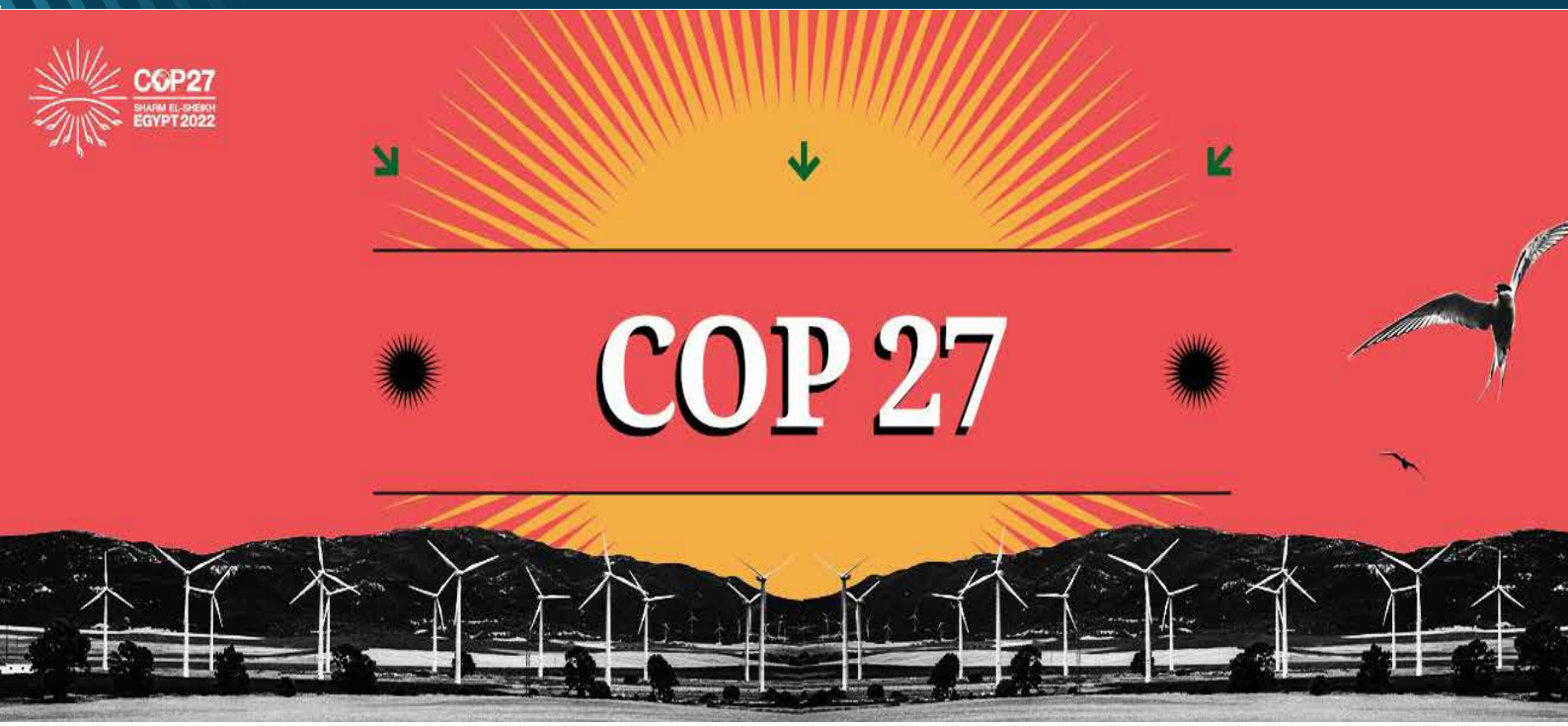


Photo: United Nations

From Tel Aviv to Sharm el-Sheikh: Obstacles and Keys to Environmental Peacebuilding between Israel and Egypt

Moshe Terdiman
University of Haifa

Ofir Winter and Morr Link
Institute for National Security Studies (INSS) – Tel Aviv University

Tal Angert
Independent Researcher

The Conference of the Parties of the UNFCCC (COP27), held in Sharm el-Sheikh in November 2022, cast a spotlight on Egypt and its commitment to environmental reform. Yet while previous indications of potential cooperation between Israel and Egypt on environmental issues appeared promising, only some initiatives have so far reached the implementation stage. Although Israel and Egypt share many environmental interests, the dialogue between them is limited; notwithstanding the logic of joining forces and tackling joint environmental issues together, actual collaboration has not yielded the necessary response to the urgent needs. A study of three areas—water and food security, blue economy, and gas and renewable energies—indicates that shared mutual interests by themselves are not enough to expand the environmental ties between Israel and Egypt, and a further set of supporting conditions is needed to help overcome the impeding obstacles. This article examines Egyptian and Israeli environmental policies and explores past and current environmental collaboration between the two countries. It analyzes the

elements affecting the development of this collaboration and proposes policy recommendations toward its further expansion.

Keywords: Egypt, Israel, COP27, climate, environment, normalization, water and food security, blue economy, energy

Introduction

The environmental collaboration between Israel and Egypt is a further illustration of the "cold" peace between both the two countries, which is characterized by partial, limited normalization and little collaboration (Podeh, 2022b). The Conference of the Parties of the UNFCCC (COP27), which was held in Sharm el-Sheikh in November 2022 and included an Israeli booth for the first time, was an opportunity to improve the situation by promoting environmental integration between the two countries and, perhaps, promote a warmer peace altogether.

This article provides a historical and contemporary overview of the environmental collaboration efforts between Israel and Egypt, and proposes possible models to advance them further. Both countries have already established the fight against climate change as a national objective and identified it as a cross-border challenge that requires nations and peoples to join forces. So far, however, each country has formulated a separate national environmental strategy that includes little or no coordination or cooperation with the other.

For Egypt, hosting the climate conference marks a zenith in the strategy led by President Abdel Fattah el-Sisi for almost a decade. The importance that his regime attaches to environmental matters is reflected in the 2014 constitution, which includes items on agriculture, natural resources, protection of water sources, renewable energy, and preservation of biological diversity. This portion of the constitution has gradually been translated into policy: in 2015, Egypt established the National Council for Climate Change, which reports to the Prime Minister and is the body responsible for formulating strategy and coordinating government efforts on the issue (Egyptian Ministry of the Environment, 2015). In 2016, Egypt published a document titled "Egypt's Vision 2030," with a chapter devoted to the environment (Egyptian Ministry of the Environment, n.d.). In 2019, Egypt updated and expanded the composition and powers of the National Council for Climate Change and began to implement concrete plans and to incorporate environmental standards in government ministries and local authorities (Egyptian Ministry of the Environment, 2019).

In 2020, Egypt was about to issue an updated national strategy for dealing with climate change by 2050, but the COVID-19 crisis postponed its publication. It was eventually presented at the 26th UN Climate Change Conference (COP26) in Glasgow in November 2021 (Seif, 2021), and again, in greater detail, in May 2022. The updated strategy deals with all sectors of the country's economy, with an emphasis on energy, transportation, agriculture, and water resources (Abu Zaid, 2022).

The governmental activity in Egypt has been accompanied by efforts to educate and inform students and the general public concerning the effects of climate change. The most prominent initiative was "Our country is hosting COP27," which included activities throughout the country organized by youth centers, women's organizations, and Muslim and Christian religious institutions, with the aim of raising awareness concerning climate change and encouraging local activism on this issue. As part of the initiative, a public convention has been drafted, whose signatories obligate to protect vegetation, to avoid polluting the Nile waters and burning waste, to save water and energy, and to spread these ideas among their social circles ('Adli, 2022).

Three main considerations stand behind Egypt's environmental activism. First is the need to address the direct threat posed to Egypt by

climate change (Fayid, 2021). Second is the drive to mobilize the international community to aid Egypt and other African countries by means of grants and loans, investment in green projects, and knowledge and technology sharing. Third is the effort to enhance Cairo's international standing by playing an active and leading role in dealing with climate change (Winter, 2022).

While Egypt has been engaged in climate change projects for about a decade, Israel has lagged behind on the practical side, notwithstanding that it has signed all of the relevant international treaties. There was some improvement under the 36th government, which involved formulating an overall strategy for the relevant ministries and setting long-term objectives on issues such as greenhouse gas emissions, reduction of air pollution, energy efficiency, and clean transportation (Prime Minister's Office, 2021a, 2021c, 2021d, 2022a; Curiel, 2022).

Former Israeli Prime Minister Naftali Bennett also harnessed the security establishment in the fight against climate change. A government meeting in October 2021 decided that the effects of climate change on Israel would be part of the annual National Security Council situation assessment presented to the cabinet (Ravid, 2021). It was also decided that the IDF would set up a team in the Intelligence Directorate that will analyze climate data and its strategic impact on IDF activity, intelligence force buildup, and security stability in the Middle East (Ashkenazi, 2021). In addition, the climate crisis would be included in the mandatory syllabus of kindergartens and schools (Kadari-Ovadia & Yaron, 2022).

Tamar Zandberg, at the time Israeli Minister for Environmental Protection, expressed hope that COP27 in Sharm el-Sheikh would lead to stronger regional cooperation, and indicated that she was holding talks with her Egyptian counterpart Yasmin Fuad on setting up a Middle East climate forum (Institute for National Security Studies, 2022). In May 2022, the Israeli government issued a plan whereby government ministries were instructed to prepare for the conference and work on promoting joint environmental projects with Egypt (regional collaboration).

While Egypt has been engaged in climate change projects for about a decade, Israel has lagged behind on the practical side, notwithstanding that it has signed all of the relevant international treaties.

Indeed, Egypt and Israel are already members in a variety of environmental forums that may be able to serve as a platform for their collaboration. One is the Cyprus Initiative on Climate Change in the Eastern Mediterranean and the Middle East, which was announced by the President of Cyprus in 2019. This initiative seeks to engage scientists, researchers, and decision makers throughout the region to find solutions for dealing with the effects of climate change (*Haaretz*, 2022). Another forum is the Negev Summit, which inter alia deals with environmental issues. It was launched in March 2022 with the participation of the foreign ministers of Israel, the United States, Egypt, the UAE, Morocco, and Bahrain. The forum is due to meet at three levels: a meeting once a year at the level of foreign ministers, a meeting at the level of a committee of foreign ministry director generals (which convened in Bahrain in June 2022), and a forum of working groups (Zaken, 2022a). Israel has earmarked NIS 38.55 million for the forum for 2023-2025 (Prime Minister's Office, 2022d).

Research on environmental collaboration between Israel and Egypt is almost as sparse as the collaboration itself. The research can mostly be found on the sidelines of professional and academic discussions and wider historiographic essays about the normalization of civilian relations between the two countries since the signing of the peace treaty in March 1979. Much of the research focuses on the obstacles that hinder the development of civilian relations between the countries, including those related

to shared environmental challenges. These obstacles include: the desire to have room to address political-security issues freely, and thus exclude civilian ministries from the discussions; the Egyptian regime's need to consider public opposition to normalization with Israel; and the gap between the Egyptian desire for secrecy and the Israeli desire for publicity within the bilateral relations (Podeh, 2022a; Koren, 2018).

In addition to the obstacles, the literature has also dealt with key factors that help or could help to promote civilian collaboration between Israel and Egypt, including in the environmental realm. These include: supportive regional and international geopolitical circumstances; the centrality of the economy within Egypt's national security concept; the selection of high priority projects; the active involvement of a third party; emphasis on practical science that will yield beneficial results to the wider public in a relatively short period of time; and the need for the auspices of a minister or individual with political-scientific influence in Egypt to ensure smooth running and long-term continuity (Pasternak, 2000; Koren, 2018).

Environmental collaboration is closely linked to national and regional security and addresses threats such as food and water security, desertification, and rising sea levels.

While previous studies generally dealt with either civilian collaboration between Israel and Egypt or the environmental aspects of a specific issue in a defined period, this article is the first to examine the broader picture of environmental connections between both countries. It focuses on the special challenges of building an environmental peace between Israel and Egypt, the obstacles they have faced over the years, and the conditions that facilitate patterns of collaboration, however limited.

The article comprises five sections: a theoretical framework explaining the concept of environmental peacebuilding; a historical and contemporary analysis of three key areas that the authors believe have potential for cross-border environmental collaboration between Israel and Egypt—water and food security, blue economy, and gas and renewable energies; and concluding remarks deriving from the case studies concerning existing obstacles and the steps required to widen the environmental collaboration between both countries.

Methodologically, the study is based on a rich corpus of primary and secondary sources in Hebrew, Arabic, and English, including government papers, academic and semi-academic articles, press items, and memoirs. The authors also held interviews with relevant Israeli and Egyptian personnel and conducted field trips that included participation in Egyptian conferences.[1]

Theoretical Framework

There is no single conclusive definition for the term "environmental collaboration," as underscored by a spokesman for the Israeli Ministry of Environmental Protection. The Ministry describes cross-border environmental cooperation as collaboration between entities whose sovereign territory does not overlap, and which contributes to improvement of the environmental situation on issues such as clean energy, sustainable agriculture, and clean transportation (A. Schalimtzek, interview, September 20, 2022).

Environmental collaboration is closely linked to national and regional security and addresses threats such as food and water security, desertification, and rising sea levels. The growing understanding of the relevance of environmental challenges to national and regional security has given these issues a central platform in both public and academic discourse. Consequently, the past two decades have seen a variety of literature examining the links between conflicts and social issues, leading to the concept of "environmental peacebuilding."

Environmental peacebuilding is defined as "the process through which environmental

challenges shared by the (former) parties to a violent conflict are turned into opportunities to build lasting cooperation and peace" (Dresse et al., 2019, p. 104). This is a long process that takes place before, during, and many years after the end of a conflict. Participants in this process comprise governmental and non-governmental actors who work together at bilateral and multilateral levels.

The process of peacebuilding is affected by the initial conditions under which it unfolds—physical conditions, along with socio-political characteristics, which may include mutual interests, power gaps, and shared values. Mutual interests may lead to agreements of mutual benefit. On the other hand, asymmetry in wealth, power, and knowledge could affect the parties' willingness and ability to collaborate. Shared values or the lack thereof may encourage or hinder environmental peacebuilding. Subject to these initial conditions, environmental collaboration assumes its particular format.

External players, i.e., either international institutions or countries that are not parties to the dispute, may also play a part in environmental peacebuilding and make the process easier for the parties involved, for example, by bridging power gaps, increasing transparency and availability of information, reducing costs and supporting negotiations, creating linkages between various subjects, and raising the cost of unacceptable behavior (Keohane, 1988).

Food and Water Security

Collaboration over issues of food and water security used to be the most fruitful civilian cooperation between Israel and Egypt under the government of Husni Mubarak (1981-2011), persisting despite the fluctuations in the bilateral relations. Since the Arab Spring of 2011, the collaboration in these areas has ceased.

Agricultural Collaboration under Sadat and Mubarak

Agricultural collaboration between Israel and Egypt began shortly after the countries signed the peace agreement. It was then-Egyptian President Anwar al-Sadat himself who initiated and encouraged this collaboration, and who approved the visit of the Egyptian agronomist Nasef Abu Nada to Israel. He even asked then-Israeli Prime Minister Menachem Begin for Israel's help in developing modern agriculture in the village where he was born (Keynan & Shoham, 1998).

In the spring of 1980, a joint agricultural committee was set up, headed by Dr. Yussuf Wali, then-Egyptian Minister of Agriculture and former Deputy Prime Minister, and Prof. Samuel Pohoryles, then head of the Agricultural Planning Authority in the Israeli Ministry of Agriculture. This committee was intended to develop agriculture and promote peace, and its founders regarded it as "a universal prototype of collaboration between former enemies" (Pohoryles, 2000, p. 5). Furthermore, throughout the 1980s, the plan, funded by the United States Agency for International Development (USAID), was a framework for Middle East cooperation and a mechanism for exchange of agricultural knowledge and technologies. In May 1980, Israel and Egypt signed a trade agreement that developed into ties in the fields of textiles, cotton, chemicals, and vegetables (Adriansen, 2015, pp. 9-10).

Most of the scientific and academic collaboration that took place in the 1980s was trilateral in nature, with the participation and funding of the United States, the Netherlands, and Denmark. Some initiatives involved arid land development while others were carried out at experiment stations and agricultural farms in Egypt, such as the one at al-Gemizah in the Nile Delta. Other projects included technology exchange for similar ecological environments. Various collaborative efforts focused on increased agricultural production, water use optimization, analysis of factors hindering and encouraging the transition to modern irrigation in Egypt, the adoption of drip irrigation, dairy products, solar heating, and other kinds of technology exchange. Additionally, there

were also exchange visits by scientists and researchers from both countries (Agriculture Agreements with Egypt, 1982; Pohoryles, 2000, p. 6; Pasternak, 2000, p. 9; TATEC, n.d.; Keynan & Shoham, 1998).

Following the signing of the Oslo Accords in 1993 and the peace treaty with Jordan the following year, agricultural cooperation between the two countries took on a multilateral format in which non-governmental organizations played an important role. For example, the Peres Center for Peace and Innovation launched a program for the eradication of the red palm weevil. Egypt took on a leading role in conducting research as part of the program, and was joined by Jordan, the Palestinian Authority, Oman, Kuwait, Morocco, Yemen, and other countries. All in all, by 1999 over $80 million had been invested in agricultural cooperation between Israel and Egypt (Pohoryles, 2000, p. 6).

Israel's International Development Cooperation Program (*Mashav*), operated by the Foreign Ministry, played a central role in collaboration in the field of agriculture and water. Beginning in 1989, the training program for Egyptian agronomists, designed to train Egyptians in modern Israeli agriculture, became an essential element in Israeli-Egyptian relations. Over 4,000 Egyptians participated in *Mashav* training held in Israel over the span of twenty years, in which Israel shared its experience in growing crops in an arid desert climate, and trained district agricultural managers (Ben Dor, 2018; Keynan & Shoham, 1998).

At times, these collaborative initiatives encountered difficulties. One such difficulty was the involvement of individuals opposed to normalization with Israel. For example, the appointment of an Egyptian representative at al-Gemizah who opposed normalization led to the disruption of the farm's work and even damaged crops due to deliberate neglect. Another difficulty arose from Israel's involvement in regional hostilities, such as the First Lebanon War in June 1982 and the second intifada, which erupted in October 2000. These events put an end to the exchange of experts and delegations and some of the joint research projects, as well as to the activity of the joint agricultural committee, and to the temporary suspension of overall agricultural collaboration. However, agricultural trade between the two countries continued (Agricultural Agreements with Egypt, 1982). A third difficulty arose from conspiracy theories published in the Egyptian media, alleging that Israel was exploiting the cooperation to harm Egypt (Koren, 2018).

Despite these difficulties, agricultural collaboration was possible, largely by virtue of the personality and efforts of Dr. Yussuf Wali. The Ministry of Agriculture was the only Egyptian ministry that collaborated with Israel—and significantly, with the minister's support. However, in the mid-1990s, the Egyptian opposition harshly criticized Wali for his ties with Israel, which it claimed damaged Egyptian society, agriculture, and natural resources, weakened the country's national identity, and allowed for Israeli domination. Some newspapers, such as *al-Sha'b,* went as far as to accuse Wali of treason. The minister was thus forced to resign in 2004, but the cooperation with Israel continued (Adriansen, 2015). According to Adriansen (2015), Egypt justified the agricultural and desert collaboration by the value of access to Israel's advanced knowledge and technologies. Criticism was also deflected by the fact that the cooperation occurred in the desert, in arid outlying areas populated mainly by Bedouins and far from the Nile Delta, which has been the most central place in the evolution and growth of Egyptian national identity. For its part, Israel saw the training courses as a desirable model for normalization.

In 2011, following the fall of the Mubarak regime, Egypt stopped sending professionals for training in Israel (Ben Dor, 2018). In February 2013, the Egyptian Agriculture Minister in the Muslim Brotherhood government, Salah 'Abdel Momen, announced the total stop of agricultural cooperation between Israel and Egypt ("Egypt Halts," 2013).

Water and Food Security Challenges under el-Sisi

In recent years Egypt has faced a serious water crisis. In April 2022 Minister of Irrigation Muhammad Abd al-'Ati announced that Egypt was on the brink of a severe water shortage, with annual consumption at about 560 m^3 per head. The water crisis is largely due to the growing gap between the available water resources, which rely almost exclusively on the Nile River, and Egypt's rapidly expanding population (Sofer, 2006). It is exacerbated by the construction of the Renaissance Dam on the Blue Nile in Ethiopia.

The severe water crisis also affects food security, which is essential for national security and government stability. Section 79 of the Egyptian constitution of 2014 states that "Every citizen has the right to healthy and satisfying quantities of food" (*Egypt's Constitution of 2014*, n.d.). Food security is also part of "Egypt's Vision 2030," which includes a number of means to achieve it: sustainable development, reduction of imports, expanded areas of agricultural land, employment solutions, and adaptation to climate change ("What has Egypt Done," 2022). However, Egypt faces challenges that reduce agricultural production, due to a combination of climate change factors, such as rising sea levels that threaten about 10 percent of the agricultural land where about a quarter of the country's crops are grown, rising temperatures, desertification and urbanization processes, and the high cost of fertilizers and pesticides on global markets (Emad & Adel, 2022). Egypt imports about half its grain, and supplies could be affected by the impact of climate change on global wheat crops, as well as economic and geopolitical factors such as the war in Ukraine. Disruptions in supply lead to high prices, which could cause public protests that undermine the stability of the government (Tanchum, 2022a).

In view of these challenges, over the last decade Egypt has introduced a comprehensive strategy aimed at utilizing all options to ensure food security for the population. The strategy includes increasing the land used for agriculture; restricting areas allocated to processing grain and water-intensive crops, while increasing the production of more economical crops (Emam, 2021, 2022); and reducing dependency on imported grains (Maged, 2019). In July 2021, the Egyptian Ministry of Water Resources and Irrigation also launched a strategic plan to be implemented by 2050. The plan advances goals such as improved water quality, development of water resources, improved water management and fair distribution, water recycling, and the construction of desalination facilities (Mahmoud, 2022).

Cooperation on the Horizon under el-Sisi

Egypt's water and food security challenges will not necessarily translate into cooperation with Israel, notwithstanding Israel's efforts. However, the Negev Summit, established in March 2022, is expected to form a working group headed by Israel and Morocco to tackle water and food security.

In May 2022, the Israeli government approved a plan to promote and expand economic ties with Egypt, which includes the import of fresh agricultural produce and fish from Egypt; the establishment of a joint research and development center at the Nitzana Border Crossing for agricultural, water, and energy projects; the resumption of the joint agricultural committee; the incorporation of elements from the business sector in Egyptian plans to develop the Sinai Peninsula and optimize agricultural land for the purpose of water desalination, treat agricultural drainage water and sewage, introduce advanced irrigation methods, and promote joint projects to develop marine agriculture and breed fish in western Sinai and in Mediterranean deep waters; and the promotion of research cooperation in the field of agriculture (Prime Minister's Office, 2022c). Egypt has not issued a formal response to the plan.

In sum, despite the potential of collaboration on water and food matters, thus far Israel seems to be more interested in its implementation than Egypt.

Blue Economy

Israel and Egypt lie along the shores of the Mediterranean and the Red Sea. While the coastal strips in Egypt stretch some 3000 kilometers along these two seas, Israel's coastlines stretch some 196 kilometers along the Mediterranean and 14 kilometers along the Red Sea (Teff-Seker et al., 2019). Although both countries face similar challenges posed by the marine environment, as well as potential mutual benefit from marine resources, collaboration between them in blue economy sectors remains limited. However, the growing importance that both Israel and Egypt have begun to attach to the marine environment leaves much room for optimism over strengthening cooperation in this area.

Despite the potential of collaboration on water and food matters, thus far Israel seems to be more interested in its implementation than Egypt.

The concept of blue economy is defined by the World Bank as "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem" (Blue Economy Definitions, n.d.). In addition to the socioeconomic goals of blue economy, the concept emphasizes limiting the negative environmental consequences of maritime economic activity, including sea water and air pollution and habitat destruction. The term covers a wide range of activities: maritime transportation, marine agriculture, energy and raw materials, marine and coastal tourism, waste and pollution management, and marine biotechnology (Union for the Mediterranean, 2021).

Many countries, particularly around the Mediterranean basin, have recently begun to reassess both marine resources as well as threats they face, in light of the climate crisis and the cross-border environmental challenges affecting the marine environment. Countries along the Mediterranean coast are particularly vulnerable to climate changes, since the region is warming over 20 percent faster than other areas. Negative consequences for the Mediterranean include acidification of sea water, rising sea temperatures, destruction of ecological systems, loss of biological diversity, coastal erosion, and rising sea levels (Lange, 2020). Similar effects are evident in the Red Sea, including rising sea temperatures, pollution, over-fishing, and rapid development (Kleinhaus et al., 2020). These processes are severely harmful, in particular to coral reefs.

Another important challenge is the migration of invasive species through the Suez Canal to the Mediterranean—a process that was accelerated with the widening of the Canal in 2015, driving out local species. This phenomenon is so widespread that in some countries of the Eastern Mediterranean basin, including Israel, local species are outnumbered by invasive species (Galil et al., 2017). The problem affects Egypt as well, but apparently to a lesser extent, due to the direction of Mediterranean currents (Bakhoum, 2019). Egypt's official position goes as far as to stress the economic benefits brought by some invasive species, and the environmental benefits of widening the Canal ("Ecological Impact," 2015). An additional problem is the risk of oil leaks, which pose a danger to habitats and the coasts of the Red Sea and the Mediterranean, and the human economic activity that relies on them. Between 1966 and 2017 there were 16 significant oil leaks in the Mediterranean alone (Greenpeace Digital, 2021).

Cooperation between Israel, Egypt, and other countries in the Mediterranean basin is therefore essential for coping with the cross-border challenges posed by the marine environment. The other side of the coin is the potential for mutual gain, both economic and scientific, offered by such cooperation, such as greater trade in seafood products, enhanced marine agriculture, preservation of the marine environment, and more. However, cooperation between Israel and Egypt in these fields is limited in scope and nature.

As in agriculture, so too in the blue economy: the Camp David Accords paved the way for initial though limited cooperation. Moreover, cooperation between Israel and Egypt on marine environment was the first sign of open scientific ties between the countries (Norman, 1982). However, unlike agriculture, it appears that Egypt and Israel did not cooperate bilaterally in the field of marine research, but rather relied on third-party support, often from the United States.

In the 1990s and the early 2000s, US support, in the form of the Middle East Cooperation Plan that was instituted and funded by USAID, facilitated various research projects involving dozens of institutions and researchers from Israel, Egypt, and the United States. At first, research was conducted in a parallel bilateral format, that is, Israel-US and Egypt-US, afterward in a trilateral format, and ultimately as joint Israeli and Egyptian projects without US involvement (Keynan & Shoham, 1998). Although the plan helped develop personal and institutional ties between the two countries, the Israelis were disappointed by what they perceived as a lack of concrete benefits to Israel (Cohen, 2000).

Another plan launched in the 1990s was the Red Sea multinational plan, established in 1995 with Egyptian, Palestinian, Israeli, Jordanian, and German participants, with German government funding. As part of the plan, several joint studies and surveys of the coral reefs and open waters of the northern Red Sea were conducted (Interuniversity Institute of Marine Science in Eilat, n.d.).

Blue Economy in Egypt and Israel

Although cooperation in marine research has dwindled over the past two decades, there are recent signs that Israel and Egypt are investing considerable efforts in the national development of blue economy. In line with growing environmental awareness in Egypt, increased importance has been attached to blue economy in work plans, legislation, projects, and budgets, as well as in the rhetoric and practice of the Egyptian leadership. Thus, in February 2022 President el-Sisi attended the One Ocean Summit, an international conference held in France dealing with the dangers facing the world's oceans ('Umar, 2022).

Egyptian interest in blue economy relates to three main aspects: marine agriculture, which is an important source for food security and an economic growth engine; tourism, which contributes significantly to the country's economy and employment rate; and transport and trade, encompassing dozens of ports along the Mediterranean and Red Sea coasts. These three areas illustrate the challenge at the heart of blue economy: striking a balance between the desire to modernize and increase production, on the one hand, while maintaining sustainable development, on the other.

In recent decades Israel too has taken steps to promote blue economy. After decades in which the marine environment was not a prominent component of security and economic thinking, in the 1990s Israel began to pay more attention to the sea (Teff-Seker et al., 2019). This change is reflected in increasing investment in marine research, as well as legislative and planning moves to manage the marine environment.

At the planning and legislative level, in the early 2000s the Ministry of Environmental Protection promoted laws designed to protect the coastal environment, and in 2008 Israel signed a policy document on the integrated management of the coastal area and the interface with the sea, as part of the Geneva Treaty documents. In 2015, the Technion presented a policy document on preserving marine environment (*Marine Plan*, n.d.), and in 2018 the Planning Administration published a comprehensive document presenting a vision for marine environment management. One of the principles of this document is regional cooperation, based on the understanding that this is the most effective way to promote Israel's economic and environmental interests, while simultaneously improving its relations

with countries of the region and positioning itself as an important global actor in this field (Planning Administration, 2018). Finally, in July 2022 the National Planning and Construction Council launched the National Marine Center for Innovation in Haifa, which will consolidate the field of blue economy and promote national and international collaboration initiatives.

Existing Collaboration and Future Potential

In view of the shared challenges facing Egypt and Israel on marine issues, reflected in the tension between exploiting marine environment economic potential and the desire for sustainable development, and in view of the countries' efforts to formulate policy in recent years, blue economy offers much potential for cooperation, with only a small portion realized as yet. Cooperation can take place at the bilateral and multilateral levels, with the support of regional organizations operating in the Mediterranean and Red Seas.

Israel and Egypt are members of several multilateral frameworks for dealing with the marine environment, led by: the Mediterranean Action Plan (MAP), adopted in 1975 as part of the UN Environmental Program (UNEP); the Barcelona Treaty on protection of the Mediterranean against pollution (1976) and its protocols; the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC Convention) dealing with preparedness and cooperation on marine oil pollution (1990); the Eilat-Akaba Agreement for dealing with oil pollution in the Gulf of Eilat (Akaba) between Israel, Jordan, and Egypt; and the Union for the Mediterranean (UfM), which was established in 2008 to tighten ties between European and other Mediterranean countries. Both Israel and Egypt are members of these treaties and organizations, but to date they have not succeeded in generating significant cooperation, and Israeli attempts to set up direct channels of contact in these frameworks with Egyptian counterparts have met with little success.

Although Israel does not have relations with all of its neighbors along the Red Sea coast, the environmental field offers a unique example of collaboration on the subject of research and preservation of coral reefs. In June 2019, scientists, ecologists, and oceanographers from Israel, Egypt, Jordan, Saudi Arabia, Eritrea, Sudan, Yemen, and Djibouti joined the International Red Sea Research Center in Bern, Switzerland, established by Professor Maoz Fine, and they are working together to study, monitor, and protect the ecological system of the Red Sea coral reefs (Terdiman, 2020). From Israel's point of view, this program is the most successful example of regional cooperation on the Red Sea, but it is in fact the Israel-Egypt axis that has experienced the most significant difficulties in the Center's work. These are attributed to concerns of Egyptian scientists over open collaboration with Israel, in the absence of strong support at the highest levels of the Egyptian government (M. Fine, interview, July 13, 2022). For this reason, bilateral marine research collaboration initiatives, without the aid of a third party, do not exist.

Finally, two Israeli government initiatives could indicate a positive direction for future relations concerning blue economy. One is the May 2022 government decision to expand economic ties with Egypt, which includes the promotion of joint projects to develop marine agriculture and fish farming; protection of marine environment in the Gulf of Eilat and the Mediterranean; and reduction of damage caused by invasive species from the Suez Canal. This decision illustrates the broad range of collaboration from which both Israel and Egypt could derive benefits in the field of marine environment.

Another government initiative is the long-term plan, promoted by the outgoing Agriculture Minister, Oded Forer, to develop the city of Eilat and the Hevel Eilot region as a national and international locus for the production of food

from the sea and the desert. In May 2022, the government approved the plan, which offers the potential for collaboration with both Egypt and Jordan (Prime Minister's Office, 2022b). Although these initiatives open a window to future cooperation, their implementation depends on a positive response from Egypt.

Thus, as on water and food security, it appears that Israel's desire for cooperation on blue economy is greater than that of Egypt. Furthermore, Israeli-led initiatives, at the bilateral level or as part of multilateral arrangements and institutions, could deter the Egyptians and in fact act as a barrier to cooperation. However, blue economy offers huge potential benefits to both countries, particularly in a multilateral framework. It is to be hoped that today, once both countries have formulated comprehensive policies vis-à-vis blue economy, collaboration will increase, for the benefit of both countries and their inhabitants—human, flora, and fauna.

A number of conditions could promote such collaboration: clear support from the Egyptian leadership for cooperation with Israel; active initiatives in this spirit on the part of government officials and scientists in both countries; support in the shape of a third party to coordinate, manage, and finance contacts; a clear economic and environmental interest, for example, the development of marine agriculture, preservation of biological diversity, or production of materials for the pharmaceutical industry; and clear mutual benefits.

Gas, Electricity, and Renewable Energies

Over the years, energy ties between Israel and Egypt were a prominent part of the "inalienable assets" of the peace between the two countries (Dubek, 1998). Time after time, strategic, economic, and energy interests prevailed over political and ideological obstacles and created a space, however narrow, for normalization of relations between the countries. Although deals during the first two decades following the peace treaty mainly involved oil, which cannot be labeled "environmental," in recent decades natural gas has also entered the picture, as a less polluting transition fuel, as well as initial contacts in the field of renewable energies.

Oil was the pioneer. While Israel was in control of the Sinai Peninsula, it developed the Alma oilfield in the Gulf of Suez, which supplied between a fifth and a quarter of its needs, and allowed it to reduce dependency on oil from Iran. Therefore, in the negotiations on the withdrawal from Sinai, Israel asked Egypt to include in the peace treaty a long-term commitment to sell it oil, and the annex to the treaty indeed mentions Israel's right to purchase surplus oil from Egypt ("Peace Treaty," 1979). The underlying motivation was a mutual business interest: Egypt had oil for sale, and Israel wished to diversify its sources and preferred to import oil from Egypt rather than from afar (Koren, 1996). The stability of the trade in oil over two decades, even during times of crisis, can be attributed to another central factor—the stabilizing role of the United States as a guarantor of the peace treaty. When the flow of oil from Egypt to Israel slowed toward the end of the 1990s, it was due to natural circumstances, namely, the dwindling Egyptian oil reserves (Rabinowitz & Rettig, 2020).

The positive experience of the oil trade for both sides helped them establish energy ties in other areas. Thus, initial talks on the supply of natural gas from Egypt to Israel and on connecting their electricity grids began after the signing of the Declaration of Principles between Israel and the PLO in September 1993 and the supportive atmosphere it created ("216th Session," 1994). Contacts gained momentum in 1999 thanks to Egypt's economic interest in the export of gas reserves to Israel, and the removal of Egyptian Minister of Petroleum Hamdi al-Banabi, who was known for his hawkish stance toward Israel, and his replacement with Sameh Fahmi, who supported normalization (Hayun, 1999).

The breakthrough to the first gas deal was achieved in June 2005, after the end of the second intifada, when a long-term agreement was signed for natural gas imports from Egypt to Israel at a cost of $2.5 billion. In reality, gas flowed between the two countries only in the years 2008-2012. On signing the agreement, Minister Fahmi was asked by Israeli journalists about the fate of the agreement in the case of a change of government in Egypt, to which he replied, "Nobody really knows what will happen, but if you're constantly wondering if your marriage will be a success, will you ever get married?" (Goldstein, 2005).

Fahmi was deposed after the Arab Spring. During the political chaos in the country, the gas pipeline to Israel was blown up 14 times and shut down several times, until the Egyptian government gas company (EGAS) announced the unilateral cancellation of the agreement. Further factors in the collapse of the deal included the depletion of Egypt's gas reserves, the absence of an international third party to act as guarantor, and Egypt's wish to be released from a commitment to sell gas at a lower price than its value on the global market—an issue that provided fertile ground for attacks on the Mubarak regime and accusations of corruption (Bar-Eli & Liss, 2012).

Likewise, during the Mubarak period, initial feelers were sent out on the subject of renewable energies. In February 1995, the US-Israel Science and Technology Commission (USISTC) proposed setting up a facility to produce electricity from solar energy at Za'afarana on the Egyptian Red Sea coast. The project was called Noor al-Salaam (Light of Peace)—expressing the hopes for strengthening the peace through technological and economic collaboration—and participants included the University of Alabama in Huntsville, the Egyptian New and Renewable Energy Authority (NREA), and the Weizmann Institute of Science. The project reached the initial state of system definition but was abandoned in 2007 following a change in the priorities of the financing elements—USAID and the US Department of Energy (DOE) (Blackmon, 2008). The circumstances surrounding the end of this project, which had survived the second intifada but collapsed after losing American financial backing, underscores the importance of the United States in energy contacts between the two countries.

An attempt to revive cooperation in the field of solar energy was made in early 2010, when then-Israeli Prime Minister Benjamin Netanyahu and then-Minister of Industry Benjamin Ben Eliezer visited Egypt and submitted a proposal for a joint solar venture in the Sinai Peninsula based on Israeli technology. President Mubarak promised to examine the subject, but the venture was never implemented, due, among other reasons, to the Arab Spring (Bar-Eli, 2010).

The el-Sisi Era: Gas Warms the Peace

Under the el-Sisi presidency, Egyptian-Israeli cooperation over gas reached new heights, although the roles of the parties were reversed: Israel, which discovered the Tamar and Leviathan gas fields in the Mediterranean in 2009, the Tanin gas field in 2012, and the Karish field in 2019, became the gas supplier, and Egypt became its customer. Contacts between the two countries starting in 2014 led to the signing in 2018 of an agreement to export natural gas from Israel to Egypt for ten years in a $15 billion deal, and the gas began to flow in early 2020. The growing collaboration between the countries was helped by intensive contacts led by Egyptian Minister of Petroleum and Mineral Resources Tarek al-Mula and the Israeli Minister of Energy, Karin Elharar, and her predecessor, Yuval Steinitz.

The countries' synergy served their common vision of becoming actors in the global gas market: Israel was looking for destinations for gas exports, while Egypt functioned as both a customer for gas for domestic use and a transit station for exports to other customers (including countries that do not have direct relations with Israel), helped by its liquefaction facilities at Idku and Damietta. According to Steinitz, this

was "the most significant economic cooperation between Egypt and Israel since the signing of the peace treaty between the countries" (Klein, 2019).

Egypt saw Israeli gas as a tool to position itself as a regional energy hub, by importing natural gas from Israel, and later from Cyprus, and exporting it as liquid gas to destinations in Europe and Asia. These goals are enhanced by Egypt's strategic location on the banks of the Suez Canal and at the junction between continents; gas conduction infrastructure with some of its neighbors; and its gas liquefaction facilities, the only ones of their kind in the Eastern Mediterranean, which were built in 2005 but were not operational for several years due to Egypt's dwindling gas reserves for export. Following the discovery of the Zohr gas field in 2015, Egypt also became a gas producer, and in 2018 achieved energy independence (Ziv, 2022; Butter, 2021).

Egypt's profits from gas exports are growing steadily, reaching about $3.9 billion in 2021 (a 550 percent increase from 2020) and are expected to grow even more in 2022 in view of increasing demand on global markets. In 2020, the energy sector accounted for 20 percent of Egyptian GDP, and in 2030 this figure is expected to rise to 30 percent (Kandil, 2022).

Interests in the field of gas and energy create a dynamic of collaboration in the Eastern Mediterranean, involving other actors apart from Egypt and Israel. The highlight was the establishment of the East Mediterranean Gas Forum (EMGF) in 2019, with headquarters in Cairo, and the aim of promoting fruitful dialogue and cooperation between gas producing companies, gas consuming countries, and transit countries. In 2021, the Forum became an international organization, and its current members also include Cyprus, Greece, France, Italy, Jordan, and the Palestinian Authority. The United States, the European Union, and the World Bank have observer status. Inter alia, the Forum discusses environmental initiatives for gas decarbonization and the use of liquefied gas as fuel for marine vessels ("4th EMGF Ministerial," 2021).

Further reinforcement of the status of Egypt and Israel in the gas market came in the wake of the war in Ukraine, which gave them both an opportunity to expand their exports to Europe. European Union countries, which used to import about a third of their natural gas consumption from Russia, now seek to reduce their dependence on Moscow. Eastern Mediterranean gas is emerging as a strategic alternative to Russian gas and as a response, even if only partial, to the energy deficit in the continent. In June 2022, Egypt, Israel, and the EU signed a trilateral three-year memorandum of understanding (with an option for a two-year extension) to encourage European companies to search for natural gas in the exclusive economic zone (EEZ) of Israel and Egypt, and to develop infrastructure for gas and the export of liquefied gas to Europe via Egypt (Sultan, 2022a; "EU Proposes," 2022).

Interests in the field of gas and energy create a dynamic of collaboration in the Eastern Mediterranean, involving other actors apart from Egypt and Israel.

In view of growing global needs, the two countries are working to increase gas exports to Europe, including developing the infrastructure for transporting gas from Israel to Egypt by sea and over land (Gorodiski, 2022). In March 2022, Israeli gas exports to Egypt reached a record 20 million m^3 per day (Espanol, 2022). Moreover, in June 2022 Egypt signed an agreement to supply Lebanon with gas that could originate in Israel and is planned to start flowing through the Arab gas pipeline that traverses Jordan and Syria (Azhari, 2022).

Nevertheless, cooperation with Israel over gas remains politically controversial in Egypt. For example, opposition elements, mostly exiles, often complain about the import of "stolen Arab-Islamic gas from the occupying

state, bringing billions into the coffers of the Zionists," and express concern over Egypt's dependence on Israel. In response, Egyptian government spokespeople stress the economic benefits of gas contacts with Israel, which enable Egypt to position itself as a regional energy hub—at the expense of Turkey (Eran, Rettig, & Winter, 2018).

From Natural Gas to Renewable Energy

In the short term, Israel and Egypt have a shared interest in maintaining the status of gas as an intermediate waystation on the move from coal to renewable energies. However, the challenge they both face is to prepare for the era after fossil fuels. That is also the expectation of the European Union, namely, that in the future the infrastructure for gas transport between Egypt and Israel will be able to transport hydrogen. In June 2022, European Commission President Ursula Gertrud von der Leyen presented a vision of a Mediterranean partnership in the production of solar, wind, and hydroelectric energy, as part of the global trend toward a reduction in the use of gas in the medium and long terms, and the move to green energies ("7th Ministerial Meeting," 2022).

Indeed, the synergetic potential between Egypt and Israel is also promising with respect to renewable energies. The Israeli government's plan to expand economic ties with Egypt states that the Ministry of Energy will seek to establish Israeli-Egyptian working groups to examine the promotion of projects on a range of subjects: collection and burial of carbon dioxide; reduction of emissions in the process of producing and moving natural gas; production of renewable energies on land and at sea and promotion of the use of hydrogen; collaboration on intensifying the energy connectivity of the two countries and the region; and examination of ventures to produce energy from renewable sources in Egypt, with the emphasis on wind energy, for the benefit of both countries (regional collaboration).

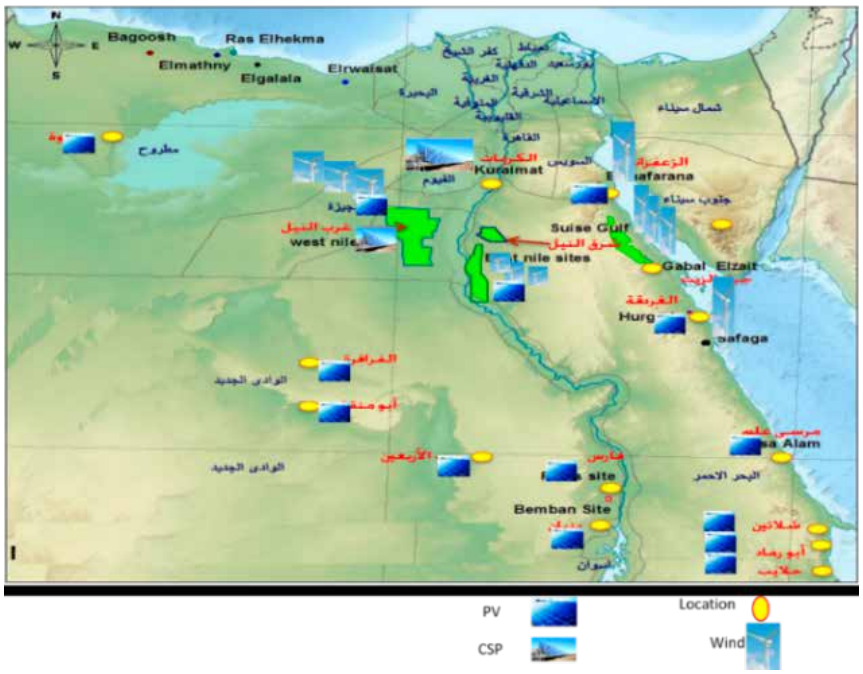
Egypt and Israel share similar visions on the integration of renewable energies. Preparing to host COP 27 in Sharm el-Sheikh, Egypt branded itself as a global model for diversifying energy sources and creating a balanced mixture, including clean energies. According to the Egyptian strategy for reducing greenhouse gas emissions, renewable energies will provide 20 percent of the country's electricity in 2022, and 42 percent by 2035 (Elgendy, 2022; Tanchum, 2022b).

Moreover, as part of the vision of becoming an energy hub, Egypt seeks to reinforce its status as an exporter of surplus electricity, generated partly from renewable energies. According to President el-Sisi, the potential connections for energy networks between Egypt and its neighbors include Israel, Sudan, Libya, Saudi Arabia, Jordan, Greece, and Cyprus. In 2021, Israel and Egypt signed separate memoranda of understanding with the latter two countries to examine the laying of an undersea cable to transmit electricity. These moves create the potential for connecting regional electric networks from countries in the Gulf and Africa to Europe through Egypt and Israel (Ministry of Energy, 2021).

Israel also plans to invest in the development of renewable energy sources in the coming years (Zaken, 2022b). After it failed to reach the target of 10 percent reliance on renewable energy in 2020, the 35th Israeli government published a broad national strategy in October 2020 that set new targets: 20 percent by 2025 and 30 percent by 2030 (Knesset Research and Information Center, 2021). In September 2021, the 36th government issued an additional set of targets, focusing on a move to renewable energy and energy storage, while strengthening regional collaboration and building connectivity in the electricity network (Prime Minister's Office, 2021b).

There is great potential for solar projects. The Israeli government's plan to promote economic ties with Egypt calls for an examination of the feasibility of a solar power station on

Renewable Energy Projects in Egypt



Source: Egyptian Ministry of Electricity and Renewable Energies

the Egyptian side that will supply electricity to both countries (Ministry of Energy, 2021). Indeed, cooperation between the countries could start close to their common border in the Sinai Peninsula, where Egypt has not yet established many solar energy projects, based on a map appearing on the website of the Egyptian Ministry of Electricity and Renewable Energies (n.d.). Such a venture could also serve the Gaza Strip.

The logic of collaboration derives from both countries' respective relative advantages: Egypt with its vast vacant lands in which to generate solar energy, and Israel with its advanced technological capabilities. For example, the Israeli company Ecoppia Scientific manufactures robots to clean dust from solar panels. They were intended for use in the Benban Solar Park in the Aswan district, which was opened in 2019 and is considered the largest in the Middle East and one of the largest in the world (Mikhail, 2021). Other Israeli companies are also involved in developing renewable energy projects in Egypt (Tagi, 2022). However, Egypt has previously rejected solar energy collaboration because it found cheaper and more attractive alternatives than the Israeli ones (Koren, 2018).

Apart from solar energy, Egypt is allocating land and raising investments for other green energy ventures, some of which could be suitable for bilateral or regional collaboration with Israel. For example, just as it became a hub for the gas industry, Egypt is working to position itself as a leading regional player in the production of green hydrogen (Sultan, 2022b), and participates in the African alliance for green hydrogen that was launched in May 2022 ("Transnational Africa Green," 2022).

Egypt is also constructing wind turbines to generate electricity, some of which are already linked to the national grid, with the largest of them—and one of the largest in the world—located at Jabal al-Zayt on the Red Sea coast (Hako, 2022). Other potential sources of renewable energy are found in the marine environment. In recent years a number of sites have been marked as promising locations for the production of wave power, mainly Alexandria and the Red Sea coastal strip (Salah et al., 2022). Concurrently, in November 2015, Egypt signed

an agreement with Russia to build nuclear power plants in Dabaa, which are planned to begin operation in 2028 and intended to supply 3 percent of the country's energy by 2035 (Gomaa, 2022).

In sum, the relative success of collaboration on energy between Israel and Egypt over the years was due to shared economic energy interests, as well as to other conditions: political and economic support from the United States and the European Union; active involvement of Egyptian and Israeli ministers in developing ties, with the support of the countries' leaders; and the legitimacy derived from Arab and Palestinian participation in the contacts with Israel. At the same time, some obstacles still hinder the expansion of collaboration in the field of renewable energies, above all: shaping an economic-technological logic to act as an incentive to promote synergy between the two countries; the absence of an integrative regional body, such as the East Mediterranean Gas Forum, whose activity is devoted to renewable energies; the still-limited contacts between the Israeli Ministry of Energy and the Egyptian Ministry of Electricity and Renewable Energies; and the reservations over normalization with Israel that are still prevalent in Egypt, particularly in view of the stalled Israeli-Palestinian political process.

COP27 at Sharm el-Sheikh in November 2022 was attended by 800 Israeli registrants, but the scope of environmental cooperation between Israel and Egypt remains far from realizing its full potential.

Conclusion

COP27 at Sharm el-Sheikh in November 2022 was attended by 800 Israeli registrants, but the scope of environmental cooperation between Israel and Egypt remains far from realizing its full potential. While ties between the two countries on gas and energy currently enjoy unprecedented momentum, cooperation in other fields—food and water security, blue economy, and other climate aspects—is almost non-existent, although both countries share cross-border environmental challenges, and in spite of expected mutual gains, in economic and environmental terms.

A wider historical perspective, including the decades prior to the rise of el-Sisi to the presidency, shows that collaboration between Israel and Egypt in areas such as agriculture, energy, and marine research were not affected solely by mutual interests. The process of environmental peacebuilding took place in the shadow of a range of obstacles and sociopolitical conditions that shaped the patterns of cooperation between the countries.

Several obstacles have hindered the development of broad environmental collaboration over the years, most of which still present a challenge. The first obstacle derives from the wider political context in which the countries function, that is, the ongoing linkage that Egypt established between normalization with Israel and progress toward resolution of the Israeli-Palestinian conflict. This obstacle is particularly prominent in periods of escalating security tensions and political stagnation, when the Egyptian authorities adjust ties with Israel according to their estimate of public and government opposition to normalization.

The second obstacle, linked to the first, is each country's respective concept of peace and the widespread opposition to normalization in Egypt. This obstacle is related to another sociopolitical condition: shared values and worldviews, whose absence hampers attempts at cooperation. Israel interprets full peace as covering a range of open civilian collaboration initiatives, allowing both parties to enjoy the fruits of the relationship. Egypt, on the other hand, tends to be satisfied with a more limited peace format: recognition of Israel, non-belligerence, and largely covert political and security cooperation with little civilian collaboration that is under strict supervision and maintains a low public profile.

Because of the restrictions imposed by Egypt on relations with Israel, most contacts take place between military and security personnel on both sides—from the Ministry of Defense and the National Security Council on the Israeli side, and General Intelligence on the Egyptian side. This practice pushes civilian issues, including environmental ones, as well as the Foreign Ministry and other ministries engaged in environmental issues, away from the dialogue between the parties. The exceptions are the Ministries of Energy and Petroleum and Mineral Resources in both countries, which maintain extensive contacts.

The third obstacle derives from the gaps in environmental policy between the parties, and from the status given to environmental issues on their respective national agendas. While Egypt has promoted comprehensive strategies to tackle climate change, water and food security, blue economy, renewable energies, and more for nearly a decade, Israel has no overall government strategy, and in this sense it lags behind. Moreover, coping with the challenges of environmental security is perceived in Egypt as an element of national security and the basis for the regime's survival, while in Israel climate change was only defined by the government as a threat to national security in 2022. This gap also has practical significance: while environmental ministries in Egypt synchronize operations as part of the comprehensive government strategies to tackle environmental security issues, in Israel these issues are handled in a decentralized way by different ministries, with no integrative strategy.

The fourth obstacle relates to differences in the political systems in Egypt and Israel. Since 2013, Egypt has had a stable authoritarian government, which makes it easier for the regime to define and implement a long-term vision, while frequent democratic changes of government in Israel involve rapid changes in the national agenda; this situation has been exacerbated by the political crises of recent years. For example, the fact that Israel's 36th government made the struggle against climate change a central concern does not necessarily mean that the next government will maintain a similar policy.

While these obstacles limit environmental cooperation between Israel and Egypt, as shown by the examples presented in the study, they do not prevent it entirely—particularly in the field of energy. Building on the analysis of the case studies, it is possible to point to several "keys" that have helped to promote ties in the past and in the present, and are likely to continue to do so in the future, even in light of restrictions.

The first key is to choose a high-priority field of cooperation for both parties, one that can yield clear mutual economic and environmental gains within a relatively short time while serving objectives in the medium and long term. Israel must therefore identify high-priority areas for Egypt, or areas in which it wishes to establish regional and international leading status, such as tackling climate change and finding solutions on matters of energy, water, and food. The chances for successful environmental cooperation will increase if both countries are unable to realize their goals without the help of the other, as is the case with gas. This type of cooperation is expected to blossom and thrive if it incorporates mutual benefits and serves the interests of both sides, which will also help it to survive periods of crisis, such as times of tension between Israel and the Palestinians.

The second key is to accept Egypt's taking the lead in collaborative frameworks that include Israel. Egyptian leadership has concerns regarding Israeli "hegemony" or an Israeli threat to its regional status. It also reinforces the advantages that Egypt sees in contacts with Israel that serve its ambitions to position itself as a regional and even global power through environmental issues. A good example is the East Mediterranean Gas Forum, which is a joint initiative with headquarters in Cairo, and a more challenging example is the Negev Summit, which is an Israeli initiative that followed the Abraham Accords.

A third key is to reinforce Israel's value as an asset to Egypt, stressing its relative advantages in the fields of science and technology in a way that chimes with Cairo's environmental agenda and positions Jerusalem as a partner that is able and willing to contribute to its neighbor and receive from it. This Israeli image can be fostered through advocacy, some of which is already carried out by the Foreign Ministry and should be increased, both in traditional media and social media. Moreover, building Israel's image as an environmental partner requires input such as extending contacts between the countries to additional civilian, business, and scientific frameworks, investment in joint projects, financing of participation of Israeli representatives in environmental conferences in Egypt and the region, and even upgrading the activity of the Israeli Academic Center in Cairo as a platform for developing scientific ties.

A fourth key is the existence of one or more third parties in the framework of environmental collaboration, such as the United States and European countries. The importance of a third party derives from its ability to reshape the map of interests as seen by the parties, in several ways: first, it facilitates cooperation by funding research projects, exchange visits, and other activities; second, it can help with collaboration coordination and management; third, it grants greater legitimacy to ties with Israel than purely bilateral relations; fourth, it guarantees compliance with agreements even in times of crisis; fifth, cooperation with Israel can be a bridge to strengthened ties between Egypt and the third party.

A fifth key linked to the fourth is the promotion of environmental cooperation through multilateral frameworks, which also serve as a kind of third party to the relations. Here the geopolitical circumstances that currently encourage civilian environmental collaboration, and above all the Abraham Accords that are supported by Egypt's Gulf allies and offer a new format for normalization, are important. Currently, the war in Ukraine and the cooperation that exists or could exist under the sponsorship of Mediterranean organizations, environmental and energy forums, and the UN is significant. In this context, sometimes the right language can also help the Egyptian party to market multilateral cooperation with Israel to domestic public opinion. For example, the choice of the non-committal term "forum" to describe the East Mediterranean Gas Forum is preferable to other more binding terms such as coalition or alliance.

A prominent, almost self-evident sixth key is the creation of a political horizon in the Israeli-Palestinian political process. The more Israel is seen by the Egyptian government and public as a peace-seeking nation, the smoother the path to broader and deeper environmental cooperation, and the weaker the arguments of the opponents of normalization.

Another means of helping to remove the political barrier is the incorporation of the Palestinians themselves in environmental cooperation with Egypt, for example, through multilateral forums such as the EMGF. In spite of the advantages of this step, the drawback is the possible risk of mixing environmental and political considerations and thereby increasing the ability of the Palestinians to obstruct cooperation between Israel and Egypt and other Arab countries. Therefore, Israel would do well to promote multilateral ties with the Palestinians, without giving them veto rights.

A seventh key is to base new contacts on precedents and past tradition. In view of Egyptian reservations regarding normalization, it is better to build environmental cooperation between the countries on existing relations, rather than seek to expand them. For example, in the field of energy there is a long tradition of cooperation anchored in the peace treaty, and it is therefore easier for Egypt to see it as the continuation of current practice rather than a precedent-setting move or deviation likely to arouse controversy. The same applies to the field of food security, where it is preferable to seek to renew the activity of the joint agricultural

committee rather than trying to establish a new bilateral framework in its place.

An eighth key is the focus on environmental collaboration between governments, promoted top down. Time after time the case studies have shown the decisive importance of the involvement of ministers from both sides, who understand the salience of environmental ties and are willing to bear their full weight to advance the promotion of these ties, with the broad backing of their leaders. This was particularly striking on the Egyptian side, in the central roles played by the Ministers of Petroleum and Agriculture over the years, with the support of their Presidents.

The other side of the coin of government cooperation is the secondary role generally assigned to civilian elements on both sides. For example, the gas ties are characterized by contacts through pipelines rather than people. Although this practice is less helpful for peacebuilding as a whole, its advantage is that it does not require fundamental administrative or normative changes in the features of normalization between the countries, and it may perhaps help build trust between the parties.

Past and present experience shows that each key has its own role, and that even if not all keys are present, it is still possible to create an effective "key ring" to promote environmental cooperation.

In conclusion, geopolitical regional and global circumstances, increased environmental awareness in both countries, and existing security, economic, and political interests create an ideal opportunity to expand environmental cooperation between Israel and Egypt. Strengthening the environmental relationship for the benefit of both countries could be an opening for civilian collaboration and peacebuilding in other areas. In view of the importance and urgency of handling many of the environmental challenges on the agenda, this issue should be given the proper government priority after COP27 in Sharm el-Sheikh.

*

The authors thank Dr. Shira Efron, head of the Climate Change and National Security Program at the Institute for National Security Studies (INSS), which is supported by the Konrad Adenauer Foundation (KAS) in Israel, for her important contribution to the study.

Dr. Moshe Terdiman is an expert on environmental security in the Arab and Muslim world and Africa; environmental interfaith cooperation; the Red Sea basin; and Islam and terror in Africa. He is a co-founder and director of the Institute for Environmental Security and Well-being Studies and director of the online institute for the study of Islam and Muslims in Africa. He also serves as a research fellow at the Chaikin Chair of Geostrategy at the University of Haifa, and the Forum for Regional Thinking. Drmoshe.terdiman@gmail.com

Dr. Ofir Winter is an Alice and Paul Baker senior researcher at the Institute for National Security Studies (INSS), and a lecturer in the department of Arabic and Islamic Studies at Tel Aviv University and in the program on Middle East and Islamic Studies at Shalem College. His research focuses on contemporary Egypt and its relations with Israel. ofirw@inss.org.il

Morr Link is a Neubauer research fellow at the Institute for National Security Studies (INSS) and a doctoral student in the Department of International Relations at the Hebrew University in Jerusalem. Her fields of research include the political economy of the Middle East and North Africa, and Israel's relations with the Abraham Accords countries. morrl@inss.org.il

Tal Angert holds a B.A. in Governance & Sustainability in the Energy & Water Division of Reichman University. She is a co-founder and researcher at the Institute for Environmental Security and Well-being Studies, and serves as sustainability and training coordinator for the Scouts youth movement. Her fields of research include environmental security and future studies. Angert.tal@gmail.com

References

Abu Zaid, M. (2022, May 19). Egypt launches national climate change strategy 2050. *Arab News*. https://arab.news/yuykf

'Adli, E. A. (2022). COP 27: The role of civilian society in intensifying the outcomes of the climate conference in Sharm el-Sheikh. *al-Malaf al-Mitzri, 92*, 35-42 [in Arabic].

Adriansen, H. K. (2015). The geography of peace: Egyptian land reclamation and agricultural cooperation with Israel. Aarhus University. https://bit.ly/3VADY82

Agricultural Agreements with Egypt. (1982, January 14). State Archive. https://bit.ly/3TCYYJC [in Hebrew].

Ashkenazi, S. (2021, November 17). The IDF will set up an intelligence unit to engage in the strategic impact of the climate crisis. *Globes*. https://bit.ly/3s3iMtP [in Hebrew].

Azhari, T. (2022, June 21). Lebanon, Syria, Egypt sign gas import agreement. *Reuters*. https://reut.rs/3gmRQTc

Bakhoum, S. (2019). Fish assemblages in surf zone of the Egyptian Mediterranean Coast off Alexandria. *Turkish Journal of Fisheries and Aquatic Sciences*, *19*(4), 351-362. https://bit.ly/3MIYFdY

Bar-Eli, A. (2010, February 18). Israel offered to operate solar power stations in Sinai. *Haaretz*. https://bit.ly/3T8U1It [in Hebrew].

Bar-Eli, A., & Liss, Y. (2012, April 22). Egypt cancels the gas agreement with Israel; EMG: "This is a breach of the peace treaty." *The Marker*. https://bit.ly/3MDQob0 [in Hebrew].

Ben Dor, L. (2018). Israel-Egypt relations since 2011. In S. Shai (Ed.), *Egypt at the crossroads: Seven years after the Arab Spring revolution* (pp. 3-5). IPS Publications. https://bit.ly/3VDs5Oy [in Hebrew].

Blackmon, J. B. (2008). *Tri-Lateral Noor al Salaam high concentration solar central receiver program*. U.S. Department of Energy. https://doi.org/10.2172/950510

Blue Economy Definitions. (n.d.). United Nations. https://bit.ly/3eKq0Qn

Butter, D. (2021). Egypt's energy ambitions and its Eastern Mediterranean Policy. In M. Tanchum (Ed.), *Eastern Mediterranean in uncharted waters: Perspectives on emerging geopolitical realities* (pp. 69-79). Konrad Adenauer Stiftung. https://bit.ly/3VHEWj4

Cohen, Y. (2000). Cooperation between Israel and its neighbors on marine science: Benefits, 14 lessons from the past, and a look to the future. In *Regional cooperation in research: List of abstracts* (p. 14). Israel Academy of Sciences and Humanities. https://bit.ly/3CLC5Nf [in Hebrew].

Curiel, I. (2022, May 8). Ministers approve Israel's first climate law: What's in it and what's missing? *Ynet*. https://bit.ly/3TxFq9A [in Hebrew].

Dresse, A., Fischhendler, I., Nielsen, J. Ø., & Zikos, D. (2019). Environmental peacebuilding: Towards a theoretical framework. *Cooperation and Conflict*, *54*(1), 99-119. https://doi.org/10.1177/0010836718808331

Dubek, E. (1998). *Nonetheless peace: Israel-Egypt relations*. Yediot Ahronot [in Hebrew].

Ecological impact of the Suez Canal Development Project. (2015, February 26). *Egypt Independent*. https://bit.ly/3MKbNj4

Egypt halts agricultural cooperation with Israel. (2013, February 22). *Zaman Press*. http://zamnpress.com/news/16842 [in Arabic].

Egyptian Ministry of Electricity and Renewable Energies. (n.d.). Renewable energy projects in Egypt. https://bit.ly/3EXfDTT [in Arabic].

Egyptian Ministry of the Environment. (n.d.). Egypt 2030 vision: The environmental dimension. https://bit.ly/3Tcmq0f [in Arabic].

Egyptian Ministry of the Environment. (2015, July 13). Egyptian Prime Minister resolution no. 1916 of 2015 [in Arabic].

Egyptian Ministry of the Environment. (2019, May 7). Egyptian Prime Minister resolution no. 1129 of 2019. https://bit.ly/3gorSP4 [in Arabic].

Egypt's Constitution of 2014. (n.d.). Constitute. https://bit.ly/3TsBpD4

Elgendy, K. (2022, July 18). Egypt as an Eastern Mediterranean power in the age of energy transition. MEI@75. https://bit.ly/3ESC1Oc

Emad, M., & Adel, S. (2022). Repercussions of the Russian-Ukrainian war on food security in Egypt. Forum For Development and Human Rights—FDHRD. https://bit.ly/3yT4CiC

Emam, A. (2021, May 4). Egypt unveils strategy to adapt to water shortages. *al-Monitor*. https://bit.ly/3D9m992

Emam, A. (2022, January 5). Egypt revives Western Desert agricultural project. *al-Monitor*. https://bit.ly/3s8NUbw

Eran, O., Rettig, E., & Winter, O. (2018, March 12). The gas deal with Egypt: Israel deepens its anchor in the Eastern Mediterranean. *INSS Insight, 1033*. https://bit.ly/3Uphg1i

Espanol, M. (2022, June 7). Egypt's gas imports from Israel hit all-time high. *al-Monitor*. https://bit.ly/3yQjXk2

EU proposes natural gas import deal with Egypt and Israel. (2022, June 9). *Reuters*. https://bit.ly/3D5KNHx

Fayid, A. (2021, November 15). Climate change in Egypt: The challenges and mechanisms for adaptation. Al-Ahram Center for Political and Strategic Studies. https://bit.ly/3Da332u [in Arabic].

4th EMGF Ministerial Meeting—March 9th, 2021. (2021, March 9). EMGF. https://bit.ly/3yGTLrW

Galil, B., Marchini, A., Occhipinti-Ambrogi, A., & Ojaveer, H. (2017). The enlargement of the Suez Canal—Erythraean introductions and management challenges. *Management of Biological Invasions*, *8*(2), 141-152. https://doi.org/10.3391/mbi.2017.8.2.02

Goldstein, T. (2005, June 30). Agreement to import gas from Egypt signed in Cairo. *Ynet*. https://bit.ly/3s4Hf1U [in Hebrew].

Gomaa, A. (2022, August 9). Russia launches production for Egypt's nuclear power plant. *al-Monitor*. https://bit.ly/3yT5bce

Gorodiski, S. (2022, February 16). Approval for sending Israeli gas to Egypt via Jordan. *Yisrael Hayom*. https://bit.ly/3MGb4zl [in Hebrew].

Greenpeace Digital (2021, February 25). Oil in the Mediterranean—nothing new under the sun. Greenpeace. https://bit.ly/3Th4CkA [in Hebrew].

Hako, N. (2022, June 23). Egypt: Agreement signed to develop largest wind project in MEA region. ESI Africa. https://bit.ly/3ScJHhs

Hayun, D. (1999, February 14). Renewal of Egypt-Israel talks on natural gas imports. Sources in energy: Egypt is under pressure from signs of gas in Israel. *Globes*. https://bit.ly/3EPPNkU [in Hebrew].

Institute for National Security Studies. (2022, February 2). The 15th Annual International Conference | Interview—Minister Tamar Zandberg on climate change and national security (video). *YouTube*. https://bit.ly/3s1L2Ng

Interuniversity Institute of Marine Sciences in Eilat. (n.d.). About. https://bit.ly/3DacfUx

Kadari-Ovadia, S., & Yaron, L. (2022, May 30). The Ministries of Education and the Environment will be obliged to incorporate learning content on the climate crisis, from kindergarten to 12th grade. *Haaretz*. https://bit.ly/3MC5DkZ [in Hebrew].

Kandil, A. (2022). Opportunities for Egypt to become a regional center following the war in Ukraine. *Takdirat Mitzriya*, *3*(93), 26-33 [in Arabic].

Keohane, R. O. (1988). International institutions: Two approaches. *International Studies Quarterly*, *32*(4), 379-396. https://doi.org/10.2307/2600589

Keynan, A., & Shoham, D. (1998). Scientific cooperation in agriculture and medical research as a means for normalizing relations between Egypt and Israel. *Annals of the New York Academy of Sciences*, *866*(1), 182-199. DOI: 10.1111/j.1749-6632.1998.tb09152.x

Klein, Z. (2019, January 14). The most significant collaboration with Egypt since the peace treaty. *Yisrael Hayom*. https://bit.ly/3MGmov7 [in Hebrew].

Kleinhaus, K., al-Sawalmih, A., Barshis, D. J., Genin, A., Grace, L. N., Hoegh-Guldberg, O., Loya, Y., Meibom, A., Osman, E. O., Ruch, J.-D., Shaked, Y., Voolstra, C. R., Zvuloni, A., & Fine, M. (2020). Science, diplomacy, and the Red Sea's unique coral reef: It's time for action. *Frontiers in Marine Science*. https://doi.org/10.3389/fmars.2020.00090

Knesset Research & Information Center. (2021, December 7). Renewable energy in Israel: Background and issues for discussion—update. The Knesset. https://bit.ly/3s2ejHE [in Hebrew].

Koren, H. (2018). Israel and Egypt: Strategic partnership, civilian distance? Mitvim: Israel Institute of Regional Foreign Policy. https://bit.ly/3EPQWJe [in Hebrew].

Koren, O. (1996, December 11). In '97 Egypt will sell to Israel only about 60% of the quantity of oil required by the Camp David Accords. *Globes*. https://bit.ly/3TeH6Fc [in Hebrew].

Lange, M. A. (2020). Climate change in the Mediterranean: Environmental impacts and extreme events. In *IEMed: Mediterranean yearbook* (pp. 30–45). https://bit.ly/3TfA82u

Maged, M. (2019, May 24). Egypt's fish farming ranks first in Africa and 8th globally. *Egypt Independent*. https://bit.ly/3TtJJ5C

Mahmoud, R. (2022, August 4). Egypt announces four-point plan to mitigate possible water crisis. *al-Monitor*. https://bit.ly/3D59rYJ

Marine Plan for Israel. (n.d.). Technion. https://bit.ly/3eMsWvS [in Hebrew].

Mikhail, G. (2021, November 30). Israel eyes solar opportunities in Egypt. *al-Monitor*. https://bit.ly/3EPbTUA

Ministry of Energy. (2021, March 9). Israel connects to European electricity grid: Minister Dr Yuval Steinitz has signed a memorandum of understanding for laying the world's longest undersea electric cable. https://bit.ly/3he3Sii

Norman, C. (1982). Scientific collaboration in the Middle East. *Science*, *215*(4533), 639-642. https://bit.ly/3VEkXS7

Pasternak, D. (2000). Long term cooperation in the development of arid regions with Egypt and Morocco: Conclusions and lessons. In *Regional cooperation in research: List of abstracts* (pp. 9-10). Israel Academy of Sciences and Humanities. https://bit.ly/3CLC5Nf [in Hebrew].

Peace treaty between the State of Israel and the Arab Republic of Egypt. (1979, March 26). https://bit.ly/3DcUHac

Planning Administration. (2018). Policy document for Israel's marine space: Mediterranean. https://bit.ly/3Vq2bgT [in Hebrew].

Podeh, E. (2022a). *From mistress to common-law wife: Israel's secret relations with countries and minorities in the Middle East, 1948-2020*. Am Oved [in Hebrew].

Podeh, E. (2022b). The many faces of normalization: Samples of Israel-Arab relations. *Strategic Assessment, 25*(1), 55-78. https://bit.ly/3t4DNok

Pohoryles, S. (2000). The Egyptian experience: Universal "prototype" of agricultural cooperation between former enemies. In *Regional cooperation in research: List of abstracts* (pp. 5-6). Israel Academy of Sciences and Humanities. https://bit.ly/3CLC5Nf [in Hebrew].

Prime Minister's Office. (2021a, July 25). Government Resolution no. 171: Transition to low carbon economy. https://bit.ly/3D6Skpx [in Hebrew].

Prime Minister's Office. (2021b, September 19). The 36th government: Principal policy points. https://bit.ly/3gbTS8H

Prime Minister's Office. (2021c, October 24). Government Resolution no. 541: Approval of update to the national plan for energy efficiency and reduction of greenhouse gas emissions. https://bit.ly/3NBoFII [in Hebrew].

Prime Minister's Office. (2021d, October 24). Government Resolution no. 542: Promotion of clean low carbon transportation. https://bit.ly/3ML4oQp [in Hebrew].

Prime Minister's Office. (2022a, March 14). Government Resolution: National plan to prevent and limit air

pollution and greenhouse gas emissions in Israel—plan for implementation. https://bit.ly/3eLVCoP [in Hebrew].

Prime Minister's Office. (2022b, May 15). Government Resolution no. 1442: Long-term plan for the development of Eilat and the Hevel Eilot region as a national and international focus for the production of food from the sea and the desert for the years 2022-2026 and amendment of government resolution. https://bit.ly/3Tftiu0 [in Hebrew].

Prime Minister's Office. (2022c, May 29). Government Resolution no. 1522: Plan to promote and expand economic ties between the State of Israel and the Arab Republic of Egypt. https://bit.ly/3UpgT6U [in Hebrew].

Prime Minister's Office. (2022d, September 18). Government Resolution no. 1861: Establishment of the Negev Forum regional mechanism. https://bit.ly/3eP8tGF [in Hebrew].

Rabinowitz, Z., & Rettig, E. (2020, February 26). Guarantees for peace: How the American oil guarantees saved the peace process between Israel and Egypt. Chaikin Chair of Geostrategy, University of Haifa. https://bit.ly/3s4Aope [in Hebrew].

Ravid, B. (2021, October 24). Bennett: We will relate to the climate crisis as an issue of national security. *Walla!* https://bit.ly/3yPtw2O [in Hebrew].

Salah, S. I., Eltaweel, M., & Abeykoon, C. (2022). Towards a sustainable energy future for Egypt: A systematic review of renewable energy sources, technologies, challenges, and recommendations. *Cleaner Engineering and Technology*, *8*. https://doi.org/10.1016/j.clet.2022.100497

Seif, M. (2021, November 3). Egypt launches its climate change strategy for 2050 and here are the details. *Sky News Arabia*. https://bit.ly/3TxGSc2 [in Arabic].

7th Ministerial Meeting—MOU Signing. 2022, June 15). East Mediterranean Gas Forum—EMGF (video). *YouTube*. https://bit.ly/3ghXPIX

Sofer, A. (2006). *The struggle for water in the Middle East*. Am Oved [in Hebrew].

Sultan, A. (2022a, April 3). Opportunities and challenges of the move to renewable energy. *al-Marsad al-Mitzri*. https://marsad.ecss.com.eg/68791/ [in Arabic].

Sultan, A. (2022b, May 19). Egypt reinforces its presence in the green hydrogen market. *al-Marsad al-Mitzri*. https://marsad.ecss.com.eg/69948/ [in Arabic].

Tagi, N. (2022, August 15). Enlight and New-Med are partnering to establish a venture in North Africa and the Middle East. Bizportal. https://bit.ly/3DIBDQ6

Tanchum, M. (2022a, March 3). The Russia-Ukraine war has turned Egypt's food crisis into an existential threat to the economy. MEI@75. https://bit.ly/3eKuiXZ

Tanchum, M. (2022b, May 5). Egypt's synergy between natural gas and green energy transition: Cairo's advances in LNG and green hydrogen are shaping the COP 27 agenda. MEI@75. https://bit.ly/3VBLr6J

TATEC Trinational Agricultural Technology Exchange and Cooperation in a similar ecosystem. (n.d.). *Semi-annual progress report reporting period—October 1, 1985 thru March 31, 1986*. USAID. https://bit.ly/3EUOdyg

Teff-Seker, Y., Rubin, A., & Eiran, E. (2019). Israel's "turn to the sea" and its effect on Israeli regional policy. *Israel Affairs, 25*(2), 234–255. https://doi.org/10.1080/13537121.2019.1577037

Terdiman, M. (2020). Israel and the Red Sea basin: Challenges and opportunities. Mitvim: Israeli Institute for Regional Foreign Policy. https://bit.ly/3g9sMil [in Hebrew].

Towards a sustainable blue economy in the Mediterranean region: 2021 Edition. (2021). Union for the Mediterranean. https://bit.ly/3yR1Zhc

Transnational Africa Green Hydrogen Alliance launched. (2022, May 20). Energy Capital & Power. https://bit.ly/3CHZ37M

216th session of the 30th Knesset: Survey by the Minister of Energy & Infrastructures of his Ministry's activities. (1994, May 17). The Knesset. https://bit.ly/3yK6oCR [in Hebrew].

'Umar, S. (2022, February 11). El-Sisi attends the One Ocean summit in France. *Sky News Arabia*. https://bit.ly/3DaLb7G [in Arabic].

What has Egypt done to place food security in heart of 2030 vision? (2022, April 21). *Egypt Today*. https://bit.ly/3TvEceH

Winter, O. (2022, March 14). Egypt and Israel: Renewable energies for peace. *INSS Insight, 1572*. https://bit.ly/3FJXpG0

Zaken, D. (2022a, March 28). The Negev Summit: The Foreign Ministers decided that the regional forum will meet regularly. *Globes*. https://bit.ly/3CKlNE6 [in Hebrew].

Zaken, D. (2022b, May 30). Elharar retreats under pressure from Bennett, Lapid, and Lieberman: What lies behind the renewal of natural gas tenders? *Globes*. https://bit.ly/3TvNyaw [in Hebrew].

Zandberg, T. (2022, February 23). Live broadcast from the Israel Climate Conference 2022 (video, from 1:06:31 to 1:28:46). *Haaretz*. https://bit.ly/3giBXNL [in Hebrew].

Ziv, H. (2022, June 8). In another eight years: Huge gas projects will turn Egypt into a regional energy center. *al-Marsad al-Mitzri*. https://marsad.ecss.com.eg/70507/ [in Arabic].

Notes

1 Interviewees and dates interviewed: Hitham Diab Bassioni, Egyptian Embassy in Israel (February 16, 2022); Ambassador Gideon Bechar, Special Envoy on Climate Change and Sustainability in the Foreign Ministry (July 13, 2022); Prof. Maoz Fine, Interuniversity Institute of Marine Sciences in Eilat (July 13, 2022); Ambassador Amira Oren, Israeli Ambassador to Egypt (July 14, 2022); Adam Schalimtzek, head of the International Relations Division, Ministry of Environmental Protection (September 20, 2022).