**Regulation of Natural Resources and the Environment in Israel’s Marine Space**

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**Introduction**

Environmental regulation is a dynamic, evolving area of regulation. In Israel its origins date back to the 1960s, when legal systems for the management of natural resources and the environment began to emerge. The term “environmental regulation” as used here refers to regulations that directly address the sustainability, use, preservation, consumption, or alteration of natural resources and the environment in any form, at any time. Given the diverse sources of environmental regulation, and in order to facilitate a comprehensive analysis, this article define the term “regulation” broadly. The definition includes binding rules for the conduct of individuals and organizations, whether private or public, in various forms, including laws, regulations, orders, master plans, business licenses, permits, guidelines and instructions, voluntary agreements, and international treaties, among others.

Environmental regulation in Israel, as in other states, has developed significantly since the enactment of the 1961 Abatement of Environmental Nuisances Law, which resembles a prototype of classical environmental regulation. The regulation has been greatly influenced by the processes of industrialization, privatization, and globalization as well as the phenomena of environmental pollution and harm to natural resources and the environment, all of which required that environmental regulation be adapted to the emerging reality. The growing public awareness of environmental protection in Israel and around the world, consolidation of an active non-governmental environmental movement, and global economic and strategic developments led to changes in the model of environmental governance and regulation. An examination of these changes and analysis of developments indicate that despite improvement in certain environmental areas, Israeli society still faces significant environmental challenges.

Part 1 briefly surveys the development of environmental regulation in Israel against the background of the various ethical perspectives in the environmental sphere, the main actors in the arena over the years, and their contribution to the process, describes the milestones in the development of environmental regulation in Israel, and analyzes its characteristics. Part 2 presents a case study of regulation in the marine space and coasts of the Mediterranean Sea in Israel from a critical environmental perspective in order to illustrate the challenges that emerged as environmental regulation developed, and which it now must address. Part 3 summarizes the conclusions that emerge from the survey and the findings of the case study analysis, and proposes recommendations for regulation in Israel generally and environmental regulation specifically.

1. **Milestones in the development of environmental regulation: A dynamic of conceptual-paradigmatic change**

In parallel to comparable trends in the Western world, conceptions of the environment have also undergone paradigmatic shifts in Israel since its founding (Schwartz 2000). Over the course of history there have emerged various paradigms that reflect different philosophical conceptions of the relationship between humankind and nature, and these changes have manifested in environmental regulation as well.

**A. Environmental regulation from the founding of the state until the 1960s**

Historians of Zionism have identified different ideological approaches to the relationship between humankind and nature among the first waves of immigrants. Alongside an ethos of rational development and a belief in the human ability to control nature, there also existed a romantic view of the natural world, which exalted and glorified the beauty of nature as a value in itself (De-Shalit 1995). These conflicting trends were present during the early years of Zionism and evident at the time of the state’s founding. In one of his speeches before the Knesset, for example, David Ben-Gurion spoke of “the beauty of nature, in the trees, the sea, the wonderful hills,” and in the same breath praised the “economic and technological creations” of humankind as a key factor in the life of the people.

The harsh realities of life during the early years of statehood made the romantic approach a secondary consideration in the operative decision-making process, given the need to develop a modern industrial economy and build houses and infrastructures (Tal 2006). The planning perspective implemented by the socialist political apparatus of the time regarded nature in terms of a “conquest of the wilderness” as reflected in greatly increased consumption of natural resources, river pollution (by industrial sewage), air pollution (in the Haifa Bay), the draining of Lake Hula, and pollution of the sea by various land sources (Jerusalem Institute for Israel Studies 2012, 67-72). The resulting environmental harm, and the struggle against the draining of the Hula in particular, led to the establishment in 1953 of the Society for the Protection of Nature in Israel – the country’s first non-governmental environmental organization.

During the state’s early years the scope of environmental laws was limited. It included the 1955 Wildlife Protection Law, the 1956 Plant Protection Law, and the 1959 Water Law. These laws reflected a perception of nature as having an inherent value that deserves protection, and they accorded with the Zionist perspective of love of the land and the return of a people to its homeland. The substance of the laws, which primarily address the preservation of nature and the landscape, focuses on prohibiting the hunting of wildlife, prohibiting harm to plant life, and defining water as a public resource. Their formulation is typically brief, practical, and succinct, establishing prohibitions as well as sanctions for violations, authorizing a regulator to oversee implementation, and providing a relatively high degree of discretion to the relevant authority.

**B. Environmental regulation from the 1970s through the 1990s**

As the scientific community gathered ever more findings about the impacts of development and industrialization on humankind and the environment, the environmental perspective acquired a new, more scientific and professional, dimension. It began to address the environmental repercussions of economic development, primarily through the prism of effects on public health (Schwartz 2000). Issues of air and water pollution, as well as hazardous solid waste, began to emerge as major environmental concerns.

In 1973 the Environmental Protection Service was established within the Prime Minister’s Office, as a professional bureaucratic mechanism with knowledge and understanding regarding environmental issues (Tal 2006, 367-372). In 1988 the Ministry of the Environment was established, and the Environmental Unit was shifted from the Ministry of the Interior to the new governmental ministry, in conjunction with a power struggle over the scope of authority required for its operation. Although at the time of its establishment, the Ministry of the Environment had the powers granted to it by eighteen laws, it had only secondary powers in a range of major environmental issues, such as the registration and use of pesticides, environmental preservation policy, physical planning, and many others. The Ministry had a small, limited budget, which left no room for new, proactive initiatives and activities (Tamir 1990, 9; Tal 2006, 403-410).

In 1991 the non-governmental organization Adam Teva V’Din (the Israel Union for Environmental Defense) was founded, with the mission of using professional and legal tools to promote an environmental perspective, similar to that of the American environmental defense groups from which the organization’s founders drew their inspiration. Subsequently, grassroots environmental organizations began to emerge, eventually forming the largest environmental movement in Israel – the umbrella group Haim VeSviva (Life and Environment). During this period environmental laws were passed that reflect the changing environmental perspective in Israel and recognize the environment’s impact on public health. The first of these was the 1961 Abatement of Environmental Nuisances Law, aimed at preventing air, odor, and noise pollution. Shortly thereafter, the Public Council for the Prevention of Noise and Air Pollution in Israel (MALRAZ) was established as a civil advocacy body with the mission of enforcing the law, and in time it became one of the leaders of the campaign against government plans to expand the Reading Power Station. Other laws enacted during this period include Amendment No. 4 (1969) to the 1940 Public Health Ordinance, which regulated the sanitary quality of drinking water; the 1980 Prevention of Seawater Pollution by Oil Ordinance (New Version); the 1983 Prevention of Sea Pollution Law (Dumping of Waste); the 1984 Maintenance of Cleanliness Law; the 1988 Prevention of Sea Pollution from Land-Based Sources Law; the 1993 Hazardous Substances Law; and the 1993 Collection and Disposal of Waste for Recycling Law. These laws, which embodied the classical regulatory approach of command and control, established uniform norms across the range of environmental issues in order to prevent pollution or harm and restrict and oversee the use of resources. On their basis amendments were passed to establish specific, relevant standards such as for drinking water and sea dumping, as well as regulatory oversight mechanisms such as licenses for sea dumping and toxic substances.

These years also saw the enactment of laws that established institutional management and oversight mechanisms for protection of the environment, such as the 1962 Local Authorities (Sewage) Law, which requires each local authority to maintain a municipal sewage system; the 1963 National Parks and Nature Reserves Law, which provided the mandate for establishing the National Parks Authority and the Nature Reserves Authority as mechanisms for the protection of sites with historical or national value and sites with unique natural or landscape value; the 1965 Streams and Springs Authorities Law, which provided the mandate for empowering designated authorities to protect and conserve streams; the 1965 Planning and Building Law, which established planning and building institutions and provided the mandate for adopting the 1982 Planning and Building Regulations (Environmental Impact Statements), which established the obligation to assess the environmental impacts of building plans that could harm or have a negative impact on the environment; the 1968 Licensing of Businesses Law, which established the prevention of nuisances as one of the purposes of licensing; and others.

Thus, during this period there were two main types of legislation: laws aimed at preventing various environmental forms of pollution or nuisances and restricting and overseeing the use of resources; and laws that established various institutional management and oversight mechanisms for protection of the environment, most of which are still in force.

**C. Environmental regulation since the start of the twenty-first century**

During the late twentieth century and early twenty-first century, the processes of globalization and reliance on global trade, the growing trend of privatization, and the increasing role of the market had an evident impact. This accelerated growth, in turn, increased the impact of harm to natural and environmental resources and, as capital became increasingly concentrated, reinforced the power of capitalists. Simultaneously, public awareness of the global climate crisis also increased, particularly following the publication in 2007 of the fourth report by the UN International Panel on Climate Change (IPCC 2007), and the role of environmental organizations in the public arena became stronger. Advocacy groups such as Adam Teva V’Din and the Society for the Protection of Nature, which had private standing and enforcement rights vis-à-vis environmental laws, made use of legal and public tools, and their activity led to the enactment of modern environmental legislation and consolidation of a body of environmental case law.

The environmental laws passed during this period as a direct result of efforts by environmental organizations include the 1999 Deposit on Beverage Containers Law, the 2004 Protection of the Coastal Environment Law, the 2008 Clean Air Law, and the 2011 Packaging Law, among others. The growing body of case law also included rulings by the Supreme Court, which established important administrative and interpretive principles for protection of the environment. The Supreme Court’s favorable approach to environmental issues and the significant role of environmental organizations received explicit recognition in 2011, when Justice Englard noted that awareness of the environment and the need to protect natural assets for the sake of the common good and future generations is still underdeveloped in Israeli society, and that it is therefore necessary to support private organizations’ efforts to preserve nature sites, and to applaud them for having assumed this role alongside governmental planning bodies (Civil Appeal 2001).

Furthermore, during this period of increasing neo-liberal economic ideology and Israel’s accession to the OECD, the economic outlook also had a notable impact on environmental regulation in Israel. Environmental legislation began to employ economic tools to promote environmental objectives. Examples include the fees and levies for emissions established by the 2008 Clean Air Act (Sections 30 and 31), the use of deposits in the 1999 Deposit on Beverage Containers Law, the levy for sea dumping established by the 2011 Prevention of Sea Pollution from Land-Based Sources Regulations (a levy to prevent sea pollution), economic enforcement mechanisms in the 2008 Environmental Protection Law – Legislative Amendments (“polluter pays”), and the establishment of reporting obligations, aimed at transparency regarding environmental threats, by the 2012 Environmental Protection Law (Emissions and Transfers to the Environment – Pollutant Release and Transfer Register (PRTR) Reporting Obligations). Also notable is the 2011 government decision to adopt a national plan for green growth so as to instill environmental objectives in the market and economy. This plan was formulated during roundtable meetings among government representatives, the private sector, and environmental organizations (Government Decision 2011).

During this period commercial bodies began voluntarily to adopt self-regulatory mechanisms based on their interest in operating environmental management systems that are not subject to government intervention or regulatory oversight. Examples of voluntarily adopted environmental regulations and practices include ISO 14001, Green Label, and the Maala Index for Social Responsibility, the implementation of which is monitored by the organizations themselves or independent third parties. Organizations like these form part of a global trend.

Nonetheless, environmental regulation is still largely based on criminal and administrative enforcement (through financial sanctions) of primary legislation, secondary legislation, individual directives, environmental conditions for business licensing, master plan guidelines, and building permits.

Another source of influence on environmental regulation is increased recognition of the principle of environmental justice, which links the rectification of environmental harm and protection of natural resources with the social values of distributive justice. In recent years the principle has gained recognition as a result of social protests around the world and in Israel. In a January 2013 Supreme Court ruling, for example, Justice Barak-Erez found that the new environmental legislation is based on an important unifying principle of social justice. Considerations of justice and environmental law are also evident in a High Court of Justice ruling on the legality of obligating a factory in the Western Galilee to remove the asbestos it had discarded and buried in its surroundings over the years. The ruling dismissed an appeal that challenged the law for reasons of justice and fairness, among others (HCJ 2013).

A comprehensive review of the changing environmental perspective can be found in a Supreme Court ruling that addressed the right to a suitable environment under Israeli law, and according to which the environmental discourse in Israel no longer focuses only on various uses of the land. Rather, it is based on an inclusive environmental conception of society, the economy, and quality of life in the city and the countryside (HCJ 2004).

1. **Regulation in Israel’s Mediterranean Sea marine space**

To illustrate the challenges for environmental regulation that have emerged over the years, this section presents a case study focused on the coasts and marine space of the Mediterranean Sea, which are among Israel’s most important natural resources. Israel has a coastline of some 200 km and approximately 3,950 km² of territorial waters in the eastern basin of the Mediterranean Sea. Its Exclusive Economic Zone (EEZ) spans roughly 26,000 km² (HaMaarag, 2014). In recent years we have seen increased activity by private entrepreneurs and parties with economic and commercial interests in these coastal and marine areas, which poses risks of pollution and ecological harm (Herut et al. 2012).

This case study addresses the challenges of environmental regulation in light of the various uses of Israel’s Mediterranean Sea marine space and the consequent environmental hazards. For our purposes, “marine space” has a broad definition that encompasses the coastal environment protected by the 2004 Protection of the Coastal Environment Law, that is, an area spanning 300 meters from the Mediterranean coastline landward, and reaching the end of the coastal waters seaward. The definition also covers additional marine areas in which, according to the Ministry of Justice, Israel has authority and rights. Aside from its internal waters (located on the landward side of the coastline), these include its coastal waters (territorial waters – 12 nautical miles, or 22 km), its contiguous zone (24 nautical miles, approximately 44 km), and its EEZ (200 nautical miles, approximately 370 km from the coastline).

This article aims to present the state of affairs regarding the regulation of Israel’s marine space as it has developed over the years, which is characterized by a sectoral approach, implemented by different regulators without a coordinating mechanism. The regulatory state of affairs has flaws, which will be discussed. Accordingly, the article proposes adopting and implementing the principle of integrated management of the marine space, a central principle with widespread support in academic scholarship and policy papers.

**A.** **Survey of uses and environmental threats in the marine space, and their manner of regulation**

Environmental changes in the marine space and a growing interest in its development the and exploitation of its resources have created a new reality, thus posing environmental threats that marine regulation must address in a manner that accommodates the dynamic developments and challenges of this time. The present regulation is rooted in past eras and relies on a multitude of regulators entrusted with overseeing various marine activities. The following three examples illustrate environmental threats and the numerous regulators tasked with addressing them.

**1. Coastline construction and development, and the dangers posed by coastal uses**

The use of coastal areas often entails construction and development along the coast. The extent of (Mediterranean) coastline that remains available to each resident of Israel for purposes of recreation, education, science, and research is extremely limited – an estimated 2 cm per resident. This is a consequence of having two major seaports, five marinas, five power stations, some fifteen hotel zones (including vacation resorts), five desalinization plants, other infrastructure facilities such as the SHAFDAN (Dan Region Wastewater Treatment Plant), and military facilities along the coastline.

This situation underscores the importance of the 2004 Protection of the Coastal Environment Law, which was enacted after a prolonged public struggle against private construction on the coastline (Civil Appeal 1054/98; Civil File 2002). The explicit intent of the law, among other aims, is to protect the coastal environment in all its aspects, rehabilitate it, preserve it as a resource with unique values, and prevent and limit damage to it. The law prohibits any activity that could harm the coastal environment and requires approval from the Committee for the Protection of the Coastal Environment for any plan affecting the coastal environment. The minister of environmental protection is responsible for overseeing implementation of the law, with the exception of provisions relating to planning and construction, for which the minister of interior is responsible. The Committee for the Protection of the Coastal Environment, which has an important role in implementing the law, comprises seventeen members, most of whom represent government ministries. The Ministry of Interior representative serves as the chairperson.

One of the salient developments along the coastline in the early 2000s, before the law was enacted, was the construction of marinas (moorings). This initiative was driven by special interests aimed at the development and construction of commercial zones, restaurants, and private residential facilities along the coast.

Another environmental threat stemming from current uses of the coastline is solid waste pollution, such as plastic bags and containers, bottles, and food debris. This waste collects along the coast, is swept to the sea, and accumulates on the seabed or as concentrations of “marine litter” in the oceans, which can harm marine life, habitats, and biological diversity in the marine environment (Pasternak et al. 2014). Even after a long time in the sea, plastic waste does not dissolve but rather fragments and enters the food chain, thus endangering public health (Barnes et al. 2009, 1985-1998). This waste also poses a threat to maritime transit and exacts a heavy toll from various maritime business sectors, such as tourism and recreation, shipping and fishing, offshore power plants, desalinization plants, and others. The regulation of coastal cleanup comes under the authority of the Ministry of Environmental Protection, in accordance with the 1984 Maintenance of Cleanliness Law and the 2004 Protection of the Coastal Environment Law, but is also within the purview of local authorities that have jurisdiction over coastal areas, in accordance with the 1964 Regulation of Bathing Places Law, as well as the minister of interior, who is responsible for implementing the law.

**2. Offshore gas and oil drilling**

The discovery of natural gas off the coast of Israel and assessments about the existence of other large reservoirs sparked gas and oil exploration projects in the Mediterranean Sea, mainly in Israel’s EEZ but also in its territorial waters. It has become evident, as detailed below, that the existing regulations surrounding this activity are flawed and do not address the environmental hazards that have emerged (Lotner-Lev and Schorr 2013). The main law regulating gas and oil drilling is the 1952 Petroleum Law, which established the licensing and oversight procedures for offshore gas and oil drilling. The law does not include instructions regarding the environmental hazards of drilling. The minister of national infrastructures, energy, and water is responsible for implementing the law and consulting with the advisory council established by it.

At the same time, all matters related to air and sea pollutant emissions come under the purview of the Ministry of Environmental Protection, and its exercise of authority is not always coordinated with the corresponding regulatory bodies.

1. **Fishing and aquaculture**

The regulation of fishing in the Mediterranean Sea, the Sea of Galilee, and the Gulf of Eilat comes under the purview of the Ministry of Agriculture and Rural Development, in accordance with the 1937 Fisheries Ordinance and its amendments, which is aimed at creating sustainable fishing interfaces given the endangered state of fishing in the Mediterranean Sea. The authority to manage fishing is assigned to the chief fisheries officer – the Fishery and Aquaculture Division director-general – and the division’s personnel within the Ministry of Agriculture and Rural Development.

The Ministry’s role is to formulate policy to promote the industry, plan the necessary infrastructures, advise and guide entrepreneurs, and identify the industry’s objectives from which R&D activities will be determined. Notably, there has been a rise in aquaculture along Israel’s Mediterranean coast in recent years (Zeidner et al. 2013, 5–8). The environmental threats posed by fish farms include organic enrichment of the farm’s surroundings, transmission of pathogens between caged and wild fish, the introduction of foreign species, and physical damage to the coastal environment, among others. Consequently researchers have called for these farms to be subjected to the same standards as those applied to polluting industries, and for the formulation of a long-term, targeted monitoring program for aquaculture farms (CIESM 2007; NOAA 2011).

However, because of the government assistance this sector receives under the Encouragement of Capital Investment in Agriculture Law, it is regulated by not only the Ministry of Agriculture but also the Ministry of Economy. Furthermore, its regulation must be coordinated with other ministries as well, including the Ministry of Environmental Protection regarding environmental impacts of relevant fish farms, the Ministry of Interior regarding licensing and authorization by the Committee for the Protection of the Coastal Environment, the Ministry of Transport on matters of vessel safety and maritime transit routes, the Ministry of Defense for coordination with the Navy’s activities, and the Ministry of Health regarding sanitation.

**B. Flaws in Israel’s marine environmental regulation**

A brief survey of threats to the marine environment and of the regulatory systems that address them, as illustrated above, points implicitly to flaws that impede effective regulation. The above survey indicates that the challenges of marine environmental regulation form a complex mix of problems involving the control of pollution and management of natural resources. The wide diversity of threats is a central facet of these challenges.

Below I address three salient types of flaws in the regulation of Israel’s marine environment: The first is a deficient institutional structure resulting from decentralized regulation, which can impede the adoption of effective legislation because of systemic bias that prevents decision-makers from consistently considering the damage caused by governmental activity. Second, the regulation might rely on partial or missing information, which undermines its aims. Third, regulatory decisions are often influenced by flaws attributable to public choice theory – that is, the influence of pressure groups on decision-making processes can result in a regulatory policy that serves their self-interest rather than the public interest.

**1. Decentralized regulation and structural deficiencies**

The survey presented in Part 1 points to the prevalent phenomenon of decentralized regulation, that is, the regulation of various types of marine activity in Israel simultaneously by several regulators with partially or fully overlapping authority. Decentralized regulation has repercussions for oversight and the prevention of environmental threats. For example, regulators might ignore certain environmental hazards that are the responsibility of entities beyond their own scope of activities. Regulators might also ignore potential advantages of government involvement in preventing environmental threats outside of their area of responsibility. This could impair the decision-making process of these regulators and create diffuse externalities linked with the activities of other regulators. In other words, when a regulator makes a decision within its own scope of authority but with implications other regulators, whether by commission or omission, there is a risk that some implications will not receive due consideration even if they could substantially alter the decision.

In other instances decentralized regulation leads to a conflict of interests among various regulators and thus to a stalemate that prevents appropriate regulation of the market. This results from the decentralization of regulatory responsibilities, which creates overlapping areas of activity subject to the authority of various entities with different objectives, different areas of expertise, and different institutional structures. Consequently interactions among these authorities might be suffer from lack of coordination, conflict, and even normative deadlock.

In certain cases, as illustrated below, the decentralized delegation of responsibilities among various regulators – or their overlap – might be intentional. It could stem from a deliberate policy for dealing with phenomena such as regulatory capture, overconcentration, and aggregate governmental power, from a desire to foster regulatory authorities’ professionalization and specialization in their field and ensure the protection of important public interests (Fainsod 1940; Landis 1974; Majone 1997; OECD 2002‎), or from historical developments (Ayal et al. 2016). In Israel, regulatory policy is evidently not formulated on the basis of structured institutional processes. Rather, it emerged from internal processes linked to the rapid development of the state, changes in the economic perspective over the years, and international and global influences (Barak-Erez 2008; Barak-Erez and Perez 2011; Arbel-Gantz 2003; Levi-Faur et al. 2015). In our context, as noted, regulation of the marine environment was carried out by several regulatory authorities that were responsible for various aspects of the issue, including the Ministry of Environmental Protection, Ministry of National Infrastructures, Ministry of Agriculture and Rural Development, Ministry of Interior, Ministry of Transport, Ministry of Defense, and others. The detailed survey above indicates that various regulatory authorities, with responsibility for different aspects of the marine environment, operate without coordinating mechanisms or structured consultation mechanisms.

The repercussions of the decentralized regulation of Israel’s marine environment become more acute in light of the growing interest among private entrepreneurs in the natural resources of the marine space for development and economic exploitation. These include gas and oil exploration companies, aquaculture ventures, power generation ventures, seawater desalinization projects, fisheries, tourism ventures, maritime transport infrastructures, and others. All have potentially negative impacts on the marine space and require a broad knowledge base that is accessible to the public and decision-makers, as well as coordination among the various entrepreneurs and – in particular – the regulators, in order to prevent the diverse activities from having adverse reciprocal consequences. Moreover, the growing interest in exploiting and developing marine natural resources requires constructing marine infrastructures that are integrated with suitable land infrastructures. The creation of such infrastructures naturally requires integrated planning that takes into account the diverse stakeholders and dynamics of the marine space.

The regulation of natural gas drilling and ensuring its supply the market, a subject examined by the State Comptroller in 2002 (State Comptroller 2013), illustrates the difficulties of decentralized regulation. The Comptroller examined how regulation is decentralized among several authorities and described the consequent problems, which include bureaucratically burdening the market, a lack of coordination among the regulatory authorities stemming from the complexity of the process, lack of regulatory coherence, and concerns about stagnation.

The Comptroller’s report indicates that the pursuit of natural gas exploration and production in Israel’s EEZ has generated a complex practice that requires approaching various regulators, including the Ministry of Environmental Protection for a permit to discharge wastewater to the sea, the Ministry of Defense for protection of the drilling site, and the Ministry of Foreign Affairs regarding relations with neighboring countries. At the time of the audit’s conclusion, about fourteen years after the discovery of gas in Israel’s EEZ, there was still no single regulator to coordinate the various permits needed for submitting a request to explore and produce gas. The applicant is bounced among the various regulators, while the Ministry of Energy tries to coordinate them (State Comptroller 2013, 253).

Another example is regulation of the fishing industry, which the State Comptroller’s 2010 report examined (State Comptroller 2010). The audit identified deficiencies in the way the Ministry of Agriculture’s Fishery Division oversaw and managed fishing in the Mediterranean Sea. It noted that fish depletion in the Mediterranean requires proactive efforts by the Fishery Division to revive fish stocks by designating marine protected areas, among other means. One of the conditions mentioned by the Comptroller for successful marine protected areas is coordination and cooperation between the Nature and Parks Authority and the Fishery Division in planning and delineating these areas. Yet according to the report, the two bodies have long been unable to reach the necessary agreements. The Comptroller’s findings point to the need for coordination and cooperation among the Ministry of Environmental Protection, the Nature and Parks Authority, and the Ministry of Agriculture in order to meet the regulatory needs of the industry.

**2. Lack of knowledge and inadequacy of data**

Information gaps and uncertainty are considered key challenges to effective management of natural resources and the environment. These factors, alongside the difficulty of acquiring knowledge and uncertainties about the impact of environmental pollution on public health and ecosystems, explain the importance that academic research ascribes to accessible databases and reliable information about environmental regulation (Esty 2004; Farber 2003; Karkkainen 2000). The knowledge and data needed to make informed regulatory decisions about environmental protection are varied and complex. Among other factors, they include details for identifying an environmental problem, identification of the causal relationship between a particular hazard and specific harm or damage, qualitative assessment of the various effects of a hazard and damages, its epidemiological and ecological repercussions, identification of the rights violated and the corresponding victims, development of an effective approach for regulatory intervention, its implementation and monitoring, and up-to-date information about relevant innovations in scientific research (Esty 2004).

One of the problems facing environmental regulation in this context is the difficulty for the regulator of assessing and proving the harm that is expected to result from environmental threats. In many cases this difficulty prevents the formulation of timely legislation (Flournoy 1991). One such example involved the discharge of wastewater from industries in the Haifa Bay to the sea via the Kishon River, as practiced for many years in accordance with a discharge license and permission order granted to the industries by relevant regulators. Over the years industrial wastewater flowed into the Kishon River and Haifa Bay, and Israeli soldiers engaged in diving exercises and military training in these polluted waters, before cancer cases and unusual morbidity rates came to light. This led to the appointment in 2000 of a military commission to investigate the matter (Shamgar Commission Report, 2003) and to the termination of military training in the Bay. Nevertheless, in addressing the question of compensation for soldiers harmed by diving in these waters, the Commission held, by a majority opinion of two members from the fields of science and medicine, that no statistically significant scientific causal relationship could be found between diving in the polluted waters and morbidity. In a minority opinion, Supreme Court President (Ret.) Justice Shamgar recognized the security establishment’s legal duty towards the soldiers who had become ill. His opinion served as the basis for subsequent legislation that codified the legal establishment’s duty, largely thanks to the public uproar surrounding the case and the fact that it involved combat soldiers who were hurt in the line of duty.

Notwithstanding the statutory duty imposed on the defense establishment, all the claims for financial compensation, filed by fifty fishermen who worked in the Kishon River and Haifa Bay against 10 industrial plants in Haifa Bay, were denied. According to the claims, the common denominator among most of the defendants was that they had discharged wastewater of one sort or another into the Kishon River (Civil File 2013). In its ruling, the district court stated that on the basis of the facts before it and the details of the plaintiffs’ illnesses, they had failed to prove that their illnesses were caused by exposure to the Kishon waters, in terms of the degree and manner in which they had been exposed and to the extent that they had been exposed.

These remarks also illustrate the difficulty of quantifying the proven harm caused by a specific polluting agent to the environment, even if such harm is evident from its widespread distribution (in time and space) and numerous instances.

The examples presented above highlight the difficulties and complexities of attaining comprehensive environmental information, which can impede the formulation of informed regulatory decisions.

1. **The distortions of public choice**

Another type of flaw in environmental regulation involves the exploitation of regulatory processes by special interest groups seeking to promote their own economic interests. This familiar phenomenon is the basis of public choice theory (Stigler 1972; Buchanan and Tollison 1984; Mueller 1984; Farber and Frickey 1991; ‎Farber and O'Connell 2010). According to this approach, environmental decision-makers could be unduly influenced by pressure from the industrial polluters they are meant to oversee (Keohane et al. 1998, 313), who seek to limit responsibility for the damage they cause in order to save money and improve their own situation.

One of the situations explored in the context of public choice theory is the phenomenon of regulatory capture (Stigler 1971, 3–21), which views the regulatory process as influenced by the narrow interests of those subject to oversight, to the extent that it undermines the public interest. For our purposes, following this approach, the concern is that the private interests of stakeholders from the relevant industry could receive disproportionate consideration because there is no one to represent the widespread general public (Farber 1992, 60–61), and because of the asymmetric incentives for participating in the political process. The undue influence on regulators can take various forms, including the submission of biased expert opinions to decision-makers and granting of favors, among others.

The prolonged public struggle for legislation to impose a levy on marine discharge, which exempted the SHAFDAN (Igudan – Dan Region Association of Towns for Sewage), regarded as Israel’s major polluter of the Mediterranean Sea, illustrates the phenomenon of influence by pressure groups (Igudan, in this case) on the regulator and the consequent difficulty of imposing regulatory duties on them in order to reduce environmental threats. In this instance, despite demands over the course of many years that Igudan find a land-based solution for the sludge created by municipal wastewater treatment in Gush Dan (the Tel Aviv Metropolitan Area), it managed to receive and continuously renew a marine discharge permit, and thus it repeatedly delayed the implementation of a land-based solution. In 2011 regulations were introduced that impose a levy on marine discharge in order to hold the responsible party accountable for the external costs of harm to the sea (“polluter pays”) and thereby encourage it to reduce pollution and stop polluting.

Igudan then approached the Ministry of Environmental Protection and managed to receive an exemption from the levy until 2013. The dialogue, recorded in the minutes of the Knesset’s Internal Affairs and Environment Committee, reflects a political party left-right dynamic. In January 2013, with elections to the nineteenth Knesset pending, political pressure was applied to extend Igudan’s exemption. Only in February 2017 did a land-based treatment plant begin to operate and the SHAFDAN stopped discharging wastewater to the Mediterranean. Aside from illustrating the impact of public choice distortions, this case also underscores the difficulty of uncovering any hidden external motives, given the influence of public choice on regulatory decision-making.

Parenthetically, there are those who claim that in the environmental arena the regulatory capture phenomenon also surfaces in relations between environmental organizations and the regulator, and in fact make the regulatory process biased towards environmental organizations.

**C. Recommendations and conclusion**

This article outlined trends in the development of environmental regulation in Israel and the corresponding regulatory bodies, alongside the consolidation of an environmental perspective in Israel, against the background of the state’s accelerated growth since its founding. The expansion of regulation in recent years stems, among other factors, from the understanding that accelerated development entails non-negligible environmental costs, whether from environmental pollution or from depletion of the state’s natural resources, and that minimizing damages necessitates using comprehensive, advanced monitoring, oversight, and control mechanisms.

The importance of marine resources and the environmental threats to them, as well as the effects of maritime activities on other activities, have led to the consolidation over recent decades of the principle of integrated management of coastal resources and the marine environment.

This principle is part of a broader conception based on the advantages of integrated natural resource management for reducing conflicts over the use of natural resources and facilitating sustainable development, as presented by international bodies such as UNESCO (Brusseau et al. 1997; Belfiore et al. 2003‎), UNEP (Shipman et al. 2009) and academic studies (Ernsteins 2010; Portman et al. 2011‎). Notably, marine natural resources have a unique combination of characteristics (Archer and Casey 1992; Clark et al. 1992‎) that make them especially suited to integrated management. These characteristics derive from the public nature of marine space and the inter-generational public interest in preserving its natural resources. Moreover, it embodies an interface between sea and land, containing sensitive habitats that interact mutually and with the environment, which necessitates a broad perspective that takes into consideration all the relevant elements and information. Furthermore, the diverse uses of marine space and its potential for significant economic development generate many conflicts over its uses and among the various regulatory authorities, which necessitate public participation in decision-making. These characteristics also explain the flaws of the sectoral approach to natural resource management and its inadequate protection of biodiversity and unique ecosystems in the marine space (Cicin-Sain et al. 1998), and provide a basis for developing a coordinated regulatory framework.

This leads to the following recommendations for future environmental regulation in Israel generally and of the marine space specifically:

*First*, to address the complex reality of the marine space, it is not enough to understand the need for modern, up-to-date environmental regulation; it is also necessary to recognize the need for mechanisms to coordinate between it and other areas of activity subject to parallel, sectoral, or general regulation.

*Second*, the general, succinct regulation characteristic of the 1960s gradually gave way to professional, detailed regulation, as required by the complexity of environmental protection. This trend should be maintained and extended in order to formulate firm, coherent principles for sustainable development and integrate them into the market and economy. Efforts should be made to ensure that regulation keeps pace with the rate of development so as to maintain a relevant edge, which is as essential for environmental regulation as it is for other areas, but which is also an important element of the regulator’s effectiveness – particularly the environmental regulator, which is disadvantaged relative to others in terms of resources and political power.

*Third*, over the years environmental organizations have played an important part in the development of environmental regulation in Israel, thanks in part to their work with the Ministry of Environmental Protection in promoting environmental laws that serve as pillars of environmental regulation in Israel. Public participation and transparency in decision-making processes enable these organizations to act in real time, alongside private and economic stakeholders, and they can help resolve conflicts during implementation. These principles should underpin the formulation of environmental regulation.

*Finally*, it is worth considering the delegation of regulatory powers to councils or bodies with a heterogeneous composition in order to balance different interests and serve as a coordinating mechanism among different regulators. Achieving such a balance is no easy task, but this does not detract from the importance of the issue or the need to address the challenges it poses for regulation in Israel generally and environmental regulation specifically.

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