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Concept of work development for reasoning and monitoring of phyto-reclamation on the exposed bed of the Aral Sea

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As a result of level lowering in the Aral Sea, intensive desertification processes take place on the exposed seabed. The sea area decreased by 4760 thousand ha as compared that of 1960; thus, the whole this area should be considered as subjected to desertification. The area of the exposed seabed within the boundaries of Uzbekistan is about 2,731 thousand ha. As the sea dries up and under influence of groundwater level lowering, moist bottom sediments transform into solonchaks changing gradually from wet hydromorphic type into automorphic type subjected to deflation. Besides, drying send beaches also transform into hazardous deflation sources. As a result, Aeolian erosive-accumulative relief is formed around the relic seaside and extends deep to the Aral hollow.
As a result of aridization in near-delta zone, soil and vegetation degrade, leading to desertification of vegetation cover of takyr-formation on alluvial soil.
From conducted expeditions that served as a basis for image processing on an area of 2308 thousand ha and identification of remote images in order to determine risk zones, 19 classes were selected and estimated in environmental instability terms. Thus, the group of highly unstable zones, consisting of three types of sands and solonchaks blown with sands, covers vast area and accounts for 35,11 %. This area occupies 785 thousand ha of the exposed seabed. It is clear that such unstable areas cannot be protected by phyto-reclamation at present since, at a rate of 20 thousahd ha per year, this would require twice more time, i.e. almost 40 years.
Phyto-reclamation of the exposed seabed should be undertaken only in those zones, where unstable areas threaten residential areas, water bodies or nature system stability. Moreover, direct risk is posed by:
sand movement towards operating roads, hydrostructures (water bodies and canals), deltas, that threatens to put them out of operation.
salt and dust transfer towards those objects, impacting people's health.
Zone of active salt and dust transfer from deflation sources that threaten those objects is 50-70 km.
As a result, the risk zone overlapping unstable landscape can be considered as 50 km in width.
Thus, out of the total area of more than half a million hectares to be protected, 57.6 thousand ha require priority protection and, besides, there are 60.0 thousand ha that can be transformed into a zone of increased risk. Moreover, within the 50 km band northward of this zone, there are additional 466 thousand ha of strong environmental hazard, of which 368 thousand ha are in the zone of potential stabilization