

Coping with eroding Cliff Shores in Israel: Economic, Public Policy and Environmental Implications Policy Document

Preparation of a policy document for the coastal cliff was initiated in 2006 as a multi-disciplinary joint research project by the Environmental Policy Center of the Jerusalem Institute for Israel Studies and the Ministry of Environmental Protection. The aim of the research was to formulate a national policy on coping with the environmental-physical, economic-planning and legal aspects of cliff instability. The triggers which initiated the preparation of the policy document were: firstly, a legal discussion on to what extent the State would be liable to claims for compensation for damage resulting from cliff instability and secondly, whether to accept requests for government assistance from local authorities unable to cope with the costs of cliff stabilization. Both triggers generated the need for a thorough basis for decision making on whether and how to minimize future damage to property and development rights, taking into account public and private costs and benefits, direct and indirect.

45 kilometers out of a total 190 kilometers along the Israel Mediterranean shoreline consist of coastal cliffs of 10 meters or more in height, located along the coast between Hadera and Ashkelon. The cliffs are unstable and are in a process of retreat eastward as a result of the weakness of the strata and the combination of three main processes: undercutting by waves at the base of the cliff, unstable cliff slopes and the infiltration of groundwater at the cliff top. Cliff instability is a natural process which is influenced by the height of sea level in relation to the cliff base, wave action and the presence of sand at the cliff base.

This section of the Mediterranean coast in the central area of the country is highly developed and under intensive demand for urban, residential, tourist and recreational land uses. Conflicts therefore arose between the intermittent but continual natural process of cliff retreat at the average annual rate of some 30 centimeters and the need for stable conditions for future urban development and for the safety of existing properties.

The policy document identified two principle lines of action to cope with the instability of the cliff, which could be implemented separately or jointly, according to interests and circumstances: first, the construction of physical forms of protection for stabilizing the cliff and second, regulatory mechanisms through land use planning and property controls, such as the prevention of new building in areas of high risk, and, as deemed necessary, removal or relocation of properties found to be in immediate risk. The cost of physical protection measures along sections of high risk to persons and property was estimated at 225 million shekels, at capitalized values.

The policy document recommended that physical protection measures be implemented along some 11-13 kilometers of coastal urban development (including the cliff shores of Netanya, Ashkelon and Herzliya) and along sites of particularly high national and international archaeological value. The measures of physical protection may include offshore breakwaters, geotechnical treatment of the cliff and realignment of infrastructure to prevent surface drainage towards the cliff. Intensity of use and benefit to the economy and to the public were the main criteria for allocating priority to physical intervention along high

density urban development and adjacent shores. Application of protective physical measures along these shores would not only prevent severe damage to properties in the area at risk, but also provide wide and safe sandy shores for recreation and enable the realization of urban and tourist development potential in the coastal resorts. The policy document recommends minimal physical intervention along some 30 kilometers of non-urban shores, where priority should be given to regulatory measures and warnings to visitors in areas of risk.

Expert opinions on geology, geomorphology, geotechnical aspects, marine and coastal processes, coastal engineering, economics, land use planning, legal and public administration, ecology and archaeology provided the basis for the preparation of the policy document. A Steering Committee accompanied the preparation of the document, headed by the Prime Minister's Office and which included representatives of the relevant Ministries and of environmental organizations.

The policy document was adopted by a government decision in April 2010 and is now under implementation by government Ministries. Adoption of the policy document by the government is a clear expression of the influence of this research on decision makers.