

# Population and natural resources

**W**HILE 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<sup>1</sup>.

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<sup>2</sup>.

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<sup>3</sup>.

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<sup>4</sup>.

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

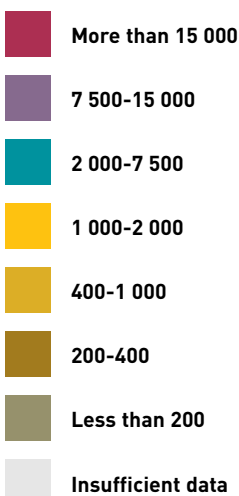
#### Passenger cars

	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

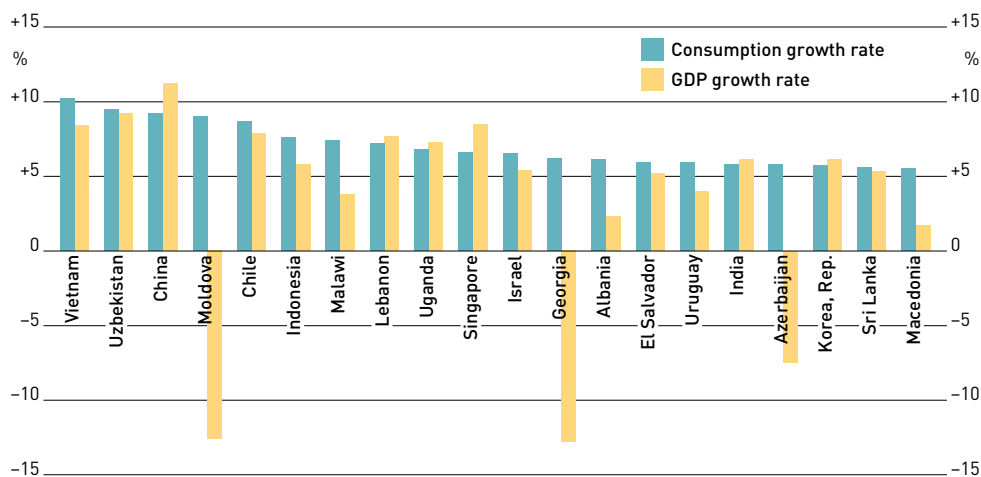
Expressed as US\$



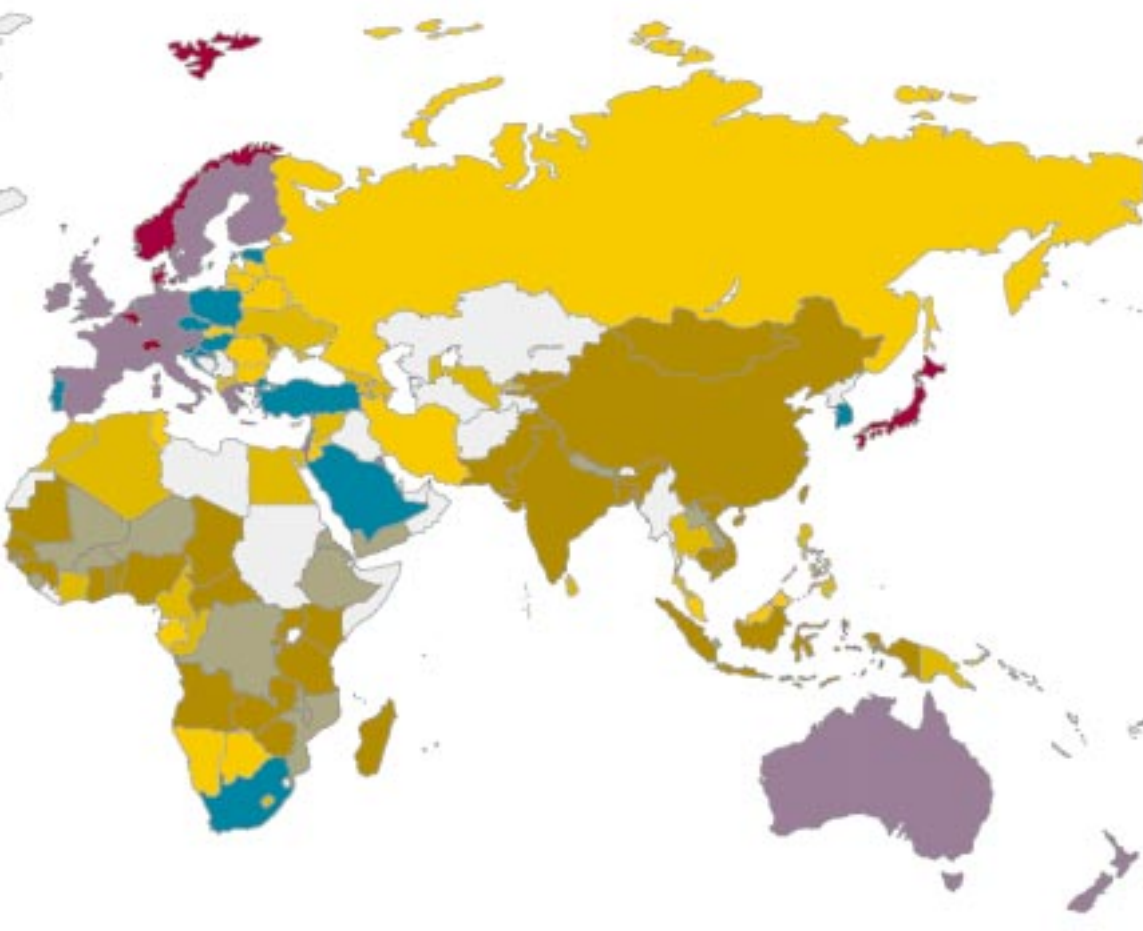
Private consumption, measured by the World Bank, is the value of all goods and services, including durable products, purchased or received by households as income in kind.

### CONSUMPTION GROWTH RATES AND GDP, 1990-98

The highest consumption growth rates

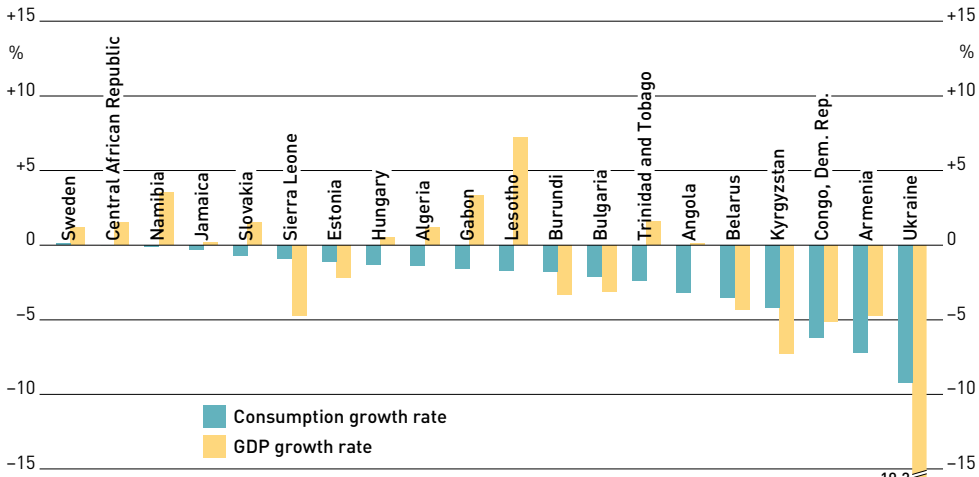


Source: World Bank.



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\$ 1998
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\$ 1998
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\$ 1998
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 Bank.

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<sup>5</sup>.

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<sup>6</sup>.

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<sup>7</sup>. 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.