

# Abstract Volume

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Beyond the River  
– Sharing Benefits and Responsibilities

# Managing Aral Lake and their Basin for Sustainable Use

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In 1960 the Aral Sea was the 4<sup>th</sup> largest lake by area. Its area was about 69000 km<sup>2</sup> and volume was 1100 km<sup>3</sup>. Level was +53.5 m a.s.l. It was a shallow lake with maximum depth about 70 m. It was a brackish-water lake with average salinity about 9-10 g/l. It was inhabited by a dozen of fish species and about 200 species of free-living invertebrates. Since 1961 has steadily dried due to withdrawal of water for irrigation from its two influents: Syr Dar'ya and Amu Dar'ya. At present the Aral Sea area is only 17000 km<sup>2</sup> (less than 25% from original area). Its modern volume is only 105 km<sup>3</sup> (less than 10% from original volume). At the end of 1980's when the level had dropped by 14 m and reached about +40 m a.s.l. the Aral Sea divided into two water bodies – the Large Aral on the South and the Small Aral on the North. Separation of the Aral Sea resulted in appearance of two lakes with different water budgets. Large Aral continues to shrink and now is about 80 km<sup>3</sup>. On the other hand Aral Sea started to increase in volume because a special dike was built in summer 1992 to raise the level. After the Aral Sea division salinity in the Large Aral continues to rise and reached 90 g/l in the Western depression and 160 g/l in the Eastern one. In Small Aral salinity started to decrease and reached now about 15 g/l.

During UNEP meeting in September 1992 that was held in Geneva in UN Palace 4 main ways on conservation and rehabilitation of the Aral Sea were put forward.

1. Conservation and rehabilitation of Small Aral Sea:

A dike was built in August 1992, but collapsed in spring 1999 when level rose for about 2.5 m higher than it was before. In autumn 2005 a new dike was completed and now level reached +42 m a.s.l. Area of Small Aral now is about 3300 km<sup>2</sup> and its volume is about 29.5 km<sup>3</sup>. From Small Aral to Large Aral at present is available an outflow via special spillway. These parameters will be sustainable only if inflow from Syr Dar'ya will be 3.5 km<sup>3</sup>/year. Outflow via water-spill should be 1.15 km<sup>3</sup>/year. All these positive changes will be accompanied by biodiversity increase. Fisheries and hunting will recovered too.

2. Conservation and rehabilitation of Large Aral Sea:

at least two projects to save Large Aral are discussed now. According to the first one water from Amu Dar'ya river via Adjibay Gulf reservoir should reach western depression. It would allow stabilizing its level around +33 m a.s.l. Simultaneously the Eastern depression would continue to shrink to a small, residual brine lake. According

to another project water from Amu Dar'ya river via Ak Dar'ya bed would go the Eastern depression. According to this plan Eastern Large Aral should receive water from Small Aral. According to unofficial information in autumn last year a new spillway from Mezhdurechensky reservoir to Ak Dar'ya collapsed. So, it is unclear now by which way to bring Amu Dar'ya water to the Large Aral. Harvesting of brine shrimp cysts (*Artemia* sp.) is quite possible in the both parts of Large Aral. Fishery and hunting are not possible due to high salinity in the Large Aral Sea.

3. Conservation and rehabilitation of delta and deltaic water bodies of Syr Dar'ya River:  
After construction of the first dike in the Berg's strait in summer 1992, Syr Dar'ya delta was moved slightly northwards and some freshwater reservoirs were rehabilitated: Tuschibas, Kamyslybas, Zhalanashkol, Karasholan. Kazakhstan government has plans to restore much more lakes in Syr Dar'ya delta. All these plans are under consideration now. It will allow nearly full rehabilitation of freshwater fishery and hunting.
4. Conservation and rehabilitation of delta and deltaic water bodies of Amu Dar'ya River:  
In lower reaches of Amu Dar'ya a number of freshwater and brackish lakes and wetlands were restored and new reservoirs built. One of the most successful projects is Sudochye Lake restoration. Besides Sudochye, there were a number of other successful projects: Mezhdurechensky, Muynak, Sarbas and other reservoirs. To some degree the restoration efforts brought back fishery and hunting activity to this area.