

ON THE MULTIFACTOR APPROACH TO THE DEVELOPMENT OF ISRAEL TERRITORIAL SEA

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Abstract. Three main interrelated factors hindering the development of the territorial sea are considered: the absence of a permanent coordinating organization; insufficient development of legislation, rules and regulations on activities in the coastal zone; the absence of a separate long-term concept of the development of the territorial sea and the coast, as part of the development strategy of the entire maritime space of Israel. In the conceptual project proposed the creation of a multi-profile coastal cluster containing industrial zones on artificial islands, a residential and health resort complex along the coast, and a multifunctional intellectual system of hydraulic structures located between them along the entire coast, also performing a transport and logistics function, combining the coast, residential and health resort complex and industrial areas.

Key words: UN Convention on the Law of the Sea, ecology, intellectual dam, sea river, closed sea basin, artificial Islands.

The power of Israel will grow by the sea.

Apparently, the main reason for the fact that for many years, since the 1980s, in Israel has done almost nothing to develop the territorial sea, can be considered the lack of consideration of the importance and working off of three main interrelated factors.

To the first factor need be attributed to the implementation of the management policy of strategically significant projects. In this case is characterized by the absence of an organization coordinating the implementation of all work, which operates on an ongoing basis and is not dependent on a change of government.

Let us consider in more detail this aspect. In decision theory, there is such a notion as a Decision Maker (DM). At the beginning of the century, grandiose projects for the creation of artificial islands were planned and gradually implemented in Dubai to expand the territory and attract tourists [1]. The Emir of Dubai acted as a DM. Under his leadership, conceptual projects designed for decades of implementation were developed, and environmental requirements were defined quite competently. The DM controls the quality and timing of execution. As a result, these projects were largely implemented and began to make a profit. A similar project of 2004 to create an artificial island called the Pearl of Qatar is successfully implemented under the leadership of its DM - the ruler of Qatar [2].

Special attention should be paid to the problem of development the territorial sea of Israel. Geopolitically, Israel is an island state, whose economic dependence on maritime trade is crucial, since 98% of its trade is by sea [3]. In the Mediterranean sea, the length of Israel's coastline, from the Gaza strip in the South to Lebanon in the North, is 195 km. At the same time, in some places in the center of the country, the width of Israel does not exceed 15 km, which creates difficulties in transportation and affects economic development and defense capability. The width of the most densely populated part of Israel-the Coastal valley is commensurate with the width of the territorial sea. Given that Israel has complete sovereignty over coastal waters and many other factors, one can speak of the obvious expediency of integrated development of the

territorial sea belonging to Israel in the interests of the country's socio-economic development and its defense capability.

The actual increase in the territory with its effective use will give a significant increase in the Israeli economy. It should be noted that according to forecasts in the next 10-20 years, Israel in the coastal region may become one of the most densely populated countries in the world [4]. And the space of the territorial sea is a reserve of accommodation on artificial islands to 20 million people.

Interest in the creation of artificial Islands along the coast of Israel began to be seen in 1992. In 2000, a feasibility study was carried out in cooperation with the Government of the Netherlands, and in 2007 this work was completed by a political document. The findings suggested the possibility of building small Islands for infrastructure such as power plants, LNG terminals, desalination plants, airports and seaports.

Shimon Peres, concerned about the inconveniences that are associated with the narrowness of the territory in the center of the country, in 2007 at a conference at the Ruppin Academic center argued that Israel "should invest in the sea and stretch our Western border in this direction by building artificial Islands" [5]. Developing this idea and taking into account the problems of defense in the work [6] of the Haifa Research Center for Maritime Policy and Strategy emphasizes "Israel needs to adopt the idea that the Eastern Mediterranean provides the country, additional strategic depth. The abilities and infrastructures to develop this approach should be examined".

In June 2012, a government decision was made to establish a steering Committee to explore the possibility of creating artificial Islands for different infrastructure clusters. On the Internet you can see an optimistic video about the project [7]. On artificial islands, it was planned to locate airports, seaports, desalination plants, power plants, military bases and other facilities. The cost of creating artificial islands was estimated at the rate of 500 acres for 1.5 billion dollars. Unfortunately, the project creation work was completed in 2014 [8] without practical results.

In January 2018, Prime Minister Benjamin Netanyahu announced the establishment of the working group to develop a project for the construction of artificial Islands off the coast of Israel under the leadership of the head of the National economic Council, Professor Avi Simkhon [9]. The Working group was tasked to present the recommendations within 180 days to transfer existing industrial infrastructure facilities to the artificial islands in the course of 15 years in order to vacate land on the mainland for residential development. These 180 days have passed, but recommendations have not been submitted.

Six months later, on July 30, 2018, the Cabinet Ministers returned to this topic, and the Prime Minister supported the plan to build an artificial island, where the airport will be located [10]. It should replace the airport of Sde Dov, which will be closed. About any projects on the integrated development of the coastal zone at the governmental level was not mentioned. But, one has to take into account that when you transfer industrial infrastructure facilities on the artificial sea structures, in addition to the territories occupied by them, significant territories of sanitary protection and protection zones around these objects are also released for civilian use. And also the environmental factors created by them are eliminated.

As one can see, the idea of developing the territorial sea is not new, but so far there are no practical results. Perhaps one of the most important reasons for this is the lack of political will to create a permanent state body (committee, ministry, commission), which as a Decision Maker should coordinate all work on the development of the marine space of Israel, paying particular attention to work in the territorial sea. Such a state committee, acting on a long-term, permanent basis, will depend little on government change and mood swings of the deputies and will allow for the sustainable implementation of projects that are strategically important for the state. The absence of a long-term coordinating body leads to such incidents as the statement in May 2018 of the head of the newly created Working Group on Artificial Islands, Professor Avi Simkhon, that the airport on the artificial island will be built in 10-15 years, noting its utmost necessity [11]. All over the world such construction goes much faster. So the large international airport

Kansai on an artificial island was built in Japan for about 3 years, since 1991. till 1994 [12]. And he was one of the first.

Obviously, a distinction must be made between the limited powers of the temporary Working Group and the permanently operating Decision Maker - the coordinating state body. The need to create such a structure was emphasized in the draft Political Document for the Israeli Maritime space [11] developed by the Ministry of Finance in 2017 and noted in [13,14]. It can be noted here that one of the founders of the Japanese economic miracle, Nobel Prize winner in economics, Vasily Leontyev, emphasized the need for constant state regulation in the implementation of strategically important projects [15].

To the second important factor can be attributed to the regulatory framework for activities in the coastal zone. And in relation to the sea space of Israel in such documents as [3,6], developed by the specialists of the Technion the Israeli Maritime plan [16], and a number of other publications for the sea space of Israel it were noted that there are a clear lack of a regulatory documentation system, especially when compared to the rules of the level of regulatory activity on the land part of Israel.

The current rules and restrictions are clearly not conducive to the economic and social development of the coastal zone. And this is reflected in the developed documents [3,16]. As is given in [16] for the sea space of Israel within the territorial sea two areas are supposed to be actively used. This is part of the sea area to the horizon line, about 7 km. (2.6% of the total sea space), and the marine common area (1.6% of the sea space) in 8 separated from each other sub-areas. In relation to the area of the territorial sea, the total area of these two sub-areas does not exceed 27% of its area. The rest of the territorial sea is reserved for various protected areas.

At the Ministry of Finance project [3], in the section on coastal infrastructure, it is limited to a drawing where only are indicated places for the possible creation of artificial Islands and infrastructure for the treatment of gas and oil in the Netanya and Hadera areas. It is stipulated that the communication between the Islands will be carried out on ships.

To the problem of preservation of sea sand on the coast in both documents is given such attention so as to the development of coastal infrastructure.

Therefore, it can be noted that in the most developed documents [3,16], related to the development of the sea space of Israel, insufficient attention was paid to the possibilities of developing the coastal zone. And, taking into account the insufficient elaboration of norms and rules for activities in the coastal zone, which must be coordinated with all structures interested in the development of the territorial sea and the restrictions existing there, we can talk about the problematic nature of its widespread integrated use in social and economic interests.

As it was somewhat bitterly noted in [17] in the Coastal valley is not less, and perhaps more than in the territorial sea, places of historical and natural heritage that require special attention. And if in the Coastal valley there were such restrictions on its development, as in the territorial sea, people would now move on it on donkeys, and not on high-speed routes with cars.

The third equally important factor is the need for a long-term conceptual project for the development of the territorial sea and coast. The draft Political Document for the Israeli Maritime Space, submitted by the Ministry of Finance, and the Israeli Maritime plan of the Technion [3,16] concerns the entire maritime space of Israel. They can be considered as source documents of the upper level and, as was shown above, they did not pay enough attention to the development of the coastal zone. Taking into account the priority conditions determined by the UN Convention for the Territorial Sea, it is necessary to develop a separate concept for the effective development of the coastal zone, which at the same time should be part of the concept of development of the entire maritime space of Israel.

At present, there is no long-term concept for the development of the territorial sea and coast developed based on multifactorial analysis and foresight design. A significant drawback of many projects on the development of the coastal zone of Israel is the lack of holistic system approach that leads to negative expert assessments. Moreover, chaotic development would lead to costly reconstruction, which would be generated by ill-considered makes. And here the question arises

of a complex, multifactorial study of a number of projects, such as moving the Sde-Dov airport to an artificial island near the beach Tel-Aviv and the creation of facilities for technological needs near the coast and other objects.

Apparently, without the formation of a separate conceptual project for the coastal zone, the implementation of actively discussed proposals for the creation of protective structures, islands or other structures in the territorial sea would be inappropriate, because without a systematic approach in the future, such structures can become a serious obstacle to the harmonious development of this part of the sea space.

Having a concept for the entire coastal zone will allow linking all local projects into one whole and greatly facilitate their development and implementation.

Summing up the three important factors discussed above, it can be said that without taking them into account and solving of the triune organizational and technical problem, Israel will still be doomed to talk about the development of the coastal zone and generation of unrealizable projects by individual innovators and organizations.

Basics of conceptual project. Consider one of the components of the triune task. In [17,18], on the basis of a long-term concept, a conceptual project was proposed for the creation of a multi-profile industrial complex in the coastal zone of the Mediterranean coast of Israel. The project of such a multi-profile coastal cluster is based on the idea of creating a triune industrial complex containing industrial zones on artificial islands and a residential and recreational and resort complex along the coast, as well as a multi-functional intelligent hydraulic engineering system (intellectual dam) located between them. In fig. a structural diagram of a multi-profile coastal cluster is presented.

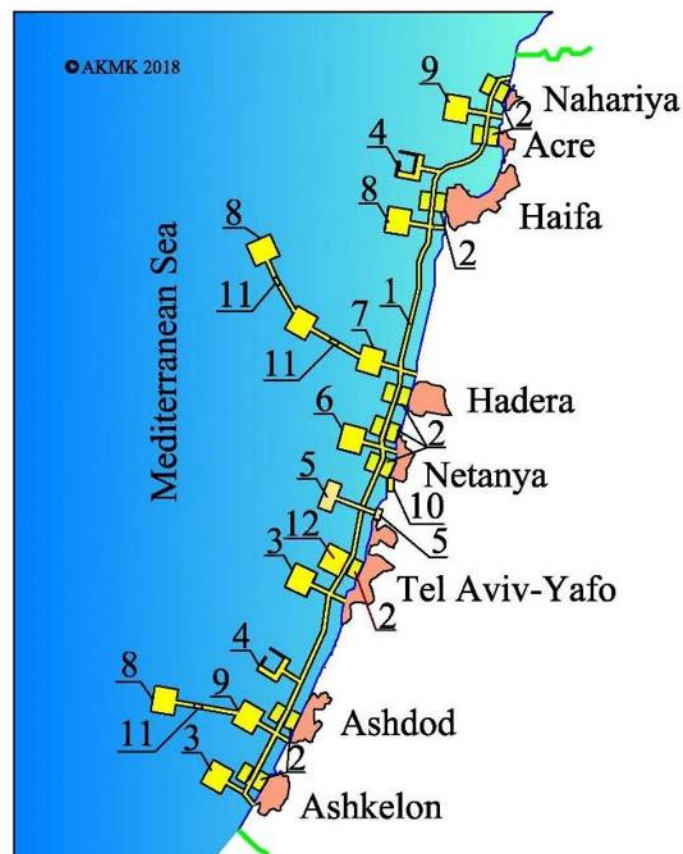


Fig. Structural diagram of a multi-profile coastal cluster

In the Fig.: 1 - intellectual dam; 2 - sea basins; 3 - desalination plants; 4 - deep sea ports; 5 - international airport; 6 - energy system; 7 - gas terminal; 8 - technological systems and services; 9 - industrial enterprises; 10 - rehabilitation medical center, 11 - bridge, 12 - residential complex.

The intellectual dam (ID) should contain a transport and logistic system uniting the coast, a recreational and resort and residential complex and industrial zones, as well as have technological systems, bank protection structures and recreation areas, and a number of others. It will become an effective high-speed transport artery connecting all cities of the coast and providing logistics for the entire complex.

The length of the transport artery can reach 180 km. It will be the longest in the world of such a structure. In addition to road traffic, one can consider the expediency of including it in the rail transportation system. ID is connected with artificial islands, where housing, tourist facilities, hotels, office centers are located. In addition, it is connected with artificial islands containing airports, several large deep sea ports and a number of small ports for direct cargo handling, desalination plants, power plants, terminals and enterprises for receiving and processing natural gas, and with other facilities. And also with technological systems that it is advisable to keep at a certain distance from the place of stay of people, for example, ammonia storage for a chemical enterprise near Haifa. The construction of the ID in conjunction with other activities should ensure compliance with environmental requirements in the coastal zone.

It is desirable to create industrial enterprises on artificial islands located beyond the horizon line.

The world has experience in laying transport arteries over water over long distances. So in the USA in 1956 a dam bridge was built across Lake Ponchartrain between the cities of Mandeville and Metheyre [19]. The bridge consists of two parallel roads, and its length is 38.42 km. In October 2018, the longest sea bridge in the world was commissioned in China, 55 km long, which connected Hong Kong and Macao with the mainland [20]. A six-lane road was built along the most modern bridge, which reduced the travel time between Hong Kong and the mainland from three hours to 30 minutes. The bridge was built in 9 years, and the cost of its construction was about \$ 20 billion. The longest bridge structure in the world is the Danyang-Kunshan viaduct in China. Its length is 164, 8 km. [21].

Between the intellectual dam and the coast, it is planned to form a resort complex, as part of a multi-profile coastal cluster. It can be located along the Mediterranean coast of Israel, comfortable for rest and recuperation, an intellectual tourist complex in the form of a self-regulating adaptive non-volatile system built on the basis of the sea river project outlined in [22]. The sea river, with devices for controlling the flow of water and debris removal, at the initial stage will work as a sectioned system containing year-round closed basins with running sea water.

One of the most important tasks in the design of all components of the multi-profile coastal cluster and its implementation should be the improvement of the ecological situation in the coastal zone, allowing to provide comfortable living conditions and minimize pollution of the Mediterranean Sea.

According to experts of the Samuel Neaman Institute for National Policy Research at the Technion by 2050 the population of Israel will increase to 18 million inhabitants. And, according to the report of the research group headed by prof. Rachelle Alterman, 98% of Israelis will have to live in giant towers, and all means of movement will be located underground [23]. At the same time, as noted by prof. Shlomo Bekhor from Technion the Israeli families have an average of 150 square meters of living space, compared with 30 in Japan, and they are unlikely to be ready to adapt to the lifestyle of Singaporeans or Japanese [23].

As we can see, the forecast in [23] is depressing. However, there is an alternative for Israel. It consists in using the space of its territorial sea and placing the inhabitants on artificial islands. In this case, it can be shown that such placement will give them significant advantages over residents of the land part of Israel.

It is associated with a positive effect on the health of the marine climate. And with the fact that floating artificial islands can provide higher seismic resistance of the structures placed on them compared to land. This, given the earthquakes likely for our region, makes them safer to

live. In addition, such decentralization of settlements provides a certain comfort to their residents. And over time, there will be an increased demand for life in such settlements.

Based on this, and the above conceptual project on the formation of a multi-industrial complex in the coastal zone, a three-layer structure can be formed on the socio-economic map of Israel.

The central layer will cover the coast with the Seaside Valley and artificial islands in the territorial sea with residential settlements. The axis of such a future conglomeration and the whole map can be a sea river located along the entire bank. The majority of the population will live in this residential area.

In the part of the territorial sea distant from the coast, a layer will be formed mainly with industrial objects. To this layer should be added and all enterprises and structures located in the adjacent and exclusive economic zone of Israel.

Another layer will be the land part of the country remote from the coast with the existing socio-economic structure. And the problems of this part of the country associated with water shortages for the development of agriculture, the restoration of Lake Kinneret and the Dead Sea can be solved by developing the territorial sea. The resource base of which will also speed up the development of the Negev desert.

Thus, during the foresight design of objects in the territorial sea and on the coast for a period of 20-30 years, it will be necessary to take into account population growth. In general, up to 20 million people can live in the central layer with a residential conglomeration, and this will allow Israel as a whole to maintain its population at 25 million.

In addition to funds sent by the state to create protective structures against the erosion of the coast by sea waves and currents in the Mediterranean and other trust funds, one of the main sources of financing and the state's additional income may be the sale of sections of the territorial sea to all Israeli citizens and private enterprises wishing to participate in his mastering. This can be done in a way similar to how land is allocated for construction. In this case, the distribution of such sections of the sea and control over their development should be carried out by a permanently operating Decision Maker - the state body coordinating all the work in the coastal zone and coordinating them with all state structures.

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