# Population and natural resources

**WHILE many of the environmental impacts of humankind closely map demographic indicators, this leaves out one vital component: consumption. The per-capita consumption of key natural resources varies hugely around the world. Typically, but not universally, the citizens of rich industrialized nations use more of the world's resources and produce more waste. Sometimes they thereby deplete their own environments; sometimes other people's.**

For many resources, the United States of America is the world's largest consumer in absolute terms. For a list of 20 major traded commodities, it takes the greatest share of 11 of them: corn, coffee, copper, lead, zinc, tin, aluminum, rubber, oil seeds, oil and natural gas. For many more it is the largest per-capita consumer.

A typical example is meat. China, with the world's largest population, is the highest overall producer and consumer of meat, but the highest per-capita consumption in the world is that of the United States. The average United States citizen consumes more than three times the global average of 37 kilos per person per year. Africans consume less than half the global average, and South Asians consume the least, at under 6 kilos per person per year[1].

Other resources are used much more variably, depending on local circumstances. Fish, for instance, has been a cheap source of protein for hundreds of millions of poor people wherever it has been available. The highest consumption levels are in some of the world's poorest states, such as the Maldives or Kiribati, where fish is plentiful. Per-capita consumption is also very high in rich nations with well-established fishing traditions – 91 and 66 kilos per capita in Iceland and Japan respectively; way above the global average of 16 kilos per capita per year[2].

Some consumption patterns reflect the rate of industrial, urban and infrastructure development rather than simply current wealth. Cement, for instance, has in recent years been used in greatest quantities in the rapidly growing Asian economies. The top three places for per-capita use in 1996 were occupied by the Republic of Korea, Taiwan and Malaysia. Each used more than twice as much cement per capita as the United States and four times as much as a typical established industrial nation with well-developed infrastructure, such as the United Kingdom[3].

Water is also heavily used in a number of developing countries. It is a key strategic resource whose location is largely fixed, like land, but for which many countries rely on their neighbors. Egypt, for instance, relies for 97 percent of its water on flows that originate outside the country, mostly upstream on the Nile. Sudan, also on the Nile, is in a similarly vulnerable position, as are the Netherlands at the mouth of the Rhine, Cambodia on the Mekong, and Syria and Iraq on the Euphrates. All rely on foreign sources for the bulk of their water[4].

Water use is often as high or higher in poor, arid countries as in rich nations. When precipitation is lowest, demand for crop irrigation is typically highest, and where water-hungry cash crops are grown as well as food, the demands are higher still. When the country is in a poor state of

## TOP CONSUMERS, 1998

### Primary energy*

| | Metric tons oil equivalent per capita | GNP per capita US$ 1998 |
|---|---|---|
| UA Emirates | 18.95 | 17 870 |
| Kuwait | 9.17 | id |
| Singapore | 8.80 | 30 170 |
| USA | 7.83 | 29 240 |
| Canada | 7.18 | 19 170 |
| Belgium and Luxembourg | 6.21 | 26 340 |
| Australia | 5.56 | 20 640 |
| Norway | 5.48 | 34 310 |
| Netherlands | 5.36 | 24 780 |
| Iceland | 5.07 | 27 830 |
| Saudi Arabia | 4.98 | 6 910 |
| Sweden | 4.89 | 25 580 |
| Finland | 4.71 | 24 280 |
| France | 4.24 | 24 210 |
| Germany | 4.09 | 26 570 |

* Commercially traded fuels only

### Roundwood*

| | Cubic meters per capita | GNP per capita US$ 1998 |
|---|---|---|
| Finland | 12.08 | 24 280 |
| Guatemala | 12.03 | 1 640 |
| Sweden | 7.43 | 25 580 |
| Canada | 6.41 | 19 170 |
| Gabon | 3.20 | 4 170 |
| New Zealand | 2.90 | 14 600 |
| Norway | 2.50 | 34 310 |
| Latvia | 2.42 | 2 420 |
| Austria | 2.27 | 26 830 |
| Chile | 2.11 | 4 990 |
| Eq. Guinea | 1.88 | 1 110 |
| USA | 1.76 | 29 240 |
| Estonia | 1.74 | 3 360 |
| Belarus | 1.66 | 2 180 |
| Uruguay | 1.62 | 6 070 |

* Raw timber only

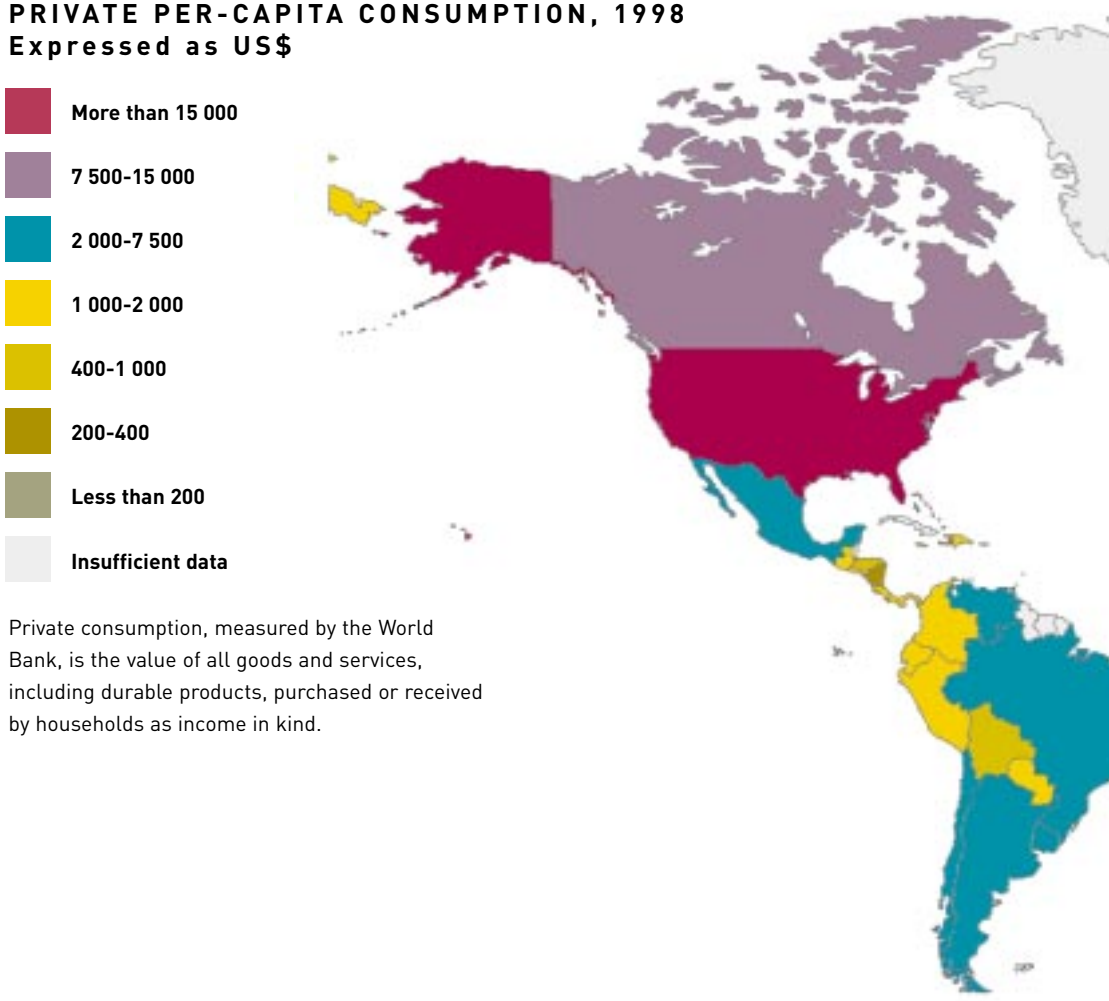
### Passenger cars

| | Cars per thousand people | GNP per capita US$ 1998 |
|---|---|---|
| Italy | 539 | 20 090 |
| Germany | 506 | 26 570 |
| Australia | 488 | 20 640 |
| USA | 483 | 29 240 |
| Austria | 481 | 26 830 |
| Switzerland | 477 | 39 980 |
| New Zealand | 470 | 14 600 |
| Canada | 455 | 19 170 |
| France | 442 | 24 210 |
| Belgium | 435 | 25 380 |
| Sweden | 428 | 25 580 |
| Slovenia | 403 | 9 780 |
| Norway | 402 | 34 310 |
| Japan | 394 | 32 350 |
| Finland | 392 | 24 280 |

Source: BP; FAO; World Bank.

## PRIVATE PER-CAPITA CONSUMPTION, 1998

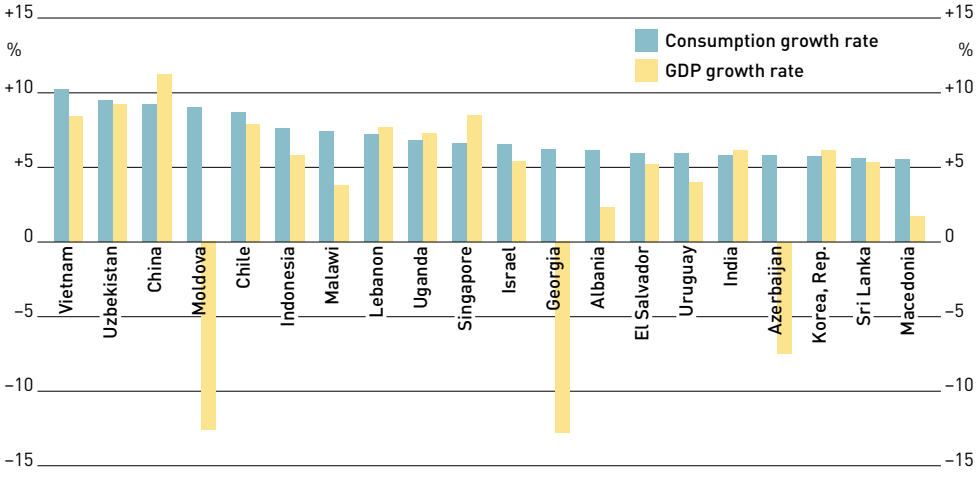
### Expressed as US$



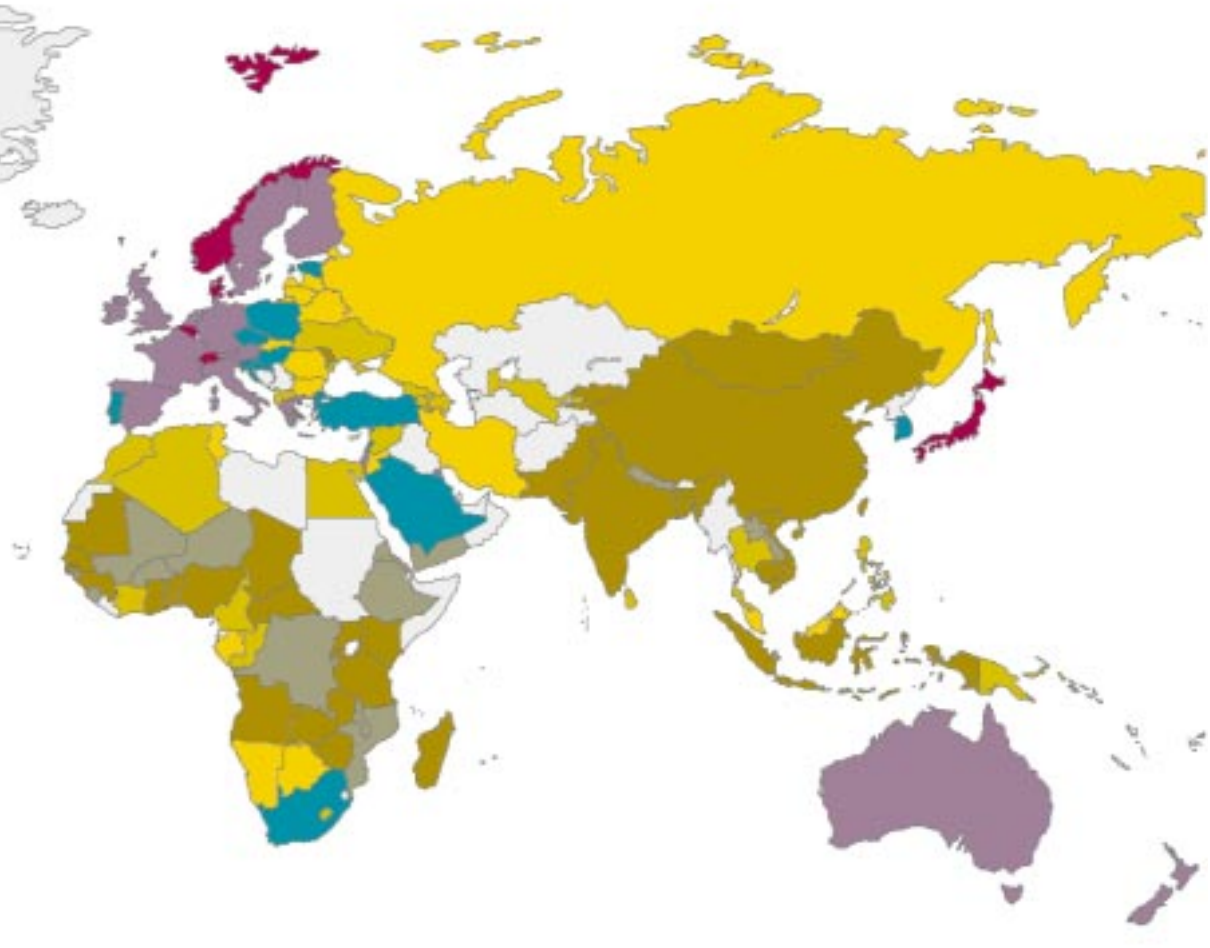

Private consumption, measured by the World Bank, is the value of all goods and services, including durable products, purchased or received by households as income in kind.

## CONSUMPTION GROWTH RATES AND GDP, 1990-98

### The highest consumption growth rates



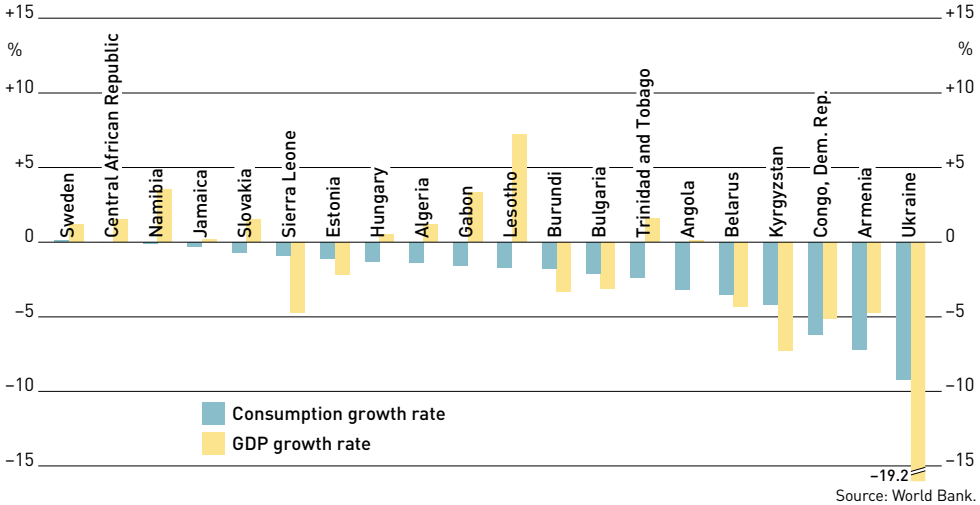

Source: World Bank.



Source: World Bank; UNPD.

## CONSUMPTION GROWTH RATES AND GDP, 1990-98

### The lowest consumption growth rates




Source: World Bank.

## TOP CONSUMERS, 1998

### Cereal

| | Kilos cereal per capita | GNP per capita US$ 199 |
|---|---|---|
| Morocco | 251.6 | 1 240 |
| Egypt | 245.2 | 1 290 |
| Algeria | 237.1 | 1 550 |
| Syria | 229.2 | 1 020 |
| Turkey | 224.9 | 3 160 |
| Myanmar | 223.6 | id |
| Tunisia | 218.6 | 2 060 |
| Bosnia and Herzegovina | 217.0 | id |
| Romania | 210.1 | 1 360 |
| Indonesia | 202.7 | 640 |
| Niger | 202.0 | 200 |
| Albania | 198.7 | 810 |
| Lesotho | 198.5 | 570 |
| Turkmenistan | 198.4 | id |
| Lithuania | 197.1 | 2 540 |

### Meat

| | Kilos meat per capita | GNP per capita US$ 199 |
|---|---|---|
| USA | 122.0 | 29 240 |
| Cyprus | 113.6 | 11 920 |
| New Zealand | 110.1 | 14 600 |
| Australia | 108.2 | 20 640 |
| Spain | 107.3 | 14 100 |
| Austria | 104.8 | 26 830 |
| Denmark | 103.2 | 33 040 |
| Netherlands | 101.4 | 24 780 |
| Bahamas | 100.9 | id |
| France | 99.6 | 24 210 |
| Yugoslavia | 97.9 | id |
| Mongolia | 94.4 | 380 |
| Canada | 94.1 | 19 170 |
| Slovenia | 92.7 | 9 780 |
| Uruguay | 92.7 | 6 070 |

### Fish

| | Kilos fish per capita | GNP per capita US$ 199 |
|---|---|---|
| Maldives | 160.2 | 1 130 |
| Iceland | 91.7 | 27 830 |
| Kiribati | 77.2 | 1 170 |
| French Polynesia | 67.3 | id |
| Japan | 66.5 | 32 350 |
| Seychelles | 64.8 | 6 420 |
| Guyana | 64.4 | 780 |
| Portugal | 58.9 | 10 670 |
| Malaysia | 52.6 | 3 670 |
| Norway | 50.5 | 34 310 |
| Korea, Rep. | 49.5 | 8 600 |
| Gabon | 45.5 | 4 170 |
| Bermuda | 44.2 | id |
| Spain | 41.1 | 14 100 |
| Malta | 40.7 | 10 100 |

Source FAO; World Ban

development, with dilapidated infrastructure, then water use can be immensely inefficient, producing the highest water use of all, as illustrated by the rates in the arid, cotton-growing central Asian states of the former Soviet Union. During the 1990s Turkmenistan withdrew more than 5 000 cubic meters per person per year, with Uzbekistan, Kyrgyzstan, Kazakhstan, Tajikistan and Azerbaijan all withdrawing 2 000 cubic meters or more per person per year. By comparison, per-capita withdrawals in the United States were around 1 800 cubic meters, in France 650 and in the United Kingdom 200[5].

But for some resources, consumption depends upon the end use to which that resource is put, as typified by wood. While rich nations use more of it in the form of paper and packaging, poor predominantly rural nations rely on wood to a greater extent for construction and particularly for fuel. Finland, which produces large quantities of paper, is the greatest per-capita user of raw timber, but African and Asian countries are the largest users of fuelwood. Japan, though widely criticized for its harvesting of tropical timbers from Southeast Asian rainforests, lies well down the global list of timber consumers.

Two trends are causing nations, corporations and individuals to reassess their use of natural resources. Since the 1970s, there has been an increasing realization that many resources, notably metals and fossil fuels, will one day run out. And since the 1980s in particular, there has been growing concern about the environmental downside of their profligate exploitation, largely with respect to pollution and the degradation and conversion of land.

Some stories of inefficiency and extravagance have become notorious. It takes the mining of 6 tons of rock to produce a pair of typical gold rings. Only 2 to 3 percent of the energy produced by burning coal in a power station is eventually used to light a bulb or boil a kettle, because of inefficiencies at every stage of its conversion to electricity, its transmission and ultimate use. The average European uses 130 kilos of paper a year – the equivalent of two trees. The average American uses more than twice as much – a staggering 330 kilos a year. The paper and board industry is the United States' third largest source of pollution, while its products make up 38 percent of municipal waste[6].

Both governments and companies are now increasingly adopting strategies to reduce their environmental "footprint" on the world. They are doing this by reducing the amount of materials and energy used in providing their services (whether a car or a kilowatt of energy, a meal or a megabyte of information), and by reusing and recycling materials where possible. Much has been done. The gasoline consumption of the average automobile in the United States has halved since the 1970s. During the same period most European homes have been insulated to reduce heat loss by 50 percent or more. Some commercial farmers, particularly in the United States, have doubled the crops they grow with a given amount of irrigation water by using sub-surface drip irrigation.

Much more could be done at no extra cost. Modern technologies – plastic and carbon fibre, optical fibres, e-mail, drip irrigation, electronic systems controls – can all aid the process by making manufacture and communications more efficient and by substituting abundant materials for scarce ones.

Organized recycling, while not invariably energy-efficient, can also be beneficial. Growing concern at the damage to natural forests from paper production has led to a surge in paper recycling. Globally, 43 percent of paper fibre is recycled, a figure that rises to 46 percent in the United States and to 72 percent in Germany[7]. In Britain the film processing industry reuses 5 million film cassettes a year, retailers reuse 40 million clothes hangers, and the aluminum industry recycles some 2 billion cans a year. The latter saves sufficient electricity, which would otherwise go to smelting new aluminum, to power all the nation's television sets for a one-hour show every night of the year.