

Reservoir and sea shore problem

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In 1950-1970 years on r. Rioni Gumati-Varcikhe, on Inguri and Eristskali r-s Djvari-Gali reservoirs cascade was built. In the 1990-s Chorokhi River cascade of 24 water reservoirs was began. In the stage of designing are: Namokhvani, Khudoni-Nenskra Skhalta-Kurmukheti, and other cascades. Such works cause number of negative results. Among of them, the heaviest one is the sediment deficit at the seaside. After the blocking of river stream by dam, coast supplying by sediment is prevented and processes of abrasion – are dramatically activated- that caused infrastructure and residential buildings destruction. These processes are reinforced by the modern eustasy- sea level climate rise.

Therefore the following problems are arisen as well: How to reduce siltation of reservoirs; How to avoid the deficiency of beach materials on the coast.

With the aim of mentioned problems implementation in 2010-2011 expeditions were organized, that had to design a dynamic scheme of Poti city coastline, to study the patterns of sediment distribution in the Gumati and Vartsikhe reservoirs and to select the cross-sections for a quarry operation in these water bodies.

Carried out studies have shown that the deposition of sediment occurs depending on hydraulic largeness (R). In addition siltation zone covers the reservoir and adjoining part of the River channel, length of which is a function of the river hydraulic gradient (u).

Volume of sediment in the silting zone (1.5 times exceeded the designing volume of Gumati reservoir (39.0 million m³), which has reduced to 1.5, million m³ by 2010. Out of silted sediment total volume only 80% is the beach forming one.

Formation of Vartsikhe reservoir silting prism was going so swiftly that by 1986, it has lost 98% of its projected volume (15.0 million m³). The fine sand and silt predominate there, which might be interesting for the farmers.

During the most active phase of water reservoirs operation (1956-1986), southern coast of Poti has kept the delicate balance, while the northern part (Nabada) nearly stopped advancing to the sea.

The siltation of navigation channel of the port Poti is also reduced. Since the 1990's, when the siltation of reservoirs almost reached the limit, delta of r. Rioni in the Nabada district by 2010, has advanced to the sea at 150 m. and the siltation of port navigation channel has significantly increased.

Opposing processes were developed on the coast of Batumi. After Chorokhi riv.channel migration to South and its blocking by dams, sea has washed away up to 1.5 km width of coastal land, part of the village of Adlia and threatens to Batumi airport runway.

Therefore, nowadays, the following situation arose- when the sediment load is a heavy problem for Gumati and Vartsikhe reservoirs, but is the protective material for Batumi coast from disastrous erosion. Of course, integrated and environmentally, the most successful implementation of these problems is the organization of sediment conveyer "reservoir-coast", that takes deposits from the reservoirs by the railway in Poti and from there on to Batumi most sensitive coast.