was approved) claim that "there should be separation between the body that approves offshore drilling (the Ministry of Energy and the Ministry of Finance) and the body overseeing it (the Ministry of Energy)."<sup>83</sup> Based on this rationale, a claim was filed in the Supreme Court arguing "that the development plan should be approved only after the completion of an Environmental Impact Study (including considering alternates), publication of such options and allowing the public to comment and express reservations."<sup>84</sup> This will be discussed in further detail below.

81 See press release by Energean dated June 20, 2017.

82 See the press release by Energean on August 30, 2017.

83 See the website of the "Tsalul" organization on the issue of the Marine Areas Law.

84 See the article in Calcalist on September 14, 2017 "The Association for the Protection of Nature goes to the Supreme Court: Stop the Development of the Karish and Tanin Fields."

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## Transportation, Long Term Policy Document, Environmental Aspects and the Israeli Industry

### Maritime Transportation

The Proposed Law in its current version was submitted to the ministerial committees for regulation and legislative affairs through an initiative led by the Ministry of Energy and the Ministry of Justice respectively. Very noticeable is the absence of active involvement by the Ministry of Transportation on the issues relating to maritime transport and shipping. Although the addendums to the Proposed Law list various shipping and port laws, it may be worthwhile considering increased involvement (perhaps at the level of a consultant) of the Ministry of Transportation on the relevant issues according to the Proposed Law.

### Long Term Policy Document

The Proposed Law has prompted disagreements between the Ministry of Energy and the Ministry of Environmental Protection on the issue of managing environmental aspects of oil and gas activity in the EEZ. Thus, the government has been urged to formalize its policy on this issue. The Proposed Law presents a "Quasi-Planning Mechanism" that balances between the interest of developing oil and gas fields and the interests of preserving the marine environment and the safety and health of civilians. As already mentioned, the Proposed Law does not extend the Planning and Building Law beyond the territorial waters.<sup>85</sup> The "Quasi-Planning Mechanism" includes, amongst other things, a requirement for the government to approve a "Long-Term Policy Document Regulating the Activities and Uses of the Marine Areas"<sup>86</sup> (Herein: "Long Term Policy") within two years from the date of the effectiveness of the Proposed Law.<sup>87,88</sup> The Long Term Policy will be issued by the Ministry of Finance in consultation with the National Planning Council. All government entities that will exercise their authority in the Marine Areas will be subject to this Long Term Policy.<sup>89</sup> Until the final approval of the Long Term Policy "the Ministry of Energy will exercise its authority in the EEZ according to the activities and uses in such area taking into consideration environmental aspects related to the area ... in accordance with the recommendations of the Strategic Environmental Study carried out by the Ministry of Energy".<sup>90</sup>

85 For further details on the planning approach which states that the Planning and Building Law should be applied in the EEZ, see the legal opinion issued by of Adam, Teva Vadin dated November 2013.

86 See the Proposed Law, Paragraph 16(a-i).

87 See the Proposed Law, Paragraph 16(a).

88 See the Government Decision #2983 (reg/8).

89 See the Proposed Law, Paragraph 16(g).

90 See the Proposed Law, Paragraph 16(e).

## Environmental Aspects of Petroleum Drilling Activity

It is further proposed that the granting of approvals for Petroleum Drilling Activity<sup>91</sup> in the EEZ will be the responsibility of the Authorized Official<sup>92</sup> within the Ministry of Energy. The Ministry of Environmental Protection will have an advisory capacity in the approval process. The Authorized Official will have the power to deviate from the position of the Ministry of Environmental Protection, based on special justifications that will be recorded and published.<sup>93</sup>

The government believes that Petroleum Drilling Activity in the EEZ is different in nature from Territorial Waters and on land, since the location of the drilling is far from population centers and from other marine activities and uses, and thus the effects of such activity on the public and on the marine environment near shore are minimal. The "Quasi-Planning Mechanism" gives adequate expression to planning, safety, engineering, professional and environmental considerations as required in a process of this type. The Proposed Law includes a list of environmental laws that apply to the Marine Areas and from the moment the proposal is approved additional approvals will be required, such as approval of an emergency plan, hazardous material permits, permits for water discharge at sea issued by an inter-ministerial committee led by the Ministry of Environmental Protection and emissions permit (for natural gas).

According to principles to be set forth in the Long Term Policy, and after providing an opportunity to the Israel Nature and Parks Authority to give its opinion, the Minister of Finance will be able to declare certain areas in the EEZ as a "Protected Marine Area".<sup>94</sup> A Protected Marine Area will have the status of a nature reserve, according to the National Parks Law<sup>95</sup> and its regulations. Prohibitions and restrictions that apply to Protected Marine Areas will not apply to the Israel Defense Forces or any branch of the defense establishment which the Minister of Defense or the Prime Minister approves in this context.<sup>96</sup>

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91 See the Proposed Law, Section 17, Definitions. "Petroleum Drilling Activity include drilling activities as part of petroleum exploration or during the petroleum production or during the positioning of a Permanent Marine Installation with the purpose of conducting Petroleum Drilling or handling the products of said Petroleum Drilling or storing products related to Petroleum Drilling or for the dismantling of said Marine Installation and laying pipeline infrastructure for transporting Petroleum [O.S. "Petroleum" is as defined in the Petroleum Law]."

92 See the Proposed Law, Section 17, Definitions: "The Authorized Official is the official authorized to approve Petroleum Drilling Activity under to the Petroleum Law and/or the Natural Gas Sector Law."

93 See the Proposed Law, Paragraph 19(e).

94 See the Proposed Law, Section E, Section 26(a). "A Protected Marine Area is an area in the Mediterranean Sea in which animals, plants, natural formations or land that have scientific or educational interest are protected from undesirable changes in their appearance, biological composition or their development."

95 See the National Parks Law, Nature Reserves National Monuments & Memorials Law – 5758, 1998

96 See the Proposed Law, Mark E, Section 26(f).

On the practical level, the Planning Authority (currently within the Ministry of Finance) has been preparing for the past several years a Long Term Policy of the type mentioned in the Proposed Law, a process that has not yet been completed.<sup>97</sup> To date, only a draft of the first stage of this process has been published (in November 2015).<sup>98</sup> The Ministry of Energy has also completed its groundwork prior on environmental issues by means of a Strategic Environmental Study for offshore oil and gas exploration and production which was published.<sup>99</sup>

Opponents to the Proposed Law, such as Environmental organizations are calling on the government to stop the approval process of the Proposed Law in its current version and to allow the public to express its position. In addition, they claim that the Proposed Law does not allow for protection of nature in Marine Areas and does not allow due process in a democracy<sup>100</sup> Such groups seek to prevent a situation in which the Ministry of Environmental Protection cannot fulfil its function because of an initiative that bypasses the planning process. They demand the application of the Planning and Building Law in the Marine Areas or alternatively to create specific planning frameworks in this context.

### Israeli industry and Local Content

It should be mentioned that the extension of Israeli labor laws to the EEZ as proposed in the **Fourth Addendum** will contribute to ensuring fair employment practices and the protection of rights for Israeli workers who will be employed on Permanent Marine Installations in the EEZ. The State has emphasized the importance of integrating, employing and training Israeli personnel and local content in the oil and gas industry to the maximum extent possible and has even introduced regulations designed to encourage such involvement. Thus, for example, in the Leviathan and Karish-Tanin leases, regulations are in place to measure local content utilized in projects in the Marine Areas (for example the obligation to submit a detailed work plan, minimum investments, etc.).<sup>101</sup> In addition, according to the Natural Gas Framework (Government Decision #476) leaseholders must invest a cumulative amount of \$500 million over 8 years in local content to the (starting from the determining date)<sup>102</sup> with the goal of maximizing value added to the Israeli economy.

97 See an article in the Calcalist newspaper on November 9, 2015.

98 See the Stage I Report, "Policy Document for Israel's Maritime Domain – Mediterranean Sea", dated November 2015.

99 See "A Strategic Environmental Survey for the Offshore Exploration and Production of Oil and Gas" dated October 2016.

100 See the Tashtiot "Environmental Organizations to Steinitz: Stop the Proposed Marine Areas Law" dated September 6, 2017.

101 See the Leviathan lease and the Karish and Tanin lease, Section 30, Local Content.

102 See Government Decision #476, Section I.

## Preparedness of Civilian Industry for Emergencies

The issue of the preparedness of the civilian industry for emergencies was investigated in the State Comptroller report published in September 2015.<sup>103</sup> Specifically, within the Leviathan and Karish-Tanin lease documents are obligations to prepare a "Procedure for Operation of Installations"<sup>104</sup> and also to coordinate activities in an emergency with the authorities.<sup>105</sup> The State Comptroller warned of problems in maintaining the operation of civilian industry during an emergency and in particular the operation of offshore gas installations. To address this matter, the Proposed Law proposes to extend the Labor Services in Emergencies Law – 1979<sup>106</sup> to offshore installations in the EEZ.<sup>107</sup> In this way, the State will improve the ability to ensure the continuity of natural gas supply in an emergency and will also formalize the legal basis for declaring "**Critical Enterprise**"<sup>108</sup> status for gas facilities in the Marine Areas (which was granted to the existing gas platforms in the summer of 2014).<sup>109</sup> The problem being addressed is that currently, some of the **critical** employees working on the offshore installations in the Marine Areas are not Israeli citizens, they are employed by a foreign company and do not have permanent resident status.<sup>110</sup> Therefore, the question arises as to what means the State can ensure the manning of key positions on Permanent Marine Installations during emergencies. There is a need to examine additional mechanism to ensure that key positions are manned during an emergency, whether by means of the lease document or by consent and/or by means of a restraining order and/or amendments to the law and/or by means of training permanent residents to fill those positions.

103 See the State Comptroller Report "Preparedness of Civilian Industry for Emergencies", September 2015.

104 See the Leviathan and Karish-Tannin lease documents, Section 20.

105 See the Leviathan and Karish-Tannin lease documents, Section 28.2.

106 See the Labor Services in Emergencies Law, 5727–1967.

107 See the Proposed Law, Fourth Addendum, Law Number (#32).

108 See the Labor Services in Emergencies Law, 5727–1967, Definitions. "A **Critical Enterprise** is an enterprise or part of it that operates or can be operated to benefit state security or public security or which supplies critical goods or services and which has been approved as such by an order of the Minister after consultation with the Minister of Defense...; and also any enterprise or part of one that can be operated to meet the critical needs of the economy and whose operation is essential to the supply of goods and services necessary to the public or for export and the Minister has given his approval by an order on this matter."

109 See the State Comptroller Report "The Preparedness of Civilian Industry for Emergencies", September 2015, p. 16. "In the summer of 2014, **Critical Enterprise** approval was given to the offshore gas installations, which are operated by, among others, a foreign company."

110 See the State Comptroller Report "The Preparedness of Civil Industry for Emergencies", September 2015. Reference No. 5. "See the revised version of the Labor Services in Emergencies Law, 5727–1967, which refers to the Security Services (integrated version) Law, 5736 - 1986, stating that a Permanent Resident is a 'person whose permanent place of residence is within a territory governed by the laws of the State of Israel or a person whose presence is viewed as permanent residence accordingly [to this law]."



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## Conclusion and Recommendations

The draft Proposed Marine Areas Law, approved by the ministerial committees, should be advanced in an effort to reach the broadest possible consensus between the relevant professional entities, leading up to its final approval by the Knesset as early as possible, with emphasis on the following issues:

- The implications of determining the geographical coordinates along the coast or near to it which will be used to determine the baseline from which the Marine Areas are measured (according to paragraph 27 of the Proposed Law).
- Promoting diplomatic efforts (whether explicit or implicit) for settling the maritime boundaries of the EEZ that overlap with those of neighboring countries and also to prepare for the possibility of disagreement under international law (according to paragraph 9(b) of the Proposed Law).
- To conclude and approve the Long Term Policy Document regulating the activities and uses in the Marine Areas as soon as possible (According to Chapter 5, Mark 3 – Long Term Policy, Section 16 of the Proposed Law).
- To formulate general environmental policy instructions from which specific criteria for submitting an environmental document may be derived (according to Chapter 5, Mark 4. "Environmental Aspects of Petroleum Drilling Activity. Sections 17–25 of the Proposed Law).
- To advance development of existing and new fields in Israel, including the Leviathan project, the expansion of Tamar Southwest and the Karish-Tannin project, with emphasis on energy security, including "non-disruptable physical availability of natural gas, at a reasonable price, while taking into account environmental considerations."
- To advance the "Offshore Bid Round" initiative without any additional delays; to attract operators to Israel; to establish mechanisms for reducing regulation and approving projects on a "fast track" basis; and encouraging international players to operate and invest in Israel.
- To assess the implications and ways for including the Ministry of Transportation as an advisory in the management of aspects of the Proposed Law on matters related to shipping, shipping lanes and other essential related issues.
- To examine and apply additional mechanisms that will ensure the continuity of civilian industry in emergencies.

# Economy, Energy, Shipping and Marine Aquaculture

## Shipping and Ports

*Arie Gavish*

### Activity in Israel's ports

There are five ports operating in Israel, three of which (Haifa, Ashdod and Eilat) are commercial ports and two of which (Hadera and Ashkelon – Eilat-Ashkelon Pipeline Company) are energy ports for the unloading/loading of crude oil, petroleum distillates and coal. The Israel Shipyards port, which is private, has been operating since 2008 within the boundaries of the Port of Haifa. There are two new ports currently under construction – the Hamifratz port and the Hadarom port which are essentially terminals for containers and other cargo within the boundaries of the Port of Haifa and the Port of Ashdod, respectively. The start of operations of the terminals is planned for 2021 and both of them will have private operators.

### The ports reform of 2005 and increased competition between Israel's ports

Since February 2005, the ports in Israel have been operating according to a new format based on the Shipping and Port Authority Law, from – 2004 (herein: The Law), which replaced the Port Authority Law, from – 1961, according to which the Port Authority had operated for the 44 years prior to the reform. The Law clearly defines the goals of the reform and the functions of the various entities in the ports, such as the port operating companies (Haifa, Ashdod and Eilat), the Israel Ports Company (IPC) and the Shipping and Ports Authority (SPA).<sup>1</sup> The Law encompasses the ports of Haifa, Ashdod and Eilat only, including the corporations within the boundaries of the ports as defined by the Law. The goal of the reform was to implement structural change in Israel's ports according to the "landlord" model.

### Operation of the ports according to the landlord model

Most of the ports in the world operate according to the landlord model. This usually involves a municipal authority or other public authorized body that controls the land and the sea within the boundaries of the port. Its main goal is the development of the port and to provide assistance to the licensed corporations within its jurisdiction with respect to all of the common functions, so that each of them can focus on its area of responsibility in providing efficient service to users.

The main functions of the landlord are:

- Port's real estate management.
- Development of the port – expansion, new terminals, maritime development, etc.

<sup>1</sup> Under the Ministry of Transportation. It serves as the government regulator in these domains.

- Management of activity that is common to all of the corporations operating within the port, such as: the maritime domain, spatial security, transportation routes, marketing, information systems, etc.
- The execution of regulators' instructions to the port, i.e. those of the Shipping and Ports Authority and regulators in the areas of port security, environmental protection, etc.

The landlord leases land to the various corporations to be used for defined activities (containers, general freight, bulk freight, passengers, fuels, storage areas, logistics centers, etc.) and is also responsible for other activities that are common to all the corporations, such as land-based transportation (including railway lines), the maritime domain and maritime services (Port Control, navigation, towing, mooring, etc.), security of the port, dealing with marine pollution, etc. The landlord's activities are meant to serve as a kind of accelerator for this activity and the success of the licensed corporations in its jurisdiction, and therefore its own success as well.

It should be emphasized that the regulatory authority responsible for the ports is a state entity, in general, The National Shipping and Ports Administration (Belongs to the Transportation Ministry), that is in continual contact with international organizations, such as the IMO and others, and it is the one that translates international regulations into laws, regulations and temporary directives related to the ports.

### **The landlord model in Israel**

The reform essentially set down three levels of responsibility and operations for Israel's ports:

1. The state: through the Shipping and Ports Administration (SPA) and the ports' managements.
2. Landlord: the Israel Ports Company (IPC).
3. The operation of the port: the government-owned port companies and in the future the private operators.

**The establishment of the Shipping and Ports Administration (SPA):** As part of the reform, regulatory responsibility for the ports (all five of them) was transferred to the Shipping and Ports Agency which became the Shipping and Ports Administration. The organization underwent a structural reorganization in order to carry out its regulatory tasks as defined in the Law.

**The Israel Ports Company (IPC):** As part of the reform, the IPC was created as a company under full government ownership; it is responsible for the development and assets of Israel's ports (Haifa, Ashdod, Eilat). Its main functions according to the Shipping and Port Authority Law, from – 2004 are as follows:

1. The management of the land within the boundaries of Israel's ports (Haifa, Ashdod and Eilat) which are defined in the shipping and ports laws as declared territories of the port.
2. Planning and development of the ports (Haifa, Ashdod and Eilat). Development of the Hamifratz and Hadarom ports was carried out as part of this function.

Following the approval of the reform and as part of an interim agreement between the IPC and the SPA, it was decided to create two port managements (Haifa and Ashdod) in February 2007 and that each would be headed by a port director (Haifa and Ashdod), as defined in the Law, and would organizationally be part of the SPA. This was in addition to the CEOs of the Haifa and Ashdod port companies who are responsible for the operation of the port companies as defined in the license granted to them by the SPA. These port managements serve as an organizational-managerial infrastructure for transforming the IPC into a landlord.

The intention of the interim agreement was to prepare the ground for the IPC to operate as a landlord for the Haifa and Ashdod ports. Since the Port of Eilat is small, it has no need for a port manager in addition to the CEO of the Eilat Port Company. The transfer of the Haifa and Ashdod port managers from the SPA to the IPC was planned to occur in 2008, according to a government decision, as the first step in transforming the IPC into the landlord of the Haifa, Ashdod and Eilat ports.

As of 2017, the Haifa and Ashdod port managers had not been transferred to the IPC. The Haifa and Ashdod port managements have been operating for about ten years in this temporary format, i.e. the agreement between the IPC and the SPA. It can be assumed that the transfer of the port managers to the IPC and the transformation of the IPC into a landlord in the full sense of the term will take place after the transfer of the Marine Departments and the rest of the joint activity (which was described in detail above) from the Haifa and Ashdod port companies to the IPC and the creation of an organizational structure for the landlord as a Port Authority headed by a port manager.

It should be mentioned that a significant portion of the functions currently carried out by the IPC, primarily with respect to development of infrastructure and assets, is certainly consistent with its role as landlord of the ports. The IPC, which was "born" within the headquarters of the Port Authority that operated over a period of 44 years, is a bureaucratic structure that is mainly involved in the planning, monitoring, supervision and development of the ports. The IPC in its present format has no operational ability with which to deal with functions that are common to all of the corporations operating in the ports, such as in the maritime domain (Port Control, navigation and towing services), spatial security, etc.

The existing port managements constitute the IPC's operational capability in the Haifa and Ashdod ports for some of the areas that are common to all of the licensed

corporations. Transforming the IPC into a full landlord of the Haifa and Ashdod ports requires an appropriate organizational structure, the division of responsibilities and authorities among the sub-organizations, the definition of mutual relations between the sub-units, etc. The lack of attention given to this matter is liable to create distortions in the operation of the new terminals (see above) and is liable to adversely affect the operation of the licensed corporations in the ports. This anomalous situation calls for major change that will lead to the cancelation of the Haifa and Ashdod port managements, which are currently operating on the basis of a temporary agreement between the IPC and the SPA, and at the same time will solidify the IPC's status as landlord of the ports (Haifa, Ashdod and Eilat) with an official and legal status.

It should be mentioned that the decision to transform the Israel Ports Company (IPC) into the landlord of the three commercial ports in the country (Haifa, Ashdod and Eilat) to some extent reduces its ability to serve the three ports under conditions of competition.<sup>2</sup>

The opening of the new terminals (Hamifratz and Hadarom) is planned for 2021, which will require the ports to organize for activity according to the landlord system. The Haifa and Ashdod ports are already operated—and will in the future continue to be operated—by a number of licensed corporations and other bodies that "need" a landlord who will provide common services to them.

#### **Following are the corporations and bodies operating in the Haifa port:**

- The Haifa Port Company.
- The Israel Shipyards Port Company.
- The SIPG<sup>3</sup> Company – Hamifratz terminal.
- Tashan – the fuel pier which includes a mooring facility.
- Dagon – storage silos.
- Gadot pier.
- Chemicals terminal.
- Shavit harbor – a fishing boat anchorage and marina under the IPC's responsibility.
- The naval base.
- Maritime police.
- Maritime contractors.

2 In discussions that preceded the ports reform of 2005, a proposal was made to create a separate landlord for each port, as is the situation in most ports worldwide. If this proposal had been implemented, the function of landlord would probably have been given to a municipal authority (the Haifa Municipality, the Ashdod Municipality and the Eilat Municipality). As landlord, a municipality has a high level of motivation to encourage the growth of the port in its jurisdiction for the benefit of residents. However, as mentioned, this proposal was not accepted.

3 Shanghai International Port (Group).

**Following are the corporations and bodies operating in the Ashdod port:**

- Ashdod Port Company.
- TIL Company – the Hadarom terminal.
- Pier 11 and 12 – Israel Chemicals Ltd. – export of phosphates and potash.
- Pier 30 – responsibility of the IPC.
- The naval base.
- Maritime contractors.

**Following are the corporations and bodies operating in the Eilat port:**

- The Eilat Port Company.
- Israel Chemicals Limited – export of phosphates and potash.
- Maritime contractors.

**The creation of the three port companies:** The reform established that the activity in the ports would be consolidated into three port companies that would be government-owned. These companies (the Haifa Port Company, the Ashdod Port Company and the Eilat Port Company) would carry out the day-to-day operations in the ports. The reform also specified that within five years the process would begin of issuing the shares of the Haifa Port Company and the Ashdod Port Company on the stock market. This was to be accomplished in a gradual process such that, by 2020, 49% of the companies' shares would be owned by the public. The reform also specified that within five years the Port of Eilat's operations would be transferred to a private operator.

In actuality, the operations of the Eilat port were fully transferred to a private operator (Papo Maritime Ltd. owned by the Nakash brothers who won an international tender) for a period of 15 years. The Haifa and Ashdod port companies were not issued to the public and they did not switch to private operators as planned. This was due to a lack of agreement between the port workers represented by the Histadrut (The Union), on the one hand, and the managements of the Haifa and Ashdod companies and the Ministry of Transportation, on the other, in addition to other reasons.

**Competition among the ports in Israel**

The ports reform of 2005 was formulated with the goal of developing competition between the ports, which was to be accomplished by separating one from the other. The idea was to improve service and efficiency for the benefit of users and the public. Twelve years have passed since the beginning of the reform but it is still too early to carry out an in-depth assessment of the reform's outcomes and the extent to which its goals have been achieved. The new ports (Hamifratz and Hadarom) that are under construction (and are expected to begin operations in 2021, as mentioned) will have a major influence on the

ports in Israel and on the results of the reform. Nonetheless, it is possible to examine the trend in competition between Israel's ports.

Although there is competition between the existing ports (the Haifa Port Company, the Israel Shipyards Port Company, the Ashdod Port Company and the Eilat Port Company), it is too early to determine its scope, in which port services it exists and whether it is efficient. The start of operations of the Israel Shipyards port in 2009 has significantly boosted the level of competition in certain types of ocean freight between the Israel Shipyards Port Company on the one hand and the Haifa Port Company and Ashdod Port Company on the other. The dramatic increase in container traffic in the Port of Ashdod can also be attributed in part to the increased level of competition between the Haifa Port Company and the Ashdod Port Company. On the other hand, it is a well-known phenomenon that freight can be a "captive" of a particular port, a fact that constitutes a barrier to full competition. It should be mentioned that an additional reason that competition is only partial is the geographical division between the existing ports. Users in the North tend to use the Port of Haifa while those in the South use the Port of Ashdod.

The activity of the new container terminals—Hamifratz in Haifa and Hadarom in Ashdod—will double the container traffic capacity in each port. This major addition to each port will certainly lead to competition within the ports (the Haifa Port Company opposite the Hamifratz terminal and the Ashdod Port Company opposite the Hadarom terminal) and between the ports of Haifa and Ashdod. It appears that the long-term vision, according to which the piers will wait for ships rather than the other way around, is close to becoming a reality.

The Port of Eilat, which has not handled container traffic since 2004, is not a player in the competition for container traffic at this stage.

The Haifa Port Company and the Ashdod Port Company have recently been intensively working to formulate plans to prepare and reorganize for the era of competition that is meant to begin in 2021 when the new terminals go into operation. On the one hand, the managements of the port companies are requesting approval and budgets for the development of the ports from the Ministry of Transportation and the IPC in order to upgrade their facilities to the level of the new terminals. In this context, the Minister of Transportation has promised to upgrade the container piers of the Haifa and Ashdod port companies in order to give them the ability to handle large ships of 18,000 TEUs or more. This task was assigned to the IPC which has begun to work in this direction, in collaboration with the managements of the port companies. On the other hand, the managements of the ports are intensively working on various projects and modifications that are meant to upgrade their capabilities and prepare them for competition with the new terminals (including the purchase of cranes, forklifts, tugboats, the overhaul of piers and the acquisition of knowledge in various types of freight, the deepening of the harbor, the adoption of more innovative methods, the upgrade of the Terminal Operating

System, early retirement of workers, etc.). One of the potential pitfalls facing the port companies' activities is the agreement that is expected to be signed with the workers who are represented by the Histadrut. The port companies will naturally be in an inferior position relative to the new terminals and the character of the agreement to be signed will to a large extent determine their ability to compete. There is an ongoing dialog on this matter between the Ministry of Transportation on the one hand and the Histadrut and the workers on the other, though until now there have been no results. At this stage, there is no immediate plan to issue the shares of the port companies on the stock market and to privatize them according to the format specified by the reform, but it can be assumed that this issue will remain on the agenda of the port companies. The chance of implementing the reform and transferring the operation of the port to private hands will grow to the extent that the managements of the port companies believe that this move will improve their ability to compete.

### **The preparations of the private operators (SIPG and TIL) for the launch of the new terminals (Hamifratz and Hadarom)**

The ports' infrastructures are currently being constructed by the infrastructure contractors (see below). The private operators are meant to receive the terminals on the completion of the infrastructure work and they will then supplement the infrastructure work prior to the operation of the terminals, in accordance with the licenses issued to them by the SPA. The private operators will need to decide on a large number of issues and will need to deal with the acquisitions, the installation of systems and the organization of the staff, so that the loading and unloading of containers and other freight at the new terminals will begin in a timely manner. Following is a partial list of issues that the private operators will have to decide on prior to opening the terminals: automatic/semi-automatic container terminal, a TOS system, bridge cranes and a gate, additional types of freight, the entrance to the harbor, the information systems, training of workers, etc.

It can be assumed that the operating companies are already working to market the activity of the new terminals by providing attractive terms to the shipping companies. The private operating companies are highly experienced in the operation of container terminals and it is reasonable to assume that the format of operation to be chosen will influence the ability to compete, efficiency and service of the new terminals.

### **Freight traffic and the activity of Israel's ports in 2016**

In 2016, 6511 ships visited Israel's ports as compared to 5893 in 2015, an increase of 10.4 percent. About 50 percent of them were container ships. It should be mentioned that the global trend toward containerization is continuing, as is the shift to container transport of freight that has traditionally been viewed as "general freight". This fact explains another global trend – the development of giant container ships in parallel to the development of terminals that are able to handle them.



In 2016, Israel's freight traffic (both imports and exports) totaled about 57 million tons. During the last 10 years, there has been an increase of about 58 percent in freight traffic (in terms of weight) and about 100 percent during the last 20 years. This data is a reflection of Israel's economic growth in recent years.<sup>4</sup> The energy ports (Hadera and Ashkelon) deal with another 30 million tons of fuel of various kinds (import and export).

The container traffic in the ports of Haifa and Ashdod totaled 2.711 million TEUs in 2016, an increase of 7.5 percent relative to the previous year. During the last 10 years, there has been an increase of 53 percent in container traffic and about 100 percent during the last 15 years. In the past, it was generally believed that container traffic in Israel's ports doubles every 10 years; however, it appears that in recent years this has turned out to be an underestimation. Nonetheless, it can be said with high probability that the growth in container traffic will continue for quite a few years to come. It should be mentioned that the average annual rate of growth in global container traffic is 4-6 percent.

In 2016, container traffic was divided between the ports as follows: Haifa Port Company – 46.7 percent and Ashdod Port Company – 53.2 percent. This is a continuation of the upward trend in the container traffic of the Ashdod Port Company which accounted for only one-third of the total about 10 years ago, while the Haifa Port Company accounted for the remaining two-thirds. The main factors explaining this trend are the following:

- The close proximity of the Port of Ashdod to Israel's business center.
- Competition between the port companies.
- A temporary advantage in the means of production: the Eitan pier in Ashdod began operating in 2006, in contrast to the Carmel pier in Haifa which began operating only in 2010.
- Level of services
- Marketing

The doubling of container capacity in each port once the Hamifratz and Hadarom ports begin operations in 2021 will affect the future division of container traffic between the four terminals (Haifa Port Company, Hamifratz terminal, Ashdod Port Company and Hadarom terminal). It appears that Israel Shipyards Port Company will not be entering the container market (although its license allows it to do so) and it will continue to specialize in the niche of general freight and bulk freight. This development has led the managements of the Ashdod and Haifa port companies to take steps in order to remain attractive once the Hamifratz and Hadarom terminals begin operations.

The container traffic through the Port of Eilat ended completely in 2004 when the ZIM Company decided that using the port was not economically or logistically worthwhile. It

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<sup>4</sup> Israel's ports also serve the residents of Judea and Samaria and the Gaza Strip.

appears that there will be no container traffic through the Port of Eilat in the foreseeable future.

### **Other freight through Israel's ports**

The Haifa and Ashdod port companies were "born" from within the Ports Authority which operated three ports: Haifa, Ashdod and Eilat. They are multi-purpose ports that handle additional types of freight, such as bulk products of various types (by means of cranes for bulk loading/unloading and automated facilities); the import of vehicles; the import and export of general freight; passenger ships; non-standard freight, such as railway cars; etc. Although the main business of the two port companies is containers (which accounts for about 50 percent of their traffic according to the various measures), they must be prepared to provide solutions for other types of freight and activity according to their licenses and the Shipping and Ports Administration Law.

The trend of increasing competition between the port companies can also be seen in the case of other types of freight, primarily since 2009 when the Israel Shipyards Port Company went into operation. . The Israel Shipyards Company, which is located within the boundaries of the Port of Haifa, created a subsidiary called Israel Shipyards Port Company. In 2008, it received a permit for the unloading of sugar and in 2009 the permit was expanded to other types of freight. The Israel Shipyards port began to operate as the first private port in Israel and in this context it is worth mentioning the "shift" of general freight and bulk freight from the Ashdod Port Company and the Haifa Port Company to the Israel Shipyards Port Company (in 2009, 0.456 million tons of freight was moved through Israel Shipyards while in 2016 the figure was 2.826 million tons, an increase of more than fivefold). The Israel Shipyards Port Company serves as a prime example of two phenomena:

1. A private port is able to develop in a professional, efficient and profitable manner without harming the rights of its workers.
2. Competition has brought about increased efficiency, an improvement in services and lower costs of transshipment to the benefit of customers and the public.

The permit of the Israel Shipyards Port Company limits the amount of freight it can handle to 5 percent of the total movement of freight in Israel's ports. It is the intention of the Company to request that the SPA remove this limitation. The Israel Shipyards Port Company is considering the creation of seed silos in addition to the cement silos that were recently built, as well as a railway connection for the efficient transport of freight.

Due to its remote location, the Port of Eilat focuses on two main types of freight: the export of phosphates and potash and the import of cars from the Asia ("captive" freight). Although the importance of the Port of Eilat under the existing circumstances is strategic, its importance will grow with the construction of the railway line to Eilat, if and when the decision is made to build it. In view of this, the Port of Eilat will not be upgraded by the

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Israel Ports Company under the present circumstances, unless such a decision is made by the owners of the operating company which will have to invest its own funds in the project.

### **The development of Israel's ports**

In 2017, a number of ships with a capacity of more than 20 thousand TEU's were completed by the shipyards in east Asia. These are giant ships with a length of about 400 meters, a width of about 60 meters and a draft of about 16 meters. Some of them have already begun to carry international cargo. The large shipping companies are continuing to order the giant ships in significant numbers and it can be assumed that we will soon see the launch of ships with a capacity of 22 thousand TEUs, which are currently under construction. In the future, we will likely see ships of 25 thousand TEU's, which are currently on the drawing board. This trend has directly influenced the planning of the new terminals that are currently under construction, i.e. the Hamifratz port (in Haifa) and the Hadarom port (in Ashdod). I would venture to say that the growth in the size of container ships surprised many port planners. It will be even more difficult in the future to predict the trends in the size of container ships and the size of the ports needed to handle them.

The maneuvering of giant container ships in the ports of Haifa and Ashdod has become increasingly difficult and complex given their size on the one hand and the lack of sufficient maneuvering room among the ports' container piers, on the other. The acquisition of large tugboats with a towing capacity of 70 tons is improving the ability of the pilots to maneuver these large ships; however, the problem has not been eliminated. This situation has a direct effect on the efficiency of the ports, which is determined by the time needed to move, maneuver and moor these ships by the ports' pilots. The Harbor Master of the Haifa and Ashdod ports and the pilots are carrying out simulations and investing in various accessories and improvements in the piers which are meant to facilitate the entrance and exit of these giant ships. The delay in the transfer of the Marine Departments from the port companies to the IPC as landlord will hinder the preparations of the departments for the operation of the ports once the new terminals open. Already today, the process to acquire tugboats for the ports is being delayed due to the uncertainty surrounding their fate.

The most significant development project in the ports is the construction of the Hamifratz port (to be located within the boundaries of the Port of Haifa) and the Hadarom port (to be located within the boundaries of the Port of Ashdod). The IPC is managing the project, which includes planning, the issuing of tenders, the selection of the construction contractors and the operator, etc. The IPC is seeking to complete the construction of the infrastructure for the new ports in 2021 and to hand over their operation to the two private companies that won the tender, which was issued and managed by the IPC. The development of the ports is based on long-run freight forecasts that are evaluated at least once a year by an economic consulting company.

The standard ship for the ports is the TRIPLE E of the Maersk Company which has a capacity of 18,000 TEU's. The ship is approximately 400 meters in length and 60 meters in width, with a draft of about 16 meters.

The Mifratz and Hadarom ports are planned to have a depth of about 17.3 meters and turnaround circles of about 600 meters. Their piers are built for giant (Ship to Shore Cranes) cranes that have the ability to load/unload 23 containers widthwise. The distance between the Hamifratz pier and the Hacarmel pier is planned to be about 400 meters (the distance between the new piers in Haifa and Ashdod is 250 meters while the distance between the piers in the original Port of Ashdod is 150 meters). These distances will determine the maneuvering ability of the large ships. The entrance to the Port of Haifa after the construction of the Hamifratz port will be no more than 300 meters, which as mentioned will restrict the entry and exit of ships. The possibility is being considered of routing PanaMax<sup>5</sup> ships to the Kishon harbor within the Port of Haifa by deepening it to a depth of 13–14 meters (currently it is 11.5 meters deep). The maritime dimensions of the Port of Ashdod after the completion of the Hadarom port are not optimal either and as a result the port has acquired a guidance system called Sector Light, which operates both day and night.

The two private companies chosen by international tender to operate the ports were the Shanghai International Port Group (SIPG), a Chinese company owned by the Port of Shanghai, for the Hamifratz port, and Terminal Investment Limited (TIL), a Swiss company that operates 29 container terminals around the world, for the Hadarom port. These two companies are now planning the systems under their responsibility: the type and size of the bridge cranes, the terminal operating system (TOS), the computer systems, etc. The Hamifratz and Hadarom ports are leased for a period of 25 years to these companies, subject to various security restrictions in view of the fact that Israel's ports are a national strategic infrastructure. The start of operations of the Hamifratz and Hadarom ports, which is expected in 2021, will constitute a serious source of competition for the Haifa and Ashdod port companies and they are investing thought and energy in order to prepare for the new era and to achieve the ability to effectively compete.

### **The Hamifratz Port**

Start of construction – 2015.

Expected completion of construction – 2021.

Responsibility of IPA – Planning and statutory approvals, management of the construction and operating tenders, management of the construction, etc.

Principal Israeli contractor – Ashtrom-Shapir.

Expected cost of construction – NIS 4 billion.

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5 Ships built to a size that can pass through the Panama Canal.

Operating company – the Chinese SIPG Company (Shanghai International Port Group Company), a subsidiary of the Port of Shanghai in China.

Area of the Hamifratz port – 820 dunam (about 200 acre) of which 720 are designated for a container terminal.

Main pier (containers) – 800 meters; secondary pier – 720 meters.

Extension of main Port of Haifa breakwater – 880 meters.

Construction of a secondary breakwater – 2100 meters (600 meters of which is by means of 19 caissons).

Depth of the water – 17.3 meters.

Entrance canal – 2 kilometers in length with a depth of 19.1 meters.

Construction of a railway line to the container terminal.

Responsibility of the operating company (SIPG) – completion of the infrastructure (electricity, communication, water, etc.), super structure, operating equipment (cranes, tugboats, forklifts, etc.), TOS, the port entrance, automatic/semi-automatic terminal, etc.

The port was built to be environmentally friendly and is meant to solve the numerous problems of environmental protection.

A modern and safe fuel pier which was meant to be moved from the Port of Haifa will not be built at this stage of the development program. In the future, it will be possible to build a fuel pier within the Hamifratz port and to move the existing fuel port to it.



Figure 1 – The Hamifratz port will be built next to the Port of Haifa and the Israel Shipyards port.

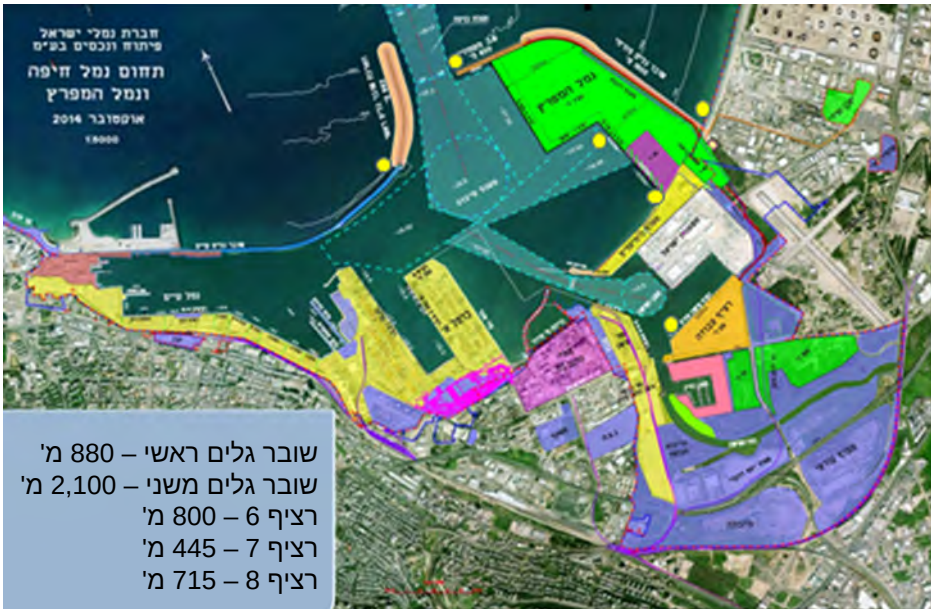


Figure 2 – Haifa Bay Port (HaMifratz port).



Figure 3 – Extension of Haifa Bay break -water



Figure 4 – The extension of the Port of Haifa breakwater and the drained area of the Hamifratz port (as of mid-2017).

### **The Hadarom port**

Start of construction – 2014.

Expected completion of construction – 2021.

Responsibility of IPC – Planning and statutory approvals, management of the construction and operating tenders, management of the construction, etc.

Principal contractor – P MEC – Pan Mediterranean Engineering Company, which belongs to China Harbor, a Chinese company.

Expected cost of construction – NIS 3.3 billion.

Operating company – Terminal Investment Limited (TIL), a subsidiary of MSC, a shipping company that operates 29 container terminals worldwide.

Area of the Hamifratz port – 630 dunam.

Main pier (containers) – 800 meters; secondary pier – 500 meters.

Extension of main Port of Ashdod breakwater – 600 meters.

Construction of a secondary breakwater – 1500 meters.

Depth of the water – 17.3 meters.

Entrance canal – 1 kilometer in length with a depth of 24 meters.

Construction of a railway line to the container terminal.

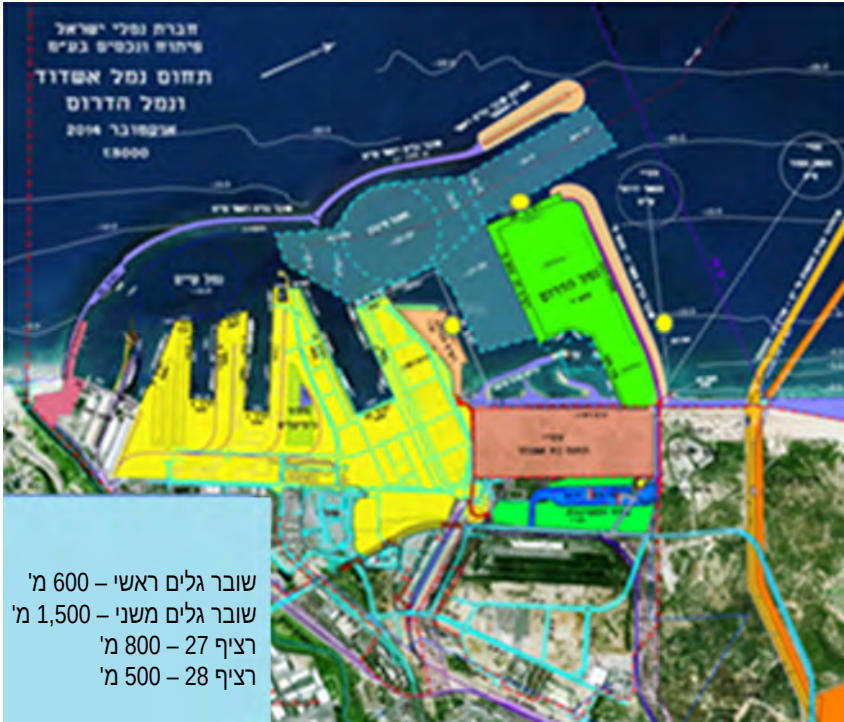


Figure 5 – The Hadarom Port

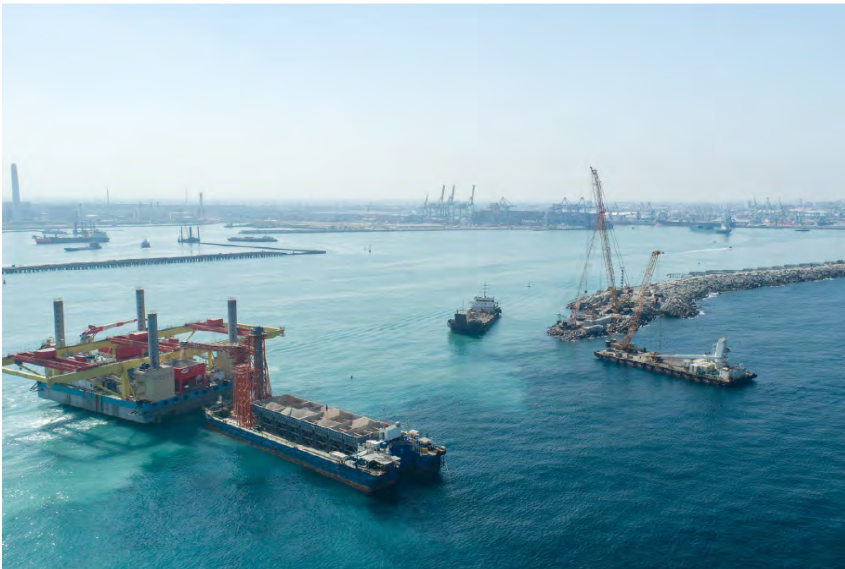


Figure 6 – The extension of the Port of Ashdod breakwater





Figure 7 – The drained area of the Hadarom port (as of mid-2017)

### The Israeli commercial fleet

Shipping is one of the most globalized industries in the world. This is because it does not require any connection between the shipping company's country of registration, the ship's country of registration (the ship's flag), the countries where it provides service and the nationality of its crew. This explains why ships choose flags of convenience in order to minimize taxes and the cost of meeting regulations. Therefore, in surveying the Israeli commercial fleet a distinction is made between ships flying an Israeli flag according to the Shipping (Vessels) Law, from -1960 and ships under a foreign flag but under Israeli control according to the Shipping (foreign vessels under the control of an Israeli entity) Law, from – 2005.

In July 2017, the fleet under Israeli ownership or control consisted of 34 ships with a deadweight tonnage (DWT) of 1,832,000 tons. Of those, eight fly the Israeli flag.

**ZIM Shipping Services:** ZIM owns or controls eight ships with DWT of 434,000 tons, all of which are container ships. Of those, three fly the Israeli flag. The company leases these ships for varying periods of time.

**XT Shipping:** XT has 12 ships with DWT of 926,000 tons, of which two are container ships and one is a coal-carrying bulk ship. Two of the ships fly the Israeli flag.

**Other companies:** Seven general cargo ships, two grain-carrying ships, one coal-carrying ship – with a total DWT of 471,000 tons.

The share of ZIM in the fleet, which was once the backbone of the Israeli commercial fleet, has fallen drastically. Other companies have increased the size of their fleets and they constitute the "iron" fleet that is meant to be mobilized for various purposes by the State when needed.

### **Tonnage tax**

In the global shipping industry, there has developed a practice of registering under flags of convenience. In other words, commercial fleets have "fled" to countries with convenient tax and regulatory regimes. As a solution to the phenomenon of flags of convenience and manning by foreign crews, an incentive was introduced in Europe called the tonnage tax. This is a tax payment according to tonnage of all the vessels owned by a company (a reduced tax that encourages greater tonnage), as opposed to corporate taxes at a higher rate (26 percent in Israel). This tax regime is beneficial to the shipping companies and is accompanied by an obligation on the part of the ship owners to maintain a partly domestic crew (an Israeli crew) and to participate in the costs of training lower officers.

The passing of tonnage tax legislation to replace the corporate tax currently paid by the Israeli shipping companies is in an advanced stage. The tax legislation is being advanced by the Ministry of Finance, the Tax Authority and the State Revenue Authority. The Ministry of Transportation is a partner in this effort and supports the tonnage tax legislation.

The tonnage tax law was approved a few months ago (in mid-2017) by the Ministerial Committee for Legislation and is currently being drafted by the Ministry of Justice. Subsequently, the law will be submitted for discussion to the Knesset prior to first, second and third reading as a proposed law. If it is approved, it will replace the corporate tax that is currently applied to Israeli shipping companies. It is doubtful whether the legislative process will be completed in 2018.

### **Maritime manpower**

Israeli shipping companies have moved to flags of convenience in an effort to reduce operating costs, which includes the high cost of employing Israeli officers and seamen relative to those from developing countries. The government of Israel has subsidized the shipping industry in order to maintain the existence of an Israeli commercial fleet, including both ships and seamen, based on a series of government decisions that specified a minimal Israeli crew (officers only), subsidization and financial assistance and also tax benefits. However, this did not stop the decline in the number of ships flying the Israeli flag or under Israeli control.

Currently (i.e. 2017), there are 630 seamen in the Israeli commercial fleet, of which 207 are Israelis. The number of active officers is 255, of which 166 are Israeli, and all of the cadets are Israeli.

The small number of cadets (about 20) in the commercial fleet and the small number of ships under the Israeli flag make it difficult to recruit new cadets or to open courses at the Institute for Maritime Training in Akko.

The shortage in maritime manpower also has implications for the operation of the ports in Israel, on the supervision by the Israeli government (regulation) and also on the manning of coastal positions in the shipping companies with experienced commercial fleet officers, since these positions require maritime experience and it is generally the practice that candidates to fill these positions originate from the Israeli commercial fleet. It is the expectation that the population of pilots in Israel, which is fed by experienced captains from the commercial fleet, will decline to the point that it will be difficult to fill the positions in the ports.

This gloomy forecast is likely to lead to the "death" of Israeli shipping (ships and crews), unless the problem is dealt with comprehensively, strategically and systemically. The first stage in dealing with the problem is for the government to recognize the importance of having a significant commercial fleet and a population of experienced seamen (especially deck and machinery officers) that is sufficient for the country's economic and security needs. However, the nature of global economic activity, and as a result that of Israel as well, emphasizes the bottom line and therefore constrains the development of the Israeli commercial fleet.

## **Conclusion and Recommendations**

### **The wonders of competition in the ports**

Since the beginning of the reform of the ports, we have been witness to growing competition among the ports and among the corporations licensed to operate within them. Even without fully analyzing the results of the reform in the ports, it can be said that there exists genuine competition between the port companies and between the licensed companies. The importance of competition as a factor that affects the profitability of a company/corporation has been internalized by the managements and indeed they are working proactively in order to improve their ability to compete, with the goal of attracting the shipping companies to use their services. The shipping companies for their part are influenced by the importers and exporters (the users/customers) in determining the destination port and the licensed corporation that is chosen for unloading/loading. It is still not full competition nor even efficient competition, but there are indications that the level of competition will increase with the entry of the new operators (Hamifratz and

Hadarom) and that the results will produce significant benefits for users and the Israeli economy as a whole. These include:

- Improved service.
- Reduced costs and indirectly a reduction in the cost of imports (cost of living).
- Reduced damage.
- Rapid response and shorter waiting time and turnaround time in the ports (efficiency).
- Flexibility in choosing between companies.

### **Future Development of the Ports**

The planning of a port from the conceptual stage to the time it goes into operation is a long process (10–20 years) since there is a need to deal with many issues, including the forecasting of freight traffic, regulatory barriers, initial planning, sources of funding, detailed planning, tenders, execution of infrastructure, preparations by the operators, etc.

The growth in the population of Israel is expected to continue in the future and along with it the growth in the economy. Therefore, the existing ports, including the new terminals, will not be sufficient for freight traffic within a relatively short time (15-20 years).

Therefore, it is important to think about the next stage of development of the ports (construction of ports on artificial islands, development of existing ports, new ports in a different location, etc.) and the sooner the better. It is recommended that a forecast be made of the trend in freight traffic and that a vision and work plan for the future development of freight loading and unloading is decided on.

The acquisition of advanced abilities for freight loading and unloading by Israel's ports will also determine its strategic character and will serve as, among other things, a multiplier of military, political and economic strength.

### **Establishment of the IPC as landlord**

The landlord system is the most suited for the operation of Israel's ports under the current circumstances. The delay in transforming the IPC into a full landlord of the ports is liable to harm the operation of the ports, their corporations and the new terminals. It is recommended that the managements of the existing ports (Haifa and Ashdod), which constitute an appropriate managerial infrastructure for the establishment of the landlord (a port authority), be replaced by the IPC as the official landlord according to law. This document is not suggesting what the correct structure of the IPC should be as landlord. It is recommended that comprehensive discussions be held in order to decide on the IPC's organizational structure as landlord and that this be implemented as soon as possible and certainly before the new terminals (Hamifratz and Hadarom) go into operation in 2021.

### **The decline of shipping and seamanship in Israel – is it inevitable?**

Shipping and seamanship has been on the decline in Israel for many years. The decisions of the government and the efforts of the Administration are trying to halt this trend by various means; however, without a major turnaround and if the trend continues (and there is no reason to think that it won't) Israel will find itself without any shipping industry (essentially, and in spite of the small "iron" merchant marine fleet, this is the situation already today) and with declining numbers of seamen (in actuality, this means officers since there have been no Israeli seamen for many years). This gloomy forecast requires strategic, national and systemic thinking about shipping and seamanship in Israel. This issue will also have an effect on maritime education (maritime schools) which is also in a long-term decline. (This document did not relate to maritime education.) There is a need to raise this issue to the level of the government and the Knesset since their recognition of the strategic importance of these issues will set in motion various processes to provide an appropriate response.

### **The maneuvering of giant ships in Israel's ports**

As part of the conclusion, I decided to bring this important matter to the attention of the readers. The giant ships that are coming into service now and in the future require a professional analysis as to their possibilities for maneuvering in the existing ports and in those that are planned and constructed.

The structure of the existing ports (which is given and does not allow for any major changes) will place constraints on the maneuvering of the giant ships to an extent that appropriate measures should be planned in order to reduce these constraints as much as possible. The current structure allows for only limited maneuverability for the giant ships. Means need to be developed or acquired that will include suitable and powerful tugboats, navigational aids, lighting, etc. The early transfer of the Marine Departments from the Haifa and Ashdod port companies to the IPC will enable this process to proceed without delays.

The reduction in the constraints on maneuverability in the existing ports will increase their efficiency in providing service to the shipping companies.

In the planning of future ports, it will be necessary to forecast the size of ships in the distant future (20 years and beyond) and to consider solutions that will provide maneuvering ability to these giant ships.

## China's Maritime Silk Road Initiative

### *Ehud Gonen*

In 2013, the government of China announced an ambitious project called "One Belt One Road" (OBOR), whose name was changed in 2017 to the "Belt and Road Initiative" (BRI). The initiative includes a large number of massive infrastructure and transportation projects along two routes between Europe and China. The land route (One Road) traverses the countries of Central Asia and is based on the historic Silk Road which includes six logistic corridors. The maritime route (the maritime belt – the maritime Silk Road) runs through China, Southeast Asia, Indian Ocean ports, East Africa, the Red Sea and the Mediterranean. At this point, the BRI framework includes about 200 joint projects (along both the land route and the sea route) and the initiative is intended to include about 64 countries.

The roots of the initiative lie in the economic openness policy adopted by China in 1978. As part of this openness, the limitations on taking capital out of China were removed in 2003 and this marked the beginning of a huge wave of Chinese investment around the world (a wave that is targeted at diverse economic sectors and a large number of countries). As part of these investments, China is buying influence in seaports around the world<sup>1</sup> and particularly in the Indian Ocean region and the Mediterranean. This is achieved through direct investment (FDI) by Chinese government companies in seaports, through the leasing of foreign ports and by means of agreements between governments (G2G agreements) that give Chinese ships use of ports. This phenomenon already became the focus of attention among Western researchers and diplomats in 2005 and became known as the "String of Pearls", although this name never came into official use in China. It should be mentioned that about one-third of world trade passes through the regions of the Indian Ocean and the Mediterranean (and the Suez Canal that joins them) and almost one-half of the global trade in crude oil and therefore this phenomenon has significant economic and political implications.

The main maritime initiative is in the acquisition of influence by China in the chain of ports between China, Europe, the Middle East and Africa. China emphasizes in its official publications that this does not involve control or some new form of colonialism and that the goal of the initiative is to secure the route for China's maritime trade in both directions: imports of energy products and raw materials to China (primarily from the Persian Gulf

1 During the ten years from 2006 to 2016, the level of Chinese investment in other countries is estimated by the United Nations Conference on Trade and Development (UNCTAD, 2016) to be over half a trillion dollars (\$500 billion). It should be mentioned that even if the actual amount is somewhat smaller due to the roundabout route taken by investment by way of tax havens or double counting as a result of counting investment both from China and from Hong Kong, there is still a massive amount of investment coming out of China.

states and the northern and eastern coasts of Africa) and the export of Chinese goods to Europe (China's main export market).

In order to facilitate this initiative, China established the Asian Infrastructure Investment Bank (AIIB) in 2013, which lends to Asian countries for the construction of infrastructure projects. In addition, in 2014 China declared its intention of setting aside \$40 billion from the bank's money in order to create a fund for investment in projects and businesses. Called the "Silk Road Fund", it invests in businesses in exchange for assets (such as shares) in those businesses, which is in addition to the money lent by AIIB to the countries that are its members.<sup>2</sup> China has allocated an additional sum in the amount of \$1 billion to the China-ASEAN Investment Cooperation Fund to finance investment in joint projects.

When examining China's international activity in infrastructure, it is important to differentiate between investment and the implementation of projects. The latter is carried out by Chinese companies as subcontractors and is essentially the export of building services from China to the world; however, this export does not involve Chinese investment or the acquisition of economic influence over the activity of the project after it is completed. Investment in projects in which Chinese companies purchase an asset or a project abroad and manage it for an extended period constitutes foreign investment by China.

### **The regional business model for investment in sea ports**

It is worth mentioning that most of the countries along the routes of the initiative are developing countries. A large proportion of those along the maritime Silk Road have a very low economic rating according to the indexes of international organizations, including many of the countries in East Africa or South Asia. The limited level of economic development (which is accompanied by inferior national infrastructures) alongside authoritarian political systems create a high level of business risk for foreign investors. These parameters have led to a situation in which investments from the developed countries (the West, Japan, Korea and others) have traditionally been small in scope.

On the other hand, it appears that the high economic risk in these countries has less of an influence on Chinese investment. In the academic literature and business research, three main explanations have been offered for the "attraction to risk" among Chinese government companies: (a) a different approach to economic risk; (b) very cheap cost of capital due to the flow of capital from the Chinese government banks, which results in the flow of investment funds even to projects that are considered marginal because of their implicit risk; and (c) Chinese political influence as well as cultural and historical elements

2 IDI. 2016. "Making Inroads: Chinese Infrastructure Investment in ASEAN and Beyond." Ashville: Inclusive Development International.

since in most cases the projects involve Asian countries that have a long history with China.

According to China's declarations and in view of the projects that have already been carried out as part of the initiative it can be assumed that this is primarily an economic endeavor (rather than philanthropic), with broad regional (Asian) and global political implications. The economic expansion and Chinese investments in the BRI countries are the result of investments directed according to economic factors related to the economy of the receiving country, such as productive capacity, the existence of natural resources and energy, etc. Part of the investments in sea ports through the BRI is related or connected to other Chinese investments and it can be said that the Chinese investment model emphasizes the creation of a high level of logistical and physical connectivity with other projects. This connectivity can be divided into two general types: connectivity between ports by means of logistic corridors and regional economic development.

### Port connectivity

Simultaneous with the investment in sea ports, investments or construction projects are being carried out in parallel in the port cities, including railways, highways and oil and gas pipelines. These investments are carried out by other Chinese companies (not those which invested in the sea ports).

It is especially worth mentioning the Chinese-Pakistani logistic corridor known as C-PEC. This land-based logistic corridor ends at the port of Gwadar on the Pakistani coast, which is located on the northern coast of the Arabian Sea in the Indian Ocean. The combination of a sea port with a land-based logistic corridor creates a maritime exit point from the western half of China which is closer to the sea than the maritime exit points at the eastern China ports (see Map 1 below) and in addition creates an alternative for the transport of goods and energy (by means of an oil pipeline) to the crowded shipping lanes of the Strait of Malacca and the South China Sea, far from Indian-controlled waters. It should be mentioned that Pakistan is a traditional ally of China and there is tight military cooperation between them, including the sale of arms.

A similar detour around the Strait of Malacca is also made possible by the Bangladeshi logistic corridor and in the future also the Kra Canal.<sup>3</sup>

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3 The planned Kra Canal will cut across the southeastern isthmus in central Thailand in the vicinity of Kra. The press is reporting that an agreement for the excavation of the canal and its financing by China has been signed by the governments of China and Thailand: China announces strategically important Kra Isthmus Canal In Thailand <https://chinadailymail.com/2015/05/17/china-announces-strategically-important-kra-isthmus-canal-in-thailand/>





Figure 1 – Import of crude oil to China from the Middle East by way of the Pakistani corridor (C-PEC) compared to import by ocean transport today. (source: The Nation)<sup>4</sup>

Outside of Asia, it is particularly worthwhile mentioning the construction of the railway in Kenya that connects the port of Mombasa with the capital of Nairobi and also the railway to the port city of Dar es Salaam in Tanzania (East Africa). This railway will be built in a western direction and will create a fast connection and convenient access to the sea to the countries of the "Greater Lakes Region" (Rwanda, Burundi and Uganda) which are landlocked.

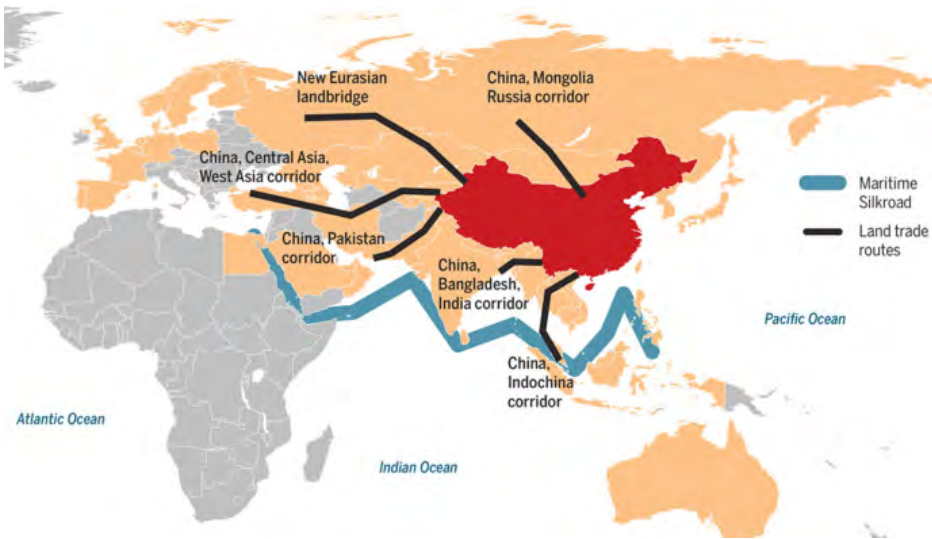


Figure 2 – The main rail lines in East Africa that connect the port of Mombasa in Kenya and the port of Dar es Salaam in Tanzania. Both the rail lines and the ports are being built by (and some of them will be operated by) Chinese companies. (source: BBC)

4 Indian media advises govt to join CPEC. <http://nation.com.pk/29-Dec-2016/indian-media-advises-govt-to-join-cpec>

## Regional economic development

In many locations, the construction of a sea port is being combined with the creation of a nearby commercial or industrial park. It is particularly worth mentioning the Chinese industrial parks in the area of the Suez Canal in Egypt and also in Ethiopia, which have become global textile centers. These include the Mekelle Park which is being built by the Communication Construction Company (CCC) and the Kombolcha Park which is being built by the China Civil Engineering Construction Corporation (CCECC).



Map 3: BRI combines six land-based logistic corridors with a sea route for Chinese trade.

## Political concerns regarding the Chinese takeover of strategic assets and Chinese "soft power"

In many places throughout the world, there is growing concern regarding the exploitation of Chinese control of strategic assets that has been acquired by means of economic investment, as a tool for applying political pressure. This is manifested in the authoritarian character of the Chinese government and the commonly held view that the economic changes in China are in general characterized by government control which regulates and directs economic activity. The fact that most of China's investment abroad is carried out by Chinese government companies reinforces these concerns. This has even led to the declaration by Jean-Claude Juncker, the President of the European Commission, that Europe should screen Chinese acquisitions in Europe.<sup>5</sup>

<sup>5</sup> EU preparing to screen Chinese investments. <https://euobserver.com/economic/139015>

It appears that the government in Beijing is well aware of the hesitation of local communities to accept Chinese investments. This hesitation is characterized by several parameters, some of which are specific to the Chinese case while others are more general, such as the growing anti-globalization trend in recent years.

Whether in order to assuage those fears or out of deep-seated cultural norms that are based on China's history and its Confucian outlook, the Chinese government has declared a number of fundamental principles that will underlie the BRI and which must be present in each of its projects: consensus building (with partner countries), openness, inclusion, partnership and civilization.

According to China's official line, the BRI fills needs over the length of the maritime route and according to the Chinese government all of the projects will fulfill the following three criteria:

- Planning and consultation with the receiving countries and communities.
- Joint implementation with the receiving country.
- Sharing of benefit between China and the receiving country.

As part of what appears to be a broader Chinese strategy which includes reliance on international norms and institutions, such as cooperation with the World Bank within the framework of the Silk Road Fund, the economic principles of BRI rest on a foundation that enjoys a wide international consensus. Official Chinese publications rest on ideas no less lofty than the UN Charter:

The Belt and Road Initiative is in line with the purposes and principles of the UN Charter. It upholds the Five Principles of Peaceful Coexistence: mutual respect for each other's sovereignty and territorial integrity, mutual non-aggression, mutual non-interference in each other's internal affairs, equality and mutual benefit, and peaceful coexistence. (NDRC March 2015)

The international forum of BRI countries, which met in May 2017 in Beijing and was headed by Chinese President Xi Jinping, was attended by 1500 participants from 160 countries, including 29 heads of state and heads of international organizations, in a show of what appears to be significant international support for the BRI. This support is explained by a number of factors and is characterized by varying levels of agreement – from the "cautious agreement" of the US and India, to partial agreement among the European countries and finally to full agreement and cooperation in largescale projects such in the case of Pakistan.

On the one hand, the Chinese are emphasizing that the BRI is economically consensual – it is a business venture to develop the country and not a hostile takeover. On the other hand and as mentioned above, the countries that are part of the BRI are in general developing countries whose options for economic development and attracting foreign investment are limited. This is combined with corruption and decision-making processes

that are not transparent to the public (both from the Chinese side and from the side of the investment recipient) which increases the concern that some of the cases are in fact takeovers of strategic national assets by the Chinese, except that in the globalization game economic forces and regional banks for infrastructure development have replaced armies.

In addition to the above principles of operation in the building of port, transportation and energy infrastructure that is part of the BRI, China has adopted a strategy of "soft power"<sup>6</sup> in the Indian Ocean region that involves a massive amount of resources.

Starting in 2008, China has been independently participating in the international task force in the Indian Ocean, which also includes a designated force to fight piracy (Combined Maritime Forces – CMF). In this effort, it has demonstrated the ability to project power thousands of miles from Chinese ports, including refueling, supplies and switching crews at sea. The Chinese activity against pirates in the Gulf of Aden is part of its demonstration of Chinese soft power and an opportunity to test the reaction of other countries to Chinese presence in the region.

China is one of the only countries in the world with a fully operating hospital ship called the "Peach Ark" whose first tour in 2010 in the region of the Gulf of Aden and the West African coast was named "Harmonious Mission 2010". The ship treated patients in Tanzania, Djibouti, Kenya, the Seychelles Islands and Bangladesh. In 2011, the ship made a similar tour in the Caribbean and in 2013 assisted victims of the Haiyan typhoon that struck the Philippines. The hospital ship did another tour during 2017 in the Indian Ocean, the Mediterranean and West Africa during which it offered free medical treatment in the ports that it visited. As part of its tour last year, called "Harmonious Mission 2017", the ship visited a Chinese base in Djibouti, crossed the Suez Canal on its way to Spain and continued on to the countries of West Africa.

Both the activities of the hospital ship and the military force sent to fight piracy are a military reaction to a threat that is not primarily military and which belongs to the category of non-military threats that includes terror, piracy, natural disasters, smuggling of various types (weapons, people and drugs), financial crimes, etc. In this way, China is positioning itself in support of the freedom of passage in international shipping routes, one of the cornerstones of global trade and globalization, and as a supplier of public goods (defense).

Another example of equilibrium between the (hard) military nature of the Chinese military presence and its soft characteristics is the establishment of logistic bases in Djibouti. An

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6 Soft power: A situation in which a country influences another without the use of force and in this way achieves various foreign policy objectives. Soft power is based primarily on the "attractiveness" of the country, or in other words its ability to project attractiveness that can be the result of legitimacy (in the eyes of others), culture, morality, values, ethics, etc.

agreement to operate a military support base in the port of Djibouti was signed between China and the local government in 2015 for a period of 10 years. It appears that this is primarily a military base, but the marketing positioning of the port as a civilian logistic base is a soft façade for the hard military presence in the port.

Researchers point to the fact that in the region of the Indian Ocean China is trying to renew the romantic narrative of Zheng He's maritime voyages. Zheng He was a Chinese admiral who made 7 voyages during the 15th century, from China westward to southeast Asia and toward the Indian Ocean and finally reaching the coast of East Africa. He was accompanied by about 250 ships and about 17,000 sailors, soldiers and merchants. It is worth mentioning that China's National Maritime Day, which was first celebrated in 2005, takes place on July 11th, the day that Zheng set forth on his first voyage.

Zheng He's voyage was primarily commercial and diplomatic in character. He traded goods and presents with countries and communities along the route of his voyage and made sure to present himself as a trader rather than a conqueror. Nonetheless, it is reasonable to assume that those kingdoms and communities along the coasts of the Indian Ocean were highly impressed by the size of Zheng's military force, which he made use in defeating a fleet of pirates in the Strait of Malacca and in a show of military force in the area of the Arabian Peninsula (near what is today Yemen).

The revival of the narrative of Zheng's voyages, according to which he led an armada of "treasure ships" rather than warships—which in a certain way parallels the Chinese commercial fleet of today—is another Chinese attempt to brand the Chinese presence in the Indian Ocean as an economic force (trade) rather than an occupying force.

### **The implications for Israel in the maritime domain of increasing Chinese involvement in maritime infrastructure**

Israel's dependence on international sea trade means that Israel's main ports (Haifa and Ashdod) are undoubtedly national strategic infrastructures. The fact that the port in Haifa Bay will be operated by a Chinese company (SIPG) for 25 years starting in 2021 has major importance for decision makers in Israel, in terms of both foreign policy and maritime transportation and shipping, with respect to understanding China's policy and considerations and those of Chinese companies involved in port operation and construction.

The rivalry between China and the US, which is Israel's closest ally, is significant in this context. It will be problematic for the port of Haifa to serve as the home port of the US Sixth Fleet if part of it is operated by a Chinese company.<sup>7</sup>

<sup>7</sup> The US Sixth Fleet is stationed in Europe and the Mediterranean Sea.

As mentioned, a differentiation should be made between the implementation of a project by a Chinese company and Chinese investment in a national infrastructure. To illustrate, the Southern Port (in Ashdod) was built by PMEC, a Chinese company in the China Harbor group, but will be operated by the TIL company for the MSC group. This case does not involve Chinese investment in Israel but rather the implementation of a project. The Chinese company does not acquire any influence or an asset in the new port and it will not have a presence once the construction work is completed.<sup>8</sup>

In contrast, on the completion of construction of the port in Haifa Bay which is being carried out by a joint venture of the Ashtrom and Shafir Engineering companies, the port will be operated by SIPG. It will invest significant amounts in the port's various systems (cranes, communication systems, etc.) and will operate the port for 25 years. This activity is a Chinese investment in an Israeli port and reflects the acquisition of an asset and of long-term influence over this national infrastructure.

Nonetheless, it is worth mentioning that the Haifa Bay port, which will be operated by SIPG, will be one of four container terminals in Israel: the Haifa port which is currently operated by the Haifa Port company is owned by the government of Israel; the Haifa Bay Port which will be operated by SIPG; the port of Ashdod which is operated by the Ashdod Port company and is owned by the government of Israel; and the Southern Port which will be operated by TIL, a Swiss company. There is also the Kishon terminals, the Israel Shipyards Port (a private port owned by an Israeli company) and the port of Eilat, all of which are active ports in Israel. Thus, there is a certain degree of diversification of the operating, economic and political risk in the future operation of Israel's ports.

At this point, it is worth mentioning the theory that the Chinese preference for investment in the port of Haifa (rather than Ashdod which is closer to Tel Aviv, the business center of Israel) is intended to create a future land-based corridor between the Persian Gulf countries and the countries of the Eastern Mediterranean, which will be based on a rail line between Haifa and Beit Shean.<sup>9</sup> Already today there are hundreds of containers conveyed by the Israeli railway to trucks on the Jordanian side and from there to northern Jordan and western Iraq. Jordan's only access to the Sea is the Port of Aqaba on the Red Sea and therefore the port of Haifa is used by Jordan as the port of exit to the Mediterranean for trade with Europe (primarily trade that is not containerized, such as agricultural produce). Future regional policy may connect the rail line to Haifa with other regional rail lines and thus create a new land-based corridor between the Gulf countries and the Mediterranean (known as MEGIC: Mediterranean-Gulf International Corridor).

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8 Further details about the construction and management of the new terminals in Israel can be found on the website of the Israel Ports company. <http://www.israports.org.il/he/PortsDevelop/Pages/default.aspx>

9 Yigal Maor, the Director of the Shipping and Ports Authority in Israel.

It is worth mentioning that the names of various Chinese companies are also mentioned as possible candidates for the construction of a rail line to Eilat. This is a "classic" project for BRI involving connectivity with the port of Haifa, which as mentioned will be operated by SIPG, a Chinese company, as well as a possible increase in the diversification and volume of trade flow through what is currently the bottleneck of the Suez Canal.

Chinese foreign policy is in general characterized by a combination of different interests, such as trade, energy, logistics, military and others, into a single policy tapestry. In addition, Chinese policy is characterized by a mixture of civilian and military domains, which implies that in the maritime domain the distinction between the commercial fleet and the military fleet is not unambiguous, as it is in the West. Thus, Chinese military doctrine relates explicitly to the use of civilian resources for military purposes. It appears that Chinese policy towards Israel is no different.

Traditionally, the Chinese position toward the Middle East conflict can be classified as pro-Arab. The policy is based on defense and energy considerations (China imports huge amounts of crude oil from the Middle East), as well as its traditional, fixed and almost built-in anti-American position. Nonetheless, China is interested in Israeli technology and Chinese companies have been among leading investors in Israeli technology in recent years.

The gradual increase in Chinese presence in proximity to Israel has occurred on all levels. Its economic presence is growing as a result of the increasing Chinese investment in strategic infrastructures, such as sea ports, industrial parks and railways in African countries and other countries in the Eastern Mediterranean, as well as direct investment in Israel (such as the acquisition of Tenuva by the Bright Food company and an attempt to acquire Israel's largest insurance company and perhaps the future construction of a rail line to Eilat). At the same time, the presence of the Chinese navy in the Red Sea, in the form of the task force against piracy and the leasing of the Chinese logistics base in Djibouti.

It can be assumed that the trend of growing Chinese investment in infrastructure in the region—long-term investments in strategic sectors—will continue, along with the growing presence of the Chinese navy. Furthermore, it is reasonable to assume that growing Chinese diplomatic involvement will be felt in some of the regional issues that affect Chinese investments in the region.

In June 2017, China published the principles for peace in the Middle East between Israel and the Palestinians. It should be mentioned that every few years China publishes a peace initiative or a diplomatic compromise initiative for the Middle East. This was the case in the Chinese initiative in 2014 to end the fighting in Gaza and in 2012 to end the war in Syria. These are usually general initiatives that do not fulfill any major role in regional negotiations and are apparently meant to keep China "in the picture" and to

signal other players that China is an international diplomatic force. Nonetheless, in the most recent declaration in 2017, China mentioned the BRI as a way of achieving peace.<sup>10</sup>

Last June, the Chinese and Iranian navies carried out a joint naval exercise in the Persian Gulf,<sup>11</sup> and in recent months there have been additional declarations by the Chinese foreign ministry. Thus, on November 30<sup>th</sup> 2017, it announced increased Chinese efforts to achieve peace in the Middle East<sup>12</sup> and the Chinese president announced on December 1<sup>st</sup> 2017 that China will increase its involvement in solving global problems.<sup>13</sup>

The Chinese line has a long history of pragmatism and signals of "economic peace" which China is promoting by means of BRI all over Asia.

**Considering the huge amount being invested by China in BRI, some of it in the Middle East, it is possible that the recent declaration constitutes the signaling of a future increase in Chinese involvement in future negotiations to achieve Middle East political agreements, which will secure the huge Chinese investments in our region.**

Policy makers in Israel need to take into account Chinese interests in the region as part of the BRI, also in the case of local Israeli projects (such as the Eilat rail line) and also should adopt a policy toward China that balances among the array of economic and security interests, in view of the rivalry between China and the US, Israel's most important ally.

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10 China Has a New Middle East Peace Plan; Yoram Evron <https://thediomat.com/2017/08/china-has-a-new-middle-east-peace-plan>

11 Iran and China conduct naval drill in Gulf <https://www.reuters.com/article/us-iran-china-military-drill/iran-and-china-conduct-naval-drill-in-gulf-idUSKBN1990EF>

12 China to help restore peace in the Middle East. <http://en.people.cn/n3/2017/1130/c90000-9298663.html>

13 China will take a more active role in world problems, Xi Jinping says <http://www.scmp.com/news/china/policies-politics/article/2122536/china-will-take-more-active-role-world-problems>



The city of Guangzhou in southeastern China and the complex of sea ports in the area, the ports in the Pearl River delta and even the Hong Kong ports are considered to be the beginning of the "Maritime Silk Road" and that is why the city was chosen to take the lead in academic research to be carried out by an international consortium of academic research institutes, which is part of the government of China's Belt and Road Initiative. This initiative includes hundreds of massive projects in transportation (ports, railways and roads) and is meant to connect China to Europe by a land route (the land-based Silk Road of Central Asia) and also by a sea route (the series of ports from China to Europe known as the Maritime Silk Road).

In September 2017, the second conference of the consortium of academic institutes was held in the city of Guangzhou and the Haifa Research Center for Maritime Policy & Strategy was proud to participate together with about 150 researchers from 21 countries along the maritime Silk Road. The writer of these lines represented Haifa University and the Haifa Research Center for Maritime Strategy and presented the role of the sea in the economic and geopolitical strength of Israel.

The conference was organized by the Guangdong Institute for International Strategies (GIIS) which is part of the Guangdong University of Foreign Studies (GDUFS).

In the photo are the conference participants from 21 countries on the coasts of the Indian Ocean and the Mediterranean.



## Can Israel Become the Startup Nation for the Maritime Domain?

*Hannan Carmeli*

### Overview

The maritime domain presents a sea of opportunities for innovation. For decades it had a reputation of being conservative in nature. And indeed the only revolution it experienced in modern times took place half a century ago with the wide scale introduction of the multimodal container, which definitely triggered a paradigm shift. Since then, the domain has experienced the expected gradual digital **evolution**, however the coming years promise to bring a digital **revolution** (disruption) to the space. The distinction between the terms technology Evolution and Revolution is important in this context. It is the latter (Revolution) that this chapter focuses over as it triggers disruptive changes which in many cases drives changes in business paradigms.

The abovementioned gradual *evolution* manifested itself through continuous improvements in "bottom line" indicators such as reduced time to handle a unit of cargo, reduction in crew size needed to operate a vessel and continuous increase in TEU (Twenty-Foot Equivalent Unit) capacity.

David Ben-Gurion, one of Israel's founding fathers, stated that "*the sea is NOT a border but rather a bridge and a passage to other great empires...*". It was further established by the founding fathers that mastering the seaways is a must for a small and isolated country such as Israel, and critical to its future development. Israel indeed used to have a reputable fleet, however its number of vessels has been continuously on the decline over the last few decades. In the 1970's it reached a peak of 110 vessels, a number which declined to 36 merchant vessels out of which 10 only fly an Israeli flag in early 2016.

It is the author's belief that **a new additional manifestation of our founding fathers' vision of mastering the high seas should be of a digital nature. That is, the leveraging of local high tech assets in order to position Israel as a leader in the future Smart Port and Smart Maritime innovation space.**

Israel is well positioned to contribute to the port and maritime domain:

1. Israel's workforce includes an estimated community of ~15,000–20,000 professionals employed in port, maritime and related value chain (source: Shipper, Port of Ashdod)
2. The first ever modern naval missile battles were conducted by Israel's navy during the 1973 Yom Kippur war. These resulted in outstanding success for the Israeli-made Gabriel sea missiles, and proved the superiority of Israel's high-tech capabilities when applied to the marine environment.
3. General Motors, Ford, VW and other car manufacturers have all recognized Israel's supreme automotive innovation capabilities, and have engaged in digital R&D and

scouting in Israel. This is despite the fact that (same like with shipbuilding) Israel has no material manufacturing infrastructure. This serves to prove the ability to adapt technology to new emerging domains.

4. With a long coastal front Israel has a history of winning world championships in sailing and windsurfing, as demonstrated by world champions Brukman, Friedlander, Korzits, Fridman and others.
5. Last, the coast of Israel has a long heritage of seafaring culture which started with the ancient ports of Acre and Caesarea dating back to c. 13–18 BC which connected ancient Europe with the Middle- and Far-East regions. Moreover, the early models of the metal sextant (used for celestial navigation – than known as Astrolabe) was designed and built by Abraham Zacut a Jewish astronomer who was born in Spain and moved to Jerusalem (1452–1515). Zacut was an author of Nautical and Astronomical almanacs and was the first to build a metal sextant (to replace earlier wood models) which allowed better precision in celestial navigation.

### Current Situation – Conservative Industry

The domain has experienced a gradual technology evolution over the last 10-15 years. Although not a *revolution*, this *evolution* has manifested itself in bottom-line operational improvements.

- Average cargo handling pace (load/unload) – increased from ~200 tones/hour 30 years ago to more than 2000 tones/hour today (assuming 5 "hands" for total of 150 movements per hour)
- Growth of vessel capacity from 3000 TEU 30 years ago to more than 20000 TEU today (fig. 1)
- The number of crew members operating a vessel has gone down from 50–60 in the 1950's to 18-25 today

Though **the overall business paradigm has not changed**. The value chain including all its links and members, has stayed in place. Perhaps the most graphic representation of heritage at its "best" is the pilot climbing on board a vessel to maneuver it into and out of the port. Day or night, hail or sunshine, on a small service boat braving the waves, the port's pilot gets out to the open sea, climbs the shaky ladder, gets onto the bridge and instructs tug boat by radio to push the aft, pull the bow etc. All in all – an error-prone and mostly manual process.

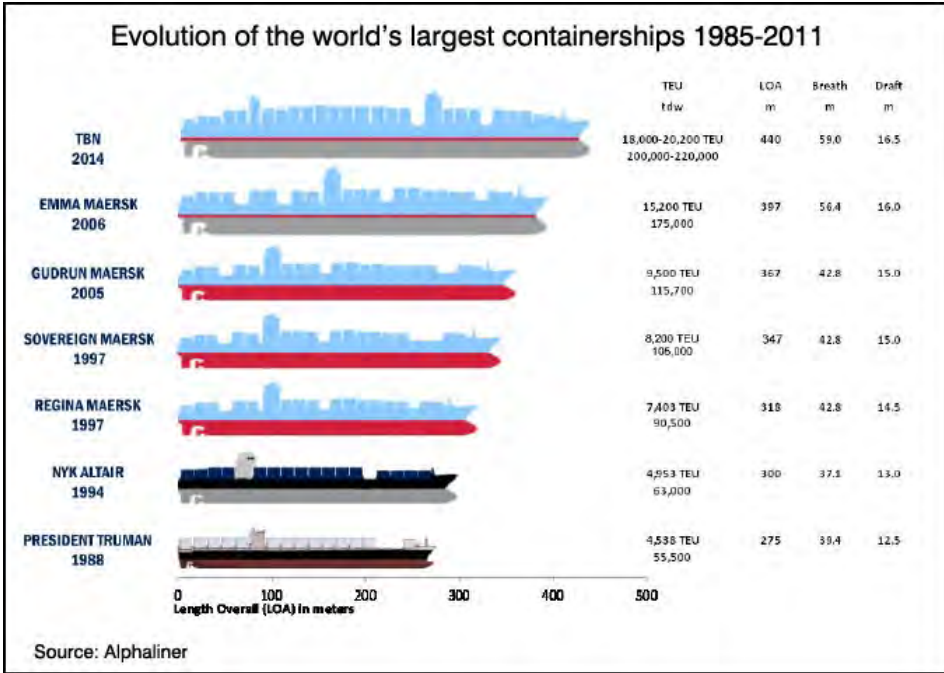


Figure 1 – TEU Evolution over the years

### Signs of Disruption – Examples of Innovation Areas

There are multiple indicators of material (technology driven) change on the horizon. Those include actual projects and initiatives announced by related parties as well as "innovative spirit" manifested by meaningful players. Below are a few examples of such early indications for disruptive innovation.

**Remotely Operated and Autonomous Vessel** – this has been a long-term initiative which has manifested itself in numerous forms and venues. Ranging from remotely operated to autonomous vessels, and from actual operations to regulatory considerations. An example of a leading initiative in this space is that of DIMECC's One Sea Ecosystem<sup>1</sup> which includes major players such as Rolls Royce Marine (Eyes Wide Open<sup>2</sup> initiative), ABB, Wartsila, Ericsson and others.

**Raised Awareness to Cyber Threats** – cyber attackers are threatening all domains. The maritime space has experienced a few notable attacks recently, which have raised awareness and are triggering new regulations and action to be taken in order to face the

1 <https://www.dimecc.com/dimecc-services/one-sea-ecosystem>

2 <http://www.rolls-royce.com/media/our-stories/discover/2017/discover-intelligent-awareness.aspx>

threats (examples from recent months – the attack on Maersk’s logistics systems and the manipulation of GPS systems in the black sea).

**"Connected" Ship, Port, Shipyard** – many indications exist today of gigabytes of data being available per hour/day from vessels and ports around the world with no proper analytics and integration among the silos of such data sets. Research has been conducted to address Port and Ship connectivity. Connected Smart Ship<sup>3</sup> by Hyundai Heavy Industries and Accenture and Connected port<sup>4</sup> by Accenture and SIPG are good examples. I expect a reasonable level of interest in cross boundaries innovation (port, shipping, forwarding etc).

**Nomination of digital/innovation executives** – a trend has been identified where leading companies in port, shipping and shipyard operations have recognized the importance of nominating an executive level (VP or C-level) to manage and promote "open innovation". These activities typically include scouting and hosting of events such as hackathons, meetups, pitch nights etc. Examples include Maersk’s Chief Digital Office (CDO), Damen Shipyards Innovation Program Manager, and various executive roles at Wartsila including CDO as well as VP Digital Portfolio.

## Israel's Digital Innovation Ecosystem Assets

Israel is well known for its startup ecosystem to the extent of getting branded as "The Startup Nation" in the book first published in 2009 by Dan Senor and Saul Singer. While many feel proud about it, others may argue overplay of that card. There is consensus though over the fact that something special is going on in that space, as is evident by relevant numbers and facts. When analyzing the "normalized data" (dividing figures by GDP in order to use the same yard stick comparing to other economies). Examples include the expenditure on (non-defense) R&D and VC investments, all as percentage of GDP and all placing Israel at the top of the list compared to other countries (fig. 2).

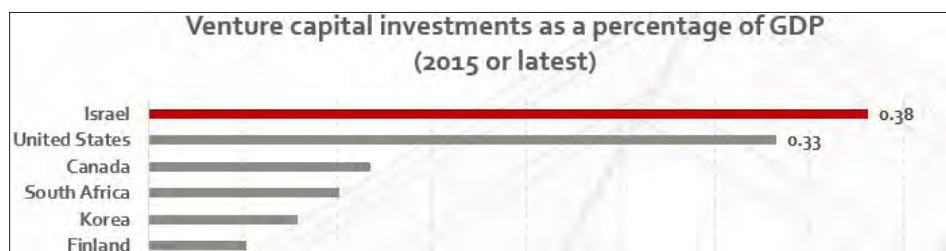


Figure 2 – Israel's Hi-Tech Ecosystem Assets

3 <https://www.thedigitalship.com/conferences/presentations/2015kormarine/3.pdf>

4 [https://www.accenture.com/t20161012T003018\\_w\\_us-en/\\_acnmedia/PDF-29/accenture-connected-ports-driving-future-trade.pdf](https://www.accenture.com/t20161012T003018_w_us-en/_acnmedia/PDF-29/accenture-connected-ports-driving-future-trade.pdf)

Among the reasons for the above are:

- Necessity as mother of all invention. Examples - Security needs which triggered creativity in harnessing new technologies to keep threats at bay; draught conditions as a stimulator to develop sophisticated irrigation and water management solutions.
- Productive collaboration by government, academy, the business sector and a multitude of other stake holders. This collaboration is inspiring to the extent that executives and officials from other countries frequently visit Israel to learn about the ecosystem and how governments could support their local hi-tech proliferation.
- Presence of Venture Capital, Private Equity and other investment platforms. While this could be viewed as an end result of the above, this vibrant community has been very active in attracting startups helping them flourish. As mentioned before, Israel ranks highest in terms of VC investment (compared to its GDP).

As a result, hundreds of global companies, most of which are leaders in their space, have opted to establish R&D centers in Israel (fig. 3). The typical path includes acquiring a local asset (startup or a growth company) and strengthening its R&D activity, basically establishing an R&D center. One of the core activities of such an R&D facility is to scout for local startups and other emerging initiatives and maintaining a deal flow for future strategic partnerships.



Figure 3 – Hundreds of R&D and Scouting Centers of Global Leaders were established in Israel

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## Local Port and Maritime Assets and their Relevance

The Maritime ecosystem in Israel was developed for the first time during the British mandate over Palestine in the 1930s. The first deep-water port was planned and constructed under the supervision of Sir Palmer in 1932 in the city of Haifa, which for decades served as Israel's maritime hub. Geopolitical circumstances have dictated that Israel be more of a terminal shipping point than a transshipment hub. This has seen some change over the last two decades with Jordan benefitting from access to Israeli ports and the construction of two new sea terminals in Haifa and Ashdod which will have the infrastructure to serve major shipping lines. Significant port operators won tenders for these terminal operations – Shanghai International Port Group (SIPG) for Haifa port and MSC's Terminal Investment Limited (TIL) for Ashdod. Existing ports are in the process of streamlining their operations and ramp up to face the expected competition. These new entrants are expected to introduce new practices to integrate with existing knowledge of shipping and port operations (and the related value chain).

Add to that the fact that Israel dependency on sea transport is higher than the global average and the awareness to the domain becomes clear (Israel has ~99% of its import/export tonnage transported by sea comparing to 85% global average)

## Israel's Maritime Technology Ecosystem – what has been achieved so far

Awareness – the steps taken in 2017 proved the global and domestic interest in the domain and thirst for coordinated and focused activity to promote smart ports and maritime technologies. This was evident through few indicators:

- Willingness of local executives (usually at the CEO and board levels) to engage in sponsorship and partnership discussions. This include local players such as Port of Haifa, Port of Ashdod and other leaders in the local forwarders and ship agents value chain.
- Interest shown by regulators to help the "national aspects" of the initiative. These include government entities such as Ministry of Economy through its newly formed Innovation Authority and network of Foreign Trade economic attaches, Ministry of Transportation through its Administration of Shipping & Ports and more
- Hosting proposals by municipalities extended in order to promote innovation in their ecosystems. Most notably is the City of Haifa, which may serve as a natural home to the initiative due to its heritage as the cradle of Israel's new-era maritime activity (first deep-water port constructed by Britain in 1932).
- Attendance in domain specific events – the most recent one held in July 2017, was overbooked and received plenty of coverage (see Ports Strategy newsletter<sup>5</sup>). The next event is a major summit sponsored by Israel's Prime Minister's Office on the

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5 <http://www.portstrategy.com/news101/products-and-services/technology-innovation-sparked-by-startup-hub>

subject of Smart Transportation.<sup>6</sup> For the first time ever, it will include a track focusing on Smart Ports and Maritime technologies. This track was booked up six weeks prior to the event.

## Recommendations to decision makers

The facts and thoughts outlined above lead to the following recommendations made to decisions makers (in local and national government, academia and other areas):

1. **Recognize Ports and Maritime as an emerging Technology Sector** which will get plenty of attention over coming years. As indicated in the Overview above, the domain is likely heading towards disruption. Israel is unique in its high-tech capabilities on one hand, but also in its reliance on maritime transport on the other. Matching the two together is an obvious choice.
2. **Allocate resources and funds to support activity in the domain.** Consider allocating a port facility and funding to support technologies for an emerging need such as the future autonomous ship. An example for such past national initiative is the one which took place in 2010 driven by Mr. Haim Shani, then General Manager of the Ministry of Finance, which appropriated NIS 200M over a period of 5 years to jumpstarting the Fintech ecosystem which has subsequently produced dozens of startups and established companies delivering technology to the space.
3. **Integrate Maritime technology into other global initiatives.** Examples include the Chinese Belt and Road Initiative (BRI), European Network of Maritime Clusters (ENMC). Israel is already a contributing member in related initiatives and should leverage such towards the Maritime domain as well.
4. **Municipality level** – while other communities outside Tel Aviv and Herzlia struggle to bring high-tech jobs to their cities, they need to focus on their strengths. While many cities could claim "cyber" dominance or try to get branded as the "capital of smart cities" – there are only a handful which could claim leadership in the Ports and Maritime space. These should seize the opportunity. Haifa and Ashdod are the natural candidates for such claim, and need to work together with government to unleash the opportunities.
5. **Support the emerging and vibrant community** – the ministry of economy has budgets for supporting communities that can offer "additive" high-tech activity to what already exists in the overall eco-system. Such budgets should be appropriated towards the promising direction of Smart Ports and Maritime community. The seed for such a community was laid in a LinkedIn group called Smart Maritime Israel and further support to promote events and other activity should be offered.
6. **Magnet for global players** – Israel is well known for attracting large multi-national companies to invest in local R&D and conduct scouting for local technology. In

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6 <http://fuelchoicessummit.com/Agenda/SmartMobilityintheFuturePorts.aspx>



fact there are some ~350 such global players who have already formalized such presence in Israel. Special effort should be announced and conducted by already existing platforms/vehicles to promote the message of Israeli-originated Smart Port and Maritime technologies. These platforms include the Ministry of Economy's Foreign Trade department, the Export Institute, Israel's Innovation Authority, ISERD and others).

## **Final Comments**

The above themes and assumptions were thoroughly tested over the last 9 months through numerous meetings and presentations. While limited in number, there are already technology companies who show signs of success and prosperity – Freightos, Windward, Loggino and Wave to name a few. I feel stronger than ever before that there is a path to position Israel as a lead contributor to the smart port and smart maritime technologies.

As an additional proof of Israel's potential, note our very recent win in the prestigious annual Rotterdam World Port Hackathon (WPH). It is a well-known and high-profile event which attracts attention from innovators who show interest in bringing the digital message to the port and maritime communities. The 2017 (5<sup>th</sup>) WPH published a list of challenges to be addressed by innovators. The challenges were mostly related to supply chain digitalization, smart solutions for port operations, and the connected and autonomous ship of the future. The list of referees included representatives of IBM, SAP, Port of Rotterdam, Marine Traffic and many other leading technology and operational companies from the domain.

It was a few months earlier that theDOCK Innovation Hub was approached by Uri Yoselevich, an individual with an entrepreneur's spirit. "If you get us sponsorship to participate at the event, we will bring a respectful result" were his short words. We decided it was the right time to raise to the occasion. Together with Startup Nation Central, headed by Professor Eugene Kandel, we sponsored the team, and put them in contact with harbor masters in Haifa (Capt. Naftali Weiss) and in Ashdod (Capt. Morris Mor). The challenge picked was smart solutions for port operations, and the solution proposed was to leverage various sources of data in order to dynamically build an on-line depth map of the harbor and its approach.

The result? **The Dock Tech team was announced as the winner of the 2017 WPH** (fig. 4 – winning team accompanied by Mr. Nir Gartzman – co-founder of theDOCK).



Figure 4 – Israel's Dock Tech team sponsored by theDOCK and SNC – winners of the 2017 Rotterdam World Port Hackathon

## Developments in the Fishery Management Policy of Israel

### *Dor Edelist*

#### **Background – the situation prior to 2017 and the new regulations, major players and factors affecting fishing and drivers of the regulatory change**

Israel has never been a maritime fishing empire. Like its neighbors in the Middle East, Lebanon, Syria and Cyprus, Israel has a small, narrow continental shelf and its fishery, especially by nets, has a multispecies nature, i.e. there are multiple target species. Approximately 80% of the fish consumed in Israel is imported and less than 5% of the fish consumption is supplied by local fishing. This figure is not expected to increase significantly, and in recent years has even fallen to 3%. Fish consumption in Israel is three times higher than local production, and only about one-tenth of this modest local production comes from fishing in the Mediterranean (~80% is freshwater aquaculture). Nevertheless, marine fishing still occurs in large sea areas and serves as a source of income for >1000 Israelis, and a source of leisure to >50,000 recreational fishers.

In 1937 the Mandatory Fisheries Ordinance of Israel was enacted and it is still used as a basis for the Israeli fishing regulations today. The 'Fishery officer' (usually the director of the Ministry of Agriculture's Department of Fisheries) is the responsible party for its enforcement and updating, and has extensive authority to change the ordinance. Nevertheless, very few changes were made over 80 years, the most prominent of which being the decision to freeze the fleet size in 1995.

The main commercial fishing methods in Israel are:

1. Bottom trawling (dragging nets across the seabed) – this method is responsible for most of the catch (Table 1), since about 90% of the Israeli shelf is a soft substrate of sand and silt that allows dragging of nets
2. Purse Seining for inshore pelagic species. Seining collapsed commercially in the 1980s due to Israel's trade agreements with Europe and the canning industry shifting to rely solely on cheaper imports.
3. Coastal artisanal fishing with stationary nets and bottom long-lines, the scope of which has also been significantly reduced in recent decades.
4. A small scale pelagic longline tuna and swordfish fishery (existing since 2000).
5. In addition, there is a growing recreational fishery in Israel with hook and line or by spear gun. The recreational fishery is booming, unlike the commercial methods, which have been in a severe crisis for decades.

Table 1 – Fishing Methods in Israel – Number of registered and active vessels as well as catch in tons

Method		Number of licenses (Licenses after the reform)	Active Vessels	Catch in Tons
Bottom Trawling		31 (25)	16-17	1,421
Purse Seine		28	10-12	146
GillTrammel nets	Inshore Artisanal	436	80-130	435
Longline	Fishery			84
SCUBA diving		28	15-20	55
Spear Fishing	Recreational	2,281**	~15,000 spears and ~50,000 pole and line	~100
Pole&Line	Fishery	4,317**		~400
Pelagic Longline		15	5-10	17

\*\* Personal licenses according to the Fisheries Division (source: Edelist and Rilov, 2014).

The annual catch in Israel increased from about 2,000 tons per year in the 1950s to 5,000 tons in the mid-1980s, in line with an increase in the fishing effort, and since then has fallen to about 3,000 tons in recent years (Figure 1). This decline mirrors the collapse of purse seining followed by the collapse of coastal artisanal fishing, rendering bottom trawling as the main fish provider (Figure 1). This figure is expected to initially fall to ~2000 tons per annum since 2017 with the new legislation and subsequent decrease in fishing effort.

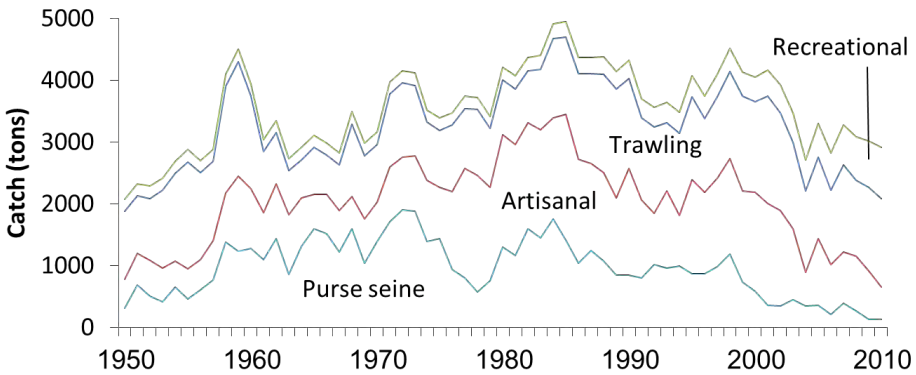


Figure 1 – Annual marine fishery catch estimates from the Israeli Mediterranean from 1950 to 2010, based on reports by the Dept. of Fisheries (Source: Edelist and Rilov, 2014).

The decline in the supply of fish occurred despite the advent of technology and due to a significant increase in operating costs, especially in fuel prices, fishing profits

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were rendered marginal at best. It would wrong fishers to blame this entire decline on overfishing. The range of natural and mainly human factors that affect Israeli fisheries, and which contributed to these changes is very broad and includes:

1. Lessepsian Migration: The influx and establishment of Indo-Pacific species in the Mediterranean through the Suez Canal began in the 19th century and has completely transformed the Israeli continental shelf ecosystem, to the extent of dominance of migrant fish species. Lessepsian species comprise about half of the catch of bottom trawlers and 20-30% of the catch of other fishing methods. This is in addition to hundreds of species of invasive invertebrates – mollusks, crustaceans and of course, the emergence of large swarms of jellyfish since the 1980s. Although some of the migrant species are of economic value, many of them are considered pests, excluding local species and altering the entire food web. This unidirectional and irreversible process is changing the Mediterranean in an ever-increasing rate, and its scale is unparalleled in the world.
2. Damming of the Nile in Aswan in 1969 and the drying of Israel's coastal rivers – the south-eastern Mediterranean is one of the most oligotrophic marine areas in the world. As a result of this nutrient deprivation, the number of native species is significantly lower than in the Western Mediterranean, and some major commercial species of fish prevalent in the North and West Med., are missing from the Levant. The removal of the largest natural nutrient source, the Nile, has significantly reduced primary productivity and with it, the carrying capacity of the marine ecosystem for fish.
3. Global and regional climate change – Earth's oceans are heating up, and the warming of the eastern Mediterranean waters is one of the highest on record. Many indigenous species that are not adapted to high temperatures have disappeared from the Israeli coast or have decreased significantly. This is occurring in synergy with a regional process called Eastern Mediterranean Transient – the warming of the deeper water layers due to a shift in the source of deepwater creation from the Adriatic Sea to the Aegean Sea since in the early 1990s. This has led to the disappearance of psychrophilic fish such as hake from the catch (a mean of 100t per annum prior to 2000, and less than 10t per annum since).
4. Pollution – Before the Ministry of Environmental Protection was initiated in 1990, lax regulation and enforcement have rendered the Israeli Mediterranean ecosystem as a dumping ground for a host of toxic chemicals and substances, some of which severely damaged the coastal ecosystem and fish dwelling in it. Newer effluents are warm and saline brines from power plants and desalination facilities. Particularly striking are damages to Haifa Bay, which in the past was an important Israeli fishing ground. Various inshore and offshore development projects such as sand mining or marine dredging also negatively impacted on the fishing grounds. Conversely, underwater structures may function as artificial reefs and contribute to production;

however with no proper fishery management installed, they serve merely as fish attractors and thus facilitate overexploitation.

5. The State's Investment and involvement in Fisheries – The Department of Fisheries and Aquaculture of the Ministry of Agriculture and Rural Development is the body responsible for the management, monitoring, development and supervision of fishing in Israel. The involvement of the State of Israel in the management and support of marine fishing has declined sharply since the 1980s. Personnel was cut and neglected, the state's investment in fishery development decreased to zero, and over the past two decades, support for fishing equipment and boats has been reduced to near zero, except for a fuel subsidy to bottom trawlers. The lack of active fishing management and the lack of enforcement have contributed substantially to deterioration of the resource.
6. Overfishing – Over-capacity and Overexploitation – The fishing resources can be exploited through fishing effort (number of days at sea, number of boats, engine size and gear size) to a certain level, beyond which overfishing affects target species, typically in the short to medium time frame (months to years). Overfishing might also have a cascading effect which impacts the entire food web, and overfishing of certain species has probably caused a decrease in the fish size for some species (e.g. groupers). Except for a short experiment in 1998, there were no seasonal fishing bans in Israel before 2016. These bans are common throughout the Mediterranean during the breeding and recruitment seasons in the spring and summer respectively. While selective fishing impacts mainly the target species and mainly the larger specimens, nonselective fishing, such as bottom trawling has high bycatch and discarding rates and young specimens from both commercial and noncommercial species might be bycaught. Therefore, the cessation of trawling during the recruitment season is imperative. Trawling also damages habitats, especially when the nets are dragged across a rocky seabed and this has also occurred in Israel (although in a smaller scale than elsewhere). In shallow waters, the increase in more selective recreational fishing affects populations of rock-dwelling species such as groupers. With the decline in profitability, the commercial fishing effort and the number of jobs that the industry provided declined as well. Trawling effort, for example, has declined from about 6,000 fishing days per year in the 1990s to about 4,000 in the last decade and will probably fall to around 2,000 with the new regulations. Since 1995, the fleet size is frozen in Israel, and while the theoretical effort has remained the same, the actual effort has continued to decline. The number of active vessels in the Israeli fishing fleet is 3-4 times the number of registered vessels. This situation, called overcapacity, is very common in the world's fishing fleets today.
7. Economic, social and geopolitical changes – market forces determine fish prices and demand, and for a number of species, especially small pelagics, the lack of markets no longer justifies exploitation. Rising operational costs, such as wages and fuel, has had a significant impact on fishing in Israel in the past, driving some

methods of fishing to economic unfeasibility. Wars and security also affected fishing. Security areas closed for fishing permanently (such as Atlit) or temporarily (a number of firing zones) have limited fishing areas on the one hand, but serve as de facto marine reserves, where fish can grow and reproduce undisturbed. Piers, breakwaters, mariculture farms and oil&gas rigs and pipelines serve as artificial reefs that either exclude fishers and create a habitat and a source for fish distribution, or in the absence of protection from fishing facilitate their extraction and support overexploitation. Conservation is a relatively new player in the Israeli Mediterranean. Nature protection, or its absence, has also had a significant impact on fisheries, since no significant conservation zones or Marine Protected Areas were planned or established in Israel. As of 2016, after the SPNI campaign, conservation affects fishing more than any of the other factors do, as discussed in the present chapter.

Traditionally, the major players that influenced fishing and excluded fishers were: 1. The economy (through demand for fish, input costs and sea pollution) 2. Shipping (through species invasion and the Suez Canal) 3. Security (through borders and closed areas). In the last decade, Hydrocarbons joined in and recently, protection of the marine environment has become a crucial player in the management of fishing in Israel. In 2011, the Society for the Protection of Nature in Israel (SPNI) launched an extensive public campaign aimed at changing fishing in Israel. Although the declared goal of the campaign was to 'save the sea', help Mediterranean fisheries and improve fishing in the long run, in practice it reflected more of a desire to preserve nature than to increase the catch or profitability of fishing yields. The campaign ended with a series of lawsuits in the High Court of Justice, which forced the Department of Fisheries to make extensive changes to the fishing order, and in January 2017, new regulations were issued, including a number of very significant restrictions on all fishing methods in Israel. Simultaneously, the Nature and Parks Authority is promoting installation of a network large Marine Protected Areas over 20% of Israel's territorial waters. Although these areas will overlap military areas and shipping lanes and allow oil&gas drilling, production and conveyance, fishing is expected to be prohibited in them, and thus they are expected to displace yet more fishers from traditional fishing fields.

### **The regulatory change – what it means and how it is expected to affect fishing and the Israeli marine ecosystem.**

The new fishing regulations constitute a historic change in the perception of fishing by the State of Israel – from unregulated fishing, in which fishermen were free to fish almost wherever and whenever they wished, to a worldview that places more importance on conservation of marine nature. Moreover, the lax enforcement is expected to be sterner with transfer of this responsibility to the Nature and Parks Authority. The new regulations place fish wellbeing in the long run before the immediate welfare of the fishermen. They contain several components relevant to all fishing practices, such as updates to the

minimum landing size for several species. Mainly, it includes regulations relevant to each fishing method. Here are the main ones:

1. Bottom trawling: This method, criticized for its high discards and damage to benthic habitats, received the most severe restrictions. According to the new regulations, trawling is banned north of Dor, as well as shallower than 40 meters north of Bat Yam and 30 meters south of Bat Yam (25 meters at night), as well as in 11 areas surrounding the main rocky reefs in the south and center of the country. This means that nearly half of the trawling fields were eliminated. In addition, trawling is prohibited for up to three months (pending fishery officer's annual decision) during fish recruitment season, defined as May 1<sup>st</sup> to August 31<sup>st</sup>.
2. Coastal artisanal fishing, including longline and gillnets: Fishing is prohibited for up to two months (pending fishery officer's annual decision) during fish spawning season, defined as March 1<sup>st</sup> to July 1<sup>st</sup>. Benthic Longlines are restricted to 1500 hooks (Pelagic longlines for tuna were limited to 2,000 hooks and 60 km). A minimum mesh size for gillnets was set at 30 mm and the use of nets over 2 km is forbidden.
3. Fishing with SCUBA gear: The exclusion of about thirty fishers from this regulation has been revoked under the new regulations, and it is now strictly forbidden to fish with tanks. In addition, all fishers are now required to declare fishing as their official profession with the tax authorities and commit to proper book keeping in order to renew their fishing licenses.
4. Purse Seine: Fishing is prohibited during the breeding season, and less than 500 meters from the coast.
5. Recreational Fishing: Banned during the breeding season (except fishing from the shore with pole & line, permitted year round). Also, under terms of the personal fishing license a clause has been inserted which limits daily catch to a maximum of 5 kg or two fish.

In the long run, conservation by reduction of fishing effort is expected to allow for larger fish and a greater and more stable catch per unit effort; however it is paramount to understand that fishing is not a stable business – there will always be stronger seasons and stronger years, along with declines in weaker years and seasons. There are multiannual cycles for many species that hinge on factors other than fishing. In addition, changes to the ecology of the Israeli continental shelf ecosystem can never be undone, if only because of the accelerating process of bio invasion, which is more dependent on the expansion of the Suez Canal in Egypt, on climate change and on time itself than fishing. Benthic life in the vast areas closed to trawling is expected to recover within a few months to several years, judging by various studies from the world and the Mediterranean (see Demestre et al., 2008). There is no doubt that the current reform is a revolution that earns Israel a spot of honor on the list of countries preserving the marine environment, not only in the Mediterranean but worldwide. However, in terms of fisheries management, a number of



legislative mistakes were made in the new regulation, mostly because fishers were not involved in the process.

### **Expected aftermath and a number of recommendations to improve regulations**

With the introduction of the new regulations, a sharp decline in the fishing effort is expected, leading to a parallel decrease in the annual catch. Non-migratory species such as goatfish, shrimp and calamari are indeed expected to increase in the areas closed to trawling, although there will be no one to fish them out, and their share in the market will be taken by imports. In order to reduce the externalization of such costs (e.g. trawling where there are coral reefs and chopping down mangrove forests in order to dig ponds to grow shrimp in SE Asia ) and in order to allow shrimp fishing in Israel, the trawl areas in the south must be closed to a depth of 30 m and not changed to 40 m within 3 years as determined by the regulations. The recovery of benthic fish in the closed fields is expected to include some species that are valuable for the artisanal fishery, and this may be a boon to coastal fishermen. However, in the short term, the new regulations are hard on all fishermen and many will find it hard to continue fishing for a living, having to sit out the breeding season. A larger daily catch can be expected with the return to fishing after the moratorium, and considering the reduction in total fishing effort; but this does not appear to compensate for the loss of working days at the level of the total annual catch and, probably, fisher income. Proper bookkeeping is important in order to determine who is a true fisher, but entails further costs that fishermen have not borne so far. In order to avoid such severe loads on the weaker sectors, and to allow social justice to exist alongside environmental justice, and in order to maintain profitable commercial fishing in Israel, some of the regulations must be reconsidered.

It is important to note that none of the regulations involve compensation of any kind to fishermen (except for a decommissioning scheme for trawlers anchored in the Kishon), which reflects Israel's continued unwillingness to invest in fisheries. Since coastal fishing is interrupted during a strong fishing season (spring), fishermen are at least entitled to a fair discussion of compensation, or at least a shift in the ban to the weaker summer season, when jellyfish often prevent fishing. Compensation should also be discussed with the trawlers who sit out the summer. In addition, the prohibition on nets <30 mm in coastal fishing contradicts the findings of a recent study at Tel Aviv University, which shows that there is no connection between the size of the eye and the number of young specimens captured in gillnets. It is therefore advised to undo this regulation. Most importantly, we must establish an advisory committee with scientists and fishermen representatives to examine results of the new decisions and to advise of the necessary amendments to the management of Israeli fishing, so it can be run in a sustainable manner, both environmentally and socio-economically.

Before the 1980s, the most common jellyfish species along the Israeli Mediterranean shores was the cannonball jellyfish; A local species with a mild sting and small swarm size and density. Then everything changed when the Nomadic Jellyfish *Rhopilem nomadica*, Invaded the Mediterranean and Israel's beaches became plagued by its massive swarms and stinging tentacles. It has since spread throughout the entire eastern basin. This bioinvasion is particularly dramatic, as *R. nomadica* is the only organism that directly impacts all types of ecosystem services in the region:

1. **Supply services** are hampered when jellyfish swarms clog water intake pipes of coastal power plants and desalination plants, and when jellyfish clog fishermen's nets. Moreover, jellyfish harm fisheries also indirectly, as Jellyfish eat fish larvae and eggs in the plankton.
2. **Regulating services** that the coastal ecosystem provides are crippled as biodiversity decreases in the coastal pelagic habitat during swarms.
3. Most importantly, **Cultural services** such as tourism, recreation, bathing, swimming, surfing, diving etc. are devastated during summer swarms, as painful and potentially dangerous (but not yet fatal) stinging by the jellyfish excludes Israelis from the waters in the beginning the hot season. Swarms thus induce severe economic implications, but more importantly this disservice negatively impacts the mental and physical health of Israelis, as well as their identity and sense of place as a coastal nation.

Nomadic jellyfish have a complex life cycle, during which their larvae seek hard, clean substrate to settle on and metamorphose into a polyp stage. This is why if we wish to contest jellyfish domination, fishing adults out is not enough – we must also stop polluting the sea with solid waste and delve into research of building materials of marine structures such as breakwaters, jetties, wharfs etc.



## Economic challenges to natural gas exports from Israel's maritime gas fields

*Elai Rettig*

In the coming years, global gas markets are expected to become more competitive and saturated, particularly in Europe. This trend will make it more difficult for gas companies in Israel to find new export markets for their product, beyond Israel's immediate neighbors. At the same time, a number of attractive destinations still remain for selling Israeli gas in the region, though the companies must find a way to lower their prices in order to stay competitive. This reality limits the companies' profit potential (and accordingly, the state's royalties from export), and decreases the feasibility of ambitious export projects, such as the underwater "EastMed" pipeline to Greece and Italy. Adding to these troubles is the current saturation of the local Israeli gas market, a fact that serves to deter new energy companies from exploring Israeli waters.

This chapter first presents the expected trends in the gas markets of Europe and the Middle East up to the year 2022. Afterwards, it examines the export options available to the gas companies in Israel, with a focus on the economic feasibility of each option. Finally, the chapter examines the difficulties in attracting new energy exploration companies to the Israeli market, and emphasizes the need to increase demand for local gas in Israel through deregulation and infrastructure expansion.

### Trends in the natural gas markets of Europe and the Middle East

According to recent forecasts by the International Energy Agency (IEA), the natural gas market in Europe is expected to be saturated and highly competitive at the start of the next decade.<sup>1</sup> While the general global consumption of natural gas will grow by some 10% by 2020, demand on the European continent will remain at the same level and may even drop, from 462 billion cubic meters (BCM) in 2016, to 458 BCM in 2022.<sup>2</sup> Despite the drop, European demand for imported natural gas will actually grow during these years, mainly due to the decrease in local gas production (particularly in the Netherlands).

Growing European demand for gas is expected to produce many competitors. These include current liquefied natural gas (LNG) suppliers who are forced to compete in a saturated global market and are looking to penetrate new markets (especially the US and Australia), as well as suppliers of dry gas via pipeline from the Caspian Sea (the "Southern Corridor") and from Russia ("Nord Stream 2"). On the eastern front, Russia

1 International Energy Agency, "Gas 2017: Analysis and Forecasts to 2022". Market Report Series, 2017. <http://www.iea.org/Textbase/npsum/gas2017MRSsum.pdf>

2 Most of the growth in the global consumption will come from developing countries, led by China and India, and mainly for the industrial sector (including chemicals, fertilizers), and not from the electric or transportation sectors. Consumption in Europe is expected to drop due to energy efficiency and greater use of renewable energy among European Union members.

has already reduced the price of gas for several of its east European customers, and is showing greater flexibility in its long-term contracts in order to safeguard its dominance in the area.

Following these processes, gas prices in Europe dropped in recent years, and are expected to remain low for at least the coming five years (despite a short rise in the beginning of 2018). This will make it difficult for gas companies in Israel to offer attractive prices to the continent. In 2016, the average price for dry gas in Europe stood at \$4.98 per heat unit (MMBtu),<sup>3</sup> a drop of 28.2% compared to 2015.<sup>4</sup> LNG prices in 2016 stood at \$4.78 per MMBtu, compared to \$11 in 2013 (lower than the price of dry gas, but does not include the cost of regasification). These prices are significantly lower than those offered by Israeli gas companies to nearby markets, even without taking into account added transport costs from the East Mediterranean to the European continent. For example, the Israel Electric Corporation (IEC) paid in 2017 \$5.8 per MMBtu for natural gas from the Tamar field, while Jordan is expected to pay \$6.2 per MMBtu for gas from the Leviathan field following a supply deal signed in September 2016.<sup>5</sup>

Compared to Europe, demand for natural gas in the Middle East is expected to grow significantly in the next few years, particularly in the electricity sector. However, most of this growth will be met through local production rather than imports. The IEA estimates that in 2016, the Middle East consumed 471 BCM. In 2022, this number will reach 542 BCM (an increase of 15%). This number can rise or fall in response to various national economic reforms in the region, including the construction of better regional infrastructure for the production and transport of gas. This is particularly true in Iran (which will be responsible for half of the rise in gas demand) and in Egypt. Both of these countries can meet the rising domestic demand with their own resources, provided they properly invest in such efforts.

Turkey is the exception, since its growing demand for natural gas will be met primarily by external suppliers. However, this growth is expected to be lower than previously assumed. In 2016, the Turkish market consumed less than it did in the previous year – 46 BCM compared to 48.8 BCM – representing the first drop in gas demand since 2009. The Oxford Institute for Energy Studies recently forecasted that gas demand in Turkey will only reach 62 BCM by 2030, a drop of 25% compared to the original estimate of 81

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3 BTU stands for British Thermal Unit – these indicate a measuring unit for heat and energy needed to heat one pound of water (around 0.45 kilogram) by 1 degree Fahrenheit (0.56 degrees Celsius).

4 International Energy Agency, *Natural Gas Information 2017*. <https://www.iea.org/publications/freepublications/publication/NaturalGasInformation2017Overview.pdf>

5 Lior Gutman, "A huge contract: The Leviathan cooperation will supply gas to Jordan worth 10 billion dollars," *Calcalist*, September 26, 2016. <https://www.calcalist.co.il/markets/articles/0.7340.L-3698842.00.html>

BCM made by the Turkish state-owned energy company.<sup>6</sup> The reason for this steep drop in demand forecasts lies in the Turkish government's new policy of reducing dependency on external gas suppliers through increased consumption of local coal, and through the hastened development of renewable energy and nuclear power plants.

The global liquid gas market is also not expected to be particularly attractive for Israeli gas companies, at least not in the short-term. LNG markets will continue to be saturated and competitive in the coming years, despite an increase in global consumption. The introduction of the US as a major LNG exporter alongside Qatar and Australia is the most significant element in this trend. Russia too will increase its liquid gas export volumes, particularly from Siberia and the Yamal Peninsula, following a drop in the demand for dry gas to Europe.

In order to find more markets for liquid gas, an effort is being made in recent years to develop cheaper and more efficient regasification technologies, such as offshore LNG reception facilities. This is designed to encourage more countries to set up their own expensive facilities for receiving liquid gas. At the end of 2016, the number of countries owning a regasification facility stood at 39, compared to just 15 in 2005. Despite this positive trend, the increase in demand is still not expected to be sufficient to balance the market. Thus, for example, the demand for liquid gas in Japan, the largest consumer of liquid gas in the world, will decrease in the coming years, as more of its nuclear power plants go back online. Though demand for the product is increasing in China, liquid gas exporters are still struggling to find new markets.

## Economic difficulties in implementing export infrastructure

Despite the bleak forecast for the global gas market, gas companies in Israel still have a number of export options. These however require very different levels of financial investment in infrastructure.<sup>7</sup> The cheapest option is to export dry gas via pipeline to neighboring states, namely Jordan and Egypt. The pipeline to Jordan forms part of the export agreement already signed by the owners of Leviathan in September 2016. The pipeline's route will pass north of Bet She'an, and will also transfer gas to the Palestinian

6 Gulmira Rzayeva, "Turkey's gas demand decline: reasons and consequences", *Energy Insight 11*, Oxford Institute for Energy Studies (April 2017). <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/04/Turkeys-gas-demand-decline-reasons-and-consequences-OIES-Energy-Insight.pdf>

7 For full details regarding Israel's export options and their geopolitical implications, see the chapter on natural gas in the HMS strategic assessment for 2016: Elai Rettig and Eyal Hayut-Man, "The Geopolitical Aspects of Gas Reserves in the Economic Waters of Israel", in Shaul Chorev (ed.), *Maritime Strategic Evaluation for Israel 2016*. Haifa Research Center for Maritime Strategy (April 2017). pp. 130-141. [http://poli.haifa.ac.il/~hms/images/publications/EN\\_Report/\\_EN\\_Report\\_.pdf](http://poli.haifa.ac.il/~hms/images/publications/EN_Report/_EN_Report_.pdf)

Authority via the city of Jenin. The cost of the Israeli segment of the pipeline is estimated at approximately 70 million dollars.<sup>8</sup>

The pipeline is expected to allow gas to flow at quantities three times larger than what the current deal with Jordan calls for. This signals an intent to significantly increase the volume of gas exports to Jordan and to the Palestinian Authority in the future. It is important to note that the Jordanian street oppose the gas deal with Israel. The Jordanian government has therefore stressed the fact that the deal was signed between two private companies, and not between the two governments. However, the Israeli government's involvement in the project is clear, both in the guarantees it provided for the two sides and in the funding of the pipeline's Israeli section.

The export of gas to Egypt is also considered a relatively cheap option. What remains unclear is the extent to which the local Egyptian market actually needs Israeli gas. In terms of infrastructure, the dormant gas pipeline between the countries, owned by EMG, can technically reverse its direction, although the costs involved in such a conversion have not been publicized. Another cheap option is to build a 100km land pipeline from Israel to Egypt that will run south of the Gaza Strip. This could link the gas pipeline in southern Israel to the Egyptian gas pipeline in the Sinai Peninsula, possibly via Kerem Shalom area. This option would provide Israel not only with access to the Arab Gas Pipeline that continues north to Jordan (and from there to Lebanon and Syria), but also, to some extent, it would connect between Israeli and Egyptian gas infrastructure, allowing the creation of mutual redundancy between the countries in case of a sudden shortage. Security considerations in the Sinai Peninsula, however, remain a concern for both options. Beyond these linkages, there are also safer yet more expensive sea-based options, which include an underwater pipeline directly from the Tamar field to Egypt, which would be 300 kilometers long. The owners of Tamar assessed that the cost of the project would be around \$1.52 billion, based on the assumption that they will fund only the section that reaches the maritime border with Egypt, at a cost of \$0.7-1 billion.<sup>9</sup>

However, it is still too soon to determine how much gas the Egyptian market will indeed require from Israel. In November 2017, the Egyptian oil minister, Tarek El-Molla, announced that Egypt plans to stop importing LNG in 2018, and instead rely on the production of gas from the giant Zohr field that was discovered in its waters in 2015.<sup>10</sup> Yet this does not necessarily prove a lack of an intention to also import dry gas from Israel,

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8 Avi Bar-Eli and Eran Azran, "The owners of Leviathan gave up on billions – and the gas export agreement to Jordan was signed," *The Marker*, September 26, 2016. <https://www.themarker.com/dynamo/1.3079574>

9 Avi Bar-Eli, "The price of the gas compromise: The state will pay 300 million dollars for the pipeline, and a discount of billions in tax to the companies." *The Market*, July 6, 2015. <https://www.themarker.com/dynamo/1.2676855>

10 Eran Azran, "Gas stocks are plummeting: Egypt plans to stop importing gas in 2018 – and could export in 2019," *The Market*, November 15, 2017. <https://www.themarker.com/markets/1.4605299>

since that is a cheaper and more stable option over the long run, compared to liquid gas. In any case, it is reasonable to assume that any exports to Egypt will not only be for local market needs, but rather, and perhaps mainly, to revitalize its underutilized LNG facilities for export to Europe.

Compared to Egypt and Jordan, exports of Israeli gas to the Cypriot market is not a particularly attractive economic option. This is due to the high cost of transferring gas from the Leviathan field (or from Tamar) to Cyprus (up to \$2 billion), compared to the small gas market that Cyprus can offer. This option would only be possible if it is part of a larger joint development project that includes the Aphrodite gas field in Cypriot territory, and only if Cyprus will just be used as a stopping point en-route to other markets. This could be accomplished either through an LNG facility that would have to be set up on the island, or through a pipeline that will continue onwards to Turkey and Europe. Both options are expensive and present political challenges as well, making them less likely to materialize.

As previously mentioned, another option for Israeli gas exports is their conversion to LNG. This option is economically logical only if it is carried out through the existing liquefaction facilities in Egypt. The increasingly competitive LNG market rules out the economic logic of setting up a new facility on Israeli or even Cypriot territory which would cost anywhere between \$5 to \$10 billion. Competitively priced LNG would only be possible if the gas companies use the existing liquefaction facilities in Idku and Damietta in Egypt, which are only partially active due to a shortage in local gas. This possibility received a boost in August 2017, following a new law that was signed by the Egyptian president, allowing the Egyptian private sector to import natural gas independently through state-owned infrastructure.<sup>11</sup>

At the same time, the option of exporting gas to Damietta is becoming more distant. In December 2016, Egypt announced that it gave ENI approval to export up to 7.5 BCM via Damietta, which is the maximum possible capacity of the facility.<sup>12</sup> The gas will apparently arrive from the massive Zohr field, and maybe from the new Baltim Southwest field that was discovered by ENI in June 2016. In comparison, the facilities at Idku have a larger annual capacity (11 BCM) and are still not fully exploited, even after Royal Dutch Shell (which acquired BG) received approval to use the facilities on January 2017.<sup>13</sup> If the

11 Eran Azran, "Is Egypt on the way to purchasing gas from Israel? Cairo gave approval to private businesses to import gas," *The Market*, August 8, 2017. <https://www.themarket.com/markets/1.4335835>

12 Avi Bar-Eli, "A blow to the Tamar monopoly: Egypt will permit gas exports – at Israel's expense," *The Market*, December 18, 2016. <https://www.themarket.com/dynamo/1.3163873>

13 Eran Azran, "Has the export of gas to Egypt died? Cairo approves liquid gas exports – this time, at the expense of Leviathan," *The Market*, January 5, 2017. <https://www.themarket.com/markets/oil-and-gas-exploration/1.3220388>

owners of Leviathan are interested in taking part in the liquid gas market, the facilities at Ildku represent the most tangible option, at least in the next five years.

The final (and most expensive) option for the export of Israeli gas includes long underwater pipelines to Turkey and/or Greece and Italy. While there are significant challenges to the feasibility of both pipelines, it seems that the Turkish option is much more economically realistic. The option of a pipeline to Turkey was raised a number of times over the years, with cost estimates of between \$2 to \$3 billion.<sup>14</sup> The pipeline would transfer 8 to 10 BCM annually from the Leviathan field to the Ceyhan Port in southern Turkey and could be completed within four years. The gas would supply the growing demand in the Turkish market, which is currently met mainly by Russian, Iranian, and Azerbaijani gas, at an average cost of \$5.2 per MMBtu (as of the first half of 2016).<sup>15</sup> Gas companies in Israel will apparently not be able to offer a price that is cheaper than the current average that Turkey is paying. However, Israeli gas supplies offer other benefits to the Turkish market that can make up for the higher cost, such as credibility and diversification of supply.

There is also an option of using Turkey as a transit country to sell gas to the European continent. For this purpose, Israel does not need to directly link up with the new "Southern Corridor" pipeline leading gas to Eastern Europe. It is more likely that any such transaction will be carried out through a swap deal, in which Israeli gas flowing to the Turkish market frees up other gas for export to Europe.

Even so, the main obstacle to a transaction with Turkey is political. Relations between Turkey and Israel have been particularly unstable in recent years, and so were Turkey's relations with all the rest of its regional neighbors. The frozen conflict in Cyprus serves as another obstacle to any large-scale regional export projects. Even political stability within Turkey itself could undermine the confidence of private investors in any long-term transactions.

A second ambitious option is to lay a pipeline from Israel to Italy via Cyprus and Greece. This may be feasible in terms of engineering capabilities, but the economic feasibility of the project is in serious doubt. The cost of this pipeline, dubbed the East-Med Pipeline, stands at \$6.7 billion, and it would be placed at a depth of two kilometers, passing three thousand kilometers on its way to Italy. It would transfer an annual quantity of 8–16

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14 The upper price estimate was made at the start of 2014, when the prices of oil and gas were significantly higher than in 2017, as well as the costs of setting up their transport infrastructure. Since then, prices across the industry dropped, and it is likely that the project's costs have dropped too. Hedy Cohen, "Gas execs see Israel-Turkey gas deal by 2017", *Globes*, 28 June, 2016. <http://www.globes.co.il/en/article-gas-execs-see-israel-turkey-gas-deal-by-2017-1001135479>

15 This is the average cost for the three suppliers, with Russia supplying the cheapest gas and Iran supplying the most expensive gas. For more details, see: Austvik, Ole Gunnar, and Gulmira Rzayeva. "Turkey in the Geopolitics of Natural Gas", *Harvard M-RCBG Associate Working Paper Series* 66. September 2016. [https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/66\\_final.pdf](https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/66_final.pdf)



BCM of gas to Europe. Israel and Cyprus are both interested in a pipeline to Italy as an alternative, and even as an addition, to the Turkey pipeline option. Indeed, in the past year there appeared to be a high level of political willingness to promote the project. Examples include a meeting between the prime ministers of Israel, Greece, and Cyprus in June 2017, and a joint declaration that the pipeline can be built by 2025.<sup>16</sup>

Yet despite the clear political will in place, the economic viability of this initiative is unclear, and this is the determining factor. According to initial estimates, the cost of gas offered by the Leviathan field to Europe will range from \$6 to \$8 per MMBtu in order to make the project profitable, compared to the average of \$4.98 paid by European customers.<sup>17</sup> The high asking price is the direct result of the high costs associated with the pipeline. To this, one must add the many engineering challenges that arise from laying the pipeline in such deep waters, over such a long distance, and through terrain that is not ideal in certain sections. These factors may substantially push up the final cost of the project. In general, projects of this kind tend to stray much beyond their initial budgets. A research conducted by Ernst & Young in 2014 found that two thirds of the current hydrocarbon megaprojects in the world strayed beyond their estimated initial costs in a significant margin.<sup>18</sup>

Even if the ambitious pipeline project proceeded according to plan, the asking price for the gas will still be higher than the expected average cost in the European market in the coming years. The European Union is discussing the possibility of consumers paying an "energy security" tax for any volumes of natural gas that do not come from Russia, a category that includes liquid and dry gas from the Mediterranean. However, this suggestion contradicts the EU's principle of free competition, which prohibits discriminatory taxes on goods and services providers. In the past, the US government supported the East-Med pipeline project, but the current Trump Administration is more concerned about promoting US energy exports, such as liquid gas to Europe. Simultaneously, Europe is making progress in renewable energies, which could significantly reduce its need for more big investments in gas import projects from the Mediterranean. As a result, the chances of this project taking off are not high. Having said that, the discovery of additional large gas reserves in the waters of Israel, Egypt, Lebanon, or Cyprus could change the equation in favor of the project.

16 Karolina Tagaris, "Greece, Israel, Cyprus to speed up Mediterranean pipeline efforts", *Reuters*, June 16, 2017. <https://www.reuters.com/article/us-greece-israel-natgas/greece-israel-cyprus-to-speed-up-mediterranean-pipeline-efforts-idUSKBN1962XK>

17 Abboud Zahr, "Challenges of an East Med pipeline", *Cyprus Mail*, 2 July 2017. <http://cyprus-mail.com/2017/07/02/challenges-east-med-pipeline/>

18 Olaniran, O. J., Love, P. E. D., Edwards, D., Olatunji, O. A., & Matthews, J. (2015). Cost overruns in hydrocarbon megaprojects: a critical review and implications for research. *Project Management Journal*, 46(6), 126–138. <http://dx.doi.org/10.1002/pmj.21556>

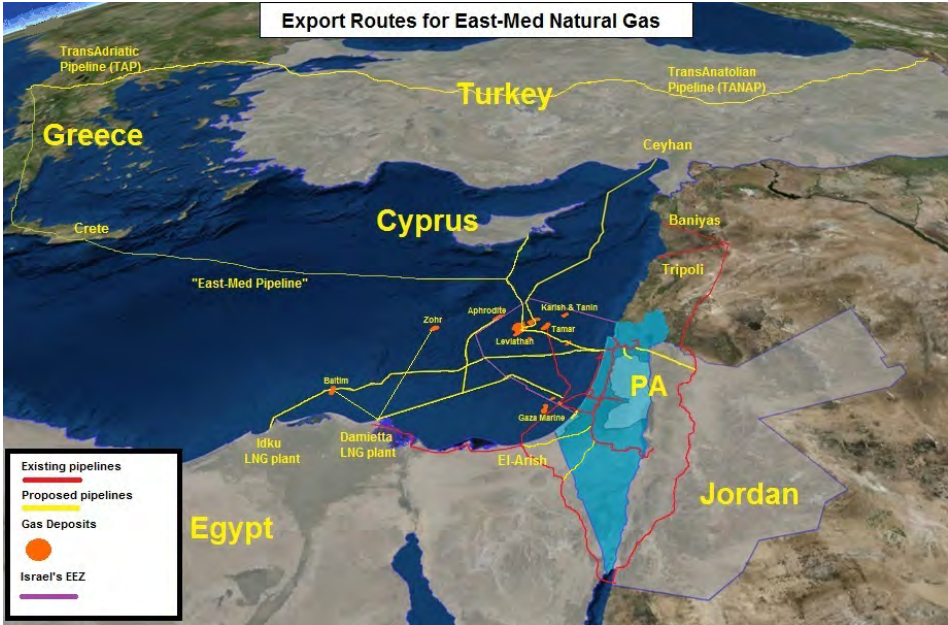


Figure 1 – Export Routes for East-Med Natural Gas

## Difficulties in attracting more foreign energy companies to Israel

Another consequence of the current gas market is the difficulty in attracting new entrepreneurs and energy companies to conduct more explorations in Israeli waters. In November 2016, the Ministry of Energy released an international tender, marketing 24 blocs (sea areas encompassing up to 400 square kilometers) that was supposed to be completed by April 2017. The tender was postponed twice (to July and November), following the very weak response on the part of international companies.<sup>19</sup> In the end, just two offers were made – one by Energean, which was primarily concerned with capturing the area between its Karish and Tanin reserves so that another company will not do so instead, and a second offer by an Indian consortium which includes Bharat PetroResources (BPRL), ONGC Videsh, and Oil India.<sup>20</sup>

19 Out of four companies, the Spanish Repsol company announced its withdrawal, the Israeli Shapir company lacks experience in the field, and Italy's Edison company represents a certain political challenge due to its close ties to the Russian government. Avi Bar-Eli, "We know we wouldn't be flooded with requests for drills, but at least our image improved," *The Marker*, June 27, 2017. <http://www.themarker.com/dynamo/1.4210913>

20 Ora Koren, "The Greek Energean and an Indian consortium submitted offers for gas and oil searches in Israeli waters," *The Marker*, November 15, 2017. <https://www.themarker.com/news/macro/1.4605687>

The main concern of those interested in entering Israeli waters is the lack of a clear destination for the marketing their gas, given the current gas prices. Unlike Egypt, the Israeli market is fully saturated, and has no room for a gas supplier beyond the partnerships controlling Tamar, Leviathan, and Karish-Tanin.<sup>21</sup> Locating an external market is the only option that exists at this stage for any new company, but this is a complex challenge, due to the expected market conditions. Adding to this challenge is the fact that gas markets close to Israel are already taken. Jordan signed a gas supply contract with the Leviathan field, which will supply most of its needs, and it has no political will to become even more dependent on gas from Israel. Egypt is enjoying a number of significant gas discoveries in its territory for local market needs, and its LNG facilities will not wait for a new competitor in the Israeli market beyond the Tamar and Leviathan fields. Although new fields could contribute to the likelihood of building a pipeline to Italy, this is still a risk which, taken on its own, is insufficient to attract significant financial investment in new exploration projects. As a result, a new energy company that enters Israel will have to assume that it will take at least ten years before there will be sufficient infrastructure and markets for its gas. Few companies would agree to that deal, especially in light of the security costs and the geopolitical risks that are involved in exploring in Israeli waters.

Perhaps the main problem of the Israeli market stems from its weak local demand for natural gas, which is not growing as expected. This is despite the great economic and environmental potential involved in turning Israel into a gas-based economy. Reasons for this include excess regulation, which makes it difficult to connect factories in Israel to natural gas, delays in promoting infrastructure projects for the distribution of gas to residential homes, and a lack of success in introducing natural gas in the transportation sector.

In this respect, it is possible that the political enthusiasm surrounding the prospects of exporting natural gas somewhat diverted the Israeli government's attention from the local economy. Insufficient attention is given to maximizing the domestic market's potential through legislation, decreased regulation, and funding of authorities that encourage the development and introduction of gas-based technologies. Nevertheless, when it comes to transportation, there is little the state can do. Private vehicles fuelled by natural gas cannot compete with electric cars as the 'vehicle of the future,' and this makes any investment in a technology whose replacement is already on the horizon superfluous. Still, it is possible to introduce gas technology in large vehicles like buses and trucks, areas where electric technology is making less progress due to limitations on electricity storage capacity (the size and weight of batteries). It is important to note that even if the Ministries for Transportation and Energy succeeded in introducing natural gas into large vehicles in Israel, this would not increase gas demand very dramatically (approximately

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21 Lebanon also does not offer an especially attractive market for exploration companies, but it does offer better regulatory and political conditions than those that exist in Israel, especially due to its good connections with the French government and Total.

10% increase, according to various estimates). However, when such a step is combined with other initiatives in other sectors it may create a change.

In light of the trends in the regional gas market for the coming five years, and without significant development of the Israeli gas market, the options for existing gas companies remain limited in the short-term, and the potential to attract new companies to Israel is small.

### **Summary and recommendations**

In light of expected market conditions, the Israeli government and the gas companies operating in Israel should focus most of their efforts on developing the local and regional gas market, and prioritize this over searching for distant export markets. It seems that the big hopes for geopolitical benefits have diverted attention, to some extent, away from the principal advantages introduced by the natural gas found in Israeli waters: (1) Increasing Israel's energy supply security and that of its immediate neighbors, (2) decreasing energy costs compared to imports from external sources, and (3) significantly decreasing air pollution in the region.

These advantages will grow so long as the demand for natural gas grows in the Israeli economy as well as in the Jordanian and Palestinian economies. Israel should thus encourage the introduction of gas to new sectors in the economy (agriculture, transportation, residential homes) by introducing economic incentives and especially by lifting burdensome regulation on existing sectors, making it easier for them to link themselves to gas.

One should also take into account that the more the local Israeli economy becomes dependent on natural gas, the more important it will be to properly secure a continuous, regular, and error-free gas supply to Israel's coastlines. To that end, the government should strive to create redundancy in its supply lines. This can be achieved through the construction of an additional pipeline to the coastline from the Tamar field, and through the quick development of the Leviathan, Karish, and Tanin reserves. Without this redundancy, even a relatively short-term, periodic, technical fault (like the one that occurred in October 2017) could, in the future, paralyze Israel's electricity market and industries.

## The Mediterranean Sea Research Center of Israel (MERC)

### *Zvi Ben-Avraham*

The Mediterranean is only 1% of the world's oceans, but its waters bordered by 19 nations. Millions of people live and work along its shores and depend on its waters for their livelihood, affecting its natural environment.

The discoveries of huge reserves of natural gas in the Mediterranean Sea off the coast of Israel, estimated at 2% of the world's global natural gas reserves, pull the Mediterranean Sea into the international spotlight and onto Israel's national agenda. These developments present Israel with unprecedented scientific and technological, economic, security, environmental challenges and opportunities which the State of Israel beginning to address.

In response to these developments, in 2012, the University of Haifa was chosen by the State of Israel to lead the national marine consortium, "Mediterranean Sea Research Center of Israel" (MERC) – an organizational umbrella for the entire scientific community dealing with research on the eastern Mediterranean - seven universities, one college and two governmental research institutes:

University of Haifa; Technion – Israel Institute of Technology; The Hebrew University of Jerusalem; Ben-Gurion University of the Negev; Bar-Ilan University; Tel-Aviv University; Weizmann Institute of Science; Ruppin Academic Center; Israel Oceanographic and Limnological Research; Geological Survey of Israel.

MERC brings together scientists from all relevant and necessary disciplines to meet the important scientific and technical challenges in the coastal and offshore Eastern Mediterranean. In parallel, it continues its mission to develop advanced infrastructure to study the Eastern Mediterranean comprehensively. MERC encourage interdisciplinary, inter-institutional projects that will foster cooperation between researchers from a wide range of scientific fields.

The Mediterranean Sea Research Center of Israel focuses on:

- Developing and purchasing modern, scientific infrastructure needed to study the coastal and offshore Eastern Mediterranean
- Supporting marine scientists and researchers to be the academic guards of Israel's decision makers, and serve the government, industry and NGO's
- Aiming sustainable development of Israel's national resources in the Eastern Mediterranean

Israel's energy and environmental policy-making must be driven by the highest caliber of interdisciplinary scientific research. MERC's activities set Israel on the path to academic

excellence and sustainable energy independence that will ultimately strengthen Israel at home and abroad.

The situation of marine research and infrastructure in Israel **before MERCI was established was poor**. There was little equipment dedicated to modern, high-quality shallow and deep marine research, and national monitoring programs were few and under-budgeted. Large-scale research was limited to the 50-year old outdated research vessel the R/V Shikmona.

MERCI institutions invested many of the initial funding in purchasing the necessary infrastructure required to conduct modern, interdisciplinary shallow water and deep-sea resources. Today, 5 years later, MERCI has strong toolset to study areas that were previously off limits due to water depths. The entire academic community in Israel can benefit from this marine platform.

The use of this equipment enables us to study important issues such as:

- Gas/fluid seeps on the seafloor and their consequences
- Submarine landslides and slumping and their potential hazard
- Life in the deep sea
- Deep sea ship wrecks

Examples of MERCI Main Marine Platform:

### Remotely-Operated-Vehicle (ROV) – Haifa University



A work class Remotely-Operated-Vehicle (ROV), capable of operating to 3,000m depth, equipped with 11 powerful electric thrusters for outstanding maneuverability, a Schilling Orion 7P manipulator, cameras, survey sonars and a dedicated scientific skid allowing the installation and testing of additional sensors and the collection and storage of samples.

### Autonomous Underwater Vehicle (AUV)- Haifa University



A medium size (0.5m in diameter, 6m in length) Autonomous Underwater Vehicle (AUV), rated to 3000m depth, equipped with synthetic-aperture-sonar (SAS), camera stereo-pair, sub-bottom profiler, obstacle avoidance system

and a dedicated section allowing the testing of own developed subsea mechanism and sensors, hardware and integrated software



### **Sea Gliders – The Hebrew University of Jerusalem, Weizmann Institute of Science and Bar-Ilan University**

The Sea Explorer, manufactured by Alseamar, is an underwater glider driven solely by buoyancy changes, with no external moving parts. This autonomous scientific platform is rated to 700m depth and equipped with an array of physical, chemical and biological sensors. The glider is capable to stay at sea for long durations (up to 8 weeks) and provide a very

large spatio-temporal coverage, collecting water column data profiles, while traveling in a saw-tooth trajectory through the water. Gliders in general are a very cost-effective solution for data collection as they greatly reduce the use of large research vessels, are monitored from shore via satellite link and are easily deployed and recovered by use of small boats.

### **ICP MS – Weizmann Institute of Science**

Laser Ablation – Inductively Coupled Plasma – Mass Spectrometer (LA-ICP-MS). The system is composed from an Agilent 7700 ICP-MS coupled to a Laser Ablation NWR 213 from ESI.

The Agilent 7700 ICP-MS is configured for routine analysis of high matrix samples, and includes HMI (High Matrix Introduction), pre-set plasma conditions and He mode ORS as standard. Shield Torch System (STS) provides effective plasma grounding, reducing and narrowing the ion energy spread. The Octopole Reaction System (ORS) works effectively using He mode, for simplified operation and consistent results, even in complex sample matrices. A unique 3rd generation collision/reaction cell is utilized in all 7700 Series instruments to remove spectral interferences that might otherwise bias results.

The Laser Ablation NWR 213 is a 213nm solid state laser ablation. It has a  $> 30 \text{ J cm}^{-2}$  fluence (energy density) at the sample surface, with widest spot size range of 4-250 microns and unmatched High Definition Viewing with 3 LED based light sources and cross polarization.

### **FACS – Ben-Gurion University of the Negev**

Florescence Activated Cell Sorter – FACSAria III (BD) is a high performance multi-dimensional analysis and cell-sorting instrument. It can analyze suspended particles (0.5 $\mu\text{m}$ -70 $\mu\text{m}$  in diameter) at up to 30 kHz. With two light scattering channels (FSC &



SSC) and 13 fluorescent channels, FACS Aria III can detect and isolate up to four cell populations simultaneously (e.g. stem cells from peripheral blood) that can be cultured and used in further experiment. FACS Aria III allow single cell sorting with automated cell deposition unit.

### Isotope Analyzer – The Hebrew University of Jerusalem



A Nu Perspective isotope ratio mass spectrometer is used for measurements of carbonate clumped isotopes. This is a new geochemical technique, based on the abundance of chemical bonds between two heavy isotopes,  $^{13}\text{C}$ - $^{18}\text{O}$ , in  $\text{CaCO}_3$ . This abundance is temperature dependent and provides a geochemical thermometer used in

shells of marine organisms to determine sea surface temperature in the geologic past. It is also used in freshwater organisms and in cave deposits (stalagmites) in order to decipher past climatic conditions on land and the interplay between seawater and rainfall. For example, we use this technique in a variety of Pleistocene carbonate archives in Israel to study glacial-interglacial temperatures and rainfall patterns and the links between these and the Mediterranean Sea as the main source of moisture.

### BAT-GALIM vessel

**R/V Bat Galim – Owned by the Ministry of Energy and operated by Oceanographic and Limnological Research (IOLR)**



R/V Bat Galim is a general-purpose research vessel serving the needs of governmental agencies and academia. It has the capabilities to map, sample and analyze the water column, seafloor and sub-bottom at depths of 10-3,000 m.

R/V Bat Galim is also equipped to combat oil spills, operate work-class ROVs, other autonomous equipment, and for search and rescue missions.

The Bat-Galim serves as a national research infrastructure for all academic institutions, research institutes and government ministries, regardless of membership in MERCI. It is a non-profit operational at the lowest possible cost for these entities.



## Mediterranean Explorer vessel



### **R/V Mediterranean Explorer – Owned and operated by the NGO Eco ocean**

The Mediterranean Explorer serves as a national research infrastructure for all academic institutions, research institutes and government ministries, regardless of membership in MERCI. It is a non-profit operational at the lowest possible cost for these entities and subsidized via the NGO.

## Strategic R&D Plans for the upcoming 5 years

The Mediterranean Sea is facing a major crisis. Global warming is effecting this area quicker and more drastically than most other places in the world, with an expected rise of ~ 3°C over the next 30 years. It is vital to understand how this unique bio-geo-chemical system works and how it reacts to past, current and future changes. This is why MERCI is so committed to supporting high-quality research across disciplines and research institutes.

In addition to the rising sea temperatures, its terrestrial counterpart will witness increasing droughts, fires and a chronic shortage of water. These compounding issues will lead to a decrease in ability to maintain land-based agriculture, due to the expected rise in evapotranspiration. Even marine heritage sites suffer from natural weathering, unlawful excavation, and the construction of underwater infrastructures.

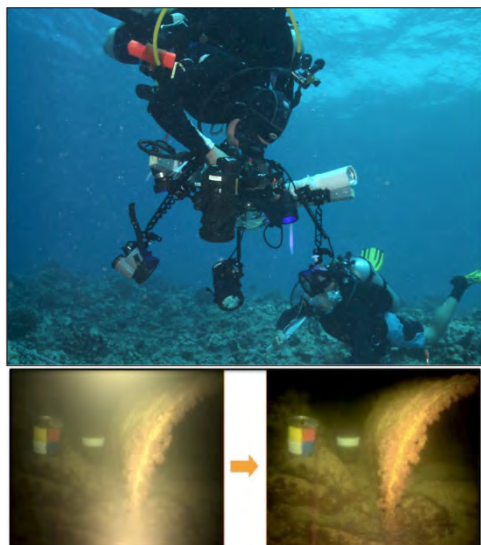
On top of these, the massive gas reservoirs discovered in the eastern Mediterranean (and oil discovery may soon follow), there is a direct threat with any malfunction – massive seeping of these reserves within the water column and sea surface contamination that will lead to a regional disaster. One result can be the formation of deadly tsunami waves, which can engulf the coastal cities of Tel Aviv, Gaza or Haifa.

As Israel looks to the future, it faces with a number of pertinent issues related to scientific research, increased rates of climate change and geopolitical unrest. Israel needs to plan a long-term marine strategy to implement policy that will harness its natural resources without causing regional turmoil and without harming the delicate ecosystem that has developed in this unique area. The need for extensive research in order to lay a solid foundation for such a plan is evident. MERCI does not carry out research itself, but supports research conducted at the various member universities and research institutes.

The next phase of the Center's activities will focus on developing capabilities that will enable Israel and the region to capitalize on the vast opportunities that lay ahead, while minimizing inherent risks. This is to ensure sustainable development of Israel's national resources in the Eastern Mediterranean for posterity. MERCI already brought together scientists from all relevant and necessary disciplines to focus on the important scientific and technical challenges in the coastal and offshore Eastern Mediterranean. In parallel, it has invested in advanced infrastructure to study the Eastern Mediterranean comprehensively.

### **In keeping with our vision for the Eastern Mediterranean Sea:**

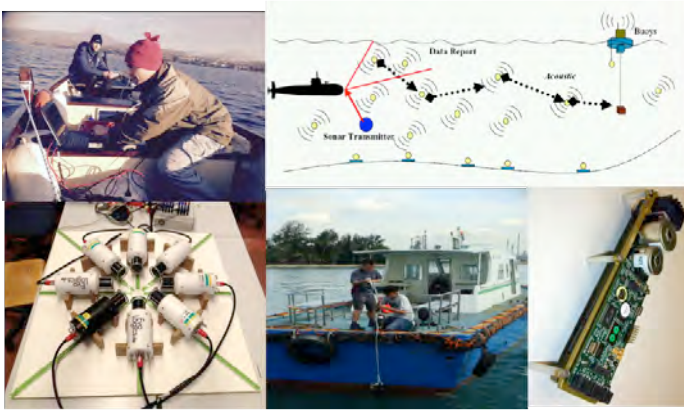
- MERCI will continue to purchase and develop the modern infrastructure needed to study the coastal and offshore Eastern Mediterranean both in the water column and in the sediments beneath. All instruments purchased through the consortium, as well as facilities (laboratories), will be readily available to all participating universities and research institutes without limitations (except for running costs and consumables). Such a step will significantly increase the national knowledge base in the exclusive economic zone (EEZ) of Israel and throughout the Mediterranean, while ensuring state-of-the-art scientific infrastructure for research.
- MERCI will encourage its members to participate in governmental boards and in meetings where policy is decided. Members will provide the government of Israel with the necessary tools to exploit in the most sustainable way best suited to Israel's national interests, the Eastern Mediterranean.
- MERCI will foster interdisciplinary and interinstitutional projects to study and understand the unique challenges that the Eastern Mediterranean Sea poses to Israel.
- MERCI will by providing the necessary infrastructure and databases, encourage international cooperation across relevant disciplines making Israel an important location of international excellence in marine science. We sincerely believe in using science as a tool for overcoming political and cultural differences and have set this as one of our main goals. We all face the same challenges and MERCI has the capability to bring neighboring countries together for the purpose of securing a better future for this resource we all share.
- MERCI will initiative to join international organizations on the subject of Marine Observatory as part of the efforts to conduct long-term monitoring in the framework of MERCI (Gliders, Sediment Traps). The Scientific Committee is still looking favorably at the possibility to join one of the international organizations, uniting the research bodies with similar systems throughout.
- MERCI will also invest in developing the field of marine strategy. This will include projecting the geopolitical situation under different scenarios; investigating security issues that may change due to the new energy discoveries in recent years; providing a detailed economic study on the different paths that Israel and other regional economies may be heading towards; and formulating our statutory position regarding international law, especially following disputes about the EEZ boundaries.



**The Subsea Engineering lab**, headed by Prof. Morel Groper. Focuses on new concept submersibles, propulsion and maneuvering for underwater vehicles including the development of trajectory simulations and unique underwater directional thrusters, novel oil compensated actuators for deep-sea operation, pressure vessels and sealing methods. Some of the current research topics include: motion of planning crafts in seaway, dynamic modeling of hovering AUVs, deep sea propulsion components and pressure vessels. In the lab we perform also research in tribology where the lubricant is sea water.

**The Marine Imaging lab**, headed by Dr. Tali Treibitz. Focuses on cutting edge research in underwater computer vision, scene, color and 3D reconstruction, automatic analysis of scenes, and autonomous decision making based on visual input. In addition we design and build novel underwater imaging systems, such as underwater microscopes.

**The Applied Marine Exploration lab**, headed by Dr. Yizhaq Makovsky. Focuses on innovative use of observational geophysics to address geological and environmental questions. Main research interests include the study of traditional and alternative marine energy sources, and the geotechnical and environmental aspects of exploiting them. In particular, gas hydrates, their potential exploitation and response to global changes; Morphology and recent evolution of the seafloor as an indicator of: recent paleo-environmental and tectonic processes; Active processes of the geosphere: Paleoseismology and mechanism of faulting; the role of free fluids in the Earth's crust; Innovative techniques for monitoring environmental changes (e.g. coral reef bleaching, marine biomass, pollutants accumulation, soil water interaction, etc.).



**The Underwater Acoustics and Navigation lab (ANL)**, headed by Dr. Roei Diamant, is active in the fields of underwater acoustic communication networks, underwater signal detection, object classification, underwater localization, and underwater navigation. Our research interests include channel modeling, design of algorithms and protocols, analysis, and development of simulation tools. We focus on applied research and develop tools for problems like underwater mine detection, navigation without GPS, communication between divers and autonomous vehicles, classification and characterisation of marine mammals and fish, tracking the motion of marine animals, and long range acoustic communication. The facilities in the lab include equipment for sea experiments, a large acoustic chamber, and a direct access to perform measurements from the lab in a testing pool and in the Shikmona reef.

# Human – Sea Heritag

## Spatial-Environmental Disputes between the Port and the City in Haifa

*Na'ama Teschner*

The fifty largest ports in the world (in terms of container traffic – TEU) are adjacent to a built-up urban area and are not, as of today, "islands" in the sea (Hall and Jacobs, 2012). As a result, and according to the international experience, the interface between cities and ports leads to numerous conflicts, first among them the statutory planning separation between the two entities. This also includes the definition of land ownership and the degree of access to and control of the shore and territory adjacent to it. Nonetheless, research in urban planning points to the fact that in recent years changes have occurred in the approach to separation between industrial-commercial activity and public-municipal activity, such as residential housing and leisure. As a result of technological and social developments, there is a growing desire to find greater balance between various land uses and also between and economic and social needs of urban residents (Gavrieli et al., 2016). For example, it is commonly argued that different uses of land can coexist under arrangements that ensure security and safety.

Alongside the industrial-economic activity of a port, which is essential and strategically important on the national level, there are well-known negative implications of port activity on the local level and in particular its effect on the maritime, coastal and urban domains. These include: pollution of the sea, air pollution, blockage of public access to the shore, consumption of additional land in the "port's hinterland", the increased burden on road and railway infrastructure, etc. According to previous research, a long-term market failure in Haifa's metropolitan area has left a neglected and unexploited space that is characterized by disputes over the ownership of land and abandoned territory, which is in need of rehabilitation (Felsenstein et al., 2014). The adverse effects of the port on the city, on the one hand, and the constraints created by the city on the port's activity, on the other, lead to numerous conflicts that, as mentioned above, are common to port cities around the world (del Saz-Salazar et al., 2014; Daamen and Vries, 2013).

We analyzed 16 planning challenges related to the city-port interface in Haifa. In order to accomplish this and to identify the main conflicts, we analyzed the relevant regulation and legislation and conducted in-depth, semi-structured interviews with position holders and other stakeholders (including the Haifa Municipality, Israel's Ports Company, Haifa Port Company, the Director of Planning and the planning committees, the Ministry of Transportation and the Ministry of Environmental Protection).

The challenges are to a large extent the result of the issue of ownership of land or, more precisely, disputes surrounding the question of rights (or lack of them) that are attached to the land. Such disputes arise in the planning processes of, for example, the Kishon Park, the airport and the municipal waterfront. Most of the issues are complex ones,

partly due to the divergent interests of the various players involved in the planning and also because the planning reality in the area is the outcome of historical developments on the one hand and a slow process for implementing change on the other.

The complexity of the issues is also the result of the broad and multidimensional implications of each issue, which usually have institutional, economic, planning, regulatory, architectural, security, health and quality of life implications and an effect on the quality of life in the city. The military harbor creates additional planning challenges, some of which are publicly known (such as the location and size of the "Polinum" structure) while others are not (such as safe distances from dangerous weapons and materials in the harbor). Other planning conflicts include the separation in statutory planning between territory of the city and that of the port, the question of the removal of the grain silo, dealing with the cumulative pollution from the "garbage mountain" and access to historical buildings in the territory of the port for purposes of preservation.

The starting point of research is that the port has the potential to become an asset and an opportunity for the city, rather than a threat and efforts should continue in order to locate opportunities to leverage its advantages, by means of appropriate and balanced planning solutions. Similarly, the city can support port-related activity that will encourage continued economic growth and optimal exploitation of space. In the current effort, we focused on one case of conflict mapping (the port-city of Haifa) and such efforts should also be made in Ashdod and Eilat. Later on, there will be a need to identify alternatives for resolving these existing conflicts. One of the ways to develop such alternatives is by analyzing international experience in this domain. This will likely enable the adoption of arrangements that will reinforce the possibility for cooperation and mutual ties between the city and its port and will advance practical solutions to a variety of planning challenges.



Figure 1 – Stones and quarrying materials used to construct the new harbor at the entrance to the Kishon Park

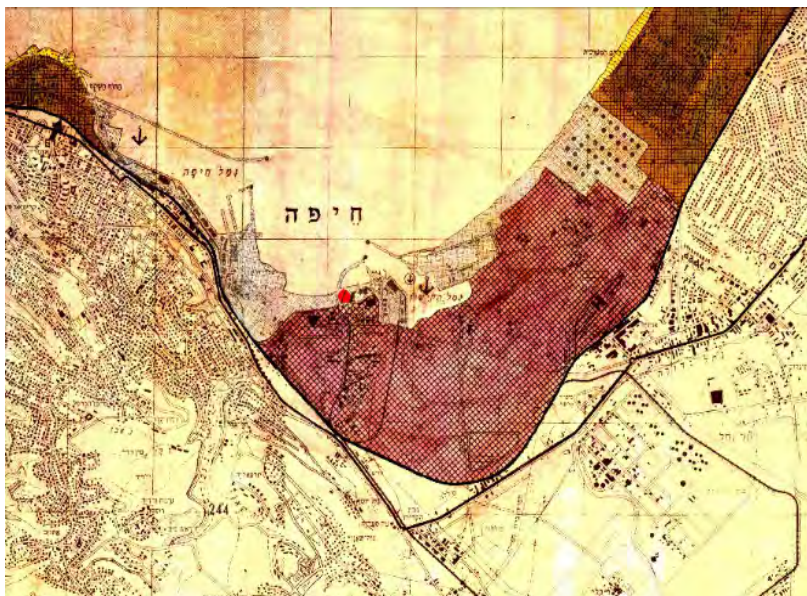


Figure 2 – Already in NOP 13 (1985), deviations from the coastal areas and the creation of a "belly" for industry and engineering installations

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## "The Sea Trail" – Connecting Israeli Public to the Sea

*Ellik Adler and Noga Collins-Kreiner*

### Why the Sea Trail and why along the coast?

In recent years, and in particular following the major offshore natural gas discoveries, there has been increasing public interest in "Israel's maritime domain", a huge area of 27,000 square kilometers. It is about 30 percent larger than the State's territory on dry land and stretches up to 165 kilometers westward from Israel's shores. In this domain is an immense potential for the development of Israeli society and Israel's economy, including the supply of natural gas and energy, the vast majority of Israel's exports and imports, the desalinization of seawater, fishing and marine agriculture, heritage sites and also a variety of leisure, sport and recreational activities.

These economic activities put the delicate balance of the marine and coastal environment at risk. This includes the pollution of the sea from various activities both on land and in the sea, the penetrations of invasive species of plants and animals that alter the ecological balance, uncontrolled fishing, development projects and real estate pressure on the coast and other activities, such as defense, tourism and marine sports, which constitute environmental threats that are often not recognized by the public. Therefore, making the maritime domain—which is usually out of sight—more accessible to discourse and public awareness is of great importance. There is no replacement for physical access and visiting the coast itself "by way of one's feet" in order to understand, feel and participate in the public discourse on the marine environment in Israel.

In recent years, as interest has grown in hiking, the hiking trails in Israel and the world have become a basis for the development of a culture of leisure and recreation, an infrastructure for the creation of public awareness of the need for environmental protection and an important platform for the development of tourism. With the development of tourism, sport and physical activity in the outdoors, there has been growing demand for the development of hiking trails, for both short hikes and trekking.

Also in Israel the culture of hiking and marked hiking trails has developed into a major extent. There are hundreds of marked trails, with a total length of more than 10,000 kilometers all over the country. These include short hiking trails of the Society for the Protection of Nature, longer trails such as the Israel Trail, the Kinneret Trail and the cross-Golan trail, as well as local trails created by the Keren Kayemet, the Ministry of Tourism and many local authorities.

Hundreds of thousands of people in Israel take part in hikes in numerous frameworks: youth movements, schools, hiking clubs for various age groups and sectors, and also family and individual hiking. The need to discover parts of the country that can be reached (almost) only by foot, the growing awareness to the values of nature preservation and the



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curiosity of the hiking public are the main factors behind the development of the hiking culture in Israel and the world.

The idea of creating a national Sea Trail in Israel is founded on these two contemporary trends in Israeli society: the increasing attraction of the public to the trails in Israel and the world and to leisure and recreational activity on Israel's shores; and the increasing public interest in the sea, particularly following the discovery of natural gas in Israel's maritime domain, but also the fear of environmental threats that are the result of development and economic initiatives in the sea and on its shores.

The goal of developing the Sea Trail is also to meet Israeli society's need for a connection to the sea, the need to strengthen maritime cultural identity and the need to increase the public's exposure to the sea and deepen its knowledge of the sea. The Sea Trail will serve as a platform for increasing the public's awareness of its right to free access to the coast and to hike uninterrupted along the shore and it will also assist in public protection of Israel's beaches which are subject to economic and real estate pressures.

The Sea Trail project is also consistent with two strategic documents whose goal is to propose a national policy to improve the values and methods for managing Israel's maritime domain: *The Israel Maritime Plan* which was created by the Faculty for Architecture and Town Planning at the Technion during the years 2015-17 and *Policy Document for Israel's Maritime Domain* which is currently being written by the Planning Authority of the Ministry of Finance. Prominent within the spirit and approach of these two documents are the principles of integrative and sustainable management, as well as principles related to the involvement of the public in planning and decision-making processes and the right of the public to physical, economic and cultural access to the sea and its shores.

### **What is the Sea Trail initiative?**

The Sea Trail is a new environmental-social project for the creation of a continuous national hiking trail about 240 kilometers in length which will stick as closely as possible the Mediterranean shoreline of the State of Israel, from Rosh Hanikra in the North to the Zikim beach on the border with the Gaza Strip in the South. The trail will be branded and marked as a guided hiking trail, which will run as close as possible to the shoreline, with necessary detours in a number of locations and stops at places of interest which will direct the eye, the mind and heart towards the expanse of the sea. The hiker on the Sea Trail will also benefit from guidebooks, maps and a navigation app, which will provide information in real time, as well as an Internet site, all of which will enrich the hiking experience along the marked trail. At the same time, the trail will encourage and develop not only a hiking culture but also a culture of marine sports – diving, snorkeling, kayaking, sailing and other types of sport and recreation activity, which will be supported and promoted by the Sea Trail.

The idea of developing a trail along Israel's coast is not a new one. Outdoorsmen from the Nature and Parks Authority and from the Antiquities Authority, as well as hiking enthusiasts, already came up with the idea in the past, but for various reasons it did not come to fruition. The vision and dream of the creators of the trail today to create a national trail that will make the sea and its shores and the marine environment, culture and heritage accessible to all Israelis and will contribute to deepening the Israeli public's feeling of ownership and responsibility for the sea and its shores. The Sea Trail will also contribute to the welfare of Israel's citizens in a hands-on, recreational and educational manner, with emphasis on getting to know the Israel's shores and its maritime domain and the preservation of its nature and heritage.

The Sea Trail is not aimed only at hiking enthusiasts and lovers of the sea. The Sea Trail has a major potential to become a focus of attraction also for foreign tourists, since high-quality hiking trails attract tourists looking for experiences and adventure and who want to be self-reliant, and at a later stage classical tourists will take an interest as well. Evidence of this is the economic and tourism success of the various coastal trails in Spain, Portugal, Britain, France and the US.

### **An initiative by citizens that later attracted the public sector**

The project began to take shape during 2016 as an initiative by citizens who volunteered their time and worked without any organized institutional framework. The initial years of planning were funded mainly by a private philanthropic fund and currently the establishment of the Sea Trail is under the auspices of Haifa University. There is also an effort to recruit public and government bodies who expressed interest in the project, such as the Society for the Protection of Nature, the Nature and Parks Authority, the Ecocean Association, the Ministry of Environmental Protection, the Ministry of Tourism and other municipal, civic and government bodies who promised their support of this national project. The Sea Trail project will take several years since it requires complicated coordination and cooperation between government bodies, civic non-profit organizations and numerous local authorities.

### **The Goals of the Sea Trail**

1. To create access to the sea and its shores for the entire population and the strengthening of the feeling of public ownership of the sea's resources for the benefit of Israel's citizen, in an experiential, recreational and educational manner.
2. The strengthening of public awareness, knowledge, interest and feeling of responsibility for Israel's maritime domain, with emphasis on the preservation of its environment, nature and heritage.
3. Creation of a continuous national trail as a guided hiking path, which will pass through the jurisdiction of numerous municipalities and government authorities. The

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trail will be established by means of genuine partnership and responsibility, while maintaining a coastal continuum and a feeling of belonging to the Sea Trail brand.

### Guiding principles

1. The fundamental values of the Sea Trail are preservation of the environment, safety of hikers and a maintaining a coastal continuum.
2. The use of existing infrastructure – by connecting existing coastal trails and urban boardwalks and promenade; there will be almost no need for new routes or development of paths beyond what already exists.
3. Creation of a minimalistic trail and signage in order to minimize the effect on the environment.
4. Proximity to the sea to whatever extent possible and creation of interesting and safe detours in areas where the shoreline is not accessible.
5. Providing information to hikers by means of an Internet site, guidance booklets, maps and a navigation and information app and the exploitation of these media in order to direct the mind and the heart westward, to the sea.
6. The trail will be used as an infrastructure for the creation of public and social awareness of the right of free access to the coast and the protection of the environment.
7. The trail will also serve as a platform for educational, environmental and cultural activities, including the involvement of education systems on various levels. At a later stage, it will be possible to organize educational and informational activities along the course of the trail, such as cleaning of the beaches, sponsorship of segments of the coast, etc.
8. Marking of the trail using the familiar and successful language of trail marking according to the tradition of the longer trails and making use of previous knowledge and experience.
9. Prohibition of motorized access and at the same providing access to as much of the population as possible and to the handicapped. The trail will be designated for hikers only and not for cyclists.
10. The involvement of coastal communities in order to maximize their fruits and benefits from the trail.
11. Creation of partnerships with the local authorities, government ministries, government authorities, NGOs, research bodies and academia.
12. Target populations: domestic and foreign tourism, recreational walkers, hiking groups, schools, youth movements, families, individuals and residents who live nearby; athletes, runners, and audiences for special events.

The trail will become part of a national and global system of trails.



### **The Sea Trail project is being carried out according to three main stages:**

Stage I – 2016-17 – Planning and characterization of the trail together with the formulation of planning concepts and principles; detailed planning of the pilot segment in the area of the Carmel coast; identification and initial contacts with potential partners; preparation of a booklet summarizing the first year of the project.

Stage II – to be carried out in 2017-18 – formulation of a consortium of partner organizations for the implementation of the project; fundraising for the creation and development of the

trail through Haifa University and also with the assistance of philanthropic organizations, foundations and private donors in Israel and abroad, the implementation of a pilot on the Carmel coast and creation of an Internet site and navigation app.

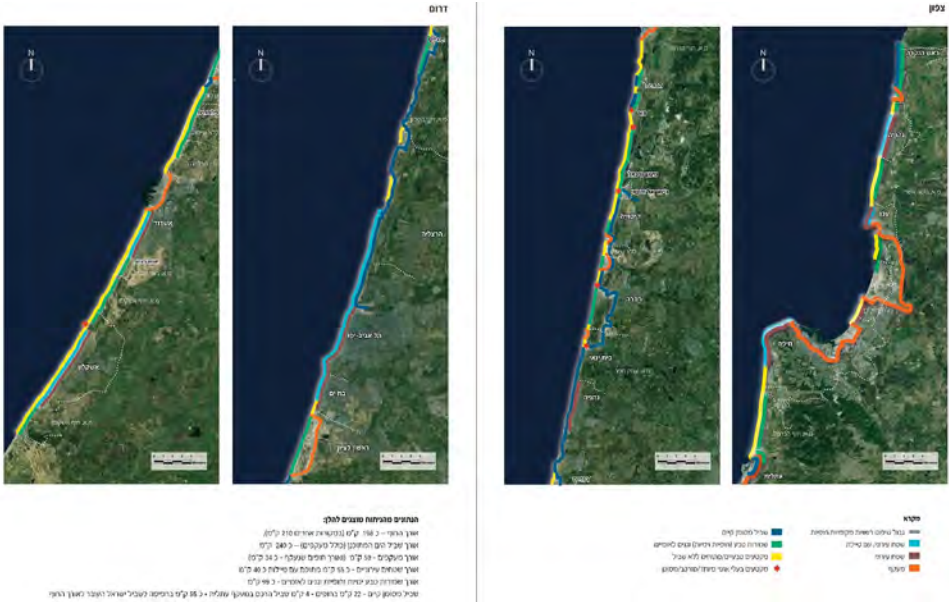
Stage III – Preparation, planning and implementation of the rest of the trail, from Rosh Hanikra to the Zikim beach (will take about 4 years).

### **The Advisory Public Committee**

In view of the complex challenges facing the trail, which include cooperation between numerous statutory bodies and the challenges of creating the trail according to principles of environmental protection, safety and the many values embodied by the trail, it was decided by the initiators to create the "Advisory Public Committee for the Sea Trail". The function of the committee is to advise and guide the Sea Trail activists and its future administration and to exploit the experience and contacts of the committee members in order to promote the project. The members of the committee are senior public figures who are active both on the institutional level and represent all of the bodies and organizations relevant to the creation of the trail and also as personal experts and advisors to the project. The committee does not have any statutory status and its activity is based on the good will of its members. The committee, all of whose members fulfil their function on a volunteer basis meet twice annually and it will support the project throughout the period it is being implemented.

### **Main achievements of the Sea Trail workgroup at the end of the first work year and the current status of the project**

- A planning structure has been created, as well as an infrastructure for public awareness of the creation of the Sea Trail.
- Conceptual/architectural planning has been completed and the planning principles for the trail have been formulated.
- Statutory and legal aspects of the routing of the trail in various areas have been examined.
- Broad support has been obtained for the project among government bodies, organizations, public non-profit organizations and also many private individuals.
- Planning of an exact route for the pilot project in the Carmel coast area has been completed.
- Possibilities for raising funds from partner organizations and from the business community have been looked at, as well as the possibility of dedication and memorialization of segments of the trail or of the rest and information stops; some of the potential partners have promised financial donation or in-kind donations.
- Foundations in Israel and abroad have been identified and in the future funding proposals will be submitted to them.



Characterization maps of coastal sections

- The community and the public were brought into the planning and implementation stages with emphasis on coastal communities (in the pilot area of the Carmel coast). In this context, collaboration will be developed with educational bodies and institutions and civic non-profits, and special attention will be given to the town of Jisr az-Zarqa.
- Ways have been examined of increasing public awareness and branding of the Sea Trail by means of public relations and marketing activity.
- The relationship with Haifa University was bore fruit with regard to its willingness, as a large and significant public body, to adopt and promote the Sea Trail project.
- There are ongoing contacts with additional bodies to recruit them as partners in the consortium for the creation and operation of the Sea Trail; for many of these organizations, the vision of the trail, its creation and its operation are consistent with their fundamental values and goals. As part of their connection or partnership with the Sea Trail, the potential has been created for the future use of the Sea Trail platform to convey and implement the educational, social and environmental messages of these bodies.
- Comprehensive and in-depth marketing material on the Sea Trail has been produced and in particular a 60-page high-quality booklet that describes and analyzes the project.

## Where is the project headed?

After the private philanthropic fund approved its continued support for the work on the Sea Trail, which is being carried out under the auspices of Haifa University, activity during 2017-18 will concentrate on consolidating the consortium of partners for the creation and development of the project; on fundraising by way of Haifa University, donor bodies, foundations and donors in Israel and abroad; on the implementation of the pilot on the Carmel coast; and on the establishment of the Internet site, the production of PR and guidance material and a navigation and information app.

It is the intention to complete the pilot project in the Carmel coast area and then to gradually develop the Sea Trail, apparently from North to South, and also according to the willingness and ability of the local authorities to collaborate with the project and to become involved in opening the national trail as soon as possible.

**We hope that within two to three years the residents of Israel and tourists, lovers of the sea and hiking enthusiasts will be able to walk uninterrupted or at least in segments on most of the route from Rosh Hanikra to Zikim beach.**



## The Past is Alive – and Sailing: The Story of the *Ma'agan Mikhael* // Ship (the Replica) and Plans for Its Future

**Deborah Cvikel**

### The ancient ship from Ma'agan Mikhael

This ancient shipwreck was discovered in 1985 about 70 m from the shore of kibbutz Ma'agan Mikhael by a kibbutz member, Ami Eshel. It was in shallow water at a depth of 1.5 m under a layer of sand about 1.5 m thick, with its bow pointing toward the shore. The initial examination of the finds indicated that it was an ancient merchant ship, about 14 m long. The ship, which was relatively new, ran aground in the late 5th century BCE. The three-season (1988–1989) excavation of the site was carried out by a team of maritime archaeologists from Israel and abroad, with the assistance of staff of the Leon Recanati Institute for Maritime Studies.<sup>1</sup> The late Dr. Elisha Linder, founder of the Institute for Maritime Studies and the Department of Maritime Civilizations at the University of Haifa, directed the project; Jay Rosloff of Texas A&M University led the excavation team; and the late Prof. Yaacov Kahanov of the Leon Recanati Institute for Maritime Studies directed the conservation, research and reconstruction of the ship at the Hecht Museum of the University of Haifa. Many researchers and students participated in the study of the ship and the finds, and the project has resulted in three books, and dozens of articles and presentations at international conferences.

As well as being ancient, the Ma'agan Mikhael shipwreck was unique in the almost perfect preservation of the bottom of the hull – to a length of 11.15 m, width of 3.11 m and depth of 1.5 m. The parts of the hull which survived were the keel, false keel and keelson, parts of 14 full frames, sections of strakes – 12 on the starboard side and 7 on the port side, the mast-step, knees in the stem and stern and various internal components. These timbers were of Calabrian pine (*Pinus brutia*), except for tenons, pegs and the false keel, which were of oak (*Quercus* spp.)<sup>2</sup>. Altogether the hull and the finds were made from 13 wood species indigenous to the eastern Mediterranean. The hull was built by the 'shell-first' method, meaning that the strakes were connected edge-to-edge by closely spaced mortise-and-tenon joints locked by tapered pegs. The planks were also sewn at bow and stern to the keel, knees, and endposts. After the planks were assembled to form the hull, the frames were fixed into it with double-clenched copper nails.

1 Yaacov Kahanov, 2011. Ship reconstruction, documentation, and in situ recording. In *The Oxford Handbook of Maritime Archaeology*, eds Alexis Catambis, Ben Ford and Donny L. Hamilton, Oxford University Press, Oxford: 161–181.

2 Yaacov Kahanov, 2003. The Hull. In Elisha Linder and Yaacov Kahanov, *The Ma'agan Mikhael Ship. The Recovery of a 2400-year-old Merchantman: Final Report Volume 1*, Israel Exploration Society and University of Haifa, Jerusalem: 53–129; Yaacov Kahanov, 2011. Ship reconstruction, documentation, and in situ recording. In *The Oxford Handbook of Maritime Archaeology*, eds Alexis Catambis, Ben Ford and Donny L. Hamilton, Oxford University Press, Oxford: 161–181.



The ship carried 12.5 tons of stone, mostly blue schist with some gabbro (basalt), laid on a bed of dunnage. The source of the blue schist was the island of Euboea, near Athens, and the gabbro was from Cyprus. A unique single-arm type of anchor made of oak was found near the bow. The hawser was still attached to the eye of the anchor at its top, and a trip rope (to free the anchor if trapped on the seabed) was attached to the crown at the bottom. Among the finds were food remains; about 70 pottery plates, bowls, jugs, etc., which were apparently for everyday use by the crew (The origin of the pottery vessels was mainly Cyprus and/or the Levant, although some items were East Greek from Asia Minor); a basket of carpenter's tools, which included bow drills, rulers and a square, wooden nails and ready-to-use tenons; several sizes of ropes of various plant fibres; a lead ingot; and decorative wooden boxes apparently used for cosmetics.<sup>3</sup> The finds made it possible to reconstruct some facets of daily life on board, although not definitely to identify the origin of the ship or her ports-of-call, since tools and objects were traded from place to place.

After the hull was excavated and all of its finds and contents retrieved, it was dismantled under water. The parts were transferred to freshwater tanks on shore and then to the conservation laboratory at the University of Haifa. The 8.26-m-long keel was taken from the sea in one piece in a container designed for its transportation and conservation. As the wood was waterlogged and internally decayed, the method chosen for conservation was by using 100% polyethylene glycol (PEG) 3350 to displace the water and restore to the timber the strength it had lost over the centuries. The conservation process lasted seven years, and on its completion the timbers were moved to the Hecht Museum at the University of Haifa, where a special wing had been built for the ship. The ship was reassembled over a period of three years, accompanied by a thorough documentation and research process. The ship has been on public display at the Museum since 2002. In 2006, a new permanent metal support frame was built to display the ship.<sup>4</sup> The outline of the frame gives visitors an idea of the shape of the original ship (Figure 1).

The excavation, research, conservation, and preparation of the Ma'agan Mikhael ship for display was made possible by the support of Lord Anthony Jacobs of London. In addition, the project was supported by Kibbutz Ma'agan Mikhael, which hosted the members of the excavation team, the Israel Science Foundation, which financed the research and reconstruction of the ship, the Hecht Foundation, Sammy Ofer and the University of Haifa.

3 Yaacov Kahanov, 2011. Ship reconstruction, documentation, and in situ recording. In *The Oxford Handbook of Maritime Archaeology*, eds Alexis Catambis, Ben Ford and Donny L. Hamilton, Oxford University Press, Oxford: 161–181.

4 Yaacov Kahanov, 2004. Conservation. In Yaacov Kahanov and Elisha Linder, *The Ma'agan Mikhael Ship. The Recovery of a 2400-year-old Merchantman: Final Report Volume 2*, Israel Exploration Society and University of Haifa, Jerusalem: 195–206; Yaacov Kahanov, 2011. Ship reconstruction, documentation, and in situ recording. In *The Oxford Handbook of Maritime Archaeology*, eds Alexis Catambis, Ben Ford and Donny L. Hamilton, Oxford University Press, Oxford: 161–181.



Figure 1 – The ancient ship from Ma'agan Mikhael on display at the Hecht Museum (photo by A. Efremov).

### **The replica project – *Ma'agan Mikhael II***

The final stage of the project which began with the discovery of the ancient ship and the realization of Dr. Linder's vision, was the building of a replica of the Ma'agan Mikhael ship that could actually sail. This was the first project of its kind in Israel and its rationale lies in the practical building of an ancient ship based on archaeological data and using 2400-year-old technology and shipbuilding methods. The construction of the replica was a research project carried out by the University of Haifa, directed by Prof. Kahanov. Participating in the project were researchers, carpenters, youth, students and volunteers. The working assumption was that only the actual construction would make it possible for the first time to understand the problems and challenges faced by the shipwrights – from choice of trees, felling season, design of the hull components, bending and finishing planks, making mortise-and-tenon joints, and designing and assembling the mast, sail and rigging.

The replica project was financed by private donations and assistance from the Israel Science Foundation and the Honor Frost Foundation. The traditional ceremony for the laying of the keel took place on 10th July 2014 in the presence of donors, maritime professionals and others interested in the project.

The replica project has three goals:

1. Construction of a replica of the ancient Ma'agan Mikhael ship – The construction of the ship requires practical research and devising technological solutions related to the building of ancient ships in the 5th century BCE.
2. Learning how to sail such a ship, with emphasis on destinations against the prevailing winds, and to understand the seamanship during that period and life on board. This is accomplished by actually sailing the replica. Although it is thought that we understand how ancient ships sailed using a square sail, it is clear that these are key questions for which there are still no clear practical answers.
3. Teaching youth and students about various aspects of ancient shipbuilding and the sailing of ships in the Mediterranean in ancient times.

The construction of the replica was carried out at the Nautical Officers School in Akko. The search for suitable trees was carried out by the replica team together with staff from Keren Kayamet LeYisrael (JNF). After the trees were felled, they were brought for initial sawing at the Eucalyptus carpentry shop in the Tiberius Industrial Area. The sawn timbers were brought to the workshop in Akko, where carpenters cut and shaped them into components of the replica. Each stage of the reconstruction was based on the archaeological find and had to be identical to it. Unlike the builders of the original ship, the carpenters of the replica did not have any discretion, and had to be faithful to the original. The dismantling of the hull of the original ship into its component parts at the end of the excavation was vital for the research into the understanding of sailing vessels – each piece of wood was drawn, down to the level of wood grain; and every part of the ship was studied and documented thanks to the direct and convenient access to the timbers. In places where the wood did not survive, the replica was based on a reconstruction of the ship based on archaeological and iconographic sources from the period, combined with models and computer design.<sup>5</sup> The construction of the various parts of the ship was challenging, and the problems encountered were solved by the team through research, building of models and consultation with experts in Israel and abroad (Figure 2).

The construction of the ship took about two and a half years. The replica is 16.6 m in overall length and 4.3 m in beam, with a displacement of 22.9 tons. The ship was lowered into the sea at Israel Shipyards on 16th December 2016 and towed to the Shavit fishing wharf (HaKishon) in Haifa. Over a period of two weeks, the ship was prepared for its Ministry of Transportation certification of seaworthiness. The preparations included a check by an inspector from the Ministry of the necessary equipment and tests of the ship's stability. After the ship received certification, the replica team carried out a series of trial sailings in Haifa Bay. The goal of the sailings was to acquaint the crew with the ship and study her capabilities at sea, handling the square sail and steering oars,

5 Adina Ben Zeev, Yaacov Kahanov, John Tresman and Michal Artzy, 2009. *The Ma'agan Mikhael Ship, Volume III: A Reconstruction of the Hull*, Israel Exploration Society, Leon Recanati Institute for Maritime Studies, University of Haifa, Jerusalem.

manoeuvring and anchoring. Participating in the sailings were volunteers from the replica team and visitors who had supported the project and came along to see the ship in action. In addition, there were also sailings with the guides from the Hecht Museum, students from the Department of Maritime Civilizations at the University of Haifa, and cadets from the Nautical Officers School in Akko. One goal of these sailings was to formulate a teaching plan for schoolchildren in various grades to learn in practice about an ancient square-sailed vessel.



Figure 2 – The replica under construction, May 2016 (photo by A. Efremov).

The official launch of the ship took place on 17th March 2017 at the Shavit wharf. Present at the launching ceremony were donors, maritime professionals and the Board of the University of Haifa. During the ceremony, the ship was officially named *Ma'agan Mikhael II*. In parallel with the short trips within Haifa Bay, the crew of the ship, led by her skipper, Yochai Palzur, started a series of sailings along the coast of Israel. The first voyage – from Haifa to Yaffo and back – took place in August 2017. The passage to Yaffo – a distance of 53 nautical miles – took about 19 hours, at an average speed of 3 knots (nautical miles per hour). The return passage to Haifa was divided into three legs: Yaffo-Herzliya; Herzliya-Hadera; and Hadera-Haifa, also at an average speed of 3 knots. During this voyage, the crew gained experience in sailing the ship for an extended period of time, including maintaining a sailing routine, watch-keeping, and dealing with the changing situation of wind and sea. The northward return passage under sail confirmed the practicability of sailing north along the Israeli coast during the summer, even against the prevailing north-westerly winds (Figure 3).



Figure 3 – The Ma'agan Mikhael II under sail (photo by A. Efremov)

### Evaluation of the project and plans for the future

The direct outcome of this project is a ship that can actually sail. This represents the completion of a vital stage of a unique research project which began with the discovery of the shipwreck in 1985. The project has aroused great interest in Israel, and has resonated in the international scientific community as well. In our opinion, the completion and proving of the construction has strengthened Israel's academic position as a leader in the study of ancient sailing vessels.

The voyage of the *Ma'agan Mikhael II* along the coast of Israel was planned to accumulate experience in the operation of a square sail system, and to better understand the seamanship and life on board a ship of that period. Although we already have initial conclusions, the next stage will be to sail the ship in the open Mediterranean to destinations against the prevailing winds (such as Cyprus and Greece), with the goal of providing a practical answer to the question of how ancient sailing vessels operated using a single square sail.

The replica project is a fitting platform on which to advance academic and educational excellence. This is the first project of its kind in Israel and one of the very few of its kind anywhere, and will strengthen the status of Israel at the forefront of global academic research. We are maintaining an open-door policy to the local community with lectures for

the public (such as in the framework of the 'Night of the Scientists' series at the University of Haifa) and by including youth in the work (for example, cadets from the Nautical Officers School in Akko and the Sea Scouts). We help young researchers to combine theoretical and practical research in various fields (archaeology of sailing vessels, history and the sciences, including metallurgy and the preparation of waterproofing materials), and strengthen their connection with the Mediterranean and its culture. We believe that in the long run, the participation of youth and students in the construction, sailing and research of this vessel will open a new window onto the academic world and maritime research, and will encourage them to continue their studies and contribute to the community.

In view of the growing importance of the sea in Israel's economy and society, it appears that this unique project, which connects the region's maritime past and present, is helping to increase the importance of the maritime domain in all its aspects, in public discourse, as well as its exposure among diverse audiences.

# Historic Look

## The Israeli Navy in the Six Day War

*Arieh Rona and Kochavi Azran*

### The buildup of naval power and naval strategy up to the war

In 1955, Admiral Shmuel Tankus was appointed as commander of the Israeli navy. At that time, the navy consisted of outdated ships that included patrol boats, torpedo boats, frigates and corvettes from the Second World War.

Immediately on his appointment, a characterization was made of the ship that would meet the needs of the navy. It was given the temporary name "archetype" and was classified as a light destroyer equipped with the most up-to-date technology of that day.<sup>1</sup>

When Britain made an offer to the Israeli navy of two Z-model destroyers (which had been built in 1944), it was accepted and the initial contacts to have a new ship built were halted. With the receipt of the destroyers, they became the backbone of the navy and were given the names INS Yaffo and INS Eilat.<sup>2</sup>

The situation was different for *Shayetet 13*.<sup>3</sup> Its commander at that time, Izzy Rahav, describes its development as follows: "In general, the naval units suffered from budget limitations; as the commander of *Shayetet 13* during Tankus' term, I did not feel any budget limitation in the acquisition of equipment or the expansion of the *Shayetet*."<sup>4</sup> During the term of Shmuel Tankus, the *Shayetet* became a fighting unit and the old torpedo boats were replaced with new ones. Nonetheless, Moshe Dayan, the Chief of the General Staff at that time, was critical of the navy and considered it to be inferior to the other branches. Also his successor, Haim Laskov (who had served as the Commander of the Air Force in the past), felt that the navy has a limited role, which was in contrast to the opinions of Shmuel Tankus and his successor, Yochai Ben Nun.

These commanders, and Shlomo Erel after them, were of the opinion that a buildup of the navy is necessary in order to operate in the open seas and to protect the shipping lanes in the Mediterranean (within a range of about 1000 nautical miles). However, the senior echelons of the IDF felt that the navy's role was limited to defense of the coastal waters. While serving as commander of the navy, Yochai ben Nun stated: "Israel's navy needs to be diversified, efficient and able to operate at long distances. It should be based on missile boats, submarines and *Shayetet 13* and should have sophisticated and diverse weaponry. I believe in tactical flexibility and the superiority of the fighter."<sup>5</sup>

1 Eshel Tsadok, Shmuel Tankus. *From the Yarkon to the Navy*, Tel Aviv 2003, pp. 78–79. [Hebrew]

2 INS: Israeli Naval Ship.

3 *Shayetet 13*: The naval commando unit of the Israeli navy.

4 Ibid., Ibid.

5 Ben Nun, Yochai, *The Period Took Us*, Tel Aviv 2003, p. 116. [Hebrew]

The navy had low budget priority in the IDF's long-term plans. As part of the Bnei Yaakov plan for the period 1959-1961, priority was given to the armored forces and the paratroopers, a situation that continued with the Hashmonaim plan for the period 1962-1964.<sup>6</sup>

The navy sometimes found a sympathetic ear among political leaders. In the debate over the submarines needed by the navy as part of the IDF long-term plan, Chief of the General Staff Rabin requested two submarines while Prime Minister Eshkol was in favor of four. In the end, three were acquired.

Despite this attitude, the navy's role was expanded as follows:

- Destruction of the enemy's naval forces.
- Prevention of attack on the country's coasts.
- Assistance to ground forces in combined operations and in transport.
- Severing the transportation lines of the enemy.
- Protection of shipping and the sovereign waters in time of peace.

The order of battle that was planned for the navy in the Bnei Yaakov plan in 1962 was as follows:

- 3 destroyers.
- 5 submarines.
- 12 torpedo boats.
- 2 tank carriers.

This plan was discussed several times but not implemented and finally the number of submarines was reduced to two and during the Six Day War the navy had six torpedo boats in the Mediterranean and three in the Gulf of Eilat.

During the implementation of the IDF's second long-term plan for 1963-1964, the navy formulated a strategy that would be based on missile boats, submarines and landing craft.<sup>7</sup> Delays in the implementation of the plan, the cancellation of the construction of the missile boats in Germany and its shift to France, as well as the delay in the renovation of the T-class submarine, led to a delay of a year in the arming of the navy.<sup>8</sup>

During the period of that plan ("Hashmonaim"), the Egyptian navy was growing in strength, following the arms deal with the Soviet Union. It also received Ossa-model

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6 Oren Eli, *"The Six Days" in Nachshonim – 40 Years Since the Six Day War*, eds. Hagai Golan and Shaul Shai, Tel Aviv 2007, pp. 181–204. [Hebrew]

7 See Oren, *"The Six Days"* according to: *Navy Headquarters – Highlights of the Work Plan 63–64*, March 63. IDF Archives. [Hebrew]

8 Erel Shlomo, "The Maritime Conception", in *The Six Day War – The Commanders and Researchers Chair*, Michaelson and Effy Meltzer eds., Reut 1996, p. 293. [Hebrew]



missile boats that carry four Styx sea-to-sea missiles and Komar-series ships that carry two. The navy planned to renew its order of battle and was in the midst of a process to gradually upgrade its forces; and it was about to allocate manpower and resources to the process of rejuvenating its missile boats and submarines. This was at a time when the IDF predicted that war is not expected before 1970.

### Preparations for war and the status of the forces

When the country went on alert for war, the navy went into action to achieve battle readiness. Of the three destroyers, only the Yaffo was ready; the Eilat was in renovations and the Haifa was in the process of being dismantled. The Tanin submarine was ready but its sister ship, the Rahav, could not dive. *Shayetet 13* and the torpedo boats in the Mediterranean and the Red Sea were at a high level of readiness and well-trained.



Figure 1 – Right INS EILAT, Left INS YAFFO

The navy used the period of alert to prepare its ships and the coastal deployment. During this period, the INS Eilat and INS Noga were returned to service and the navy was reinforced by armed fishing vessels. A forward base was set up in the port of Ashdod, radar systems were put in place to reinforce the coastal detection system and landing craft were brought down to the base in Eilat.<sup>9</sup>

Shlomo Erel, the commander of the navy, described the situation as follows: "The navy was compared to someone who had one leg abroad, i.e. the missile boats and the new submarines, and one leg on the ground, which is losing its footing: the forces under my command at the beginning of the alert were somewhere between absurd and ridiculous."<sup>10</sup>

Up until June 5<sup>th</sup>, on the eve of the war, the navy managed to ready most of its vessels for battle. The three destroyers, the landing craft and the torpedo boats were ready, as was *Shayetet 13*, which consisted of about 70 fighters.

9 Lifshitz Eitan and Kahana Rivka, *The Six Day War – the Navy*, Training and Instruction Department – History, 1970, p. 19.

10 Erel Shlomo, *Before us the Sea – The Story of a Sailor, a Commander and a Warrior*, Tel Aviv (1998), p. 258. [Hebrew]



Figure 2 – Torpedo attack boat

The activity of the navy was to take two forms:

1. Attacking enemy ports using *Shayetet 13*.
2. The carrying out of ambushes at the entrances to the enemy's bases by means of the navy's surface forces and the Tanin submarine which was operational.



Figure 3 – Submarine INS TANIN ready for action

Due to the poor situation of the navy's vessels and the small size of its forces, the commander of the navy decided to put emphasis on guerilla warfare, which generally requires surprise and initiative. He did not agree with the common view in the navy that *Shayetet 13* should be used for the first strike of the war. In any case, this was not made possible because the opening strike of the war was made from the air.<sup>11</sup>

The operational planning rested on the plans that had been given to Navy Headquarters – the "Sadan" General Headquarters defensive plan and the "Kamrun" plan that involved the attack of enemy ports using *Shayetet 13*. In addition, the navy was capable of landing an IDF force in northern Sinai.

<sup>11</sup> *The Six Day War*, Training and Instruction Department, p. 19–20.

The navy had a fairly large landing craft force, which included 6 tank carriers that together could land a battalion-sized armored battle group. This was "disproportionate to the size of the navy's forces."<sup>12</sup>



Figure 4 – Tank Carrier (TC) 60 meter

The General Staff did not attribute importance to a landing from the sea, but when the war began it "jumped" at the opportunity to use the navy's landing capability. To this was added the "Baram" plan which involved the attack of Syrian ports. The planned operations at this stage were the following:

1. Attacking Syrian ports: Minet el Beyda, Tartus and Latakia.
2. Attacking Egyptian ports: Port Said, the Alexandria port and Hurghada on the Red Sea by means of a submarine and *Shayetet 13*.

Starting from May 21<sup>st</sup>, the General Headquarters focused on solving the problem of the Straits of Tiran which were closed on May 23<sup>rd</sup> and the navy was ready to carry out a diversionary maneuver in order to draw forces to the area of Sharm el Sheikh. The torpedo boats patrolled the Gulf of Eilat and the Dolphin was ready to sail through the Straits. Preparations were made to have a tanker sail to Eilat and for landing in the area of the Straits in the day.

### The enemy and its order of battle

Starting from mid-May, the Egyptian navy was on alert in its bases in the Mediterranean and the Red Sea. Its forces included the following: 6 destroyers and frigates, 7 Romeo and Whisky submarines, 18 Ossa and Komar missile boats and a large number of small vessels. The battle readiness of the ships was satisfactory, as was their operational capabilities.

The Israeli navy did not accurately evaluate the operational ability of the Styx missile, one of the new weapons in the naval arsenal. Most of the Egyptian navy was concentrated

<sup>12</sup> Erel, *Before us the Sea*, p. 259.

in the port of Alexandria on the Mediterranean. The navy was also located at Port Said and at Mersah Matruh in western Egypt. In the Red Sea, the navy was located at the main port of Suez in the southern part of the Canal and the port of Hurghada near Sharm el Sheikh. Two destroyers were sent southward to the Red Sea in order to impose a blockade on shipping to Israel and patrols were reinforced in the area of the Tiran islands. By May 14<sup>th</sup>, the Egyptian navy had completed its preparations.

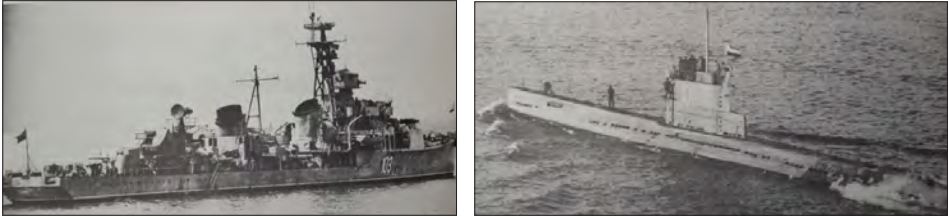


Figure 5 – Right Egyptian destroyer class 'skoryy' , Left Egyptian submarine class W

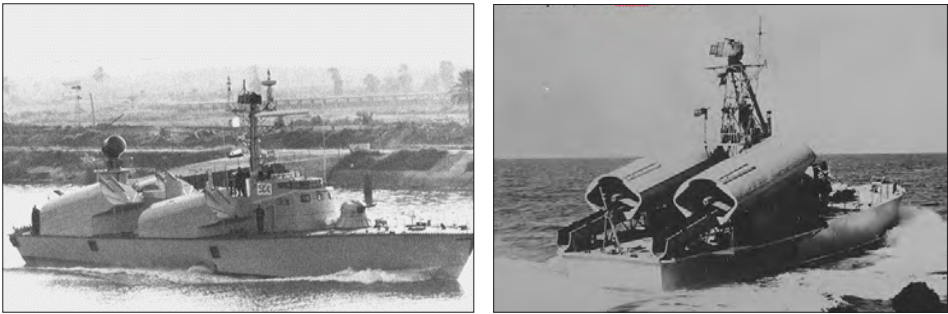


Figure 6 – Right Osa class missile ship, left Komar class missile ship

The Syrian navy, which had a defensive orientation, consisted of 6 Komar missile boats, two minelayers and K-123 torpedo boats. It was located in four harbors: Minet el Beyda in the North, the port of Latakia, the Baniyas harbor and the port of Tartus which was under construction. In addition, there were a number of coastal radar stations and batteries of 152 mm coastal cannons (not radar directed).



Figure 7 – Right Komar class missile ship performing missile launch, left Torpedo attack boat class K-123

## Operations on the Syrian coast during the war

The operational planning of the Israeli navy was frequently modified during the course of the war, which was the result of the small size of its forces (and primarily a lack of ships), as well as an unwillingness on the part of the General Headquarters to approve operations with potentially high risk.

The IDF landing operation in the area of el Arish, which was planned but not implemented, tied down much of the navy's forces and therefore "Galim" and "Shikmona" fishing vessels were mobilized under the command of Yochai ben Nun and Yossele Dror to be used as transport vessels for *Shayetet 13*.

On May 24<sup>th</sup>, Captain Avraham Botzer was appointed as commander of the Red Sea theater. After encountering difficulty in obtaining approval for operations, the Commander of the Navy met with the Prime Minister and presented his plans in the maritime theater:<sup>13</sup>

1. The balance of forces was such that actions should involve *Shayetet 13*.
2. There is a need to quickly sink most of the enemy forces.
3. The enemy should not be allowed to attack the Israeli coast.

After the meeting with the Prime Minister, he met with the Chief of the General Staff, his Assistant and the Head of the Operations Branch. Since the landing operation had been canceled, the naval forces were directed to act against the Banias harbor, while the ISN Yaffo and the torpedo boats were directed to act against Port Said together with a group of *Shayetet 13* divers.

On June 5<sup>th</sup>, approval was given by the General Headquarters to act against Egyptian and Syrian ports.<sup>14</sup> The navy planned to operate against five targets on the first night using *Shayetet 13*, from Minet el Beyda in northern Syria down to the port of Alexandria in Egypt. These operations were carried out 24 hours after the start of the war, so that the advantage of surprise did not exist. Thus, the operations were carried out while the enemy forces were ready and on guard with defensive measures and patrols. The changes required hasty planning and there was no up-to-date intelligence for any of the operations with regard to the deployment of the vessels in the ports.<sup>15</sup>

The "Galim" fishing vessels under the command of Commander Yossele Dror which were at sea returned to port on May 26<sup>th</sup> and set sail again on June 4<sup>th</sup>. On June 5<sup>th</sup>, approval was obtained to carry out the operation of *Shayetet 13* in the Minat el Beyda port on the Syrian coast. There were a number of problems with the rubber boats and

13 Oren, *The Six Day War*, p. 189; Erel, *Before us the Sea*, p. 264.

14 In his approval of the operation, the Chief of the General Staff gave the following instruction: "Don't go in if you are uncertain," Training and Instruction Department, *The Six Day War*, p. 79.

15 Erel, *Before us the Sea*, p. 262. The Commander of the Navy claimed that despite the loss of the element of surprise there was no choice but for the forces to act as they did.

not enough limpet mines. The force was reduced to three pairs of divers and due to the slow pace of progress in the rubber boats it was not possible to carry out the mission. As a result, the commander of the operation decided against penetrating the port. In the morning, the commander of the operation notified naval headquarters of non-completion of the mission. The ship remained in the operational area. The force was returned to its base in Haifa on June 7<sup>th</sup>. In summing up the operation, Dror stated the factors that led to the delays: slow progress, an error in navigation, mishaps with the boats and the lack of communication between the force and the leading ship.

The "Shikmona" research/fishing boat was modified prior to the war in order to carry a *Shayetet 13* force. The boat, under the command of Yochai ben Nun, and the fighters, under the command of Lieutenant Paz (Paulene), carried the rubber boats and the "pigs" (underwater vessels that carry two fighters). The "Shikmona" ship that was meant to operate in the port of Tartus arrived at the drop-off point opposite the port at a range of about 10 miles during the night, when it was not possible to carry out the mission. The commander of the operation decided to delay implementation and thus the mission was cancelled.

The INS Noga under the command of Lieutenant Commander Zeev Ariel was meant to attack the port of Latakia in Syria by means of *Shayetet 13*. This target was changed when Noga could not arrive in time from the landing operation that was cancelled and the new target decided on was the Baniyas harbor. The *Shayetet 13* force under the command of Lieutenant Commander Amnon ben Tsion was not familiar with the target and did not possess up-to-date intelligence-gathering means. After the force was lowered into the rubber boats at 22:00 problems arose in locating the harbor and since they were unable to identify their location, the mission was cancelled. On its way to the pickup point, the boat encountered three Syrian vessels but refrained from attacking them so as not to endanger the operation to pick up the *Shayetet 13* force.

### **Summary of the operations on the Syrian coast**

In some of the operations, the forces were dropped off late since the speed of movement of the *Shayetet 13* force was not correctly estimated. The large number of changes and the different plans resulted in a shortage of equipment, as well as a serious deficiency in up-to-date intelligence. The Head of the Naval Department, Captain Izzy Rahav, felt that in some of the operations mistakes were made in estimating the time needed and with better preparations the missions could have been carried out.

In his summary of the operations, Yossele Dror wrote: "I kept my doubts and uncertainties to myself in order not to undermine the men's confidence and indeed I feel that we did everything we could to carry out the mission. I am doubtful that there are many other

units in the IDF that would set out on a mission knowing that there was little chance of them coming back in one piece."<sup>16</sup>

### The operations on the Egyptian front

On June 5<sup>th</sup>, the INS Yaffo was joined by a force of *Shayetet 13* under the command of Lieutenant Commander Zeev Almog, which included two "pigs" (underwater vessels) and a "bird" (a fast command boat) with the goal of attacking vessels in Port Said. The plan was based on intelligence reports that missile boats are docked in the port and it is possible that a submarine will be joining them. The force was under the command of Captain Benyamin Telem and the ship was under the command of Commander Yitzhak Katt.<sup>17</sup>

The INS Yaffo was accompanied by three torpedo boats from Flotilla 914 under the command of Lieutenant Colonel Oren.<sup>18</sup> It was decided that the operation would finish by 23:30.

On that same morning of June 5<sup>th</sup>, a telegram was received from the commander of the navy by Captain Telem, which said among other things that: "We must not suffer casualties that will be exploited by the enemy for purposes of propaganda. Don't endanger the Yaffo in an encounter with the "Ossas". The priority is to operate in the port."<sup>19</sup> This telegram was sent as a result of a conversation between the Chief of the General Staff and the commander of the navy: "Don't send them inside, don't get a destroyer sunk there, near Port Said."<sup>20</sup> At 20:15 about an hour before the drop-off of the *Shayetet 13* force, approval was received for the mission and it mentioned that there is no certainty that targets are located in the port. The drop-off was at a short range of 8 miles and thus a valuable hour was added to the schedule of the fighters. The INS Yaffo and the torpedo boats headed north. Two "pigs" carried out a comprehensive sweep of the port under attack of depth charges and did not find any targets (pair 1: Shamir-Soretski and Luria; pair 2: Dov Bar and Yeshayahu Goren). The "pigs" continued to search for 2 hours and 40 minutes but the Egyptians had evacuated the warships from the port, including two Ossa missile boats that were patrolling in northern Sinai.

At 5:00, Zeev Almog brought the "bird" in closer in order to pick up the "pigs". At relatively close range, Dov Bar and his partner were picked up and the pig was destroyed. A few

16 Almog Zeev, *Commander of Shayetet 13*, Or Yehuda 2014, p. 358, 60-359. And also the comments on statements of Yossele Dror, which discuss and analyze the issue of "at any price" and its effect on the soldiers.

17 Training and Instruction Department, *The Six Day War*, pp. 11-109.

18 The Torpedo Boats – 207, 206, 203.

19 Training and Instruction Department, *The Six Day War*, p. 113.

20 Ibid., *ibid.*

minutes later, Shamir and his partner were picked up and their "pig" was also destroyed. The "bird" then headed for the meeting point with the torpedo boats.

While this was taking place, the torpedo boats spotted two vessels entering the port which were later identified to be missile boats. The ships were attacked but the attack was called off at 02:38 so as not to endanger the pickup of the *Shayetet* fighters.

The torpedo boats opened fire on the missile boats from a range of about 1000 yards, at which there is no chance of hitting the target (effective range for 20 mm and 40 mm cannons at night is between 100 and 150 yards, based on the Rumani battle experience).<sup>21</sup> The *Shayetet* force on the "bird" was picked up by the Yaffo at 06:00.

### The Alexandria operation

The main Egyptian naval force was anchored at the port of Alexandria, the navy's main base. The port was protected by coastal cannons, radar and patrols. The Egyptian navy carried out patrols up to about 20 miles from the port.



Figure 8 – Operation in Alexandria port – ROGEL 4

The INS submarine *Tanin* under the command of Lieutenant Commander Avraham Dror received approval to operate using two methods: attacking ships at the entrance to the port and putting into play a force of *Shayetet 13*, under the command of Lieutenant Commander Eitan Lifshitz, and three pairs of divers.

<sup>21</sup> On the effective range at night from small-scale weapons, see: Pope, D., *Flag 4 – The Battle of Coastal Forces in the Mediterranean 1939-1945*, Annapolis 1998, p. 190.



In the afternoon of June 5<sup>th</sup>, the submarine received approval to attack the Egyptian ports.<sup>22</sup> The submarine discharged the divers at 19:00 and the pickup was set for 03:00. The three pairs operated separately in the port and when they did not find any military targets they attached the explosives to a dredger and a dry dock. None of the three pairs managed to make contact with the markers sent out from the submarine. Two of the pairs joined together and returned to the breakwater to hide and there they met the third pair.

The commander of the submarine waited for the divers and later started moving slowly northward. On the way, he located a target and fired four torpedoes at it that did not make contact. In response, the submarine was attacked by depth charges which disabled its passive sonar. It moved out to 50 miles from the coast. In the afternoon hours of June 6<sup>th</sup>, Egyptian forces located the divers hiding in the breakwater and they were taken prisoner.

The commander of the submarine planned to come in again to pick up the fighters but towards evening, at 19:00, the submarine received word that the fighters had been taken prisoner. From that point onward, the Chief of the General Staff did not approve any further naval initiatives.

On the Syrian coast, none of the operations succeeded. At Port Said, the *Shayetet* did not find any targets and the torpedo boats did not destroy the "Ossas" that were coming into the harbor. Thus, "there was a heavy atmosphere at the naval headquarters."<sup>23</sup>

## Naval operations in the Red Sea

The Red Sea headquarters had made preparations to carry out an ambush using torpedo boats about 20 miles south of Eilat, based on information about a possible attack by Egyptian destroyers and torpedo boats. The force, commanded by Captain Avraham Botzer, included mobilized private vessels, *Shayetet 13* explosive boats and the "Tsala" tugboat. When enemy forces did not appear and the air force did not discover any enemy forces on the way, the force returned to Eilat.

On June 6<sup>th</sup>, it was decided to capture Sharm el Sheikh and the navy was given the mission of landing four MX tanks using a small vehicle landing craft, with protection from the torpedo boats of Flotilla 912. The torpedo boat force entered Sharm el Sheikh on June 7<sup>th</sup> and found that the Egyptian forces had abandoned the location. Two fishing vessels being used by the Egyptian commandos were captured. The landing force landed the tanks on that day.

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22 See also: Oren, *The Six Day War*, p. 191. Oren comments on this as follows: "It should be mentioned that the intelligence telegram with a list of the targets sent to INS Tanin (Alexandria) was not received and requests for flights to be made above the main enemy bases in order to obtain aerial photographs before sunset were rejected"; *ibid.* p. 204.

23 Oren, *The Six Day War*, p. 198.

# המבצע המשולב לכיבוש שארם-א-שייח'

דב-שיח מפקדים בהנחיית אל"מ מיל"ד ד"ר מאיר פעיל



4 נחתות שנסאו 4  
טנקים מסוג Amx-13  
וג'פ, בליווי 3 ספינות  
תותחים והגוררת "צאלה"  
כספינת הפיקוד וכוונת  
לגרירה.

הטרפדות הגיעו למפרץ בשעה 11:30 ובשעה 12:12 הונף דגל ישראל על בנין בית החולים של כוחות האו"ם בשארם-א-שייח'. בוצר התקשר למפקד כוח הצנחנים והודיע לו על תפיסת המקום. כתוצאה מכך בוטלה הצניחה ובשעה 14:00 נחתו הצנחנים במסוקים.



Figure 9 – Capturing Sharm el Sheikh by Torpedo attack boats, landing craft and the tugboat TSALA on June 7, 1967.

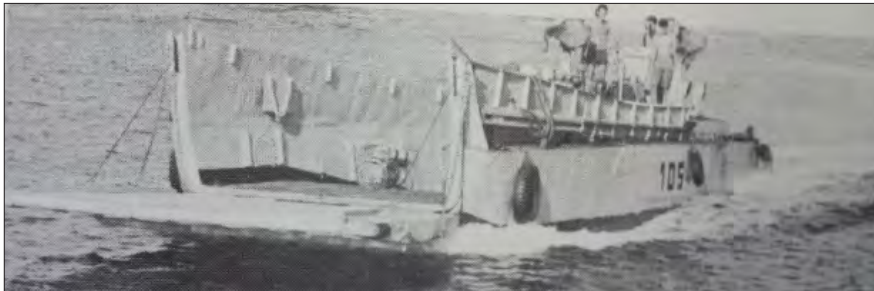


Figure 10 – small vehicle landing craft

## The Liberty incident

On June 8<sup>th</sup>, the USS Liberty, an American surveillance ship, was attacked by mistake off the shores of northern Sinai. The ship was carrying out eavesdropping and intelligence gathering tasks. The ship was about 150 meters long with dozens of antennas that are used for eavesdropping and geolocation and it was armed with four 0.5 machine guns. The ship was sailing from the port of Abidjan and was in the Mediterranean under the command of the Sixth Fleet. It operated outside sovereign waters opposite the coasts of Israel and Egypt.

On June 8<sup>th</sup>, the Liberty was discovered by patrolling Israeli aircraft and identified as an American auxiliary ship; it was designated as such at the navy's control center. Sometime later it was removed from the control table.

In the afternoon of that day, reports arrived at naval headquarters of the shelling of our forces in el Arish from the direction of the sea, which turned out later to be incorrect. Three torpedo boats of Flotilla 914 were sent out from Ashdod and about two hours later the commander of the force reported a target moving at about 20 knots in the area of el Arish. The speed calculated by the torpedo boats was about 30 knots, which was incorrect. A pair of Mirage jets was dispatched which did not manage to identify the target and they received approval to attack along with another pair of aircraft. During the attack, the pilots by mistake read the markings on the ship's hull as CPR-5 and in the meantime the torpedo boats came closer in order to verify identification.

The commander of the force had mistakenly identified the Liberty as the "el Qusair", an auxiliary ship of the Egyptian navy, and as a result gave the order to attack it with torpedo fire. One of the five torpedoes hit the ship and ripped a large hole in the hull. When the torpedo boats came closer they discovered that it was an American ship.

With the assistance of the Sixth Fleet, the boat was accompanied to the Port of Valletta in Malta. The casualties on the ship included 34 dead and 17 wounded. Investigative committees on both sides came to the conclusion that the ship was attacked by mistake. The event—in which the navy had exhibited determination in carrying out its mission—turned out to be an error that led to disaster.<sup>24</sup>

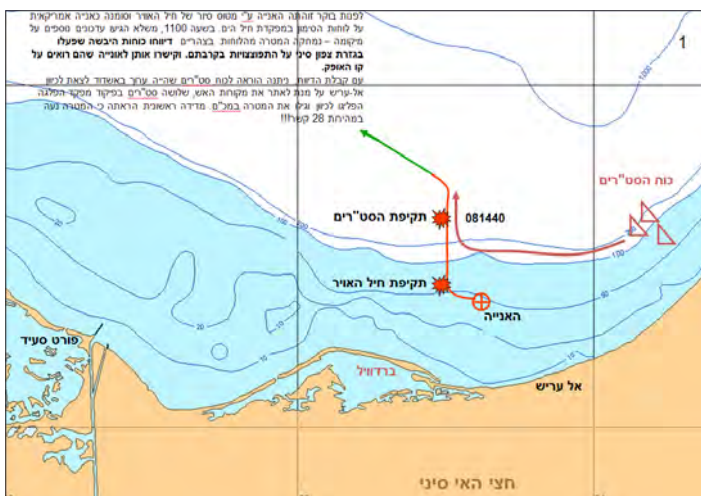


Figure 11 – USS LIBERTY incident, June 8, 1967

24 For a detailed description of the incident, see: Cristal, A.J., *The Liberty Incident*, Washington D.C., 2002, and also: Training and Instruction Department, *The Six Day War*, p. 198.

## The Rumani battle

The Rumani battle occurred on the night between the 11<sup>th</sup> and 12<sup>th</sup> of July, after the end of the war and during the period of the ceasefire. From the navy's point of view, this was a continuation of the events of the war.

On July 9<sup>th</sup>, there was a briefing in naval headquarters for the commanders of the Eilat and the Yaffo and the second in commander of Flotilla 914, Eli Rahav. It concerned a patrol whose goal was to destroy Egyptian ships east of the longitude line that passes 12 miles from Port Said.<sup>25</sup>

The intention was to carry out patrols with a destroyer and two torpedo boats. On the night between July 11<sup>th</sup> and 12<sup>th</sup> the ISN Eilat under the command of Yitzhak Shushan and the two torpedo boats from Flotilla 914 under the command of Eli Rahav carried the patrol. At around 21:45, the Eilat reported two vessels that had left Port Said. About an hour later, the torpedo boats identified a target about 8 miles away, which was the two targets moving together eastward. The two Egyptian vessels, which it turned out were torpedo boats, were found by the 914 Squadron force and the INS Eilat. The Egyptian vessels split up and a situation was created in which the Eilat closed in on one of them while the force under Eli Rahav closed in on the other.

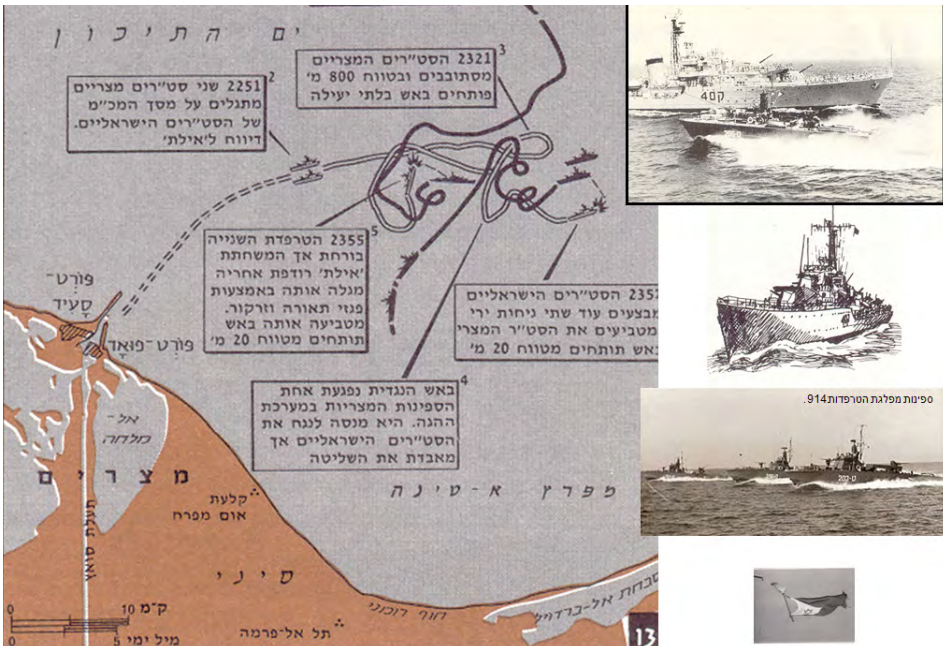


Figure 12 – The ROMANI fighting on the night of June 11, 1967

25 Shushan Yitzhak, *The Last Battle of the Destroyer Eilat*, Tel Aviv, 1993, pp. 206-207. [Hebrew]

While firing their cannons, the boat of Squadron 914 approached the Egyptian vessel and managed to hit their target at a range of about 150 yards. The Eilat also hit the second ship with fire from its main battery of guns and also from its light battery of 40 mm cannons. After looking for survivors, our forces left the area.

The Rumani battle lasted about 25 minutes and set new standards for the navy. These were applied in the mission of the Devora's during the Yom Kippur War in the Red Sea theater. In addition, the management of the battle by Eli Rahav from the battle information center of the torpedo boats set the standard for battle management and determination in carrying out a mission.

## Conclusion

The five *Shayetet 13* operations that were planned and implemented did not achieve their goals. On the Syrian coast, the operations were not completed and in Alexandria the fighters did not manage to make contact with the submarine.

In the evaluation of the outcomes of the *Shayetet 13* operations in the northern theater, i.e. Syria, Zeev Almog, who took command of the *Shayetet* after the war, concluded that the operations were managed with a lack of attention to detail. Shlomo Erel, the commander of the navy, felt that that the appointment of overly senior officers who were not an organic part of the units did not contribute to the success of the operations.<sup>26</sup>

In view of the assessment of the threat posed by the Egyptians and Syrians—which turned out to be exaggerated—the headquarters of the navy tried to attack the enemy's naval bases with improvised means, in a situation where up-to-date intelligence information was lacking. Guerilla warfare even under better conditions is a "step into the unknown" and the use of improvised means and non-organic commanders increases the uncertainty. It appears that under these conditions, the operations on the Syrian coast were beyond the abilities of the fighters.

The USS Liberty was attacked by mistake. The submarine in the port of Alexandria performed well even though it did not manage to sink the Egyptian "sloop".

The attack on the Egyptian missile boats at the entrance to Port Said was called off and the enemy vessels were not hit.

In the Rumani battle, the commanders exhibited determination in their mission and applied lessons learned from past battles and therefore achieved the hoped-for results.

In the Six Day War, the main weapon used was the torpedo. The four torpedoes of the Tanin in Alexandria did not hit the target due to a technical problem discovered after the war. In the attack on the Liberty, only one torpedo out of five hit the target, despite the

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26 Almog, *The Voyage of my Life*, p. 382 [Hebrew]; Erel, *Before us the Sea*, pp. 364–365.

good firing conditions. This was the result of using a simple sight, which resulted in only a small chance for a solution of the firing equation.<sup>27</sup>

With regard to the efficiency of the torpedo, see also the comments in Cristal's book (footnote 24). The navy fired about 50 torpedoes in training exercises prior to the war and 48 of them missed their target. It would have been worthwhile for the navy to find a different type of torpedo for its vessels. The torpedo's accuracy was even lower than during the Second World War.

Three of the ships in Squadron 914 had Packard engines which ran on high-octane gasoline (115 octane). This is very flammable fuel that is not appropriate to a military environment. The torpedo boats were also limited in their range since they carried only 10,000 liters of fuel. It was clear that the torpedo boats constitute an important force within the navy and that installing them with Napier engines that run on diesel fuel could have improved their performance in times of both war and peace and could have increased their range.<sup>28</sup>

The cannons on the torpedo boats are instinctive, i.e. they are aimed with the naked eye (with or without a simple "clock" sight). In the daytime, a target can be hit at up to 1000 meters while at night this is reduced to no more than 150-200 meters.

Most of the radar systems were outdated (except for that on the T-204), particularly on the ships that ran on gasoline. The Flotilla 912 ships also had Decca radar systems, though of a different model. This radar had only a small range of detection.

The outcome of the war lengthened Israel's coastline many fold. Thus, over 250 nautical miles of coastline in Sinai were added.<sup>29</sup> Furthermore, the navy and also *Shayetet 13* accumulated battle experience in the War of Attrition and the units of the navy were completely overhauled. This included the development of tactics and the introduction of new standards that were applied in the Yom Kippur War.

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27 Such sights were installed on ships in the Second World War. Cooper, B., *The War of Gunboats*, Barnsley, 2009, pp. 96–97.

28 For more details about the engines, see: Eden, Shimshon, *The Iron Men of the Wooden Ships*, Reut 2000, pp. 206–222. [Hebrew]

29 See the estimate in Oren, *The Six Day War*, p. 203.

## Fiftieth Anniversary of the Port of Ashdod

### *Kochavi Azran and Arie Rona*

Israel's seaports are one of the main links in the national chain of supply. In view of the limited possibility for overland trade, Israel's seaports are its main artery of transport and account for about 99 percent of its total exports and imports (in terms of volume).<sup>1</sup> This fact makes the seaports the "oxygen supply" of the State of Israel and incidentally gives the port workers their power.

### The factors behind the decision to build the Port of Ashdod

The ports along the coast of Israel were an important infrastructure even in ancient times.<sup>2</sup> The need to build deepwater ports in addition to the port of Haifa—which would allow the loading and unloading of large ships—arose from the increase in the quantity of Israel's imports and exports during the first decade of the State's existence. Strategic, political and economic factors of this type were also the basis for the decision to build the Port of Ashdod in the late 1950s.

The decision to locate the port in Ashdod was a result of a variety of topographical, economic and geographic considerations which included the following:<sup>3</sup>

- A flat coastline without cliffs.
- Large reserves of sand in the area (for the filling and drying of the sea).
- The dispersion of the population and the creation of jobs in the South.
- The low cost relative to the alternatives in the center of the country, including the costs of construction, transport, employment and industrial development.
- The establishment of the port and the city of Ashdod in an area of sand dunes to avoid the loss of agricultural land.
- The proximity to quarries in the Negev (phosphates, potash, etc.).

### The construction of the Port of Ashdod and the creation of the Israel Ports Authority – 1960

The decision to build a deepwater port was deferred several times due the State's lack of funds. Following are the milestones in the process that finally led to the building of the Port of Ashdod:<sup>4</sup>

- 1 See the Annual Statistical Abstract of the Shipping and Ports Authority, 2016 and also the discussion later in the article.
- 2 Professor Emanuel Friedheim and Dr. Aryeh Roneh, "Did Herod have a maritime strategy?", 2017, pp. 6–7.
- 3 Ben Sirah, 1959.
- 4 See Barkai, 1990, pp. 54–74; Brutzkus, 1969, pp. 39–40; Yaniv, 1990.

- 1952 – Difficult economic conditions in the country, including a severe shortage of foreign currency reserves and an intentional slowdown in immigration to the country.
- Late 1953 – Need to initiate the construction of a power plant that will provide electricity to the settlements in the South.
- May 1957 – The Ministry of Transportation signs a contract with the American Frederick Harris Company and the hydrological laboratory of France in order to prepare a master plan for the port and a coastal survey.
- December 16<sup>th</sup> 1957 – Definition of the maritime and coastal planning of the Port of Ashdod.
- October 1959 – Final decision to build the Port of Ashdod.
- September 1960 – A loan in the amount of \$27.5 million is approved by the World Bank.
- October 1960 – Publishing of a construction tender with bids received from eight countries.
- March 31, 1961 – Signing of a contract with the contractor.<sup>5</sup>
- July 31, 1961 – The laying of the port's cornerstone.
- November 21, 1965 – Four years, three months and twenty-one days after the laying of the cornerstone in a public ceremony, the first ship enters the port – the Wingland with a cargo of 1600 tons of sugar.<sup>6</sup> The completion of construction continued after the port was opened for international trade.

At the same time, the Israel Ports Authority was established with the power to develop and operate the ports. The establishment of the Authority in September 1960 led to the approval and receipt of a loan from the World Bank in the amount of \$27.5 million, which enabled the Ministry of Transportation to issue an international tender for the construction of a breakwater and Hadarim Pier. At a later stage, other sources of funding became available. The estimated cost of Stage I of the port was \$75 million and the remainder of the funding came from the government's development budget and from other funds raised by the Ports Authority in order to build the port as planned.

The tender committee chose a consortium of companies that included a subsidiary of Solel Boneh and three French companies, who left Israel at a later stage for their own reasons.

Until 2003, the three ports in Israel (Haifa, Ashdod and Eilat) were under one umbrella organization – the Israel Ports Authority. The Authority had responsibility for the territory included in the port, the operation of the piers and their development and paying the

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5 The Ports and Outsourcing Company founded by Solel Boneh together with three French companies.

6 Avi Shmul et al., "The Home Port", the Port of Ashdod Company, 2012.



workers' salaries. The result was a situation in which one organization controls all of the resources dedicated to Israel's maritime trade. Furthermore, the various port unions were united under one central union and in the case of a strike all of the ports were affected. In addition, there was a complete lack of competition between the ports, which resulted in the excessive salaries of the port workers. The concentration of power in the hands of the company's unions frequently led to the paralysis of Israel's maritime trade.

In view of the success of the Ports Authority in profitably managing the ports, the government in 1988 placed it under the authority of Israel Railways, which was at that time an outdated organization with a chronic deficit. The Ports Authority, which became the Ports and Railway Authority, managed both these sectors and promoted the efforts to rejuvenate the railways. At the end of the 1990s, the supervision of the railways was returned to the government and in 2003 Israel Railways was finally separated from the Ports Authority, which became a government corporation. During the period in which the two organizations were under one roof, the Ports Authority invested more than NIS 4 billion in the development of railway infrastructure and the purchase of fixed assets, a large sum even by today's standards.<sup>7</sup>

## The ports reform

In 2003, the government decided to change the structure of the ports. The highlights of the plan included the following:<sup>8</sup>

- The creation of a new government company whose function would be to manage the ports' assets, to lease land and to develop the ports.
- The ports of Haifa, Ashdod and Eilat, which until then had been managed by the Ports Authority, became independent government port companies whose operations would gradually be transferred to a private concessionaire.
- It was decided to create a regulatory authority in the Ministry of Transportation to be called the Shipping and Ports Authority, which would be responsible for the long-term planning of the ports sector and the regulation of its activity.

In 2004, the legislative process was completed and in 2005, following Stage I of the reform, the management company, the port companies and the regulatory authority came into being.

The format chosen by the government to manage the ports sector is called the landlord model, which is recommended by the OECD. In this format, the State is the "landlord" that provides the public goods to the concessionaires that operate within the ports. This management model has been used in many countries since the 1990s and it is viewed

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7 The website of the Ministry of Transportation <http://asp.mot.gov.il/he/ports/168-spg-c5-a3> .

8 Implemented on February 17<sup>th</sup> 2005 with the removal of the Ports Authority from the records.

as facilitating the attainment of the reform's goals, i.e. increased efficiency, improvement of services, lower prices and savings to the economy.<sup>9</sup>

In the corporate charter of the operating companies, their function is defined as the loading and unloading of freight. According to the reform, it is planned that the government operating companies would be privatized. The Eilat Port Company Ltd. was the first step in the implementation of the plan.<sup>10</sup>

The Shipping and Ports Authority Law, 5774 – 2004 created the Shipping and Ports Authority. The law went into effect on February 27<sup>th</sup> 2005 and defines the main functions of the Shipping and Ports Authority.<sup>11</sup>

As part of the reform, the Port of Ashdod was also transferred to the Israel Ports Company and the Ashdod Port Company was empowered to manage the operations of the port. (For further details on the ports reform, its effects and the current situation, see the chapter on the situation of shipping and the ports in this survey.)

As a result of the ports reform and in view of the needs of Israel's maritime trade, the growing dimensions of ships and the growth of the Israeli economy, which was increasingly dependent on the ports, the government made several decisions to build deepwater container terminals in the waters of the Port of Haifa (the Mifratz Port) and the Port of Ashdod (the South Port).<sup>12</sup>

## Statistical comparison between the Port of Ashdod and the other Israeli ports

The share of the Port of Ashdod data in freight traffic through Israel's ports

Data on freight traffic through the ports of Israel and the share of the Port of Ashdod. Figure 1 shows that the Port of Haifa led in the total amount of freight traffic (including transshipment). More 20 million tons of freight moves through the Port of Ashdod and there is an upward trend over time.

Data on freight traffic – Figure 2 shows that the fourth quarter of 2013 was the peak for container traffic through the Port of Ashdod and reached close to 1.5 million TEU in 2017.

9 "Who is the owner here?" Ayal Tevet, April 2012, position paper published by the Van Leer Institute in Jerusalem. [Hebrew]

10 The Pappo Shipping Company Ltd. owns the shares and operates the Port of Eilat, based on the amended corporate charter dated January 30<sup>th</sup>, 2013. Until that time, the Eilat Port Company operated as a government corporation in accordance with the ports reform and the corporate charter dated February 15<sup>th</sup>, 2005.

11 The website of the Shipping and Ports Authority.

12 The first government decision to establish the ports was made in May 2007.

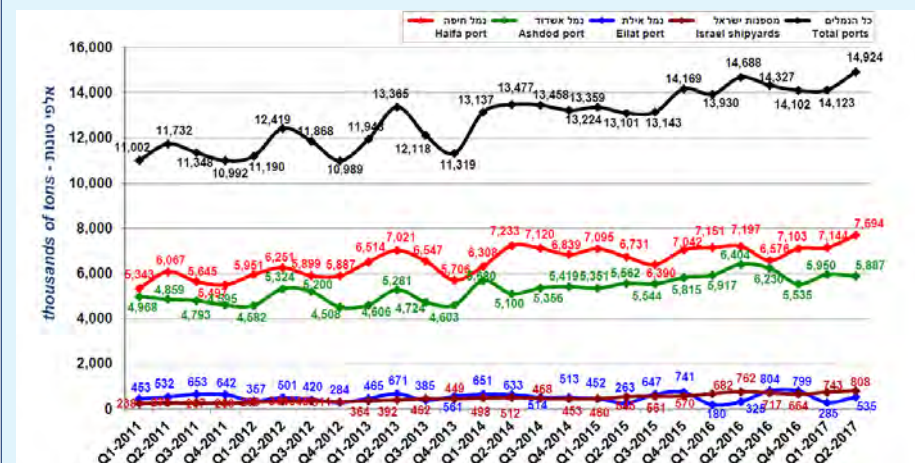
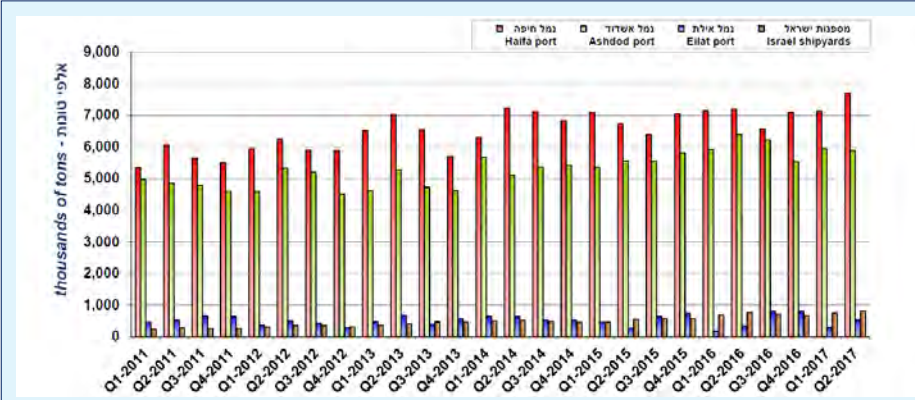
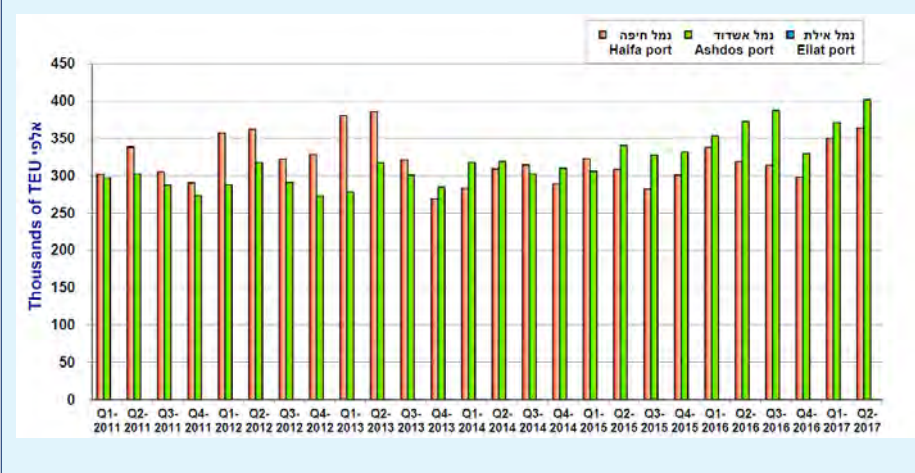


Figure 1 – Total cargo traffic (in thousands of tons) in Israeli ports 2011–2017



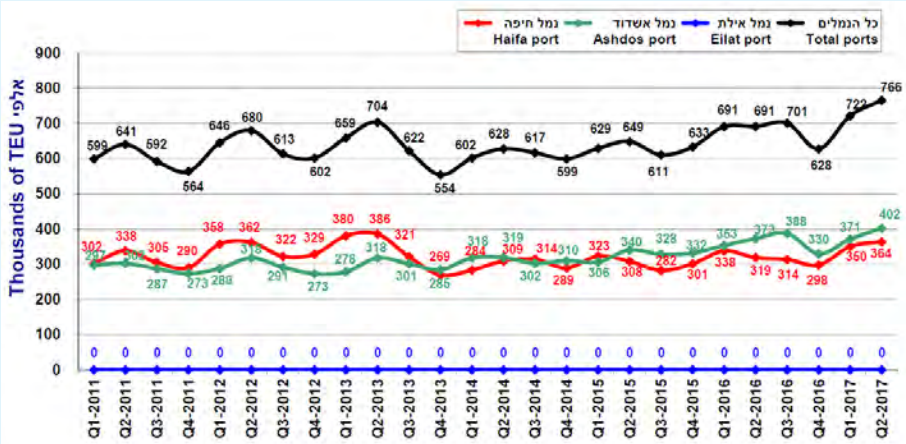


Figure 2 – Total containers traffic (thousands of TEU) in Israeli ports 2011–2017

Data on freight traffic – Figure 3 shows that the Port of Ashdod is the clear leader in number of vehicles imported during the last decade, with an annual figure of about 160,000.

Data on freight traffic – General freight. Figure 4 shows that the Port of Ashdod is the clear leader in general freight with an annual total of about 2 million tons. It is also important to mention the major increase in general freight through the Israel Shipyards Port.

Data on freight traffic – Bulk freight. Figure 5 shows that the Port of Ashdod is the clear leader also in bulk freight with an annual total of about 3 million tons.

Data on freight traffic – Container Transshipment/Transit Freight. Figure 6 shows that the Port of Haifa continues to dominate in this type of traffic.

Data on freight traffic – Shipment of Metals. Figure 7 shows that last year the Port of Ashdod slipped into second place in the shipment of metals. There is an impressive uptrend in this type of freight through the Israel Shipyards Port.

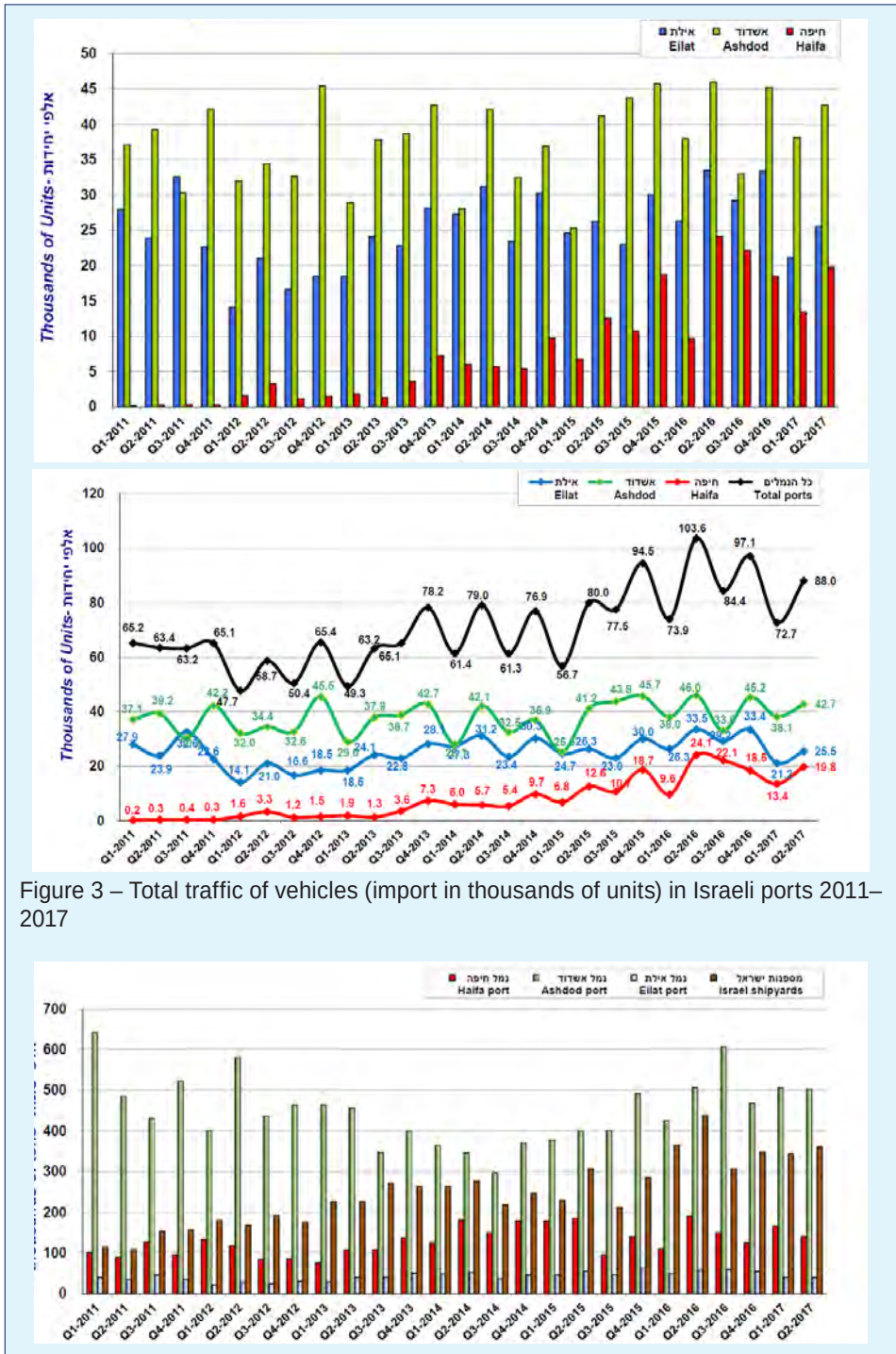


Figure 3 – Total traffic of vehicles (import in thousands of units) in Israeli ports 2011–2017

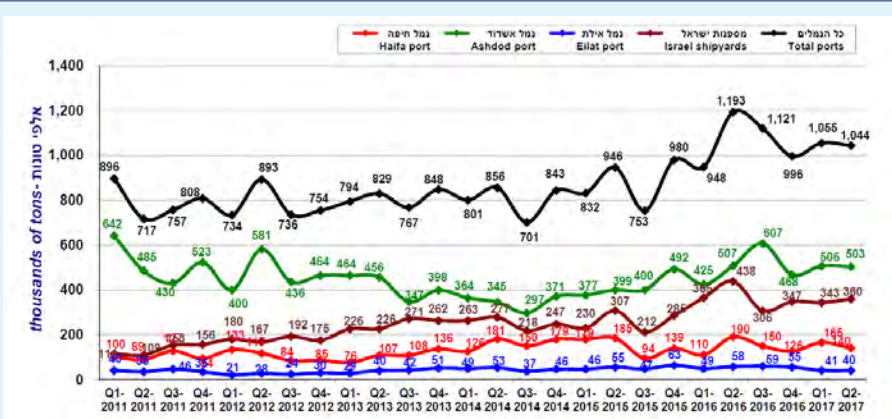


Figure 4 – General cargo – total traffic (in thousands of tons) in Israeli ports 2011–2017

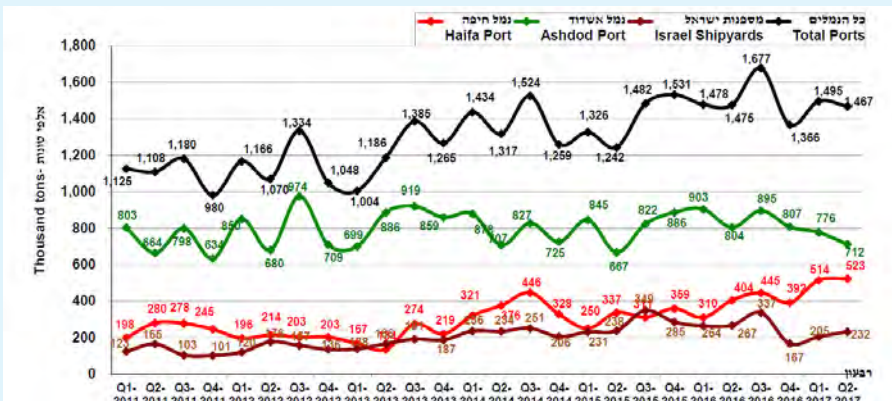
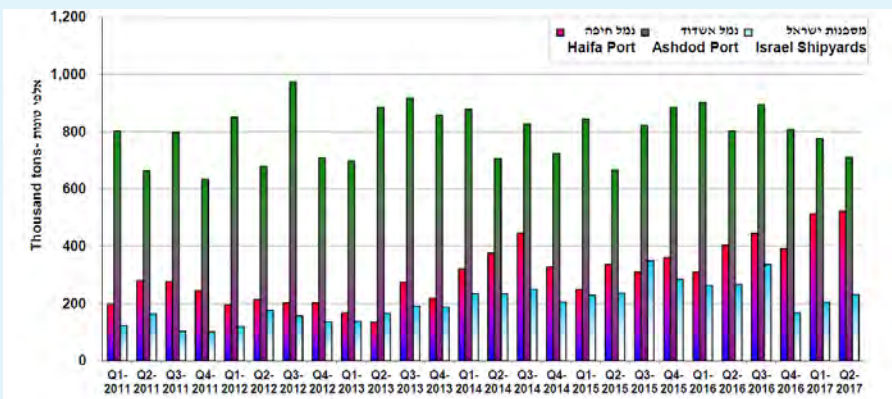


Figure 5 – grabbing crane – total movements (thousands of tons) in Israeli ports, 2011–2017



Figure 6 – Containers transshipment – total units (cumulative annual TEU) in Israeli ports 2008–2017

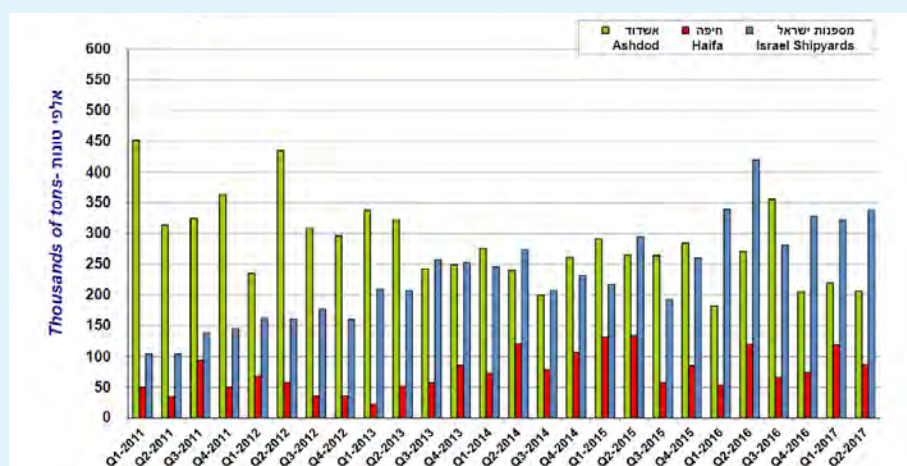


Figure 7 – Total metal movement (thousands of tons) in Israeli ports 2011–2017

## The future development of the Port of Ashdod

In our estimation, there are several factors that will open up the area of transshipment to competition between Israel's ports. They include the surplus infrastructure that will exist in Israel's ports, the fact that Israel's ports will become "stations" on the map of shipping lines for the super ships and Israel's relative proximity (and especially that of the Port of Ashdod) to the northern opening of the Suez Canal. In addition, these factors will make it possible to compete with other countries in the Eastern Mediterranean.

Israel's modern system of ports is essential to economic growth and the country's foreign trade. The development of the ports is a strategic goal for the Israeli economy, which is seeking to increase its participation in global and regional trade and which can also transform Israel from a final port of call into one of the main hubs for trade, maritime transport and logistics in our region.

In view of this target and based on the forecasts for growth in Israel's trade, the Israel Ports Company prepared the Strategic Master Plan for the Long-Term Development of the Seaports already in 2006. The strategic planning for future decades provides the State of Israel with a planning horizon and the ability to define its land reserves and the port infrastructures that are needed for the Israeli economy. The master plan constituted a platform for the promotion of the main objective of the ports reform, namely the creation of competition and the achievement of greater efficiency in the ports by means of involving the private sector in the operation of the terminals, as is generally the case in modern ports all over the world. The creation of new container terminals next to the existing ports in Haifa and Ashdod will facilitate competition within each port and between ports, as well as with other ports in our region which have undergone intensive development in recent years.



Figure 8 – HaDarom port (Port of the South) Stage A (computered image)

The plan for the future ports is based on the Strategic Master Plan for the Long-Term Development of the Seaports drawn up by the Israel Ports Company. This is one of the most important projects for the Israeli economy and the welfare of the public. It is intended to meet the need to expand the capacity of the ports, in view of the continuing growth in Israel's trade, the dramatic changes in the size of ships and the maintenance



of a strong economy which is based almost exclusively on the seaports as its main trade conduit.

On the basis of the data, the government passed a decision to simultaneously advance the planning of the two ports—the Miphrazt Port in Haifa and the Port of the South in Ashdod.<sup>13</sup>

The creation of competing container terminals within the Haifa and Ashdod ports was one of the recommendations of the Trajtenberg Committee for promoting competition and reducing the cost of living and was adopted by the government.

### **Fiftieth anniversary of the naval base in the Port of Ashdod**

With the creation of the Port of Ashdod, the navy now had the option of deploying some of its vessels opposite the Egyptian navy both for regular patrolling activity and in time of war. Thus, prior to the Six Day War, 60-meter tank carriers were brought to Ashdod for the purpose of transporting the Paratroopers Brigade of Motta Gur to El Arish in order to assist the IDF in capturing the coastline. In order to guard the force, several torpedo boats were also sent to Ashdod.<sup>14</sup>

Since then, many vessels have been stationed at the base in Ashdod, including patrol boats in Flotilla 916 (the Devora since 1970, and Devora Mark 3 and the Shaldag today); the tank carrier flotillas in various configurations; mother ships and the Shayetet 13 force for special operations; as well as the flotilla of missile boats. Flotilla 31 was stationed there permanently from 1979 until late 1990, when it was returned to Haifa for reasons of savings and efficiency.

The Ashdod base, which has become an independent entity that operates vessels and an advanced technological system for coastal detection, is responsible for all the activity in the center of the country from the area of Michmoret down to the Egyptian border in the South, including the Gaza Strip.

As a result of missiles fired from our neighbor to the North (in the Second Lebanon War in July 2006), Israel had to temporarily move its fleet from Haifa to the Port of Ashdod.

In the future, the opposite situation may occur in which the Port of Ashdod is the one threatened and the navy's vessels will have to be moved to Haifa, or both ports may be threatened in which case a different solution will have to be found.

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13 Government Decision 3986 on December 18, 2011.

14 This was the main operation planned by General Headquarters for the navy, but was not carried out in the end. The operation was cancelled at the last moment due to the success of the Haplada Division led by the late Yisrael Tal along the northern coast of Sinai. Motta Gur's brigade was sent to Jerusalem and participated in the capture of Jerusalem. Taken from a filmed interview with General (res.) Shlomo Arel, April 25, 2017.

## Conclusion

The development of the Port of Ashdod and the Ashdod Port Company during the last fifty years can be summarized as follows:

1. It is possible to conclude with certainty that the Port of Ashdod, one of the two commercial ports on Israel's Mediterranean coast, has fulfilled expectations during its first fifty years, in spite of the shortfalls that have been evident in the process (service to customers, productivity, operational efficiency, labor relations, etc.). Evidence of this is provided by the data on the flow of freight into and out of Israel's ports.
2. The Port of Ashdod has successfully integrated advanced technological systems. Evidence of this can be seen in the following examples, among others: advanced cranes in the Hayovel piers; the Smart Gate that was built by the Israel Ports Company; and the TOS system at the "New Gate". All of these facilities include technology and monitoring ability, on both the operational and security levels. By means of the computerized system for managing freight (TOS), together with the support of a computer system (managed by the Israel Ports Authority) and a database that is connected to the entire maritime commerce community in Israel (Tasak-Yam), it is possible to operate a port without any paperwork.
3. Organizational streamlining – The reform of the ports in February 2005 led to increased organizational efficiency in various areas. Currently, the Ashdod Port Company employs about 1300 workers, who are organized into 11 sectoral unions; some of them are members of the diminishing first generation of workers. The second generation of workers is employed on the basis of existing Ministry of Finance restrictions on government corporations.
4. After about four decades, during which the Port of Haifa was dominant, the Port of Ashdod is currently considered to be the leading port in Israel with respect to types of freight and the scope of their traffic. This situation is, in our opinion, evidence of appropriate management practices.
5. The city of Ashdod has grown and prospered in recent decades. The mayors during that period—Zvi Tsikler and Dr. Yehiel Lasri—emphasized the importance of the Port of Ashdod and its development at every opportunity. The fact that during the fifty years that have gone by the port workers have received salaries that are respectable by any standard has meant that not only could they provide their families with a comfortable standard of living but also that small businesses in the city would thrive. This combined with the presence of the power plant and various factories in Ashdod and its environs created a reality in which many of Ashdod's residents enjoyed salaries that allowed them to build detached homes and to benefit from goods and services that stimulated the economy of the city and created the reality of a flourishing and prosperous city.

The building of the Raphael Eitan (Raful) breakwater – In the late 1990s work began on the building of Hayovel Port, which involved the addition of the 1000-meter-long Pier 21 with 6 general cargo cranes and two bridge cranes for unloading of bulk seeds; the 250-meter-long Pier 22 with 2 “bridge” cranes<sup>15</sup> for small ships; the 600-meter-long Pier 23<sup>16</sup> with 6 bridge cranes; and Pier 24 which has no cranes.

In the stage prior to the building of the Hayovel piers<sup>17</sup> and in view of the fact that the Port of Ashdod is built on the open sea, a new breakwater of 1150 meters was built. The antifer technology—involving concrete blocks of about 40 tons each—replaced the technology of the previous breakwater of about 2300 meters that was built using tetrapods that weighed about 16 tons each. The late Raphael Eitan (Raful) was appointed as the work foreman for the building of the breakwater by the Ashtrom Dragdos Company. He described his experiences as a work foreman in his book, “We are building a port here – letters from an annoying grandfather”.<sup>18</sup>

The purpose of the breakwater is to stop large waves in a storm, including out-of-the-ordinary waves that occur only once every few decades. Therefore, the breakwater must be particularly strong and stable. The breakwater of the Hayovel Port was built on the seabed at a depth of 20 meters and with a width of 120 meters at the base. It is made up of strata (stratigraphy) of different types of boulders (natural stones of various types and sizes) which are placed on top of each other up to the surface, with light stones on the bottom and heavy ones on top. On the sea side, huge concrete blocks weighing 40 tons each are placed on the seabed at a depth of 14 meters up to 8 meters above the surface. At the end of the process (at the top of the pyramid) a concrete road is poured that is 9 meters wide and about 5½ meters above the surface. Following are illustrations.

On the evening of November 23<sup>rd</sup> 2004, there was a major storm at sea. Raful arrived in the morning at the new breakwater and wanted to see close up how the forces of nature were affecting the breakwater that he was building. He stopped his car in the last third of the breakwater and when he got out a wave hit and killed him. His body was later pulled out of the water. After his death, the Hayovel piers were renamed the Eitan piers in his memory.

### **The 1500-meter-long breakwater of the Eitan piers**

- 15 Bridge cranes – Like their names, these cranes create a bridge between the ship and the pier and are used for the loading and unloading of containers.
- 16 The Israel Ports Company installed a “dolphin”, an accessory with a \_\_\_\_ (++++) that essentially lengthens the pier by about 50 meters and makes it possible to temporarily connect two large ships (of at least 300 meters length) to the pier.
- 17 Fiftieth anniversary of the founding of the State of Israel.
- 18 Edited by Nitza Peled, Tammuz Publishing, 2004.

# Conclusion

## Conclusions and Policy Recommendations

### *Rear Admiral (Ret.) Prof. Shaul Chorev*

The sea became an increasingly important component of Israel's resilience in 2017, in view of the growing use of natural gas as Israel's main energy source; the continuing development of the desalination facilities which are now supplying the majority of Israel's drinking water; the expansion of maritime trade with additional partners around the world; and the recognition of the importance of the sea as a component in the country's strategic depth. In the area of seaborne trade in a period of emergency, there was no progress made this year. On the contrary, although the golden share in the Zim company—which is held by the State and gives it access to shipping capacity in order to bring essential goods to Israel in an emergency and is meant to prevent hostile parties from having an influence on the management of the company—remained in the hands of the government, the ships that are included under the golden share are becoming antiquated and it is unclear whether they will provide a solution in scenarios where they will have to transport goods in emergency situations.

The Eastern Mediterranean and nearby regions continued to suffer from a lack of stability in 2017. The civil war in Syria has become a regional war in which a number of countries are involved and it is now directly connected to the war in Iraq and indirectly to the wars in Libya, Yemen, Somalia and the Sinai Peninsula.

Iran—which supports the Assad regime in Syria—participates in the war alongside Russia and has exploited the situation in order to upgrade its status in the region to almost that of a regional superpower. Indeed, it is on the verge of reaching the Mediterranean, including the use of Syrian ports by the Iranian navy. The Iranians who signed a nuclear agreement with the superpowers in 2015 have invested energy in the preservation of their capabilities at the time of the signing and have exploited the legitimacy they achieved by the agreement in order to strengthen the status of Iran as a controlling stakeholder with geopolitical influence from the Persian Gulf to the shores of the Mediterranean.

The US and Saudi Arabia, together with the pragmatic Sunni camp, view the containment of Iran and non-state players such as Hezbollah and the Houthis in Yemen as a primary goal. The joint Sunni Arab attack in Yemen led by Saudi Arabia—which included a naval component—constitutes a historic turning point in the efforts of the Sunni countries to deal with Iran's expansionism.

With respect to the superpowers, US involvement in the Eastern Mediterranean is continuing to decline and accordingly it has assigned priority to other theaters with respect to the deployment of naval forces and in particular the South China Sea and the Korean Peninsula. The diminishing involvement of the US has led to its weakened status in the region.

The deep structural crisis in the EU is affecting the global status of the organization, including in the Eastern Mediterranean. In contrast, the Russian Federation continues to deepen its involvement in the region, which is also reflected in the document signed by President Putin in July 2017 entitled: "Fundamentals of the State Policy of the Russian Federation in the Field of Naval Operations for the Period Until 2030". The document dictates that the operations of the Russian navy will be focused on the Mediterranean and the Black Sea and that the majority of the resources and the main Russian naval activity will be concentrated in that theater. President Putin, who has correctly read the geopolitical map in the Middle East, is deepening Russia's involvement in the region and is filling the vacuum left by the US. Israel must therefore coordinate its activity on the diplomatic and military levels with the Russians.

The Chinese navy is becoming increasingly powerful and is acquiring the capability of a "blue water" navy. It continued to be active in the Mediterranean on an occasional basis as part of its effort to protect the shipping lanes connecting China to markets in Europe.

The flow of refugees from Syria by way of the sea to Europe has been reduced following the agreement between the EU and Turkey. According to the agreement, Turkey detains the refugees in its territory in exchange for the financing of their stay there by the EU. Nonetheless, the flow of refugees from the coast of Northern Africa to the shores of Southern Europe is increasing. Many of the refugees on this route have drowned on the way and this has required NATO to step up its activity near the shores of North Africa in order to assist the Libyan navy in stopping the departure of the refugees from Libya.

The Southern Red Sea and the area of the Horn of Africa have in recent years constituted a focus for maritime piracy. The taskforces from various countries that are operating in the region have managed to reduce the scope of piracy to isolated incidents. On the other hand, the increased intensity of fighting in the region between the Houthis who are supported by Iran and the central government in Yemen, which includes among other things the mining of the approaches to the port of Mocha and the firing of coast-to-sea missiles against Saudi vessels, has made this area dangerous for shipping, especially in the vicinity of the Strait of Bab el Mandeb. Israel whose exports to East Asia use this shipping lane also needs to formulate a maritime strategy to meet this challenge.

In 2017, the Israeli Navy continued to build up its forces in order to fulfill all of its missions. In 2015, an agreement was signed for the procurement of defensive vessels to protect Israel's assets in its Exclusive Economic Zone, including four patrol boats from the ThyssenKrupp Marine Systems (TKMS) shipyard in Germany. In October 2017, a joint memorandum of understanding was signed between the governments of Germany and Israel to build three advanced submarines that will be supplied to the Israeli navy in the mid-2020s. On the margins of this activity, ethically questionable practices have come to light which are beyond the scope of this essay, as well as issues regarding the choice of contractor which have provided evidence of inappropriate processes within the defense

establishment (i.e. modification of the Navy's professional position regarding the issuing of an international tender and the process of choosing the model of the vessel).<sup>1</sup> These findings obligate the defense establishment to establish mechanisms that will include additional professional entities in the process of analyzing proposed alternatives and will prevent the repetition of such incidents in the future.

With the increasing role of the sea in Israel's resilience and the accelerating economic development of the maritime environment—including the construction of coastal installations such as ports and gas intake facilities—as well as the increasing security needs related to the sea, the need to include the public as much as possible in the public discussion of this issue is becoming more acute since this discourse will determine the balance between various needs that exist alongside economic development, such as the protection of the ecosystem and the maritime heritage.

Some of the strategic changes taking place in the region involve risks to Israel and in particular the increasing power of the Iran-Syria axis, as mentioned above, while others are creating opportunities that did not previously exist for Israel. The relations that are developing with Egypt and Saudi Arabia are one of those opportunities, even if both countries condition further improvement in relations on the solution of the Palestinian problem.<sup>2</sup> Nonetheless, it is worth emphasizing that Israel's military position remains secure and there does not appear to be any military threat to its existence in the near future, including in the maritime domain.

According to this assessment, which was carried out by the Haifa Research Center for Maritime Policy and Strategy, the report presents recommendations for maritime policy and strategy. The order in which they are presented does not necessarily reflect their importance or their level of urgency.

### **First recommendation – Formulation of a maritime policy and strategy for Israel**

A formal process should be carried out which will begin with the identification of the State's maritime interests and the formulation of a policy towards all aspects of the maritime domain. Once this is done, it will be possible to formulate a maritime strategy that will include defined targets and the methods for achieving them.

- 1 Brigadier General (res.) Shmuel Tsuker, former head of the Procurement and Production Authority in the Ministry of Defense, in an interview with Ilana Dayan on Galei Tsahal on September 7<sup>th</sup> 2017: "I would still like to believe that they acted honestly."
- 2 Speech by Egyptian President Abdel Fattah el-Sisi at Asyut: "If we could solve the issues of our Palestinian brothers, peace would be warmer...I have asked the Israeli leaders to allow the broadcast of this speech once or twice since it is a genuine opportunity," Walla News, May 17<sup>th</sup> 2016, <http://news.walla.co.il/item/2962078>.

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The status of this issue: In April 2017, the Haifa Research Center for Maritime Policy and Strategy completed a comprehensive examination of the model best-suited to the State of Israel in order to formulate a maritime strategy and to choose the methodology to carry out the process. These recommendations were published as part of a booklet entitled "A Model and Methodology for a Maritime Strategy for the State of Israel". Since the previous report and following the publication of the booklet, initial contact was made with the National Security Council and a response was submitted to a call by the National Council for Economics and Society within the Prime Minister's Office to carry out an assessment for the 35<sup>th</sup> government, which will begin its activities at the beginning of 2020. At a later stage, the Center presented its recommendations to a forum organized by the National Security Council, which included representatives of various government ministries. It has not yet been decided whether the issue will be chosen by the Council when it comes to prepare its assessment for the 35<sup>th</sup> government of Israel.

### **Second recommendation – Maintaining commercial shipping to Israel and the port infrastructure**

Israel's geostrategic situation requires an infrastructure of ships and seamen for both civilian and defense purposes. Some of the issues that require discussion in this context are the necessity of having ships belonging to the Zim shipping company that are designated for transporting goods in an emergency, the physical condition of these ships and also the ways in which they will be put to use in an emergency.

A policy should be formulated to operate the ports in an emergency, under the threat of rockets and precise missiles, and it should be determined which capabilities are required in order to accomplish this.

With respect to the operation of the ports as the gateway for Israeli exports and imports, the process to improve service, reduce the costs to exporters and importers and shorten the waiting time of goods in the ports should continue. After the expected introduction of new operators in the ports, users should be given flexibility to choose between them.

A master plan is needed for port development, as part of the examination of the various alternatives, including: the establishment of ports on artificial islands, the development of existing ports and the development of new ports in a different location, including an examination of the flow of cargo in order to formulate a plan for the development of capabilities for loading and unloading cargo in the ports.

It is necessary to formulate a long-term plan for the training and nurturing of Israeli manpower that will serve as a reserve for the operation of essential shipping in an emergency and as a reserve to fill positions (which require maritime experience) in the port institutions and organizations and in the shipyards.

An analysis of cyber threats is needed, as well as a plan to protect the Israeli commercial fleet and the ports and their infrastructures from such threats.

### **Third recommendation – Integration of the Mediterranean as part of Israel's strategic depth**

The State of Israel is a coastal nation and in view of the ranges of modern weaponry lacks any real strategic depth on land. Its centers of population, industry and electricity production are adjacent to the coast and are exposed to attack from the direction of the sea. Israel's "narrow waist" is densely populated and contains much of the country's infrastructure, which is vulnerable to land attack and one day will have to be extended into the sea.

Israel needs to adopt the idea that the Eastern Mediterranean provides the country with additional strategic depth. The abilities and infrastructures to develop this approach should be examined.

Projects should be initiated that were recommended by the feasibility study for the establishment of artificial islands, which was based on Government Decision 4776 of June 6<sup>th</sup> 2012 and the final feasibility report carried out in 2013 which recommended the first cluster that would be included on such a future island. This cluster includes a facility for the cleansing and handling of natural gas, a power plant, a desalinization plant and an ammonia intake facility.<sup>3</sup> Construction on artificial islands will enable the intake of natural gas produced offshore, the production of electricity and seawater desalinization without having to use expensive land resources near the coast.

### **Fourth recommendation – Processes to build up the naval forces**

The processes to build up the Israeli navy's forces, which came into the limelight with the submarine and patrol boat deals, were at the center of public discourse and have been investigated by the authorities. There were two main issues at the focus of the investigation:

- Alleged ethical misconduct of those involved in the process.
- The professionalism of the process to decide on the type of international tender for the patrol boats and the stance of the Navy on this issue.

The processes related to the ethics of the alleged suspects are not the subject of this report and it is worthwhile that they be examined by the authorities and that the defense establishment will arrive at the necessary conclusions.

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3 BipolEnergy – final report of the project to examine the feasibility of creating artificial islands (maritime structures) which was prepared for the Director General of the Ministry of Science and Technology and the Interministerial Committee to examine the feasibility of artificial islands for infrastructure clusters, May 21<sup>st</sup> 2013.



The processes involved in defining the operational need for the patrol boats and their suitability for a specific industry revealed a process that is characteristic of a hierarchical system that is not subject to oversight and external auditing. It is worthwhile examining how this issue can be appropriately dealt with within the defense establishment including the possibility of expanding the examination process to include entities outside the defense establishment who have the relevant experience and are able to present alternative opinions. This will prevent a repetition of the decision making process that occurred in this instance.

### **Fifth recommendation – Development and exploitation of energy resources located in the open sea and protection of the environment**

The government and the gas companies in Israel should concentrate their efforts in the development of the local and regional gas market, which will strengthen Israel's energy security, reduce the price of energy relative to the cost of imported energy and significantly reduce air pollution. The integration of natural gas in additional sectors (agriculture, transportation, municipalities and residential use) should be encouraged using incentives and primarily by making it easier for existing users to connect to the natural gas infrastructure, which can be accomplished by reducing complicated and burdensome regulation.

An analysis is needed of the strategic implications of the natural gas discoveries, as well as resources that exist with high probability (oil and others ) and which will be discovered in the future in Israel's economic waters.

It should be decided how to develop offshore natural gas, including the responsible and correct use of the expected profit and royalties that will go to the State as a result of the export of natural gas, particularly after the development of the Leviathan field.

A policy should be established that will provide incentives to foreign investors to participate in the development of the gas fields and which will reduce the economic risk involved in the investment. It should be ensured that the principles of this policy are transparent to the public.

It is worthwhile formulating a proactive environmental policy in order to protect the ecosystem. This is to be accomplished by means of a plan that will identify the environmental components to be taken into account in the exploitation of offshore natural gas, including the preparedness for disasters and the means to prevent them and deal with them once they occur, as well as the organizations that should be involved in this activity.

The regulations should be amended in order to protect the ecosystem, including protection of heritage and archaeological sites. To this end, it is worthwhile taking advantage of the experience of other countries with respect to best practices to be adopted.

### **Sixth recommendation – Development of professional human infrastructure in order to deal with Israel's new maritime challenges**

A decision should be made regarding the public resources that need to be invested in Israel's education and higher education systems in order to create an economic, social and human resources infrastructure that can deal with the challenges and opportunities in the maritime domain, including energy production, the development of energy sources, protection of the ecosystem, etc. In addition, the growth of industries that will assist and support the growth of this sector should be encouraged, as well as the establishment of a "maritime syndicate for Israel" that will provide a platform for discourse among relevant stakeholders.

### **Seventh recommendation – The formulation of Israel's policy in the Eastern Mediterranean and the Red Sea**

The process to formulate a maritime policy for Israel (when that occurs) should decide what Israel's interests are in the Eastern Mediterranean and which is the best policy to protect those interests. To this end, allies should be identified and the opportunities and risks implicit in the growing Russian presence in the Eastern Mediterranean should be considered.

Effort should continue to persuade the two superpowers (the US and Russia) to prevent the Iranian navy from gaining a stronghold in the Syrian ports. As a counterweight to the creation of the Russia-Iran-Syria axis, consideration should be given to the tightening of relations with Egypt and Saudi Arabia in the maritime domain.

An assessment should be made of the Chinese interests that motivate their activity in the Mediterranean and the Red Sea, as described in China's strategic document entitled "The Maritime Silk Route", as well as in light of China's increased maritime presence in the region. We need to ask ourselves how Israel should react to this presence, including the Chinese investments in the construction of essential infrastructures in the ports of Haifa and Ashdod and Chinese involvement in their operation.

As a result of the massive procurement program of both vessels and advanced weaponry by the Egyptian navy in recent years, a policy is needed with respect to maintaining Israel's Qualitative Military Edge (QME) and Israel needs to act on the basis of that policy in our dealings with friendly nations such as the US and Germany which supply these vessels and weapons.

### **Eighth recommendation – Advancement and passage of maritime law**

Since the Maritime Strategic Assessment for Israel published at the end of 2016, there has been progress in advancing the proposed Law of Maritime Zones. The proposed law has been approved by the Ministerial Committee for Legislative Matters and is

expected to be discussed by the Knesset in the near future. It is important that Israeli law be applied in the maritime zones as soon as possible, since the Law for Planning and Building (which regulates the planning and building activity on land) is not suited to the character of activity in the sea and certainly not in deep water.

In addition, agreement should be sought regarding the areas of overlap between the EEZ of Israel and those of its neighbors and preparations should be made to seek a solution according to the rules of international justice if agreement is not reached.

In the context of Lebanon, Israel should respond using all of the diplomatic channels to developments in the region, such as the granting of licenses for oil and gas exploration by Lebanon in the disputed waters. Consideration should be given to the optimal method to demarcate Israel's economic waters according to accepted international practice or an alternative option for joint management of the disputed area in the absence of agreement on demarcation or the possibility of negotiations through a third party.

All of the aforementioned emphasizes the need to train professional manpower that will be capable of handling issues of maritime law within the framework of international organizations.

### **Ninth recommendation – Use of Israel's offshore natural gas in order to strengthen its economy and its international standing**

Given the expected market conditions in Europe and the world in coming years, the government and the natural gas companies in Israel should invest maximum effort in the development of the local and regional natural gas market rather than searching for distant export markets.

Given the aforementioned, account should be taken of the array of geopolitical and geostrategic considerations (both opportunities and risks) that are related to the countries to which Israel would like to export part of its natural gas production. This is in order to strengthen its diplomatic and economic position while taking into consideration the economic considerations that motivate the commercial companies which produce natural gas in Israel.

An examination should be made of Israel's economic, security, environmental and political considerations regarding the pipeline infrastructure, the floating supply facilities and the liquid natural gas (LNG) terminals.

### **Tenth recommendation – Continued positioning of the Haifa Research Center for Maritime Policy and Strategy as a national knowledge center for maritime policy and strategy**

The study and assessment of strategic and policy issues in the maritime domain requires unique multidisciplinary knowledge which is not to be found in Israel at the moment.

The Haifa Research Center for Maritime Policy and Strategy constitutes, among other things, a focus of multidisciplinary and independent knowledge in maritime policy and strategy, in the broadest sense of the term, with emphasis on Israel and its maritime environs in the Eastern Mediterranean and the Red Sea.

The Center has this year established collaboration with similar centers in the US and Singapore and is in the process of creating relationships with centers in Germany, India and China.

During the past year, the University made a decision to merge the Wydra Institute for Shipping and Ports with the Center and thus the Center's research activity now includes an additional component. The Center must now formulate a plan for the development of staff that will be involved in this subject from both the academic research side and the applied research side with respect to the relevant players (Israel Ports Company, Shipping and Ports Authority, etc.).

In order to train staff to deal with this subject on the strategic level, it is necessary to open a graduate degree program in Political Science with specialization in national security and maritime strategy, an initiative being promoted by the Social Science Faculty – the School for Political Science at Haifa University already in the 2018-19 academic year. This program will supplement the existing programs in the School for Marine Sciences at the University and will support the goal of Haifa University to take a leading role in the field of marine studies in Israel, as part of the Mediterranean Sea Research Center of Israel.

The goal of the Center is that this report will be distributed for the third time by the Center and will serve all of the entities involved in the maritime domain in Israel, as well as initiating and supporting policy and strategic planning processes in the maritime domain.

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## The Authors (according to the order of the chapters)

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