Rescuing the Dead Sea?

The Dead Sea lies more than 400 metres below sea level. It is a major tourist attraction for people who go to float in its mineral-rich waters and cover themselves with mud from its bed. However, the Dead Sea is now receding at the rate of a metre a year and has dropped 25 meters in the past 50 years.

Its eastern shore is in Jordan and its western side is under Israeli control. About two-thirds lie in Palestinian territory in the West Bank. The distribution of water in the region is a contentious issue, with most of the underground aquifers in the West Bank under Israeli control. The Palestinians say they are severely deprived of water resources compared with Israeli settlements in the West Bank. Water shortages in Jordan were much worse than in either Israel or the Palestinian Territories.

The Sinking Sea

The Dead Sea is fed by the River Jordan. However, due to abstraction by farmers along its banks, the Jordan is barely a trickle by the time it enters into the Dead Sea, and much of that is sewage coming out of Jerusalem and West Bank settlements.

Water levels have been declining for about 40 years, the lake’s surface area has shrunk by 30% in the past two decades and thousands of sinkholes have appeared on its shore. The Dead Sea’s salty waters are shrinking so fast that it has already shed its southern half. According to Friends of the Earth, by 2050 the sea will be little more than a pond the size of two football fields.

The main cause of the decline is the appropriation of more than 98% of water from the river Jordan to the north for agricultural and domestic use by Israel, Syria and Jordan. The commercial and industrial extraction of vital minerals from the sea is also to blame. Industry uses the waters of the Dead Sea to pump into evaporation ponds to allow the extraction of minerals, such as potash, bromine, magnesium and salt. However, mineral extraction is economically important. Global sales from Ahava Dead Sea Laboratories, an Israeli firm that manufactures Dead Sea beauty products, are valued at about£100m a year. Palestinians are denied access to the economic potential of the Dead Sea.

In December 2013 Israeli, Jordanian and Palestinian ministers signed a deal to slow desiccation. Backed by the World Bank, they plan to build a desalination plant on the Red Sea and pipe the run-off 180km (112 miles) north to the Dead Sea.
Experimental mixing pools at the Dead Sea Works industrial complex were part of ambitious and controversial proposal to build a conduit to pump water from the Red Sea to the Dead Sea. These pools mixed different quantities of water from the Red Sea and the Dead Sea. The results were conflicting. In one experimental pool, established in 2003 – a mixture of 70% water from the Dead Sea and 30% water from the Red Sea – a white scum of algae floated on top of the water. In an adjacent pool, with exactly the same proportions of Dead Sea and Red Sea waters, established in 2012, the colour of the water was red. The red colour of this pool was due to the blooming of bacteria. The algae indicate that the mixing on a large scale would encourage the growth of living organisms in a sea with no life.

The World Bank conducted a study into the feasibility of taking water through tunnels, pipes and canals from the Red Sea to replenish the Dead Sea. Public hearings were held over the ‘Red-Dead Conduit’. The Bank considered a number of options, all of which involved massive construction in ecologically delicate areas of desert between the two seas. The inclusion of two stretches of canal under one of the options would attract further development along their banks. Whether a change in the chemical composition of Dead Sea waters would impact on its mineral extraction business is a major consideration.

The conduit plan ignores the basic cause of the shrinking Dead Sea. If Israel, Jordan and Syria halved the amount of water they diverted from the Jordan River, the Dead Sea would stabilise. However, with population growth and rising standards of living in some areas, the demand for water is likely to increase in the future.

According to environmentalists, the best solution is for the Jordan River to flow again – this is what nature intended. According to the water ministers of Jordan and Palestine, and the Israeli energy and infrastructure minister, the Red-Dead Conduit will save the Dead Sea. They believe that the inflow of water from the Red Sea will slow the drying up of the Dead Sea. In addition, desalinated water from the Red Sea will also be supplied to the cities of Eilat in Israel and Aqaba in Jordan for domestic consumption.

Critics claim it will provide only about 10% of the volume of water needed to stabilise the Dead Sea. Moreover, it will threaten its unique characteristics, and will not alleviate severe water shortages in the area. According to the agreement, 200 million m$^3$ of water will be pumped from the Red Sea every year. Half will be desalinated at a new plant in Aqaba, and the rest will be piped to the Dead Sea. Construction of the pipeline is likely to take up to five years and cost up to £400m. Israel will sell water from the Sea of Galilee to Jordan and desalinated water to the Palestinians.

The project would supply less than 100m of the 800m cubic metres of water needed each year to stabilise the Dead Sea at current levels.

For a region in which conflict is common, this is an example of where countries have come together to try and find a solution. The problem is that industrialists and environmentalists – often disagreeing with each other – believe that they have found the wrong solution. It could be an expensive mistake that only time will tell.
Activities

1 What is the main source of water entering the Dead Sea?

2 How much of this water is being extracted before it enters the Dead Sea?

3 What evidence is there that the Dead Sea is drying up at an accelerating rate?

4 Which three countries border the Dead Sea?

5 What are the water-related issues in this region?

6 In what ways might the Red-Dead conduit affect (a) the environment and (b) economy of the Dead Sea?

7 What, according to environmentalists, should be the solution to the shrinking Dead Sea?

Useful Website

World Bank overview of the Red Sea - Dead Sea project
Answers

1 The River Jordan

2 Up to 98% of the flow is extracted.

3 The Dead Sea has dropped 25m over the last fifty years (an average of 0.5 m/year) but is now dropping at a rate of 1m/year.

4 Israel, Jordan and Palestine

5 The distribution of water in the region is very uneven, with most of the underground aquifers in the West Bank under Israeli control. The Palestinians say they are severely deprived of water resources compared with Israeli settlements in the West Bank. Water shortages in Jordan were much worse than in either Israel or the Palestinian Territories. In addition, with population growth and rising standards of living in some areas, the demand for water is likely to increase in the future. It has been suggested that uneven access to water in the region could trigger war.

6 The introduction of Red Sea water could bring bacteria and other living organisms which could invade and disrupt the Dead Sea’s unique environment. Experiments have already caused algal blooms of exotic (alien) species. The economy could be hit in two main ways – the extractive industry is worth £100 million a year to Israel – this could be affected as the composition of mud and water changes in the Dead Sea. The tourist industry could also decline as the sea shrinks – however, if stabilization of the Dead Sea is achieved, the tourist industry may be saved. If the water quality changes (either due to the Red-Dead conduit or the sewage carried in by the Jordan), the Dead Sea may lose its unique ‘floating’ attraction and less tourists will come to float or apply the cleansing muds.

7 Environmentalists believe that water abstraction from the River Jordan should be limited and that the river should be allowed to flow as naturally as possible – an unlikely scenario in a region where there are water shortages.