

# Problems created by the use of water sources

Secure water supplies are needed in order to support irrigation, food production, manufacturing and energy development. Water supply issues can lead to environmental problems as well as have severe implications on human welfare and economic activity.

## **CASE STUDY: Aral Sea**

### **Location:**

The Aral sea is located in the continent of Asia. It is a transboundary lake, with one half in Kazakhstan and the other in Uzbekistan. Rivers enter the Aral sea, with the Syr Darya entering from the northeast and the Amu Darya entering from the south.

### **The water supply issue?**

In the late 1950s the Soviet government decided that the two rivers that fed the Aral Sea, the Amu Darya from the south and the Syr Darya from the northeast, would be diverted in order to irrigate the desert, in an attempt to grow rice and cotton. The Soviet scheme was based on the construction of a series of dams on the two rivers creating reservoirs, from which 40,000km of canals could be dug to irrigate the fields. Due to this diversion, less and less water reached the Aral Sea causing it to shrink in size.

### **Economic Impacts:**

Due to the diversion of the water from the two rivers, the amount of water in the Aral sea was severely reduced. This has had many economic impacts such as:

- The increased salinity of the water meant that fish and other marine life in the Aral sea died. As a result the Aral Sea fishing industry, which used to employ 40,000 and produced 1/6 of the Soviet Union's entire fish catch, has been ruined.
- The reduced flow into the Aral sea meant that salt was blown onto the surrounding area. Camels therefore died because the grass they were consuming was too salty. One fishermen in the area lost 16 camels as a result of this.
- Many factories that lined the coast of the Aral Sea relied on the sea to export and import goods. When the sea dried up this trade route was disrupted and therefore led to the closure of these factories. This not only reduced the economic output of the area, but also caused the loss of jobs for many local people.

### **Human health and welfare impacts:**

- Respiratory illnesses including tuberculosis, cancer, digestive disorders and infectious diseases are common in the region now due to dust containing highly toxic chemicals and fertilisers blowing from the dried sea.
- There is a high child mortality rate of 75 in every 1,000 newborns and maternity death of 12 in every 1,000 women.
- Drinking water supplies have are low, with the water being contaminated with pesticides and other agricultural chemicals. The water also contains bacteria and viruses which are causing disease in the Aral region.

### **Environmental Impacts:**

- 24 species of fish that once thrived in the Aral sea including caviar rich sturgeon, pike, perch and silver carp are now gone due to the high salinity and loss of water.
- By the late 1980s, 10,424m<sup>2</sup> of the river had become desert and layered with toxic salt.
- Water salinity in the 1950s was 10g/litre, however this increased to 26g/litre in 1990 which is far too high for marine life to survive.
- Due to a lack of food and freshwater only a few dozen of the 180 land animals survived in the region
- The water level has dropped by 16 metres and the volume has been reduced by 75% with the sea having shrunk to 2/5 of its original size and now ranks about 10th in the world.

