

## Technologies of coastal restoration in Eastern Black Sea

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The eastern part of the Black Sea coast mainly belonging to Georgia (313 km) is accumulative (62.3%) and abrasional-accumulative (37.7%). It is bordered by the pebble-sandy (80%) and sandy (20%) beaches.

Until 1982 the strategy of coast protection was the elaboration and building of new coastal protective structures. As long as this strategy deals with the results rather than with the reasons of coastal erosion it can not be considered as nature preserving. Thus total length of eroding coast in Georgia in 1961 was 155 km, in 1971-183 km and in 1981- 220 km. At the same time the total expenses of coast protection in towns (46km) and along the railways (18 km) were equal to 45 million roubles during 1961-1971 and to more than 80 millions during 1972-1981.

The Georgian Association of Seacoast Protection created in 1981 was in fact an experiment in the field of coastal management. Its activities are directed by the scientific-research institute of coastal morphodynamics. The latter integrates the scientific research, analysis, generalization of empirical data, experimenting and also plans their realization in space and time. According to its profile (study of seacoast nature) this institute developed qualitatively a new strategy of transforming seashore landscapes. The main goal of this strategy instead of protecting some sections of coast (e.g. with constructions or artificial beach nourishment) - is to achieve and retain the balanced budget of beachforming sediment in each dynamic system. In that case the whole energy of water is spent only in the transportation of sediment.

So the power of waves becomes creative instead of destructive. The weakened or intersected (by various reasons) interactions of adjacent sectors of shore are restored and the processes of self regulation of mobile beach zones along the whole morpho- and lithodynamic system are gradually reanimated. This is achieved by the different methods depending on natural conditions. At the same time constructing is considered as "surgery" and is applied only in exceptional cases -when it allows to speed up the achievement of the above mentioned goal.

As a result of realizing this strategy the length of eroding coast in 1982-1991 was cut down to 80 km., 93.2 million roubles were spent at 110 hectares of beaches restored. Natural landscapes were created in place of concrete constructions which is quite important in towns and resorts too. It is worth mentioning that in cases like the Georgian seacoast - with steep pebble beaches, large sediment flow's length (tens of kilometers with capacities more than 100 thousand m<sup>3</sup> and velocities up to 200 cm/day etc.), numerous submarine canyons and so on even the artificial beach nourishment was considered inexpedient, nothing to say of the regulation of beachforming processes.

The new strategy is based on the results of investigation of sediment distribution during the evolution of coastal relief in the last 5-6 thousand years (i.e. in the period of slowing down and stabilization of transgression of ocean). It enabled us to work out the conception of discontinuous lithodynamic systems evolving almost autonomously and hence subject to regulation.