



## Aral Sea Wetland Restoration Strategy, Central Asia

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**Short title:** Wetland restoration incorporates ecosystem service value, Aral Sea, Central Asia

**Key Message:** Aral Sea Wetland valuation shows that wetland is more than one valuable ecosystem service and is a useful tool for policy and decision making

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### What is the problem?

In the early sixties the Government of the former Soviet Union decided to intensify and expand its irrigation activities in Central Asia. The irrigation water was taken from Amudarya and Syrdarya, the two main rivers contributing water to the Aral Sea. The result has been shrinking and salinisation of the Aral Sea and reduced availability of water in the deltas of these two rivers, considerable loss of biodiversity, vegetation and fisheries, the occurrence of salt and dust-laden winds and the deteriorating health conditions because of salinisation of groundwater. In 1995, about 10% of the original wetlands remained in the delta's, largely maintained by a mix of incidental floodwaters and saline drainage water flowing into constructed water reservoirs.

The World Bank coordinated Aral Sea Programme (ASP) started the Aral Sea Wetland Restoration Project (ASWRP), focussed on the Amu Darya delta in Uzbekistan. A consortium of Dutch consultants in close consultation with local Uzbek institutes developed a coherent strategy for the restoration of this delta, broadly accepted by local stakeholders and government authorities, and an investment programme of priority pilot projects.

### Which ecosystem were considered and how?

The main objective of the study was to bring a halt to and if possible mitigate the deteriorating environmental conditions and its effects on the local population in the Amu Darya delta by wetland restoration. The objective links human wellbeing directly to environmental conditions. In their work plan, the consultants took the ecosystem services of a dynamic semi-natural wetland system as the point of departure, and used valuation of these services as a means to structure the decision making process on a future development strategy of the delta.

The study has all characteristic of an SEA integrated into a strategy development process. The strategy development process was based on the development and comparison of alternative strategies, making use of local knowledge, aimed at providing relevant social, economic and environmental information for decision making on the future development of the Amudarya delta.

Three main ecosystems were identified in the Amu Darya, providing key ecosystem services: permanent lakes and marshes, seasonally flooded plains, and drylands with groundwater

supporting dense vegetation. The larger part of the delta nowadays consists of degraded steppes no longer functioning as a part of delta ecosystem and not providing any relevant services. The upstream half of the delta is converted to irrigated land.

The Amu Darya delta ecosystem services were first determined qualitatively and later on quantified where possible, based on information from local scientists, government agencies, representatives from the delta population and a socio-economic survey. Services were assessed for three situations:

1. The former natural state when 90% of the delta could become flooded during summer floods;
2. The present state, leaving only 10% of the original wetland area, mainly artificially maintained;
3. Restoration potential with the presently available quantity of water.

Social, economic and ecological values derived from wetland ecosystem services were quantified in semi-quantitative terms. Values referred to numbers of beneficiaries, jobs, or production levels of various land use forms. With the available information an ecosystem services-values matrix was constructed to provide insight in the multifunctional character of the natural environment in relation to human activities. A multicriteria analysis was used to compare the outcomes of different development strategies. The weights applied to ecosystem services in the MCA were determined in participatory stakeholder workshops.

Ecosystem services	Social values	Economic values	Ecological values
Recharge of groundwater	Fundamental function for the maintenance of all other ecological processes		
Prevention of dust/salt transport by wind	living conditions / health	Protection of irrigation schemes	
Maintenance of biological diversity.		genetic reservoirs (wild ancestors / medicinal)	Many red listed / threatened species.
Fish spawning /nursing		fisheries and canning plant	survival aquatic organisms.
Pastures		cattle raising	
Reedlands		processing industry	
Water supply		agriculture, aquaculture	
Muskrat, waterfowl,	Local hunting (meat /skins)	Fur & meat industry	
Liquorice and other wood resources	Fire and construction wood for local use.	Liquorice roots for export. Dried plants for fodder.	

*Table 1 Simplified ecosystem services - values matrix for Amy Darya wetlands*

**What input was necessary for this analysis?**

Duration of the environmental assessments, strategy development, including all preparatory studies and participatory process, was 12 months. Total costs of the studies amounted to

US US\$1 million. Investment cost for the proposed programme of projects was US\$ 20 million. A first pilot project has been implemented at an approximate cost of US \$ 4 million. Time expenditure included hiring one permanent expatriate project leader; 3 permanent local experts; 6 expatriate experts (two visits of 1 month each) and 12 local scientists (3 months each).

### **How was this information used to change/inform local/regional policy?**

From a strategic perspective it was apparent for all, that restoration of the ecology of the area had to receive first priority since “everything else depends on the health of the environment”, as pointed out by one representative. The Aral Sea rated lowest, indicating that people, for the time being, have given up on the Aral Sea itself in favour of the delta area.

By focussing on multiple values of ecosystem services instead of translating services directly into monetary values, it became apparent that for local stakeholders as well as government representatives, ecological values, expressed in their own terms, received highest ranking. Discussing these values and more importantly, recognising stakeholders for each ecosystem service did not distract the discussion to aggregated figures on money.

The services-values matrix was a helpful tool as it provided immediate insight in the social, economic and ecological consequences of interventions. Presenting the matrix for the former, the present and possible future restored situation, proved to be a very strong tool to convince decision makers of the values of wetlands and related ecosystem services. It proved to them that restoration of wetland services might be a better option than the continued construction of water retention and irrigation works. The former focus on one service only, i.e. water supply for irrigation, denies that other services exist..

Valuation of ecosystem services was instrumental in changing the course of development from technocratic and unsustainable interventions, towards the restoration of natural processes, which are much better capable of creating added value to inhabitants under the dynamic conditions of the water stressed delta. The process followed created a strong coalition of local stakeholders and authorities, resulting in necessary pressure to convince national government and the donor community to invest in a pilot project.

### **References:**

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