

# Revitalizing Manchar

## Introduction

Manchar, a beautiful shallow-water lake with an average depth of 0.5 to 3.75 m. is located in district Jamshoro, Sindh. Flanked by the Kirthar Mountain Range in the west, Lakki Hills in the south, the Indus River in the east, and protective embankments in the north and the north-east, Manchar is a major freshwater resource in an otherwise arid region.

A source of livelihood for half a million fishermen, locally called Mohanas, Manchar's waters are also used for irrigation and domestic purposes by the communities living around the lake because the groundwater in the vicinity is brackish and not suitable for drinking or irrigation. Significantly, the lake has been home to thousands of Siberian migratory water birds in the past, its fish being their staple. Sadly, the lake is no longer the harbour it once was for these birds. The numbers coming to Manchar have dwindled drastically, from 25,000 birds counted in 1988, to just 2,800 in 2002.

Unfortunately, lack of management and decades of draining untreated agricultural and industrial waste into the lake has converted this fresh water reservoir into a pool of toxins destroying its natural aquatic flora and fauna and endangering the lives and livelihoods of its inhabitants.

## Problem

Originally fed through storm water and hill torrents from the Kirthar Mountains, and inundation canals (namely Aral Wah and DanisterWah) from the Indus, Manchar had a third inlet, the Main Nara Valley (MNV) drain, added to it in 1932. Initially conceived as an inundation canal, the MNV was later re-modeled to take in sewage from the towns of upper Sindh. It was with the construction of the MNV drain, that the quality of the water was compromised and the degradation of the ecosystem of the lake started.

The situation was further exacerbated in the 1980s, when the MNV drain began to be used to carry industrial and agricultural effluents. In the 1990s, it was further expanded under the Right Bank Outfall Drain (RBOD) Scheme—a mega project initiated to drain industrial and agricultural effluent directly into the sea. However, the RBOD was left incomplete and effluents continued to drain into Manchar Lake.

## Study: objectives and findings

A study conducted by the PCRWR in collaboration with the USPCAS-W in 2016-17, aimed at evaluating the quality of the water of the lake, identifying the sources of contamination, and understanding the impact of the degradation of the ecosystem on the local population found that untreated agricultural and industrial waste entering Manchar through the MNV has resulted in

raising the levels of pollutants entering the lake to dangerous levels rendering the water toxic and unsuitable for drinking and irrigation. Treated water provided by governmental agencies was found insufficient to meet the needs of the local communities.

In testing for microbiological contamination, findings revealed a substantial presence of Coliform and E.coli bacteria. Similarly, tests for Persistent Organic Pollutants (POPs) found pollutants to be 3-16 times higher than the acceptable threshold. Moreover, Dichloro Diphenyl Trichloroethane (DDT) was also found in the water samples. POPs can cause death as well as harmful illnesses relating to the endocrine, reproductive, and immune systems, as well as neurological disorders and cancer.

### **Impact on the community**

The highly saline and heavily contaminated water has taken a profound toll on local communities. Waterborne diseases are common. Villagers complain of the prevalence of diarrhoea, dysentery, gastric diseases, hepatitis B and C, as well as skin diseases. In a community, where men are the main providers and where the main occupation is fishing, dwindling fish stocks have meant drastic reduction in household income. Lower earnings have led to widespread malnutrition, the brunt of which is borne by women since women generally get less food and drink than men, a custom based on the widely prevalent but false notion that men need more food since they perform greater physical labour.

Malnutrition combined with child marriages has led to increasing complications during pregnancy and childbirth. The resultant medical conditions can be chronic and acute and can affect both the mother and the child. Some of the conditions may include impaired liver function, low platelet count, intrauterine growth retardation, pre-term birth and maternal and peri-natal deaths. Other complications such as higher rates of pre-eclampsia and gestational hypertension in pregnant women may also be caused by saline contamination of drinking water.

Health facilities are all but non-existent. A mobile hospital, under the aegis of the Red Cross is no longer functional and people have to go the health clinic at Bubuk village or Sehwan hospital if they face health problems—a daunting task for most, given financial and mobility issues.

For women the disappearance of aquatic plants like the lotus and *kum*, and depleting fish stocks, has not only resulted in the loss of livelihood but has also left them more house-bound as they no longer have a reason to leave the house. Other livelihood options such as rearing livestock, chicken, buffalos and goats, have become more difficult since high salinity during the low-flow season means water for livestock must be found or purchased from elsewhere and this creates an additional financial burden. Sewing and handwork—which could be credible earning options, are barely profitable because of the restricted mobility of the women and their limited access to the market.

Schooling for girls and young women is rare, in part because teachers rarely show up to work, and families do not wish to spend money on transport for girls to attend nearby schools. There is also a general disinclination to educate girls since they are not seen as earning members for the family.

Aggravating the loss of income from fishing, is the loss of shelter for the Mohanas. Since the Mohanas live in house boats constructed from wood and bound by iron nails and bands, the loss of their boats to saline water means loss of both their source of income as well as shelter. Those unable to repair or replace their boats have been relocating to dry land, living in fragile huts made of woven reed or mud and which are particularly vulnerable in the monsoon season.

Many families, or in some cases, the young men of the family, seeing no future prospects in Manchar, have been migrating to the Punjab or other parts of Sindh, and also to the Middle East in search of better earnings from fishing and construction. Unfortunately, many families relocating to other fishing areas are falling prey to exploitative contract fishing practices and child labour.

Those communities whose main livelihood was agriculture, have fared somewhat better than the fishing communities, though they too have suffered serious setbacks because their farms were being irrigated by saline lake water. Where once there was diversity and abundance in crops: cabbages, dates, guava, herbs, lemons, mangoes, potatoes, tomatoes and turnips, now, due to the twin menace of salinity and waterlogging, only wheat, canola, red pepper, corn, mustard and potatoes are grown. However, agricultural communities were able to adjust quicker than the fishing communities to the changing environment. This was partially because they had better access to education compared to the fishing communities; and because they were less reliant on Manchar lake and thus were able to switch livelihood options sooner than the fishing communities.

## **Conclusions and recommendations**

This research offers an important insight into how environmental degradation affects men and women differently, not only at the individual level, but also at the household and community levels. Not surprisingly, women wanted a better future for their children, especially better education opportunities. Women also expressed a desire for more livelihood options beyond handicrafts and sewing, as well as need for greater access to markets and to buyers for their products. Men too shared the same dream as women for better opportunities for their children.

Consistently, men and women recalled a life of prosperity, rich in flora and fauna, which enabled a good livelihood, good health and education facilities, as well as greater mobility and autonomy for women, before the waters of the lake were polluted.

Sustainable management of the lake requires that it should be well protected from contamination, that it should be assessed regularly and maintained in a healthy condition. To achieve these objectives it is suggested that the following measures be adopted:

### ***Rehabilitation of the Lake***

- Release of untreated wastewater into the lake to be stopped immediately.
- Since the major source of pollution is the MNV drain and its tributaries derived from the Shahdaskot and Miro Khan areas, it is essential that the ROBD is completed so that industrial wastewater and sewage from the urban areas of upper Sindh are diverted directly into the sea.
- The waters of the lake as well the Indus River to be monitored on a long-term basis till the waters are deemed healthy again—and to ensure they remain healthy.
- Environmental flow may allowed for Manchar Lake to dilute the water pollution level.

### ***Fishing***

- The designs of the Danister and Aral Wah gates and its regulators to be modified so that fish hatchlings cannot escape from the lake.
- Awareness among the fisherfolk to be raised regarding harmful fishing practices such as the use of toxic grain as bait, and DDT, dynamite and motorized boats to increase catch.

### ***Social and economic practises***

- Financial incentives such as scholarship for girls' education to be provided to encourage parents to support schooling for their daughters.
- More stringent monitoring is needed to ensure teachers are not absent from their posts.
- Opportunities for alternative livelihoods and training in skills such as sewing, to be provided for women.
- Better and permanent housing to be made available, especially for those who cannot afford secure shelter and are currently residing in houseboats.
- Regular potable water supply to be ensured. This means that either the government sets up reverse osmosis plants for each village, or it ensures a regular supply of electricity so that filter plants that are already in place can operate at optimum levels.