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Levels and layers of integration: early experience of terrestrial and marine spatial planning for the Gulf of Eilat, Israel

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ABSTRACT

Marine spatial planning (MSP) and land-use or terrestrial spatial planning (TSP) usually operate separately, with numerous mismatches, even though there are many reasons for integration between them and for coordinating activities along coasts and in nearshore marine areas. We developed a framework and used it to analyse the extent to which a marine plan and a coastal plan for Israeli Red Sea waters were coordinated and contributed to land-sea integration. Our analysis revealed some harmony between the plans, due partly to overlapping leadership of the planning processes, and a good level of understanding of environmental concerns and land-sea interaction, but with differing emphases on the degree of development, especially for tourism in relatively unspoiled areas. The way in which spatial priorities play out across land and sea is a key issue for TSP-MSP integration and will vary between contexts but is likely to reflect the profoundly different spheres of land and sea planning. The practice of planning must be responsive to both terrestrial and marine environments in order to achieve integrated spatial outcomes using a 'one space' approach. Given the established principle of aiming for such integration within MSP discourse, the MSP community is well-placed to promote integration for planning and for environmental policy as a whole.

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Coastal planning; marine spatial planning; land-sea interface; integration; planning evaluation; regional planning

I have been told that there is no Hebrew word for seaport.



From the beginning, it has been the nature of the Jews

to turn their backs upon the water and move inland.

Hector Bolitho (1933) *Beside Galilee: A Diary in Palestine*, p 100

Introduction

Marine spatial planning (MSP) and land-use or terrestrial spatial planning (TSP) often operate separately. They cover different environments, have varied scales of operation and engage with

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different stakeholders. MSP is usually carried out by different entities than those responsible for TSP, even though they often have overlapping remits in the coastal zone (Harris et al., 2019) and therefore need to be integrated (Ansong et al., 2020; Chalastani et al., 2020; Portman, 2011; Smythe & McCann, 2019).

However, this kind of integration is often lacking in practice (Córdoba Donado et al., 2024; Stancheva et al., 2025), particularly as MSP is at an early stage of development. Overlap or adjacency of different spatial realms often leads to unclear jurisdictional responsibilities in coastal zones which are often environmentally sensitive and poorly understood (Dugan et al., 2010) and have inappropriate or excessive development due to their high demand as tourist locations (Defeo et al., 2009). Contrasts between marine and terrestrial planning systems may be reflected in resulting plans.

Although the arguments in favour of land-sea integration in spatial planning have been set out in academic literature, there has been little empirical work to explore the extent to which it is being achieved. Hence, we set ourselves the research question: what are the challenges involved in achieving integration between MSP and TSP in particular contexts?

We address this question through documentary analysis of two plans that have recently been prepared for the southernmost tip of Israel around the resort town of Eilat on the Red Sea coast (Figure 1). The first plan – hereafter ‘the Coastal Strip Plan’ – consists of the Policy Document for the Eilat Coastal Strip (Israel Planning Authority, 2022), considered an example of TSP. The second plan – hereafter ‘the Marine Plan’ – is a Policy Document for Israel’s Maritime Space in the Gulf of Eilat (Israel Planning Authority, 2021), initiated and led by the national government. Both were commissioned by the National Planning Administration in collaboration with the Ministry of Tourism and the Eilat Municipality and are in draft form. They are strategic plans, though with major differences that lead to unanticipated tensions and in some respects, lack of integration between land and sea.

To analyse the two plans systematically and identify their commonalities as well as the tensions between them, we developed an evaluation framework, based on our backgrounds in planning research and practice, and our knowledge of marine and coastal planning in varying contexts. Below, we review current debate on the need to integrate MSP and TSP and describe our methodology and analytical framework. We then present a selection from the results of our analysis of the two plans that best illustrates the relationship between MSP and TSP as expressed in the plans’ content, plan-making process, and context leading to their development. Our discussion reflects on how greater integration can be achieved between land and sea. Our overall aim is to assist in future research and practice working to achieve greater integrated planning between land and sea.

Calls for Integration

Many planning scholars have called for the integration of MSP and TSP given the fundamental ‘interdependence of land and offshore systems’ (Smith et al., 2011, p. 297) and for wider sectoral and institutional integration in MSP (Ansong et al., 2022; Chalastani et al., 2020; Portman, 2011). Integration is also stressed in planning practice. For example, a policy document existing prior to the UK’s statutory MSP system states, ‘MSP would need to have a clear and integrated relationship with land use planning’ (Defra, 2006, p. 18). Similarly, in a Danish study, a local mayor hopes ‘that the forthcoming maritime spatial plan would take into account the interests on land’ and that the ‘sea and land *play* together in the planning’ (Howells & Ramírez-Monsalve, 2022, p. 153). Recent international guidance also emphasises the need for institutional integration between different terrestrial and marine planning regimes (UNESCO-IOC & European

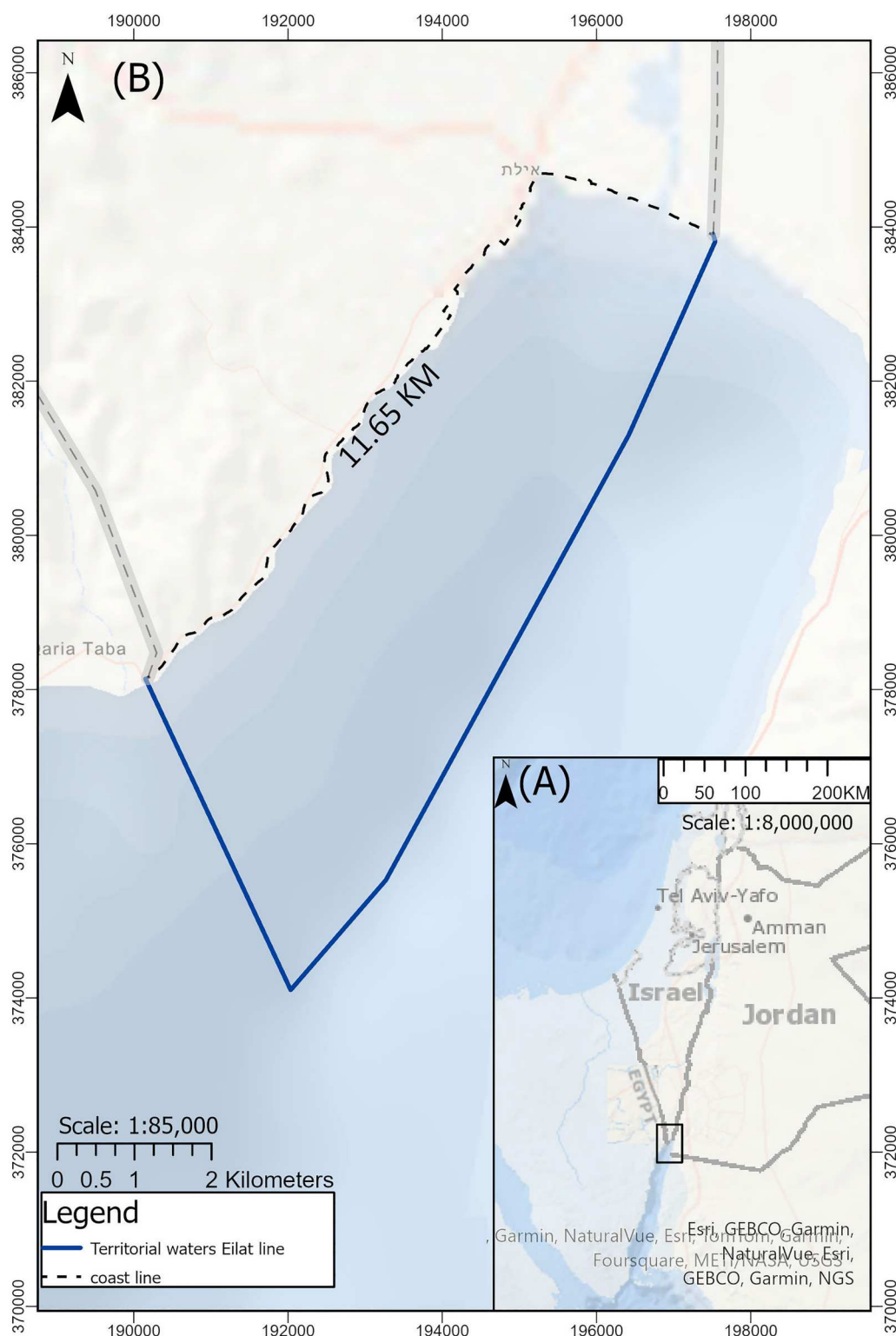


Figure 1. (A) map of Israel; showing Eilat's location; (B) map of the area covered by the plans. This Israeli marine space (approx. 31 km²), extends about 11 km in length to the Egyptian border and varies in width from 2.5-4.5 km. (Source: Noa Lachyani, Technion).

Commission, 2021, p. 73). Much of this reasoning comes together in the European Union's (EU's) Maritime Spatial Planning Directive (EPC, 2014), which recognises 'marine and coastal activities are often closely interrelated' (p 138) and has specific clauses requiring coastal Member States to 'take into account land-sea interactions' and 'promote coherence between maritime spatial planning and the resulting plan or plans and other processes, such as integrated coastal management' (Article 6).

A principal concern here is for integrated planning along the coastal zone, connecting not just with the planning responsibilities carried out by coastal municipalities but also with other initiatives, especially integrated coastal management (ICM) processes (Portman et al., 2012; Ariel et al., 2021). For example, the UK document referred to above states that MSP should relate to other plans in the coastal zone where there are 'complex management arrangements' (Defra, 2006, p. 38). This reflects longer-standing calls within ICM discourse for 'horizontal' and 'vertical' integration, so that ICM initiatives are harmonised with adjoining (spatial) and hierarchical (institutional) efforts (Humphrey & Burbridge, 2003; Portman, 2016; Taussik, 1997).

Integrating horizontally refers to the coordinating of adjacent areas under other jurisdictions, whereas vertical integration refers to international, regional, district, and local administrative units organised hierarchically. Underlying these concerns is the call for MSP to implement an ecosystem-based approach (EBA) by which coastal and marine planning efforts should recognise and take account of the sensitive environmental conditions that span the land and sea (Ansong et al., 2017). UNESCO-IOC & European Commission (2021) call for 'the coupling of MSP and EBA ensures that planning looks beyond jurisdictional boundaries' (p 26).

From a socio-economic point of view, the concept of land-sea interaction (LSI) supports the integration of MSP and TSP. This emphasises the inter-connectedness across the coastal divide, not just of environmental conditions, but also of human activities. Trade and logistics serve as an example as they comprise networks of shipping, ports and land-based distribution, which straddle extensive marine and terrestrial territories (Kidd et al., 2019; UNEP-MAP, 2018).

Arguments for integrating MSP, TSP and coastal planning have indicated the challenges involved. One challenge is that the three tend to have different scales of operation, with MSP typically operating at large national or sub-national levels while coastal planning and management operate at the municipal or local level (Ansong et al., 2025). They often involve different levels of government and institutional responsibilities and varying levels of legal obligation (Ritchie et al., 2024). Similarly, MSP is typically carried out by centralised government departments or agencies and TSP by municipal and other sub-national authorities. ICM is usually a non-statutory process involving loose partnerships of organisations with coastal interests (Ariel et al., 2021). Different ownership regimes also come into play; TSP deals with land managed by a wide range of private and public interests, some of which hold property rights, whereas MSP handles the public-owned and managed seabed and water column.

Furthermore, the comparatively long-standing traditions of TSP contrast with the recent emergence of MSP (Kidd & Ellis, 2012; Teff-Seker et al., 2019). They may be working towards different objectives and involve different groups of stakeholders reflecting their varying geographies, environmental and social conditions, sectoral activities, policy priorities, property rights and so on (Ritchie & Ellis, 2010). Other misalignments relate to timescales for plan production, types of planning output and varying levels of data availability, resources and finance. There are also perennial concerns about how MSP and TSP meet and sometimes overlap in the coastal zone. An area for consideration is how effective integration can be achieved across what are usually clearly demarcated areas of jurisdiction (UNESCO-IOC & European Commission, 2021, p. 73).

Normative calls for integration have been accused of naivety (Kelly et al., 2019) and ‘a lack of appreciation for the institutional changes that these integration efforts induce and require’ (Spijkerboer, 2021, p. 2). Such difficulties were observed in the Danish study referred to above: ‘the MSP process has priority over the terrestrial planning system ... there is a complex institutional set-up with a lack of integration between the maritime and terrestrial planning systems’ (Howells & Ramírez-Monsalve, 2022, p. 152). These authors indicated that the municipality had a much bigger role in TSP than in MSP; TSP underwent liberalisation, moving it towards entrepreneurship (where planning may be characterised as a barrier to development), whereas centralised MSP had the remit of enabling the economic growth of certain sectors.

Fundamental differences of this kind trace back to the different origins and purposes of MSP and TSP. Kerr et al. (2014) conclude that full integration across the land-sea divide is not achievable with current institutional arrangements. They refer specifically to a study in Scotland, UK, and conclude that the ‘separation of accountability between central government responsibility for marine planning and local responsibility for terrestrial planning is not sustainable’ (p. 118) and could indeed hinder practice.

Smith et al. (2011) take a more positive view. Whilst recognising the difficulties involved, they point to some enablers of integration, such as statutory requirements for coordination between planning and management processes in some contexts. They point to European Union directives for water and river basin management as potentially integrative frameworks. The requirements of the Maritime Spatial Planning Directive (see above) could now be added to their list of incentivising statutes.

An understanding of LSI inevitably calls for planning processes that look across the whole spatial extent and influence of such activities. Hence a European programme of spatial analysis refers to ‘one space’ territorial planning, defining an LSI core area as:

an area of sea defined by relevant marine planning boundaries ... and an adjoining land area defined by relevant landward planning or data-gathering boundaries ... in which LSI might be expected to be most evident (ESPON, 2020, p. 11).

In addition, there have been attempts to develop theoretical frameworks to aid the integration between MSP and TSP. Kidd (2013) considered integration of the natural coastal and marine system with the human system, including spatial and temporal aspects and across the land-sea boundary. The latter included sectoral, jurisdictional and organisational aspects. Similarly, Portman (2011) documents three dimensions of integration: institutional, temporal-spatial and that between science and policy, a type of hybrid between the two. These models inevitably differ in detail but share a common understanding of the need to incorporate environmental, social and political aspects when working towards integration. We draw on this work in developing our own bespoke analytical framework, to which we now turn.

Methodology

In order to explore the challenges involved in achieving integration between MSP and TSP, we have focused on a specific case, that of Eilat, Israel. Our primary method was an in-depth documentary analysis of the Coastal Strip and Marine Plans as mentioned. This was supplemented by an extended site visit and observation of the coastal area and informal conversations with some of the actors involved in the planning processes. Our documentary analysis followed the well-established approach in MSP studies of carrying out a systematic analysis of planning documents themselves using

Table 1. Framework for evaluating integration in coastal and marine plans.

Criteria	Detailed questions
1. Organisation	Was the organisational set-up for the production of the plan, such as leadership, team-working, and skills geared towards integrative working?
2. National strategies for coastal and marine planning	Does the plan address the aims of any national strategies for coastal and marine planning, especially relating to land-sea interaction, spatial and cross-sectoral integration and environmental protection?
3. Sectoral, regional and local strategies	Does the plan respond to sectoral, regional and local strategies and policies, especially relating to land-sea interaction, spatial and cross-sectoral integration and environmental protection?
4. Vision, goals and objectives	Are the plan's vision, goals and objectives adequate and coherent, especially with regard to land-sea interaction, spatial and cross-sectoral integration and environmental protection?
5. Ecosystem-based management approach	Does the plan apply an ecosystem-based management approach, especially with regard to land-sea interaction?
6. Blue economy	Does the plan support the blue economy and make provision for future economic development, particularly with regard to sectors with terrestrial and marine dimensions?
7. Environmental protection	Does the plan ensure protection of environmental assets, such as sensitive habitats, especially with regard to land-sea dynamics? Have the environmental impacts, including cumulative impacts, of the plan's proposals been assessed and mitigated, especially with regard to land-sea interaction, spatial and cross-sectoral integration and environmental protection?
8. Integration	Does the plan aim to integrate and harmonise different sectoral and spatial demands, especially in relation to land-sea interaction?
9. Stakeholder engagement	What importance was given to stakeholder engagement carried out in the production of the plan, especially with regard to land-sea interests?
10. Cross-border cooperation	Was there cooperation with neighbouring jurisdictions and authorities, both international and national, in the production of the plan, especially with regard to land-sea interaction, spatial and cross-sectoral integration and environmental protection?
11. Role of knowledge and data	Is the plan scientifically informed and have other forms of knowledge and data, such as environmental reports, been used, especially to inform land-sea, spatial and sectoral integration?
12. Consideration of alternatives	Were alternative proposals considered, such as through scenario-building, especially with regard to land-sea interaction, spatial and cross-sectoral integration and environmental protection?
13. Area-based approach and spatial proposals	Does the plan propose or allocate defined areas or zones for particular uses, especially that take into account land-sea dimensions? Are the plan's proposals for sectoral activities and particular areas coherent and effective, and will they achieve the plan's vision, goals and objectives, especially with regard to land-sea interaction, spatial and cross-sectoral integration and environmental protection?

evaluation frameworks. This allows the content of documents to be studied in detail; the documents' performance is measured against set criteria (sometimes with the purpose of comparative analysis between documents) (Blau & Green, 2015; Collie et al., 2013; Fang et al., 2019; Fletcher et al., 2013). To this end, we developed a detailed evaluation framework that focused on issues of integration as discussed above. This was based on previous studies, especially Carneiro's (2013) meta-analysis of MSP, supplemented with Kiessling and Putz's framework (2021) that emphasises governance dimensions, van den Burg et al. (2023) which addresses broader contexts and Zuercher et al (2023), Collie et al. (2013) and Jay et al (2012). From the grey literature, we used Pan Baltic Scope (2019) with its emphasis on ex-post evaluation of completed plans. This led us to formulate a comprehensive framework for the evaluation of coastal and marine plans consisting of 23 criteria, categorised into three main themes: context, process and content (Appendix 1).

From this, we developed a more discrete framework for evaluating integration in coastal and marine plans (Table 1). We then carried out a content analysis of both plans in relation to each criterion. The questions in the framework were answered qualitatively, with a descriptive narrative with illustrative quotations to support the argument, as presented below.

The Israel Gulf of Eilat Case

In Israel, integration between land and sea has not yet been sufficiently addressed (though see the early work of Brachya and Marinov (1993)). Portman (2015) notes issues of integration with regard to planning of Israel's Mediterranean Sea and Klimašauskaitė and Tal (2020) discuss coastal management dynamics from a political science perspective in the Eilat region. Along the coast of the city of Eilat and the adjoining Red Sea, integration between land and sea is of the utmost importance due to highly sensitive marine habitats. These include coral reefs threatened by growing anthropogenic impacts, including climate change. The Israeli and adjacent Jordanian maritime space is relatively small and highly pressured; Israel has jurisdiction over approximately 31 km² of the Red Sea compared to its 26,000 km² in the Mediterranean. In the Gulf of Eilat (also known as the Gulf of Aqaba), the very environmental resources that draw economic development are threatened therefore making environmental protection a major issue for the coastal and marine planning in this area.

For each of the plans (referred to in Hebrew as 'policy documents'), two parts were published: (1) a document on existing conditions and (2) the policy document itself. The former is a kind of atlas, whereas the latter is textual and sets out a vision and framework with specific guidance. The implementation of integration was clearly intended by the National Planning Authority of Israel (NPAI) which commissioned the plans. From various document analyses conducted of both the plans themselves and NPAI protocols, integration between the two was clearly expected. Evidence included: (1) having the same planning firm oversee both the Marine Plan and the Coastal Strip Plan; (2) references to 'integrated planning' or 'integrated plan' in the texts of each plan – 10 and 17 references in the Coastal Strip Plan, and the draft Marine Plan, respectively; and (3) resources and areas of each realm are cross-referenced in the plans. By the latter point we mean that the Marine Plan addresses coastal land uses and the Coastal Strip Plan addresses the resource values of submerged (marine) areas.

A draft form of the Marine Plan was published in July 2021 and reviewed by the National Planning Authority. This plan also addresses the 'coastal environs' which continue 300 m inland as defined by Israeli national law.¹ The plan indicates marine uses such as tourism, commerce, water sports, security and shipping, and their importance. It highlights the clear waters and coral reefs which are of national and international importance but increasingly face anthropogenic threats. It refers to global MSP standards and approaches, including an ecosystem-based approach, integrated coastal management and principles of land-sea interactions. The plan includes: (1) analysis of existing conditions, (2) a matrix showing inter-relations between the activities proposed, and (3) policy development.

The Coastal Strip Plan is described as a presentation of background, values, approaches and planning considerations. Following these general goals, the document gives its users detailed guidance and for some uses, detailed planning. It follows on from existing conditions surveys which emphasise the problematic issues and potential opportunities of the coastal strip for users, planners and the general public. In many cases, the development proposed has been 'grandfathered' in. Much more detailed than the Marine Plan, the Coastal Strip Plan includes perspectives on the visual landscape, environmental, cultural, economic and management aspects of the coastal strip.

Evaluation.²

(1) Organisation

The organisation of human resources for preparing the plans reflects integrative understanding. For the Marine Plan, the head was an environmental consultant reinforcing the plan's ecological

orientation. The Coastal Strip Plan was led by a landscape architect in conjunction with the above environmental consultant and it had the same steering committee. The connection between the teams represents a significant advantage in integrating the physical spaces.

(2) National strategies for coastal and marine planning

The coastal national framework supports coastal protection and land-sea integration. For example, Israel's 2004 Law on Preservation of the Coastal Environment³ includes requirements to minimise damage to the coastal environment when permitting activities. The 2005 National Outline Plan 13 contains provisions for the Gulf of Eilat aiming to balance development with the preservation of the coastal environment, establishing a boundary line 300 m into the coast and extending 500 m out to sea, indicating locations of ports, marine nature reserves, etc. At this national level, there is an element of cross-sectoral integration, balancing environmental protection with development and defining the coastal area.

(3) Sectoral, regional, and local strategies

The sub-national framework for LSI is weaker. The 2007 District Master Plan for the Southern District – Eilat (DMP 14/4/21) includes the coastline but omits maritime space. It organises the shoreline and adjacent hotels, preserving the open southern beaches. The 2021 Master Plan for Eilat (270/02/2) primarily focuses on urban renewal, considerably broadening the scope for residential development though restricting expansion to the southern beaches. It does not address LSI except for protection of less urban beaches and by requiring monitoring for sea quality and reef health.

(4) Vision, goals, and objectives

The Marine Plan aims to enable 'the exploitation of the economic and touristic potential in the space, along with the preservation and protection of the values of nature and the landscape in it' (p 4). Its goals include the arrangement and coordination between stakeholders on the coast and at sea (p 19) and 'to conserve the marine and coastal natural resources, which are of international importance' (p 40) and it sets up 'A coordination and integrated management system' (p 26). This demonstrates the aspiration to achieve a comprehensive planning framework integrating marine and coastal interests as a whole.

(5) Ecosystem-based management approach

The Marine Plan states that the Gulf of Eilat is one of the world's richest coral reef regions and declares that it is adopting an ecosystem-based approach. There is a focus on natural resource protection and the plan attempts to regulate uses and establish environmental guidelines, including on ecological matters, sea pollution, light pollution and impacts on coral, thus acknowledging land impacts on the sea. It includes a chapter on climate change assessments, such as analysing expected temperature increase, more intense rain events with flooding risks and sea-level rise. The plan is therefore strong in these respects.

The Coastal Strip Plan also draws on ecological knowledge, particularly by identifying ecologically sensitive areas in the southern zone. It differentiates two areas: the northern zone for intensive

development focusing on tourism and the southern zone for low-intensity development, prioritising integration with the landscape and nature. However, there is less consideration of the potential impact of development on the sea than in the Marine Plan.

(6) Blue economy

The goal of the Marine Plan is mainly the conservation of the maritime space whilst considering economic needs. The plan's tourism policy proposes reducing conflicts through spatial management, suggesting tourism development in the maritime space, including diving sites and artificial reefs. It is oriented towards intensified tourism development on the northern beaches and less development in the southern space. The Coastal Strip Plan considers economic development of a range of sectors, especially tourism development, recognising that Eilat is a prime location for snorkelling and scuba diving.

There was criticism of both plans' approach to tourism from an NGO dedicated to preserving the coastal environment:

The document allows for excessive development on Eilat's southern coast, which so far has managed to remain relatively untouched ... Therefore, we request: Prohibit the construction of any new hotels within the coastal environment (up to 300 meters from the water line) of the southern coast (Zalul [online](#)).

Also, the Marine Plan focuses on ports and fuel transportation, recognising that the Eilat Port 'has strategic economic, political, and military importance as the country's southern gateway' (p 81). It seeks to minimise its environmental effects stating, 'action must be taken to implement green port processes in the Eilat Port and the oil port' (p 83). However, the NGO Zalul claims 'The activity of the EAPC [Europe Asia Pipeline Company] in the sea and on the coast must be reduced or ended' (Zalul [online](#)).

(7) Environmental protection

The Marine Plan takes the preservation of the natural marine environment as its starting point, expressed in an overall policy covering such topics as restoration of coral reefs and prevention of marine pollution. The plan attempts to deal with conflict between interested parties, by proposing, for example, a marine-terrestrial nature reserve 'that is designed to allow strict protection of important natural values on the seabed, in areas with intense human activity, without limiting the activity in and on the surface of the water' (p 45). However, Zalul expressed several concerns to the plan's proposals, stressing the need to protect the entire ecosystem, including sea turtles, seagrasses and deep-sea canyons.

Perhaps the most challenging issue is the transportation of oil in the Gulf of Eilat for which the plan suggests mitigation measures and policy lines are intended to produce effective mitigation measures. There are also guidelines regarding interfaces with infrastructure, the security system, and navigation.

(8) Integration

Both plans express spatial LSI through the establishment of a planning area that covers land and sea. 'The policy for the maritime space is a complementary and inseparable part of the policy for the

coastal strip of Eilat, aiming to develop a unified planning concept for three geographical areas: land, coast, and sea' (Marine Plan p 3). Also, the Coastal Strip Plan describes the sea area as 'inseparable' from the land.

Other aspects of an integrative approach include recognition of the proximity of the delicate ecological units to the coastline. For example, 'Beach users and activities exert a considerable influence on the marine space, effects that extend beyond their terrestrial boundaries' (Marine Plan p 15).

The Marine Plan also considers the broader impact of activities regardless of their proximity to the coast, such as industrial areas far from the sea, stating that

interactions between terrestrial and marine environments involves natural processes and human activities, such as surface runoff impacting the marine ecological system, fuel docks and desalination pipelines, water sports activities extending from the coast into the sea, navigation, shipping, and more. (p 11)

Interactions are analysed using matrices: one for interactions between marine uses, another for interactions between the marine and coastal environments.

In the Coastal Strip Plan, there is integration between tourism, coastal, and natural uses across land and sea. For example,

While tourism depends on unique natural resources, its activities can be detrimental to these resources. The analysis indicates a substantial opportunity to regulate the interaction between the ecological system and recreational beach activities, aiming to markedly reduce human-induced pressure on marine natural values. (Coastal Strip Plan p 163)

(9) Stakeholder engagement

In the plans, there is no mention of formal public participation carried out as part of plan-making, possibly because the plans were still at a draft stage and had not proceeded to consultation. However initial meetings were held with key stakeholders. For example, one public participation event was held in Eilat in which many participants were present and the information and views presented were made public. Also, the Marine Plan steering committee held a variety of roles, effectively representing different stakeholder perspectives. This level of engagement led to constructive dialogue on certain issues. For example:

Within the framework of the policy document, an analysis was carried out with the cooperation of the professionals ... to map the maritime areas required for ship manoeuvring. The result is an agreed map showing the manoeuvring envelope for the large ships and tankers in the Gulf area. (p. 82)

(10) Cross-border cooperation

The Gulf of Eilat is shared by four countries with different marine activities but international cooperation faces geopolitical challenges. It appears that there were no exchanges with the immediate neighbouring jurisdictions of Egypt and Jordan. The Marine Plan states the importance of future cooperation. 'The risk to the quality of the sea water in the Gulf arises from the sum of all human activity along the coasts and in the maritime space of Israel, Jordan, Egypt and Saudi Arabia. It is important to collect information and international cooperation that will enable a comprehensive examination of the extent of the impact of international sources of pollution.'

This should be set in the context of the normalisation of Israel's relations with the United Arab Emirates by which transfer of oil, fuel, and energy is anticipated through the Gulf of Eilat as an alternative to the Suez Canal. However, this is stated to be in contradiction to the Marine Plan's aims.

(11) Role of knowledge and data

The Marine Plan was informed by the Existing Situation report which delves into the region's physical and climatic characteristics and its resources, drawing on expert knowledge and research. More generally, Eilat is a marine science hub where a national monitoring programme overseen by the Inter-University Institute for Marine Science is on-going. It emphasises integrating existing scientific knowledge and expertise, including contributions from Eilat's research institutions. The plan identifies scientific monitoring gaps needing future attention, such as mapping mesophotic reefs and seagrass monitoring. Hence there is a high level of integration of scientific marine data, especially with regard to the Marine Plan.

(12) Consideration of alternatives

Alternatives were presented in relation to some issues. For example, in the Marine Plan, administrative alternatives for regulation and coordination in the maritime space are suggested. More generally, the plan deals with issues at the macro level with the main purpose of overcoming the challenges. Examination of specific alternatives is likely to be at a follow-on stage, such as design alternatives for infrastructure development in the port.

(13) Area-based approach and spatial proposals

The Marine Plan maps out different uses of the maritime and coastal space which is limited and crowded in character. A spatial policy is presented for all activities for the purpose of conflict management. The plan emphasises limitations, such as existing shipping routes, and suggests reducing the boundaries of the official port area to reflect its actual extent. The plan recommends protected marine and coastal areas and areas for sports activities. Both the Marine and Coastal Strip Plans propose a spatial distinction between the intensive tourism area in the north and the more natural area in the south (where it is labelled as eco-tourism). For each area, the Coastal Strip Plan establishes planning principles, taking into account the complex pattern of uses across the land-sea divide.

To summarise, although they have different spatial remits, both plans express an understanding of LSI by establishing planning areas that cover land and sea. Both plans make use of area-based approaches, mapping out actual and proposed uses at a detailed level. They also both recognise the proximity of delicate ecological units to the coastline and the need for an integrative approach that reduces risk to them. Consequently, they both stress the need to balance development with environmental protection. Overall, both plans can be seen as working towards national, and, to a lesser extent, local, strategies that support the clear definition of a coastal area and achieving a development-environment balance.

However, the Coastal Strip Plan gives less consideration to the potential impact of development on the sea than its marine companion, reflecting the Coastal Strip Plan's priority for coastal tourism development, including in the currently less developed southern area. Moreover, even the Marine

Plan's more restrictive approach was considered inadequate by an environmental NGO, as were the plan's measures for managing the oil port and shipping activities. Apart from this intervention, there was relatively little stakeholder engagement that might have led to greater understanding of land-sea and wider spatial issues; similarly, there was no cross-border cooperation with neighbouring countries. However, the wealth of scientific information that is available for the area was drawn upon, is impressive, especially with regard to the Marine Plan.

Discussion

We began this article by noting that MSP and TSP generally operate as separate regimes despite their overlapping remits and the undisputed need for integration between. Our study has underlined this need, highlighting the tensions typically experienced in coastal areas between their environmental vulnerability and development pressures, reinforcing previous work on this point (Smith et al., 2011). In fact, it is difficult to imagine more acute tensions than exist in Eilat, a diminutive area in spatial planning terms, squeezed between arid mountainous terrain and highly sensitive marine habitats (including the coral reef within close proximity of the shoreline), with expanding urban development, rapid tourism pressures and growing port and other activities being experienced along this narrow coastal strip (Figures 2 and 3).

The two plans examined demonstrate a degree of harmony. This is due in part to the overlap of teams responsible for preparing them who have brought to bear a broadly common approach to plan-making, with an emphasis on spatial mapping and design, drawing on established planning practice in Israel as a whole. Practice has in fact been transferred from land to sea via the agency of the consultancies involved, with their wide experience of TSP now being put to the service of MSP (building upon the recognition that TSP and MSP need to be more closely linked institutionally (Kidd & Ellis, 2012; Retzlaff & LeBleu, 2018)). Consultancies' mobility, working wherever contracts lead them, in contrast to the fixed base of municipal planning efforts, can perhaps serve the dissemination of certain good practices to the marine realm.

Questions arise, however, about the adequacy of consultancy-led processes, and whether this approach is capable of handling the complexities involved in settings such as these, especially the more socially and politically-oriented dimensions. For example, there is scope for a greater emphasis on stakeholder engagement than consultancies might usually carry out (Table 1, criterion 9). This could lead to a more comprehensive understanding of key issues and perspectives, more nuanced planning proposals and wider community acceptance of emerging plans (Pentz, 2012; Zaucha & Kreiner, 2021). Our personal involvement with government-led MSP processes, which generally do incorporate a high level of stakeholder engagement, has shown this to be the case. Also, greater input from local government might enable better consideration of strategic priorities and coordination across geographical areas, including transboundary and transnational cooperation (Hildreth & Nickol, 2012). Overall, some of the institutional mismatches between MSP and TSP that may militate against integration noted above, such as different scales of operation, have not been in play in Eilat, showing that there is potential for more streamlined plan-making for coastal zones.

It is also fortunate that environmental concerns are prominent in both plans, again partly due to the role of an environmental consultant in both processes. However, there was a mismatch in the relative importance of these concerns, especially with regard to proposed tourism development in the relatively untouched southern section of the coast. The development imperative was stronger in the Coastal Strip Plan than the Marine Plan, no doubt reflecting different planning remits and

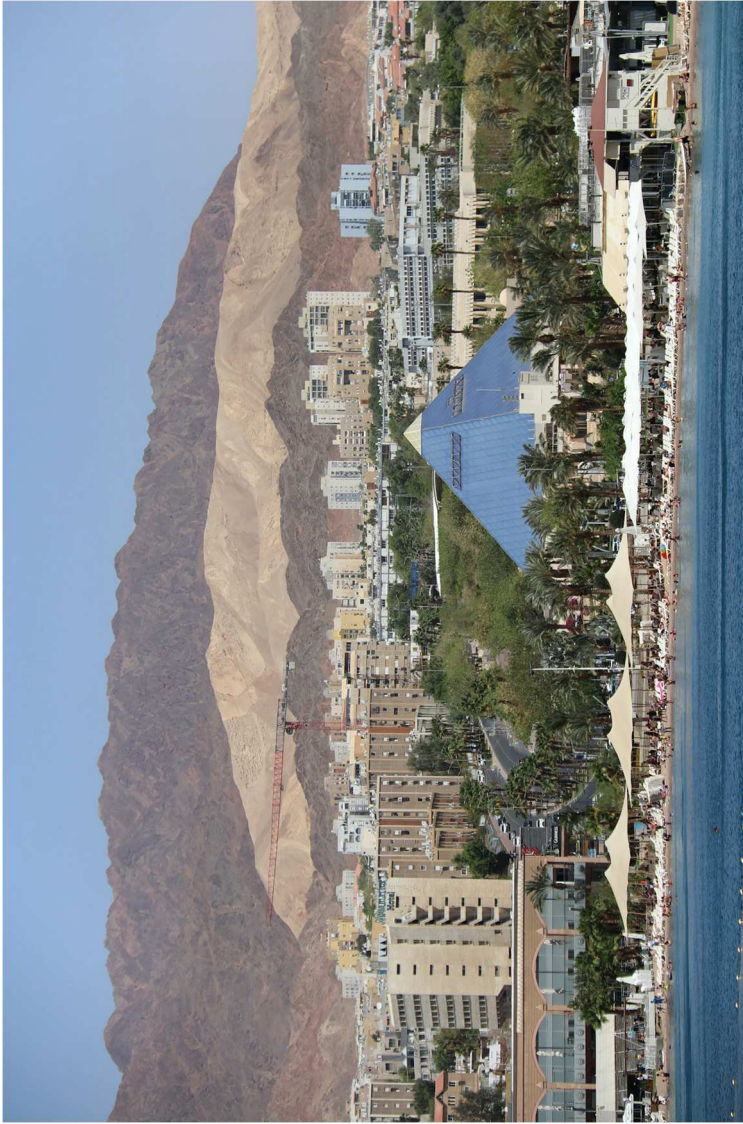


Figure 2. The city of Eilat (Source: Shalev Cohen, <https://unsplash.com>).



Figure 3. Tourism pressure on the coastal strip of the Gulf of Eilat (Source: authors).

strategic objectives, and the economic potential of the increasing tourism revenue. The role of national government in initiating the Marine Plan may also have reinforced the need to protect important habitats.

The way in which legitimate, but potentially conflicting, spatial priorities play out across land and sea is a key issue for LSI. In many contexts, it is likely that there will be widely differing ambitions on each side of the shoreline, reflecting fundamental differences of the physical and natural environments themselves and of social and economic uses on land and at sea (Jay, 2023). In Eilat, pristine marine habitats contrast sharply with the bare strip of land within easy reach of a growing tourist population. In other settings, these environment-development dynamics might be reversed between land and sea or completely different polarities might be at work. This demonstrates that the particularities of land-sea interaction (Kidd et al., 2019) are context-specific and likely to be variously weighted depending on what the aims of the plan.

Challenges to integrating TSP and MSP are often born of the profoundly different geographies themselves. This calls for an equivalent step-change in planning practice, with painstaking, inclusive, consultative, multi-actor, data-rich, iterative, multi-draft processes likely to be the most successful approach. Agreed, broad principles may also help to steer such processes, such as ecosystem-based management, sustainable development coastal resilience and climate proofing. Such terms are open to multiple interpretations, but this may prove to be useful in that it provides a means of bringing people together to work towards consensus to improve systems with common or intertwined elements or parts (Baker et al., 1997).

We note above the potential contribution that long-standing TSP practice can make to fledgling MSP efforts. In many contexts, this potential is untapped, as MSP and TSP are institutionally divided, as there is usually a different body of government responsible for each. Actual measures for linking TSP and MSP more closely institutionally will depend on the organisational and regulatory arrangements in place for the two spheres of planning in any given jurisdiction and what possibilities may exist for connecting them (Smith et al., 2011). At the least, cross-representation from planning teams could facilitate more integrative thinking. More substantially, spatial allocations and policies could be harmonised, especially where there is a geographical overlap between terrestrial and marine plans. Failing this, cross-reference could be made between plans, pointing the users of one plan to relevant sections of the other (MSPP Consortium, 2006). Similarly, there could be efforts for plans to ‘conform’ with one another, since there is an emphasis of ‘inseparability’. ‘One space’ thinking is possible even where the strict spatial remit of plans is limited. A challenge in this regard is the probability that terrestrial and marine plans cover vastly different scales. Terrestrial plans are likely to be much more localised and detailed than marine plans, which may cover vast areas of marine space (the Eilat plans being an exception) and are of a high strategic nature. Horizontal integration between the two is thus likely to be lop-sided. However, this does not preclude any of the steps suggested above from being carried out with due regard to the differences in scale.

Finally, it should be considered that MSP, although the newcomer to the planning field, may have the leading role to play when working towards integration. There is considerable awareness of the need for integration in MSP circles (Commission of the European Communities, 2008; UNESCO-IOC & European Commission, 2021). It behoves the MSP community to make the case, bringing especially their understanding of environmental imperatives to the table, including the dynamics of land-sea interaction on issues such as pollution, habitat vulnerability and coastal erosion. It must also be kept in mind that even countries that have a more mature system of MSP are only now moving towards early stages of second-generation MSP. Also, the growing experience of

integrative practice purely within MSP, such as the use of conflict and synergy matrices (as were in fact used in both Eilat plans), could be adopted more widely within TSP generally, and not just in the interests of integration in the coastal zone. Given the inherently dynamic, uncertain and sensitive environment of marine and coastal areas, where human interaction may be precarious and have unforeseen consequences (Jay, 2018), MSP must be attuned to the need for integrative thinking.

Conclusion

Despite efforts at LSI, mismatches between systems that militate integration are common; many 'levels and layers' exist. These include different scales of operation, levels of government and institutional responsibilities, levels of legal obligation, ownership regimes, planning objectives, groups of stakeholders, environmental and social conditions, sectoral activities, policy priorities, property rights, timescales for plan production, types of planning output, levels of data availability and resources and finance. Many of these issues have been touched upon in our study.

Overcoming these challenges requires significant and targeted effort. We offer our bespoke evaluation framework as a means for researchers to scrutinise the existing measures in place in particular locations. Working through the evaluative criteria can reveal the points where planning processes need careful attention. In the case of Eilat, we restricted our method to documentary analysis. We have found that this is a limited approach which has not allowed us to fully investigate the planning process and answer all of our evaluation questions fully. However, this has illustrated the use of our suggested framework and further, more detailed studies could make better use approaches such as interview of actors and focus groups and longitudinal observation of plan-making processes.

Today, Hector Bolitho would be unlikely to claim that the people of Israel have little interest in the sea. Measures like MSP are becoming well established (Portman, 2015) in the country. Here, as elsewhere, we would do well to ensure that the coast, the gateway to the sea, receives the careful attention that it needs through integrated planning of the sea.

Notes

1. Such as The Law for the Protection of the Coastal Environment 2004.
2. Quotations from documents in the sections below have been translated from the original Hebrew.
3. The law defines the coastal environment as an area of 300 meters measured from the coastline inland, as well as the area measured from the coastline towards the sea.

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Appendix 1. A Comprehensive framework for the evaluation of coastal and marine plans

1. CONTEXT CRITERIA		
1.1 National strategies for coastal and marine planning		To what extent does the plan address the aims of any national strategies for coastal and marine planning?
1.2 Sectoral, regional and local strategies		To what extent does the plan respond to sectoral, regional and local strategies and policies for regeneration, urban growth, tourism, environmental protection, etc?
1.3 Ecosystem-based management approach		To what extent does the plan apply an ecosystem-based management approach?
1.4 Role of knowledge and data		To what extent is the plan scientifically informed and to what extent have other forms of knowledge and data, such as environmental reports, been used?
1.5 Integration		To what extent does the plan aim to integrate and harmonise different sectoral and spatial demands?
1.6 Blue economy		To what extent does the plan support the blue economy and make provision for future economic development?
1.7 Environmental protection		To what extent does the plan ensure protection of environmental assets, such as sensitive habitats?
1.8 Area-based approach		To what extent does the plan propose or allocate defined areas or zones for particular uses?
1.9 Stakeholder engagement		What importance was given to stakeholder engagement carried out in the production of the plan?
1.10 Cross-border cooperation		To what extent was there cooperation with neighbouring jurisdictions and authorities, both international and national, in the production of the plan?
2. PROCESS CRITERIA		
2.1 Organisation		How effective was the organisational set-up for the production of the plan, such as leadership, team-working, skills, specialisms, sub-contracting, etc?
2.2 Resources		How adequate were the resources available for producing the plan, such as finance, staff, facilities?
2.3 Timescale		To what extent was the plan produced to an effective timescale?
2.4 Stakeholder engagement		How adequate and effective were methods of stakeholder engagement, such as methods of engagement and ensuring wide representation of stakeholder interests and their meaningful influence?
2.5 Consideration of alternatives		To what extent were alternative proposals considered, such as through scenario-building?
3. CONTENT CRITERIA		
3.1 Vision, goals and objectives		How adequate and coherent are the plan's vision, goals and objectives, etc?
3.2 Legal and regulatory framework		How effectively does the plan relate to and adhere to the existing legal and regulatory framework for the sectors covered by the plan?
3.3 Existing conditions and activities and current trends		How well does the plan describe existing environmental conditions and socio-economic uses in the plan area, including conflicts between them, and consider trends that are at work?
3.4 Presentation of spatial data		How well is spatial data, including digital data, presented and made available in the plan or accompanying tools, such as via a data portal?
3.4 Spatial proposals		How coherent and effective are the plan's proposals for sectoral activities and particular areas, and to what extent are they likely to achieve the plan's vision, goals and objectives?
3.5 Environmental impacts		To what extent have the environmental impacts, including cumulative impacts, of the plan's proposals been assessed and mitigated?
3.6 Operative guidance for implementation		How adequate is the guidance within the plan for implementing the plan's provisions?
3.7 Operative guidance for monitoring		How adequate is the guidance within the plan for monitoring the provisions and implementation of the plan?
3.8 Presentation and communication		How clear and accessible is the presentation of the plan and how effective in communicating to a wide audience?