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# Natural resources

## Key facts

It takes from 2 000 to 5 000 litres of water to produce a person's daily food.

Between 2000 and 2004, around 262 million people were affected by climate-related disasters. Of these, 98 percent lived in developing countries.

With world population expected to reach 8.2 billion by 2030, the Earth will have to feed an additional 1.5 billion people, 90 percent of whom will be living in developing countries.

Twenty percent of the world's population live in river basin areas that are at risk of frequent flooding.

More than 1.2 billion people live in areas of severe water scarcity, which is where there is not enough water for everyone's needs. About 1.6 billion people live in water-scarce basins, where human capacity or financial resources are likely to prove insufficient to develop adequate water resources.

An estimated 250 million people already have been affected by desertification, and nearly one billion more are at risk.

## The challenges of scarcity and climate change

Natural resources – land, water and genetic material – are essential to food production, rural development and sustainable livelihoods. Unfortunately, conflicts over access to these resources, long a feature of human history, are likely to increase in many regions because of rising demand for food, fibre and energy, as well as the loss and degradation of productive land. Conflicts will be further exacerbated by changing growing conditions, increased water scarcity, loss of biodiversity, extreme weather events and other effects of climate change. If productive agriculture is to be safeguarded, these challenges will have to be addressed.

## Land resources

Land tenure is an important issue. FAO promotes the adoption of land tenure policies that guarantee adequate access to land resources. It works with other international agencies to assist this process through the development of guidelines covering good governance in land tenure and administration, and property restitution for refugees and displaced persons.

FAO's land management programme supports sustainable farming and promotes better understanding of land characteristics and their potential uses. It works on land resource inventories and assessments and recently launched a world soil database.



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*More food needs to be grown with less water.*

## Safeguarding water resources

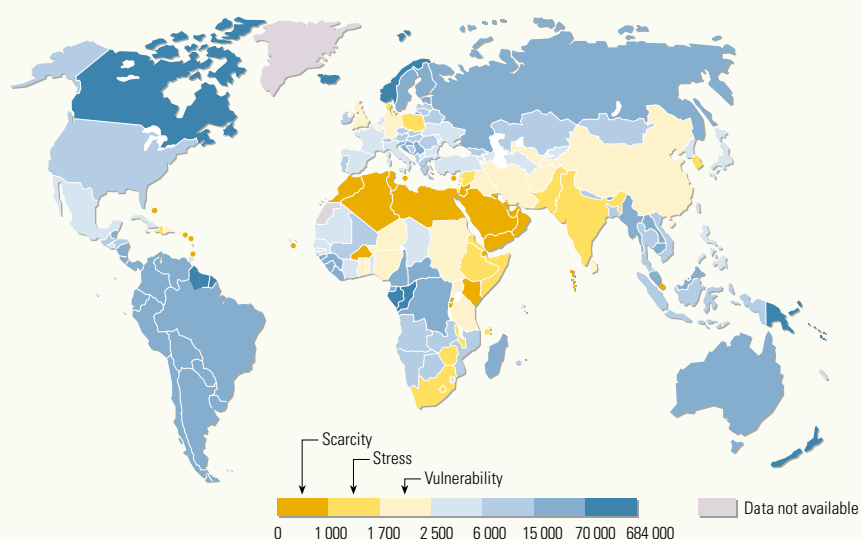
The world population is expected to increase from 6.7 billion today to 7.2 billion in 2015. One of the key global challenges in light of this population growth will be the capacity to grow more food with less water, to improve water use efficiency and productivity, and to ensure equitable access to water resources. At present, irrigated agriculture consumes approximately 70 percent of the world's freshwater withdrawals. This rises to 95 percent in several developing countries, while industrial and domestic water withdrawals represent approximately 20 and 10 percent respectively.

Pressure from industrial and domestic water uses is, however, increasing as is the need to sustain water for well-functioning

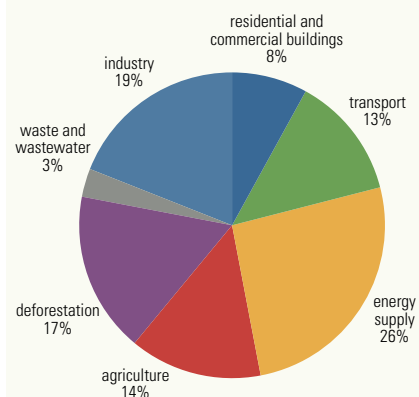
ecosystems. Furthermore, additional challenges are posed by climate change and the impact climate variability will have on the most vulnerable regions. Another problem will be posed by the amount of water needed for crops used for the production in biofuels.

FAO is active as a key partner in UN-Water, a mechanism that strengthens coordination among all UN bodies dealing with water-related issues. FAO's water database, AQUASTAT, contains key data and information by country and region.

**Fresh water availability**  
Cubic metres per person and per year 2007



**Agriculture and deforestation contribute significantly to greenhouse gas emissions**



*Greenhouse gas emissions by sector*

Source: Intergovernmental Panel on Climate Change 2007

## Managing bioenergy

Over the longer term, increased demand for biofuels could provide an opportunity in developing countries for poverty reduction, improved food security and a clean energy source, but only if appropriate policies and investments are put in place. In order to enhance its ability to give sound bioenergy policy advice, FAO is developing a new methodology for measuring bioenergy production's impact on food security. Pilot projects are testing the methodology in Cambodia, Peru, Thailand and the United Republic of Tanzania.

## Climate change

Climate change will exacerbate existing hunger and food insecurity problems in many countries. For millions of people living in fragile ecosystems, climate change can greatly increase the risk of crop failure and the loss of livestock. FAO's role is to promote adaptation options and to assist rural communities in tailoring these options to best meet their needs. At the same time, agriculture itself can be part of the solution when it comes to reducing global greenhouse gas emissions. In other words, agricultural and environmental agendas must be closely

linked to ensure that agriculture contributes to climate mitigation, reduces emissions and sequesters carbons in the soil.

Since 2005, FAO has been guiding a process of livelihood adaptation to climate variability and change in the drought-prone area of northwest Bangladesh, where large parts of the population are chronically exposed to a range of natural hazards. The Organization is working with key agencies and farmers' groups to provide services that will help farmers to better cope with climate variability.

## Conventions, treaties and commissions

The Organization also has an essential role in the area of international environmental conventions and treaties. FAO is a key partner in promoting three highly important environmental conventions covering biological diversity, desertification and climate change. The intergovernmental Commission on Genetic Resources for Food and Agriculture aims to ensure that future generations have access to genetic resources, and that everyone shares in the benefits.



*Global warming will cause more severe weather damage, such as this cyclone inundated area of Bangladesh.*



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