

# Marine spatial planning in the Middle East: Crossing the policy-planning divide



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## ABSTRACT

Many countries have begun marine spatial planning (MSP) efforts in the past decade and much academic and professional literature reviews and analyzes these processes. Relevant research that can contribute greatly to new efforts at MSP compares efforts, both recent and historical, with ideals set for spatial planning processes. This research addresses the extent to which paradigms from the planning practice and the policy field can be relevant for the MSP context. It does so by analyzing the interim products of an MSP process addressing the Mediterranean Sea area in the waters adjacent to the State of Israel. Results emphasize the potential contribution of public policy analysis and planning to critique outcomes of the MSP process with the aim of improving outcomes and devising best practices. This type of analysis can inform MSP as it becomes an accepted practice as a mainstream tool in the field of environmental planning. The complexity and challenge of spatial planning when policy foundations are minimal is highlighted in the results.

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## 1. Introduction

Ocean resources are a global public good and therefore their use, management and regulation are topics of interest within the field of public policy. These resources have been the subject of public policies dating back to Roman times, since issuance of the Institutes of Justinian<sup>1</sup> set forth the Public Trust Doctrine (PTD) [1,2]. The PTD holds that the air, the sea and the shore belong not to any one person but rather to the public at large; it is the states' duty, as trustee, to manage marine and coastal resources for the common good. Similarly, the Freedom of the Seas has been an accepted doctrine for centuries,<sup>2</sup> implying that marine areas belong to all.

As the near shore marine environment becomes increasingly crowded with uses, due to improved technologies for exploitation and less available area for many uses on land, use-use conflicts and use-environment conflicts have become commonplace in the sea [3,4]. As on land, conflicting uses often drive the development of laws, policies, and programs at sea. In areas of coastal state

jurisdiction, these forces have led to a proliferation of marine spatial planning (MSP) initiatives [5].

MSP is the process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas "to achieve ecological, economic, and social objectives, usually specified through a political process" [6]. Some experts on marine policy have compared MSP with traditional planning and zoning that has taken place for decades on shore. Turnipseed et al. [7] refer to MSP as "analogous to land use planning in terrestrial settings". But in reality, MSP is quite different than land use planning. For one, because the marine environment is physically different from the terrestrial one [8], but for many other reasons as well.

This article presents the theoretical (and practical) basis for MSP and then it briefly discusses traditional terrestrial planning models and their connection to MSP. The case study is described followed by the methodology used for analysis. Results emphasize the potential contribution of public policy analysis and planning to critique interim outcomes of the MSP process with the aim of improving outcomes and devising best practices. This type of analysis can inform MSP as it becomes an accepted practice as a mainstream tool in the field of environmental planning.

## 2. MSP defined

In the past decade there has been a virtual explosion of academic articles on MSP. The results of a simple search for the term

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<sup>1</sup> Of the Roman Civil Law Digest (circa 500 AD). The PTD has developed into one of the most important doctrines in public property law in the United States.

<sup>2</sup> The notion of Freedom of the Seas, attributed to the writings of the Dutch jurist Hugo Grotius (1583–1645), would dominate ocean policy and regulation until the mid-twentieth century; it continues to be applied for much of the high seas and wields influence in all ocean waters, even though application of the concept is evolving just as the ocean environment itself changes.

“marine spatial planning” in the journal *Marine Policy* show no publications on the subject in the year 2004, one publication in 2006 [9] and 22 articles on MSP in the year 2013 alone. But what exactly is MSP and what is the set of actions that, taken together, make up a MSP process or initiative?

While various definitions abound, a common description defines MSP as a process that aims to rationally organize the use of marine space and the interactions between its uses [5,10]. MSP is usually described as a process designed to balance demands for development with the need to protect marine ecosystems, and to achieve social and economic objectives. Even though the history of comprehensive and formalized MSP is relatively short, many believe that it has the potential to greatly improve management of the marine environment by helping address or avoiding conflict, reducing the loss of ecosystem services and creating economies of scale and efficiencies for enforcement and management [5,11–13].

One significant difference between marine and terrestrial planning is that from its inception, MSP has been considered a way to improve, enhance and protect the marine environment [6,17]. Coastal nations have a direct interest in the sustainable management of their coastal resource systems, which include the near shore marine environments within their territorial waters and Exclusive Economic Zones (EEZs)<sup>3</sup> [13,14]. Another difference has to do with the using of zoning. Historically, zoning is a tool of town planning [15].<sup>4</sup> An early publication considering the use of zoning in the oceans [16] points out that most terrestrial zoning provisions regulate uses of private property by imposing conditions according to zones. By and large the ocean and its treasures are public goods, so that taking zoning from its land-use applications directly to the sea may be inappropriate in many contexts.

Whether MSP includes zoning or not, there are different terms referring to what has come to be commonly called MSP – maritime spatial planning, coastal and marine spatial planning, integrated ocean management, marine use planning, and integrated marine planning. These terms are frequently used interchangeably although how the MSP process is actually executed will be highly context dependent – sometimes emphasizing ecosystem-based management (EBM), sometimes the allocation of space for a particular use (i.e., renewable energy [see [5]]), sometimes questions of equity and fairness [12].

The widely-used UNESCO handbook definition of MSP [6] emphasizes the public aspect of the planning process. According to the handbook’s definition of MSP, it ultimately aims to achieve objectives that have been already set through a prior political process. Mengerink et al. [17] define MSP as a “proactive means of regulating, managing and protecting the marine environment in a sustainable manner”. This definition emphasizes marine protection through spatially explicit designations. There is an assumption here (and in other descriptions of MSP goals [see [10]]) that marine protection and sustainable use of the ocean is the main principle of MSP. However, by contrast, in the MSP definition put forth in Coleman et al. [18], the role of scientific and geo-spatial information in decision-making for planning is considered paramount.

Ocean policies that articulate management needs are operationalized through MSP and they can have various context-dependent emphases. Policy determined by political process (or otherwise) will determine context and thus emphases. But what if a clear national or regional ocean policy has not yet been articulated? This research posits that in many marine spatial plans, policy making is part and parcel of the planning process.

### 3. Planning as a policy tool

Policy links action to consequences [19]. As alluded to in its definition(s), MSP leads to actions designed to achieve goals “usually specified through a political process” [6]. These actions are by and large the allocation of space, but not only. Policy development can be part of planning. The consequences of a planning process are dependent on the articulation of overarching goals and therefore planning often begins with this stage [20–23]. For MSP, Collie et al. [5] provide the following examples of conceptual objectives: conserve marine biodiversity, sustain fisheries, sustainable economic development. Such objectives are articulated at the level of goals.

As indicated by the Ehler and Douvère [6], goals become progressively more operational as the MSP process advances through 10-stages. Such an approach (i.e., action items derived from objectives derived from goals) has been part of most types of planning (terrestrial, coastal and otherwise) for decades and have led to planning for improved sustainability and ecosystem conservation, considered to underpin most MSP efforts today [24,25]. Similarly, the planning profession emerged out of series of crises starting in the mid-19th century, such as health crises that lead to epidemics, social crises that led to riots and strikes and other crises resulting from man-made and natural hazards such as fire and floods [26]. Progressive intellectuals envisioned healthy cities much as environmentalists today envision healthy ecosystems. An analogy can be drawn to the interest in MSP as a way to further ideals of marine conservation [5,10,25].

Based on these similarities, planning tools and approaches, such as incremental planning and participatory planning, can inform MSP (see Table 1). Despite the clear common ground, conceptual planning models have only recently found their way into applications relevant for the marine environment, among them most notably for marine conservation [27,28].

These conceptual planning models underlie aspects of MSP processes. A review of these models helps understand the basic structure of MSP, how it differs from terrestrial planning and what aspects of MSP processes are suited to particular contexts. Other than the basic, traditional *comprehensive rational planning* described first, the most relevant planning process approaches for MSP are *participatory* and *adaptive planning* as explained below.

*Comprehensive rational (synoptic) planning* was for a long time the predominant planning model [31]. It is based on instrumental rationality used for analyzing and making decisions [30] and it assumes that there is a right way to develop. In a positivistic view, this model assumes that it is possible to find one best way to allocate space and resources. Otherwise it is based on the notions that (1) scientific knowledge and modern technologies can control the environment; (2) common public interest is identifiable and clear; and (3) change is engineered from the top [32].

This research considers *participatory planning* and *adaptive planning* as highly relevant for MSP due to the emphasis on: (1) the public participation process in MSP practices [25] and the public nature of marine resources; and (2) the adaptive approaches recommended for both MSP [6] and for EBM [11,17]. Participatory planning strives to involve the entire community in the strategic management process. It contrasts with the rational planning process for which there is little or no role for the people affected by the planning [30]. The notion of adaptive planning is fundamental to any EBM framework. It enables planners and managers to be flexible [11], recognizing that plans will be modified as more information becomes available and as planners learn about the behavior of the system, gain more experience, or as a result of external changes in circumstances [33].

*Incremental planning* is the most widely noted alternative to comprehensive rational planning [see [31]]. It is based on

<sup>3</sup> According to international law the (the U.N. Convention on the Law of the Sea), the EEZ can extend up to 200 nautical miles from shore.

<sup>4</sup> Zoning’s original purpose was to protect home-owners in residential areas from devaluation by new industrial and apartment made possible by new modes of transportation (e.g. trucks and buses) by around 1910–20 [15].

**Table 1**  
Summary of conceptual planning models with level of relevance to the use of marine spatial planning. Adapted from [29] and [30].

Planning theory	Main tenets	Seminal source	Relevance to MSP praxis
Comprehensive- rational	Science-technology based; planner is technician; dominant model used in professional planning	[20]	High
Incremental	Used for crisis management; highly political environmental problems handled individually	[21]	Low
Adaptive	Reliance on modeling; anticipatory, predicts future events; recognizes dynamic character of ecosystem	[23]	High
Contingency	Risk assessment based; used for natural and man-made hazards; alternative course of action produced to adverse consequences	[22]	Low
Advocacy	Planner cannot be neutral; planning congruent with client values/goals relates to conflict	[45]	Low
Participatory	Focus on process, not outcomes; often bottom-up;	[46]	High

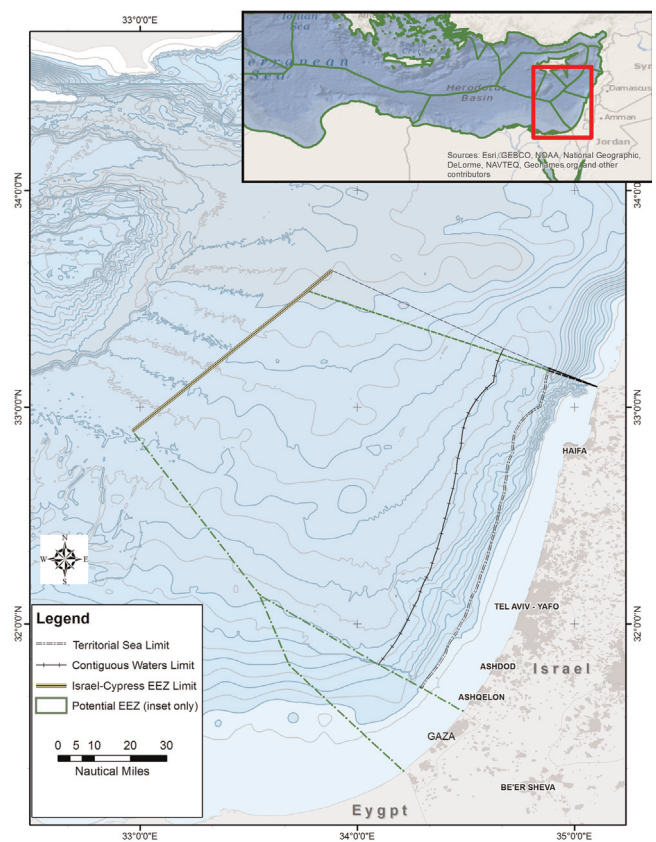
“bounded” instrumental functionalism which expects the planner (or planning entity) to simplify the complex world by finding a satisfactory solution, rather than the best one. Incremental planning is carried out in a decentralized manner with a focus on what can be implemented without clear objectives while redefining the problem at regular intervals [31,32]. This type of planning is less relevant for the marine environment because most MSP processes are concerned with arriving at a specific product where there has been no plan before. *Contingency planning* is suited to dealing with highly uncertain and hazardous situations and therefore, arguably less relevant for MSP, although a marine plan may have a contingency plan as a part of it. *Advocacy planning* applies to actions advocated by certain sectoral interests. By contrast MSP strives to be comprehensive and integrative [13,34].

#### 4. The Israel marine plan

This research analyzes the MSP process used for development of the Israel Marine Plan (hereafter, Technion IMP (TIMP)). The plan is spearheaded by staff affiliated with the Center for Regional and Urban Studies at the Technion— Israel Institute of Technology. The planning process began in late 2013. The area addressed by the TIMP extends to approximately 110 nautical miles (ca 200 km) from the shoreline to the south and to 70 nm (ca 130 km) from Israel's northern shores. Within this area are Israel's territorial or “coastal” waters and its contiguous zone which extend to 12 nm (ca 22 km) and 24 nm (ca 43 km) respectively, from its shores (See Fig. 1).

According to international law (UNCLOS),<sup>5</sup> Israel has complete sovereign rights with certain maritime obligations (such as for navigation) within its territorial waters. The western extent of Israel's EEZ is defined by a 2010 agreement with Cyprus. Of note is that the southern boundary with Egypt (and Gaza) has yet to be definitively delineated, and to the north there is a dispute with Lebanon regarding the limits between the two countries. Despite the agreement on a midline with Cyprus (but contested by Lebanon), Israel has not yet declared its EEZ according to UNCLOS. The southernmost part of the country's territorial sea is adjacent to the Gaza Strip and therefore closed to Israel civilian uses.

As for most industrialized countries, [5,6] there has been a substantial increase in development and activities within Israel's marine space in the last decade. Intensifying activities include: marine transport; fishing; construction of infrastructure and



**Fig. 1.** Israel's marine boundaries. The dashed lines show borders disputed by neighboring countries and the Gaza Strip. The EEZ limits shown are potential boundaries (not yet declared).

pipelines for energy and communications; the provision of sea-water for cooling and desalination; outfall of desalination plants, of sewage spoils and of cooling water; tourism, marine sports and recreation; military and security operations. The activity that has had the greatest bearing on initiation of the TIMP is natural gas extraction. Most recently-confirmed (since 2010) large natural gas reserves are located beyond Israel's territorial sea in the country's potential EEZ regarding which laws, especially environmental and planning laws, do not apply [35,36]. This has caused an atmosphere of both uncertainty and heightened interest in marine planning and policy.

Currently Israel's regulatory system addresses activities in its

<sup>5</sup> United Nations Convention on the Law of the Sea.



marine space on a sectoral basis. Even the Committee for the Protection of the Coastal Environment (CPCE) that administers the 2004 Law for the Protection of the Coastal Environment [37], as well as several government ministries that have jurisdiction over particular activities (e.g., drilling, fishing and nature conservation), fail to effectively regulate the marine area. The Coastal Waters Policy of 1999 published by the Ministry of the Interior [see [38]], the Protection of the Coastal Environment Law of 2004, and the decisions of the CPCE generate a multi-sectoral perspective regarding nearshore development. However, for all practical purposes these law and policies pertain only to the country's territorial waters, an area of 4200 km<sup>2</sup>. The area within the potential EEZ covering approximately 27,000 km<sup>2</sup> is greater than the country's terrestrial area that covers roughly only 21,000 km<sup>2</sup>.

Increasing marine activities together with the lack of a national oceans policy drew the attention of numerous entities in the country. A major philanthropic foundation provided funding for an MSP initiative to be led by staff at the Technion – Israel Institute of Technology. A similar MSP effort, instigated by the government and initially aided by European Union (mostly as capacity building) support, began a few months later.

Since an offer to combine the two processes was not successful, the TIMP group sought to distinguish itself from the government's work led by the Ministry of the Interior. It did so by emphasizing both its academic affiliation and principles of transparency with a great emphasis on public participation. The TIMP's guiding principles define it as integrative, science-based, flexible and cutting-edge. It seeks to balance development and environmental protection through an EBM approach. The plan is developed with marine policy experts working in an academic environment (science-based) and has tried to develop a relatively new type of GIS-based interactive decision making tool (modeled after SeaSketch, formerly "MarineMap") which has been used for marine planning visualization, public participation and improved decision-making in other areas of the world [39].

The TIMP has seven stages, which are: (1) data collection and analysis; (2) definitions of vision, goals and objectives; (3) development of policy alternatives; (4) development of selected alternatives; (5) preparation of the marine spatial plan; (6) recommendations for implementation and monitoring; and (7) development of monitoring guidelines.

Stage two articulates the TIMP's vision:

*The marine area of Israel will be an integral part of the spatial area of the country and an essential component of its future economic well-being, environmental resilience and socio-economic development. This will be achieved through the implementation of integrative governance that is ecologically balanced and participatory, as well as through the sustainable use of natural resources, enhancement of landscape values, marine science and knowledge and through the realization of international responsibilities and cooperation.*

This dense, value-laden vision represents a significant challenge, but one which is comprehensive and emphasizes the TIMP commitments.

The TIMP has particular characteristics that make it unique. Israel's geo-political situation is one of isolation and uncertainty; its MSP is taking place as two parallel planning processes – one state run and the other a public-private partnership. The TIMP's tight timetable is driven by the competing process and by natural gas exploration interests and the urgent need to have a plan. But by analyzing interim outcomes of the TIMP process in view of the literature and as new insights to MSP unfold, we see that Israel's MSP process is not as unique as might be expected (see Section 6).

## 5. Methods

This research analyzed the TIMP process qualitatively using its interim products. The analysis seeks to determine the extent that MSP drives policy or is driven by it. To do so, two aspects of the plan are analyzed:

1. Goals: the twelve goals of the TIMP are analyzed as to their level of policy-orientation (through the examination of the set of objective-like "policy means" designated to achieve each goal);
2. Policy means: the mechanisms designated to achieve the most policy-oriented goals of the TIMP are analyzed using criteria of best practices taken from the literature on MSP.

It should be duly noted that the analysis presented here has been conducted on stage two of a seven stage process. As described above, as the TIMP began (and in the proposal for its funding) the planning process stages were determined. Because of critical conceptual work done at stage two of the process – the setting of the plan vision, goals and objectives – it was chosen for analysis. As work on the TIMP progressed different concepts evolved which require explanation within the broader planning context. Planning processes usually set both goals and objectives. The two are so closely intertwined that they often appear in the same sentence in how-to planning documents (such as [6]) and are addressed in the same or at most, consecutive stages of planning processes. While goals are usually broad sweeping statements, objectives are more specific and state desired outcomes or observable behavioral changes that represent the achievement of a goal [6].

TIMP planners decided during the second phase of the project that in place of objectives, they would develop "policy means". The thinking among members of the lead team was that they did not have the authority to determine objectives and these would best be left to policy-makers to devise and adopt. Therefore objectives were replaced by the term: "policy means". However, the difference between objectives and "policy means" in the TIMP is to some extent an issue of semantics and translation. Although the operational guidance that gives more specific detail about how goals are to be achieved are called "policy means" (in direct translation from Hebrew), they are in many ways the equivalent of objectives, as defined by Douvere and Ehler [6]. They state desired outcomes and behavioral changes and despite the term "policy", many are spatial in character.

To determine whether a goal of the TIMP is mainly 'policy-related', this study uses thematic analysis, a qualitative research method that aims to identify patterns and themes relevant to the subject of inquiry. It involves several stages once the data is collected, including generating short descriptions (or "codes") to organize the information and search for (reoccurring) themes among them [40,41]. In this research, thematic analysis allows categorization of each goal as more or less policy-oriented. The level of policy-orientation or, by contrast, spatial-orientation, is then compared to that of the other goals.

Several "policy means" (or "means") are designated in the TIMP to achieve each goal. The thematic analysis searched for action words indicating spatially-explicit measures in the policy means' text: "siting" and/or "identification [of area]", "spatial allocation", "plan development", assuming the word "plan" indicates a spatial layout plan (as opposed to a legislative or regulatory development measure). When such words were used, the means was considered to be one of a spatial nature.

A goal with high policy-orientation would have as few as possible "spatially oriented" policy means. This research considered policy-oriented goals as the ones that have, at most, one

**Table 2**  
The 12 TIMP goals with bold font indicating a policy-oriented goal. The number of policy means is listed in the second column. The third, right-hand column shows how many of these objectives are policy-oriented (i.e., non-spatially explicit) means.

Goal	No. of means specified under each goal	No. of policy-oriented means
<b>Improve governance of the marine area</b>	6	6
<b>Advance marine scientific knowledge, promote data generation and its accessibility</b>	12	11
<b>Protect, preserve and restore the marine environment</b>	9	8
Develop sources of energy in the marine area while exploiting them wisely and cautiously	7	5
Develop marine transportation and ports	7	5
Promote sustainable development of food sources from the sea	8	5
Promote cautious and sustainable use of the marine area as an alternative to land uses	5	3
Integrate security needs within planning and management of the sea	6	3
Prepare for global climate change (CC) impacts (including uncertainty) affecting the sea and shore	7	5
<b>Establish the sea as part of the public domain for the welfare of the people</b>	7	6
<b>Discover, protect and enhance the cultural and heritage values of the sea</b>	6	6
<b>Develop the role of the sea as an opportunity and bridge for international cooperation</b>	3	3

spatial-oriented policy means identified from among the total (see Table 2). In the next stage, the sets of means that are mostly policy-oriented are further analyzed.

The policy means of the most “policy-oriented” goals were evaluated based on two criteria: (1) specificity; and (2) measurability. In the UNESCO publication, *A Guide to Evaluating Marine Spatial Plans*, Ehler [42] recommends that MSP objectives be S-M-A-R-T: specific, measurable, achievable, realistic and timely (SMART). Collie et al. [5] use the first two criteria (specificity and measurability) to describe what makes an objective operational and therefore these two criteria are adopted here to evaluate the policy means specified for goal achievement. Measurability was judged using three options: yes, no, or some (see Table 3). “Some” is listed when part of the specified means is measurable. There are cases for which the policy means was determined to be specific, yet not measurable. The reverse, an unspecified means that is measurable, could not occur.

## 6. Results and discussion

Only six goals (half of the total) had more than one spatial objective to define them (see Table 2). The small number of spatially-explicit goals suggests that the TIMP is not unlike other marine spatial plans. Collie et al. [5] explain that MSP objectives are expressed along the continuum from conceptual to fully operational. They found that only five out of the 16 marine spatial plans they reviewed contained spatially explicit “conceptual objectives” (categorized here as “goals”). These identified areas for uses such as sand extraction, public use, scientific research, and marine protected areas.

Collie et al. [5] confirms Ehler's [42] advice that objectives should be operational as opposed to “aspirational”. The TIMP's interim means may remain similar to the goals themselves, aspirational, or they may evolve further as the plan moves forward. They may change in subsequent generations of the plan. A third option is that the plan may remain difficult to evaluate and less successful than it would be if all the policy means were operational to begin with, even SMART [42].

The need for basic policies leading to regulation and legislation such as those dealt in the majority of policy means under all goals of the TIMP, suggest that MSP must first address policy before progressing to its expected spatially-explicit means and allocations [25]. The other issue is that some policy-oriented goals have a tendency to be specific but not necessarily measurable. This is suggested based on an analysis of the 27 means detailing the “policy-oriented” goals (See Table 3). Of the 27 policy means, 14 (52%) are specific (48% are non-specific); 2 (7%) are fully

measurable and 9 (33%) have some degree of measurability (60% are non-measurable). While half of the policy means are specific, most are not measurable suggesting that there is great variability among the means developed at this early interim stage in the planning process. On the one hand, such “unevenness” may lead to difficulty in the subsequent stages of planning. On the other hand, lack of specificity engenders more flexibility later on, for example, in developing the policy plan (Stage 5).

The first three of the seven stages of the TIMP (see the case study section) closely follow the *classical planning* model acknowledged by policy analysts. Weimer and Vining [19] describe classical planning within the policy context (without a salient spatial dimension) as a reaction to the apparent “disorder and myopia” resulting from private markets and pluralistic government.

Classical planning's general approach is, first, to determine specific goals and objectives that will lead to a better society and, second, to determine the most efficient way of achieving them [19]. One could consider “freedom of the seas” as a realm in which allocations of space are governed by the private market. There is no doubt that pluralistic, fragmented government causes problems for management of marine areas within coastal state jurisdiction [2,6]. With that in mind, perhaps the classical planning model, highlighted in the realm of policy studies, is more relevant to MSP than other planning models well known from planning praxis (see Table 1).

Other issues highlighted by the analysis include contradictions between the different policy means, uneven articulation (language) and excessive lack of specificity. As an example of the first issue, means A3 and A4 (Table 3) suggest adopting two different approaches for establishing a marine permitting and management authority – one that expands an existing committee (the CPCE) and another that would create a new entity (a marine council) alongside the CPCE. It is unclear how these two ideas would be reconciled. Non-parallel formulation of goals and policy means causes high variability whereas some means are very detailed and others are vague and general. This could bring about priority-setting problems; some means will require much greater investment in time and attention to work through. Overall, priorities are not dealt with by the TIMP.

Regarding the lack of specificity, it results from articulating too much within a single means or mechanism. Trying “to do too much” is a common problem in integrative natural resource planning and management [see [43]]. Repetitive and all-inclusive language also contributes to the lack of specificity (e.g., extensive use of “including” and other types of compound sentence structure). As an example, means C2 and C6 (Table 3) are almost identical and neither offers any quantifiable measure. Furthermore, the language of some of the policy means hints at confusion

**Table 3**

Actions of the six most policy-oriented goals. The right two columns indicate whether the policy means uphold two best-practices criteria for MSP. [Text of the goals and policy means was translated from Hebrew and edited to improve clarity and reduce length].

Goals	Implementation measures	Specific	Measurable
A. Improve governance in the marine area	1. Advance legislation governing the uses and activities of Israel's marine space according to definitions and allocations of jurisdiction in accordance with international obligations, considering: sustainability, the public nature of the marine space, accountability, transparency and diverse future scenarios.	No	No
	2. Advance the country's participation in international conventions and formal declaring Israel's EEZ according to UNCLOS.	Yes	Some
	3. Enhance the mechanisms of the Committee for the Protection of the Coastal Environment (CPCE) (which administers the LPCE 2004) <sup>a</sup> to improve its effective operation in the country's coastal waters	Yes	Yes
	4. Establish a "Marine Council" that expands the membership of the CPCE to coordinate sectoral marine uses and activities of governmental and public entities working in the entire marine space.	Yes	Some
	5. Establish a system of permitting, compliance, monitoring and enforcement, and consider the involvement of the Israel Navy to advance TIMP goals and policies.	Yes	Some
	6. Establish a governmental mechanism responsible for the development, streamlining and coordination of the various compliance and enforcement authorities in the marine environment.	No	No
B. Advance scientific knowledge while continuously developing and making marine data accessible	1. Develop national policy to support, coordinate, and implement actions for collecting data, information and knowledge needed for decision-making and management of the marine environment addressing: 1) mapping and monitoring of unique natural marine values at varying spatial and temporal scales; and 2) understanding and monitoring of interactions between human activities and the natural environment. Base policy principles: standardization of data, maps and monitoring; government funding; use of latest technology; development of a scientific experts lead task force; scheduled 5-year evaluations of data collection and priorities	No	No
	2. Prepare a national policy for the organization, management and accessibility of marine information/data in accordance with the on-going government initiative to build a national repository of marine data, led by the Israel Oceanographic and Limnological Research Institute (IOLR). <sup>b</sup> Base policy principles: 1) obligating government agencies, publicly funded agencies, government grant recipients and government permitted entities to submit their non-proprietary baseline and monitoring data to the repository; 2) obligating the national repository to supply data to interested parties without limitations (excluding security-sensitive data) and without charge; 3) ensuring public funding for the operation and activities of the repository.	Yes	Some
C. Protect, preserve and restore the marine environment	1. Establishment the means and delegate authority for preserving and rehabilitating natural and environmental assets according to an ecosystem approach and according to the roadmap adopted by the Parties to the Barcelona Convention.	No	No
	2. Establishment of obligatory environmental standards according latest international standards. Updating these standards from time to time according to improved knowledge, information and technology and considering evolving, accumulative effects.	No	No
	3. Development of a strategy for the reduction of marine and coastal pollution; apply it in accordance with advanced ecological management practices and relevant international conventions and agreements.	No	No
	4. Definition and allocation of MPAs in Israel's marine space in a manner and scope that will allow conservation and protection of marine biodiversity		
	5. Examination of including all the "abrasion tables" <sup>cc</sup> within marine protected areas or designating them as protected natural features in order to prevent their further degradation.	Yes	Yes
	6. Examination of systems and plans for preparedness and response to oil and other pollutants as a results of spills, malfunctions, including mitigation, response and rehabilitation.	Yes	No
	7. Adaption of the environmental impact statement (EIS) regulations, (guidance preparation and approval) for the entire marine area. EISs will incorporate up-to-date knowledge, standards and tools for enforcement and monitoring.	Yes	Some
	8. Requirement for preparation of Environmental Management Plans (EMP) valid for the entire life of the project (construction, operation, management, decommissioning and restoration) for projects proposed that are likely to cause significant environment impact.	Yes	Some
	9. Consideration of international conventions and agreements for protection of the Mediterranean Sea and coast in terms of the meaning for Israel and actions and arrangements required for Israel to join.	Yes	Some
D. Establish the sea as public domain for the welfare of the people	1. Development of a national plan to advance perception of the marine space as an asset of major national-public value for the benefit and enjoyment of the public and future generations as a destination for tourism, sport, recreation and relaxation, including: <ul style="list-style-type: none"> <li>– develop tools and mechanisms to reinforce the connection between the public, beaches and ocean from the perspective of access, views, and natural and heritage values;</li> <li>– identification and designation of unique and general marine values as space dedicated to the public welfare;</li> <li>– preserve and enhance activities and sites of cultural importance (i.e., fishing, boating, etc.) and development of recreational and sports activities for the benefit of the Israeli public and tourists;</li> </ul>	No	No

Table 3 (continued)

Goals	Implementation measures	Specific	Measurable
	<ul style="list-style-type: none"> <li>– inculcation of the importance of seascape preservation and enhancement;</li> <li>– improve compliance and enforcement of public health standards for bathing and regulation of various touristic and recreational activities that could harm the ocean;</li> <li>– create a social and community identity connected to the marine environment and the establishment of a network of social organizations concerned with the marine issues, establish cross-entirety affiliations and collaborations leading to public participation in planning, compliance and monitoring of marine activities/uses;</li> <li>– introduce marine learning modules to the education system relating to all aspects of the sea: seascapes, physical dimensions, values and socio-economic perspectives.</li> </ul>		
E. Develop the sea as a bridge for international cooperation	<ol style="list-style-type: none"> <li>1. Develop collaborative, common agreements for the benefit of peoples of the region, e.g., in the environmental, desalination, energy, shipping, protected areas, and food production sectors, including for international networks, imports and export, and common infrastructures.</li> <li>2. Provide the basis for cooperative academic study of the local and global importance of the Eastern Mediterranean.</li> <li>3. Develop new international initiatives and integrate existing ones with countries and international authorities in the field of preservation, development, monitoring and regulation in the marine space. Emphasis will be on protecting common interests such as avoiding and responding to environmental hazards, marine transport/commerce and international security.</li> </ol>	No	No
		Yes	No
		Yes	No
F. Discover, protect and enhance the cultural and heritage values of the sea	<ol style="list-style-type: none"> <li>1. Develop effective and efficient tools to protect heritage and cultural sites, especially endangered ones, and guarantee such protection through legislation and regulation.</li> <li>2. Prepare a “road map” designating priorities for siting, identification and documentation of heritage values. Preparation of monitoring plans for existing sites according to their importance and vulnerability, including survey procedures and for pre-development salvation operations.</li> <li>3. Develop a national directory of marine antiquity sites, including the establishment of procedures for consolidating data accumulated amongst various government entities.</li> <li>4. Develop tools and means to protect submerged marine heritage sites (e.g., ancient ports).</li> <li>5. Develop infrastructure and professional capacity for compliance and enforcement in the field of cultural and heritage concentrated within marine research institutes.</li> <li>6. Promote and expand public knowledge of marine heritage values with emphasis on the formal and informal educational system.</li> </ol>	No	No
		Yes	Some
		Yes	Some
		No	No
		No	No
		No	No

<sup>a</sup> For an explanation of the operations of this committee see Alfasi [38]; Sas et al. [37]; Portman [39].

<sup>b</sup> <http://www.ocean.org.il/MainPageEng.asp>.

<sup>c</sup> Remnants of (“abraded”) kurkar ridges— geological features consist of Aeolian sandstone and red-brown sandy loam (locally called “hamra”) existing along approximately 70 km of the 190 km Mediterranean shore.

about whether the plan focuses on the marine or the coastal environment. To achieve integration [34,43], both should be addressed by the plan, but specificity is reduced when both are dealt with in the same objective.

Goals may become more operational, including more specific and measurable, as a planning process moves forward. However, the time frame set for the TIMP and the number of stages it has complicate matters. Even if not articulated in the plan, some refining of implementation mechanisms will be necessary during implementation, as occurred for other MSP cases [5]. Even at a late stage, explicit and quantifiable means have great advantages for conflict resolution and trade-off analysis [44] as well as for future TIMP evaluation and adjustment [42].

This analysis has highlighted both the challenges of MSP and inherent qualities that distinguish it from land use planning. Limitations of the research are the difficulties of translation and contextual concerns. Articulation of goals is highly language dependent and would be clear of bias if the products and analysis were not translation-dependent. Additionally, the national planning framework in the State of Israel is relatively centralized and it highly influences both development and conservation [see [36]], such that any national ocean policy development might take place within the planning framework even if it had no aspiration to be spatially-oriented.

## 7. Conclusions

When goals and policy means are analyzed from a combined policy and planning perspective, MSP is distinguished from traditional planning approaches (See Table 1). Going beyond the analysis of interim products to a look at the overall TIMP process, we see that the seven TIMP stages can be broken into two major parts: a policy-heavy part, followed by a spatially-explicit part. The stages move from being very policy-heavy (Stages 1–3) to being more spatially oriented (Stages 4–7). As mentioned in the case study section, the fifth stage of the TIMP is the “development of the marine spatial plan” even though the entire process is considered the *plan*. The lack of clear existing marine policy leads many of the policy means (far beyond Goal A, which is dedicated to policy development – see Table 3) to address the development of regulation. Therefore, we conclude that MSP deviates from the rational planning approach and from others. It is perhaps closest to the adaptive model, but this is an assumption requiring further research.

Although MSP has much in common with traditional land use planning paradigms, it breaks new ground both in the planning and in the public policy field. Marine “spatial” planning is in fact, not particularly spatial. Further, it fails to conform to Ehler and Douvère’s [6] definition of achieving objectives “specified through



a political process” if we assume that the political process occurs before the planning process begins and outside of it. Today, it seems that most MSP is policy-heavy to fill in gaps related to the lack of oceans policy on the nation-state level although having such policy ready before embarking on an MSP process would likely improve practices.

Additionally, this research determined that policy analysis could be an appropriate framework for determining success and evaluating interim products of MSP. Policy analysis takes a comprehensive and integrated view of policy consequences and social values [19]. If policy analysis is indeed appropriate, a clear statement of social values can be found in the plan's vision described above.

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