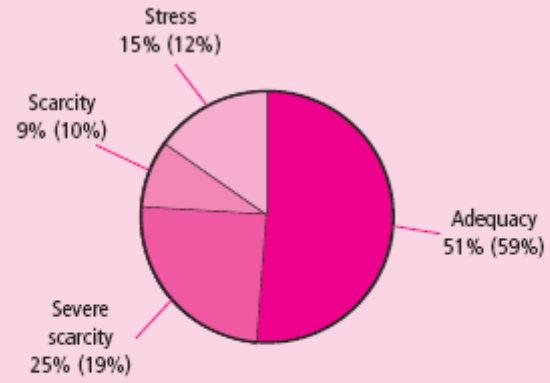
Global water resources become precarious

Case taken from The International Business Environment, second edition (Palgrave, 2006), by Janet Morrison

The world is becoming drier. Many vital rivers and lakes, once offering abundant water, have shrunk, mainly due to climate change, irrigation and demands of growing populations. Moreover, rivers and lakes in some parts of the world have become so polluted that their water is unusable – a situation that is made worse by the effects of climate change. It is estimated by the UN that nearly a third of the world's population, at least 2 billion people, will be affected by water scarcity by 2025 (see figure). Resources in groundwater, the water stored in underground aquifers, is increasingly being drawn on, and in some areas, such as northern China, serious depletion is occurring.



Note: 1995 percentages in brackets.

The world's water availability (as estimated percentage of population in 2025)

Source: Houlder, 14 August 2001.

Farmers are the biggest consumers of water, irrigation accounting for 75 per cent of all water drawn from rivers, reservoirs and aquifers. Growing the food for a person to eat requires a thousand times as much water as that person needs for drinking purposes. Growing populations demand more food, and agricultural scientists estimate that farm water use will need to be increased by 15–20 per cent in the coming 25 years to maintain food supplies. On the other hand, environmental scientists say that water use is severely threatening ecosystems and needs to be reduced by 10 per cent to maintain rivers and lakes. According to the World Development Report 2003, much of the world's land surface is 'fragile', that is, 'vulnerable to degradation, erosion, floods and landslides' (World Bank, 2002, p. 60). These areas are mainly in East and South Asia, sub-Saharan Africa, the Middle East and North Africa. Between 1950 and 2000, the rural populations tripled and even quadrupled in some of the countries where people living on fragile lands make up half the total population. To make matters worse, a high proportion of the countries which have significant populations living on fragile lands have suffered from civil conflicts in the last decade. Nineteen countries in sub-Saharan Africa fall into this category (World Bank, 2002).

Improving water management and seeking innovative ways to improve efficiency are recommended by water experts. More than half the water that is used in irrigation systems never reaches crops, due to leakages, evaporation and poor management. Drip irrigation systems and precision sprinklers can alleviate this wastage. Scientists have made progress in developing crop strains which are drought-resistant. New water-saving techniques are being designed to reduce the water needed to grow rice. For some countries, importing food alleviates the problems of water scarcity, but this solution is only feasible for wealthier countries, such as Jordan. It would not be workable in the poorest countries. For China and India, the world market would not be able to meet the needs of their large populations. Both are engaged in major hydrological schemes to transfer water long distances. However, the experience in India has been that the promises of political leaders and bureaucrats that reliable water infrastructure would reach rural villages remain unfulfilled. Self-help has

stepped in, with extensive rainwater harvesting systems, relying on man-made ponds, tanks, channels and a variety of other structures, some medieval in origin.

While the World Bank recommends that new infrastructure projects are needed, environmentalists argue that some of these have caused ecological destruction and are very costly. They urge that large projects on their own are not the solution: conservation and better water management are the keys to combating water shortages and protecting the environment. In addition, building desalination plants to use water from the world's oceans, while expensive, is an alternative. New desalination technology is reducing the costs, bringing the process within the reach of poorer countries. The solar-powered desalination plant represents the kind of innovative approach that offers hope of future sustainable water supply.

Sources: Houlder, V., 'Low water', Financial Times, 14 August 2001; Houlder, V., 'World in drier straits', Financial Times, 11 August 2003; World Bank (2002) World Development Report 2003; Houlder, V., 'Parched cities turn to the sea to quench their thirst', Financial Times, 23 June 2004; Luce, E., 'Supply and demands: what has water to do with politics', Financial Times, 24 July 2004.

Case questions

How does water supply highlight the tension between economic growth and environmental protection?
What solutions does the case study highlight for combating water shortages?

@ The World Bank's dedicated page on water can be found here: http://water.worldbank.org/water