

Text E The three central problems

There are three decisive problems. First, precipitation is by no means equally distributed all over the globe. This means that not all have equal access to water resources and that some countries have much less accessible water than the global average would seem to indicate. The question is whether water shortages are already severe in some places today. Second, there will be more and more people on Earth. Since precipitation levels will remain more or less constant this will mean fewer water resources for each person. The question is whether we will see more severe shortages in the future. Third, many countries receive a large part of their water resources from rivers; 261 river systems, draining just less than half of the planet's land area, are shared by two or more countries, and at least ten rivers flow through half a dozen or more countries. Most Middle Eastern countries share aquifers. This means that the water question also has an international perspective and - if cooperation breaks down - an international conflict potential.

Beyond these three problems there are two other issues, which are often articulated in connection with the water shortage problem, but which are really conceptually quite separate. One is the worry about water pollution, particularly of potable water. While it is of course important to avoid water pollution in part because pollution restricts the presently available amount of freshwater, it is not related to the problem of water shortage *per se*. Consequently, we will look at this problem in the chapter on potable water and pesticides.

The second issue is about the shortage of access to water in the Third World, a problem, that we have already looked at. This problem, while getting smaller, is still a major obstacle for global welfare. In discussing water shortage, reference to the lack of universal access to drinking water and sanitation is often thrown in for good measure, but of course this issue is entirely separate from the question of shortages. First, the cause is not lack of water (since human requirements constitute just 50-100 liters a day which any country but Kuwait can deliver) but rather a lack of investment in infrastructure. Second, the solution lies not in cutting back on existing consumption but actually in increasing future consumption.

Finally, we should just mention global warming and its connection to water use. Intuitively, we might be tempted to think that a warmer world would mean more evaporation, less water, more problems. But more evaporation also means more precipitation. Essentially, global climate models seem to change where water shortages appear (pushing some countries above or below the threshold) but the total changes are small (1-5 percent) and go both ways.