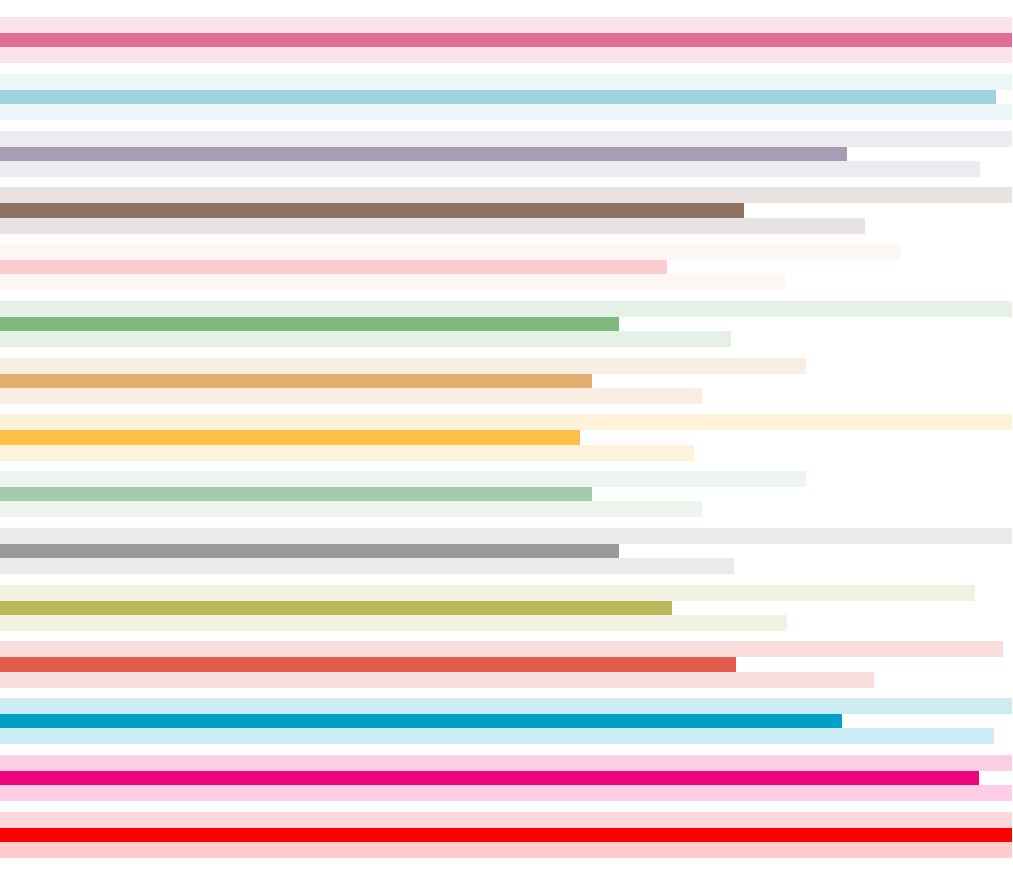


# THE ATLAS OF THE REAL WORLD





Daniel Dorling, Mark Newman and Anna Barford

# THE ATLAS OF THE REAL WORLD

*Mapping the Way We Live*

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# Introduction

We know a lot more about the world than we used to. Even ten years ago our knowledge was a good deal less complete than it is today. Certainly, if at any time in the last fifty years you had wanted to know the population of Brazil or the number of televisions in France, you could probably, with a little determination, have found an answer. But until recently not many statistics were available for nearly everywhere in the world. If you wanted to know the number of televisions in Burkina Faso, for example, you might have been out of luck.

But as we move into the 21st century, things are changing. The changes are partly technological: the arrival of the Internet and the widespread availability of computers have made reliable data gathering enormously easier. And they are partly political: a number of major new projects have been set in motion by the United Nations and others with the aim of measuring and recording a broad range of global statistics. Worldwide statistics are now available about such diverse entities as income, literacy rates, numbers of doctors, nurses and dentists, numbers of teenage mothers, how many people smoke, military spending, endangered species, greenhouse gas emissions and mobile phones.

All of these data are freely available on the web but unfortunately they are mostly in the form of rows of numbers in tables, which are difficult to read and difficult to understand. Japan has a domestic water consumption of 17 billion cubic metres a year. Is that a lot or a little? How does it compare to other countries? It is hard to answer such questions without spending a long time poring over the tables. A much better way to show what is going on in the world is to make a map, which is what this book does.

The *Atlas of the Real World* contains 366 maps showing all sorts of geographic and social statistics, ranging from basic data on population, health, wealth and occupation to how many toys we import and who's eating their vegetables. Open this book at almost any page and you will learn something you never knew about the world.

Cartography, the art of map making, is as old as the oldest literate civilizations, though an accurate picture of the world (except for Antarctica) did not emerge until the 16th century. Extensive exploration of the globe and improved techniques for navigation and surveying resulted in the first true maps of the world, including the known portions of the Americas, around 1500 AD.

One of the things map makers quickly discovered was that it is quite difficult to draw a picture of a spherical world in two

dimensions. If you want to map just a small portion of the world, such as the town you live in, then, even though the surface of the Earth is curved, the area you are depicting is small enough to be almost flat, which makes a flat map perfectly adequate for most purposes. But if you want to map the whole planet, this is no longer true, and you need to allow for the fact that the world is round. The only truly correct way to map the planet is to draw the map on a sphere, which ensures that every part of the world is in the right proportion to every other and that they all fit together as they should. But for many purposes globes are inconvenient, so most maps of the world are two-dimensional. And to make a flat map one has to 'unroll' the world and lay it down on paper. Imagine the surface of the globe as a rubber sheet, unwrapped from the sphere and spread out on a page. Inevitably parts of the map must be compressed and others stretched to make it flat. And the end result is that, no matter how it is done, any flat depiction of the world must distort some regions, and often all of them.

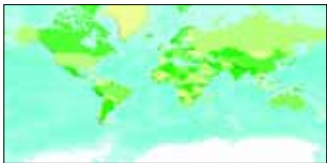
There are a variety of different ways of distorting the true dimensions of different regions in order to depict the Earth in a map – 'projections' in cartographic terminology; each distorts different regions by different amounts. The most commonly used projections distort the areas near the north and south poles quite severely but represent the areas near the equator relatively accurately. In many cases this is a reasonable compromise, since rather few people live near the poles and so for most purposes it is less important to represent them exactly.

The most famous projection of the world is the Mercator projection, created by the Flemish cartographer Gheert Cremer (or Gerardus Mercator) in 1569 (Figure 1). This projection has the nice property that the shapes of regions on the map are represented faithfully, but it greatly exaggerates the sizes of features near the poles. An alternative projection is the Gall-Peters projection, first described by clergyman James Gall in 1855. This projection depicts areas accurately: the area covered by a feature on the map is proportional to the true land area of that same feature in real life (Figure 2). But in this case an accurate representation of area comes at the price of a distortion in the shapes of land masses and other features; again, this distortion is greatest near the poles.

There are an enormous number of other projections of the world, including ones that are not rectangular, ones that come in several disconnected parts, and even ones on which the same features appear more than once in different parts of the map.



Figure 1 (left). Version of the Mercator Projection  
Figure 2 (right). Version of the Gall-Peters Projection



All of them have their uses, but all of them, inevitably, distort our view of the world.

A common use for maps is the visual representation of data. For example, a map of the population of the world may use the standard technique of colouring the countries of the world in different shades to represent the density of their population. However, such a map has considerable limitations: while it might show, for instance, that Russia is large with a low population density and Bangladesh is small with a high population density, it will not show whether Russia or Bangladesh has a larger population. In this book we take a different approach to representing data, changing not the colour of the country but its size to indicate how 'big' it is in terms of the subject matter of the map. As the sizes and / or shapes of countries are inevitably distorted, why not exploit that property of two-dimensional mapping? Put simply, on a population map in this atlas, a country with twice as many people as another is drawn twice as large: on a map of wealth a country with half the GDP of another is drawn at half the size.

Maps of this kind are called 'cartograms'. They have been in common use only since the 1960s, partly because until the advent of powerful computers the calculations and the mapping itself were laborious and prone to error. The cartograms in this book were produced using a method devised in 2004 by two physicists, Michael Gastner and Mark Newman, and based on ideas borrowed from theoretical physics.

Cartograms are very easy to read, and in most cases the countries retain enough of their correct shape to be recognizable despite changes in size. In some cases, however, the changes in size are so extreme and so many territories are totally absent because there are no data for the subject matter in question that the countries become unrecognizable. For example, a map of deaths resulting from volcanic eruptions represents statistics from only 17 territories and these are distorted almost beyond recognition. In this book, therefore, each territory is always depicted in the same colour to aid identification. Each map is accompanied by a commentary and a table showing (for the most part) the ten territories that score highest and the ten that score lowest in the subject matter of the map. Bar and pie charts present

the data depicted in the map in a different form where this is helpful, often aggregated by region.

Each map tells its own story but a comparison between maps adds another dimension of information and interest. Related maps are arranged on facing pages of the atlas: for instance, maps showing exports and imports are presented together, as are those showing the poorest and richest territories in the world. These juxtapositions offer many immediate insights into the state of trade, economics, politics, social welfare, and environmental issues. But there are many other interesting comparisons to be made in addition to those suggested by the map pairs.

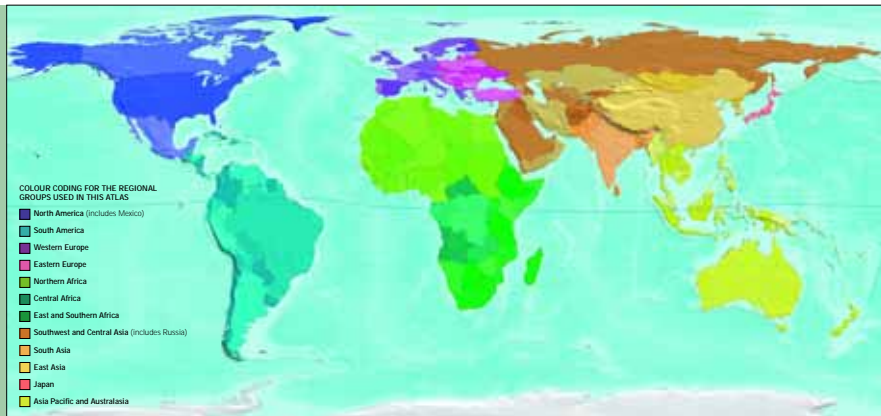
Many of the maps in this atlas paint a picture of a global humanitarian and environmental disaster. Billions of people are living in slums, in poverty, without clean water, adequate medical attention or shelter. Worldwide inequality in health and living standards is on the increase, with the rich getting richer and the poor poorer. In some places living standards and average incomes are actually declining. The maps of life expectancy from 1972 to the present day show significant improvements in the wealthier countries of the world, but essentially none in many parts of Africa. The map of airline travel shows you in which countries people are flying most often, but also shows that most people in the world never fly. More people do not have access to a car with every year that passes. Our maps of trade flows show that production is concentrated on one side of the planet while consumption is concentrated on the other. And population is increasing in the poorest parts of the world while at the same time it is roughly static or even decreasing in the richer ones, thereby concentrating wealth in the hands of an ever smaller proportion of the world's population.

The picture is not entirely bleak, however. For instance, the rapid growth in production and the healthy export market in China have allowed near universal access to electricity and many other benefits of the modern world, though it is unlikely that most of the population of China will achieve the affluent living standards of the richest nations in the near future. High living standards tend to be associated not with industrial production but with business, finance, and intellectual property such as books, music and software.



# Land Area and Population

Land Area	001	Total Population of Elderly	012
Total Population	002	Right to Vote	013
World Population Year 1	003	Voter Turnout	014
World Population in 1500	004	International Emigrants	015
World Population in 1900	005	International Immigrants	016
World Population in 1960	006	Net Emigration	017
World Population in 2050	007	Net Immigration	018
World Population in 2300	008	Refugees and Displaced	
Total Births	009	Persons: Origins	019
Births Attended	010	Refugees and Displaced	
Total Population of Children	011	Persons: Destinations	020



#### TERRITORIES WITH THE LARGEST AND SMALLEST LAND AREA

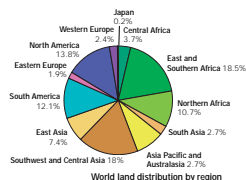
Rank	Territory	Hectares
001	Russia	1,689,000,000
002	China	933,000,000
003	Canada	922,000,000
004	United States	916,000,000
005	Brazil	846,000,000
006	Australia	768,000,000
007	India	297,000,000
008	Argentina	274,000,000
008	Kazakhstan	270,000,000
010	Algeria	238,000,000
191	St Kitts and Nevis	36,000
192	Niue	26,000
193	Cook Islands	23,800
194	Marshall Islands	18,000
195	Liechtenstein	16,000
196	San Marino	6,000
197	Tuvalu	3,000
198	Nauru	2,000
199	Monaco	200
200	Vatican City	40

## 001 Land Area

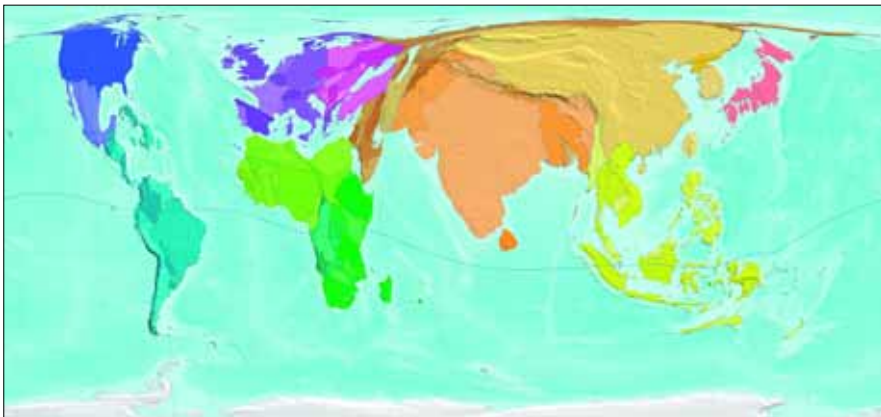
The relative size of the territories as shown on the map represents exactly the land area of each territory in proportion to the others.

Maps based on the most commonly used projection – the Mercator projection – enormously distort the size of land masses at the poles, making Greenland and Antarctica disproportionately large by comparison with Africa and South America. This map uses land area data for each of the 200 territories shown throughout the atlas and scales it so as to represent accurately in two dimensions the relative sizes of the territories in reality. The total

land area of the 200 territories is 13,056 million hectares (a hectare is 100 metres x 100 metres). The pie chart (right) shows the proportion of the total land area of the world occupied by each regional group of territories.



*'Secure access to land remains essential for diverse land-based livelihoods and is a precondition for sustainable agriculture, economic growth and poverty reduction.'*



#### TERRITORIES WITH THE LARGEST AND SMALLEST POPULATIONS

Rank	Territory	Population
001	China	1,295,000,000
002	India	1,050,000,000
003	United States	291,000,000
004	Indonesia	217,000,000
005	Brazil	176,000,000
006	Pakistan	150,000,000
007	Bangladesh	144,000,000
007	Russia	144,000,000
009	Japan	128,000,000
010	Nigeria	121,000,000
<hr/>		
191	St Kitts and Nevis	42,000
192	Monaco	34,000
193	Liechtenstein	33,000
194	San Marino	27,000
195	Palau	20,000
196	Cook Islands	18,000
197	Nauru	13,000
198	Tuvalu	10,000
199	Niue	2,000
200	Vatican City	1,000

#### TERRITORIES WITH THE MOST AND LEAST LAND AREA PER PERSON

Rank	Territory	Hectares per person
001	Greenland	821
002	Western Sahara	97
003	Mongolia	60
004	Namibia	41
005	Australia	39
005	Suriname	39
007	Mauritania	37
008	Iceland	33
008	St Vincent and The Grenadines	33
010	Botswana	31
<hr/>		
191	Nauru	0.154
192	Barbados	0.143
193	Bahrain	0.101
194	Maldives	0.100
195	Bangladesh	0.091
196	Malta	0.080
197	Vatican City	0.044
198	Singapore	0.016
199	Hong Kong (China)	0.015
200	Monaco	0.006

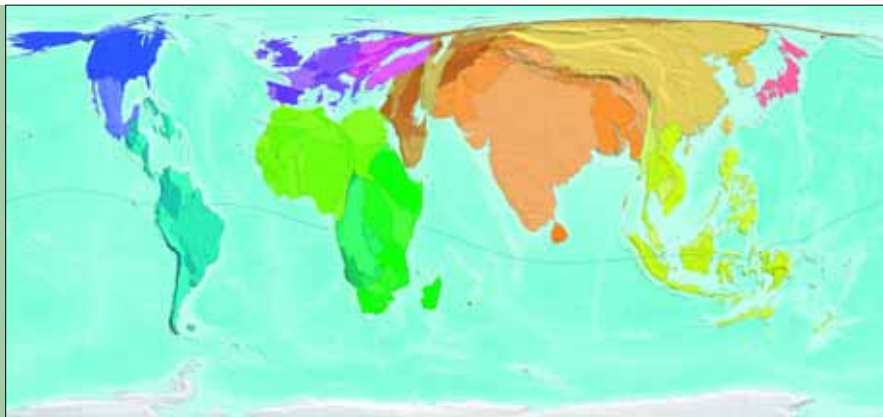
## 002 Total Population

The proportion of the world's population living in each territory is indicated by the relative size of the territories on the map.

In spring 2000 (the latest date for which comprehensive and reliable data are available) the world's population was estimated at 6 billion (6,000,000,000). (By July 2007 that figure had probably reached 6.6 billion.) India and China appear large on the map because they have large populations; Panama, Namibia and Guinea-Bissau are barely visible because they have small populations.

Population is very unevenly distributed across the world and is very weakly related to land area. If the land area of the world were

divided up equally there would be 2.1 hectares for each person, but in some territories there are far fewer and in others far more hectares per person. Australia's land area is 21 times bigger than Japan's, but Japan's population is more than six times bigger than Australia's. Similarly, Sudan, which is the largest territory in Africa by land area, is quite small on the map by comparison with the more populous Egypt, Ethiopia and South Africa.



#### THE TERRITORIES PREDICTED TO HAVE THE HIGHEST POPULATIONS IN 2050

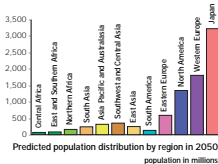
Rank	Territory	Population
001	India	1,593,000,000
002	China	1,372,000,000
003	United States	395,000,000
004	Pakistan	305,000,000
005	Indonesia	288,000,000
006	Nigeria	258,000,000
007	Brazil	253,000,000
008	Bangladesh	243,000,000
009	DR Congo	177,000,000
010	Ethiopia	170,000,000
011	Mexico	139,000,000
012	Philippines	127,000,000
012	Uganda	127,000,000
014	Egypt	126,000,000
015	Vietnam	117,000,000
016	Japan	112,000,000
016	Russia	112,000,000
018	Iran	102,000,000
019	Turkey	101,000,000
020	Afghanistan	97,000,000

## 007 World Population in 2050

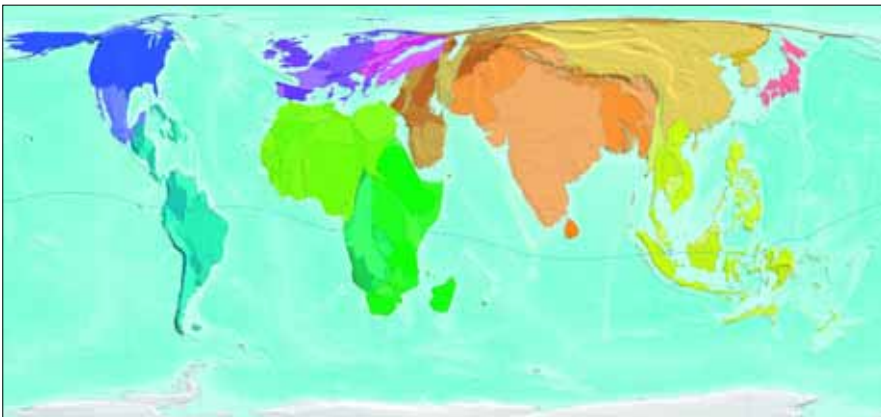
The size of territories on the map indicates the proportion of the predicted world population in 2050 that will live in each one.

Predictions of the increase in world population are contentious, and subject to error, so the data used in this and the following map are based on calculations from current trends – for example, that birth rates in Sub-Saharan Africa are the highest in the world. Other factors cannot be taken into account: if HIV / AIDS were to be controlled, or even eradicated, population increase could be far greater.

By the year 2050 the United Nations estimates that the human population of the Earth will be 9.07 billion (9,070 million). 62% will live in Africa, southern Asia and eastern Asia, whose combined populations will by then be equal to the entire population of the world today. Within just 50 years there will be three people alive for every two today.



*'The choices that today's generation of young people aged 15–24 years make about the size and spacing of their families will determine whether Planet Earth will have 8, 9 or 11 billion people in the year 2050.'* United Nations Population Fund, 2005



#### THE TERRITORIES PREDICTED TO HAVE THE HIGHEST POPULATIONS IN 2300

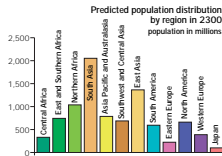
Rank	Territory	Population
001	India	1,372,000,000
002	China	1,285,000,000
003	United States	493,000,000
004	Pakistan	359,000,000
005	Nigeria	283,000,000
006	Indonesia	274,000,000
007	Bangladesh	243,000,000
008	Brazil	223,000,000
009	Ethiopia	207,000,000
010	DR Congo	183,000,000
011	Uganda	155,000,000
012	Yemen	130,000,000
013	Mexico	127,000,000
014	Philippines	126,000,000
015	Egypt	125,000,000
016	Vietnam	114,000,000
017	Iran	101,000,000
018	Japan	101,000,000
019	Niger	94,000,000
020	Russia	92,000,000

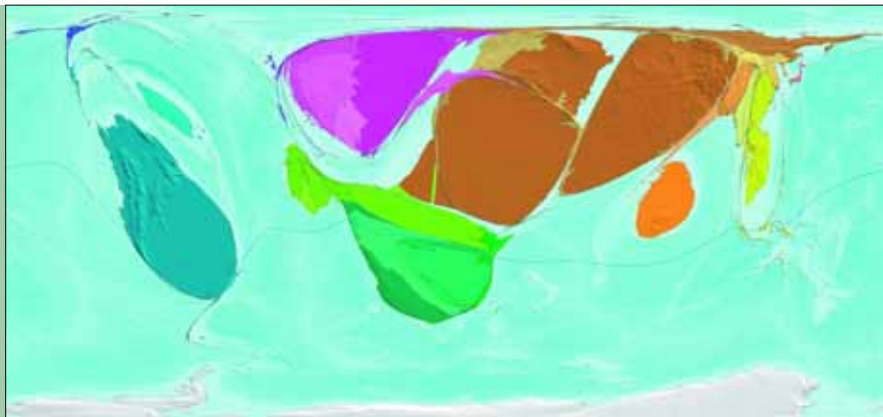
## 008 World Population in 2300

In 2300 the world's population is predicted to be 9 billion. The proportion of the population predicted to be living in each territory is indicated here by the relative sizes of the territories.

World population is expected to grow, peak in 2050 and then decline slightly between 2050 and 2300. These estimates are based on calculations from current trends. Birth rates are expected to decline slightly on average: in developed countries it may be at or below replacement levels and in developing countries it is likely to be affected by the growing use of methods of birth control. All data here are estimates based on predicted future behaviour, and are therefore subject to error.

The United Nations forecasts that the world's human population will by just below 9 billion by the year 2300. The greatest long-term population growth is predicted to occur in Africa, which is currently under-populated by comparison with other continents and has the lowest average life expectancy. Populations in other regions are predicted to remain the same as in 2050 or to decline from those levels. India, China, the United States and Pakistan (in that order) are expected to remain the most populous countries.





#### ORIGIN OF REFUGEES AND INTERNALLY DISPLACED PERSONS

Rank	Territory	per cent <sup>a</sup>
000	Bosnia Herzegovina	12.0
001	Serbia and Montenegro	12.0
003	Afghanistan	9.9
003	Azerbaijan	9.9
003	Iraq	9.9
006	Palestine	9.6
007	Burundi	9.5
008	Bhutan	5.2
008	Croatia	5.2
008	Georgia	5.2
011	Colombia	4.7
011	Puerto Rico	4.7
013	Sri Lanka	2.5
014	Angola	2.4
015	Liberia	1.7
015	Sudan	1.7
015	Western Sahara	1.7
018	Sierra Leone	1.6
019	Tajikistan	1.0
020	Mauritania	0.9

<sup>a</sup>Number of refugees and internally displaced persons as a percentage of the resident population in the territory of origin

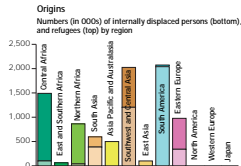
## 019 Refugees and Displaced Persons: Origins

The size of each territory indicates the number of refugees or internally displaced persons who define that territory as their place of origin

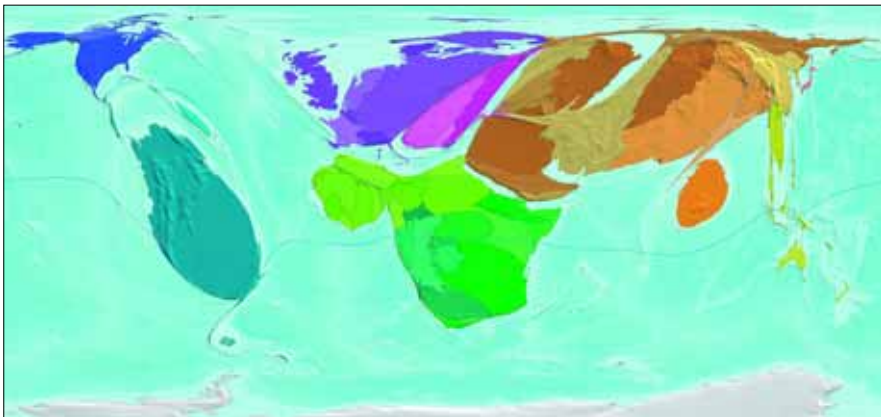
Refugees are those who flee to another territory, while internally displaced persons are those who flee to another part of the same territory.

There were 15 million refugees and internally displaced persons in the world in 2003. This map shows the origin territories of both combined.

Because people move within as well as between territories, some territories are simultaneously a major origin and destination of displaced people. Examples include Iraq and Afghanistan – see Map 020: Refugee Destination, opposite.







#### DESTINATIONS FOR REFUGEES AND INTERNALLY DISPLACED PERSONS

Rank	Territory	per cent <sup>a</sup>
001	Bosnia Herzegovina	8.5
002	Armenia	7.7
003	Azerbaijan	6.9
004	Georgia	5.1
005	Colombia	4.7
006	Djibouti	3.9
007	Serbia and Montenegro	2.6
008	Congo	2.5
009	Afghanistan	2.4
009	Iraq	2.4
011	Guinea-Bissau	2.2
012	Burundi	2.1
012	Zambia	2.1
014	Sri Lanka	2.0
015	Chad	1.8
015	Tanzania	1.8
017	Sweden	1.6
018	Puerto Rico	1.5
019	Denmark	1.4
019	Iran	1.4

<sup>a</sup>Number of refugees and internally displaced persons as a percentage of the resident population in the destination territory

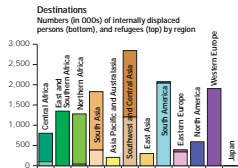
## 020 Refugees and Displaced Persons: Destinations

The size of each territory indicates the number of refugees or internally displaced persons who define that territory as their destination, regardless of whether they are successful in seeking asylum.

The United Nations defines a refugee as one fleeing for fear of 'being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion'. Traditionally, refugees – those fleeing to another territory – are counted separately from internally displaced persons – those fleeing to a different part of the same territory. This map shows the

destination territories of the two combined.

In 2003 there were an estimated 15 million refugees and internally displaced persons in the world as a whole. The Middle East and South America were the destination for the largest numbers of them; Pakistan, Iran and Germany were the territories that provided asylum to the largest numbers of people from outside their own borders.



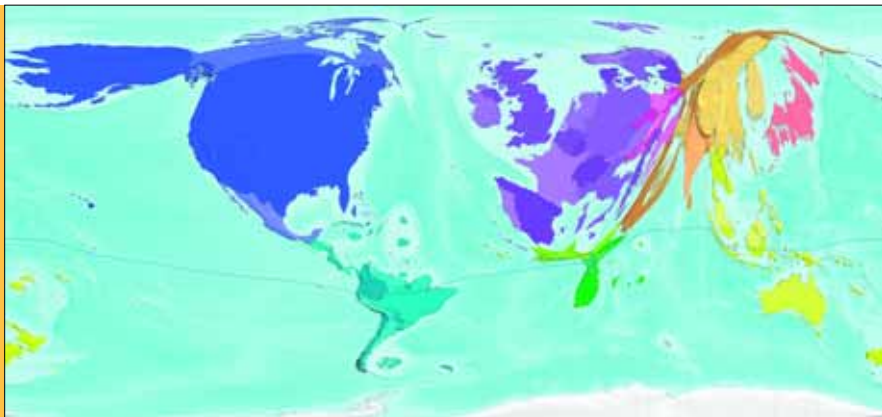
*'I miss my country, the sunshine of my country, its soil, my friends, my [family], the way of life and its incredible simplicity.'*

Habib Souaidia, *La Sale Guerre* ('The dirty war', 2001), 2006



# Travel and Transport

Origins of Tourists	021	Passenger Cars	033
Tourist Destinations	022	Mopeds and Motorcycles	034
Net Out-Tourism	023	Public Transport	035
Net In-Tourism	024	Commuting Time	036
Tourism Expenditure	025	Road Network	037
Tourism Receipts	026	Vehicle Freight	038
Tourism Profit	027	Rail Network	039
Tourism Loss	028	Rail Freight	040
Aircraft Departures	029	Container Ports	041
Aircraft Flights: Distances	030	Cargo Shipping	042
Aircraft Passengers	031	Oil Tankers	043
Rail Passengers	032	Air Freight	044



## MOST AND FEWEST AIRCRAFT DEPARTURES

Rank	Territory	Departures <sup>a</sup>
001	Antigua and Barbuda	472
002	Monaco	411
003	Seychelles	186
004	Luxembourg	102
005	Bahamas	82
006	Marshall Islands	75
007	New Zealand	65
008	Ireland	59
009	Norway	55
010	Fiji	48
191	Guinea	0.07
191	Nigeria	0.07
193	Mali	0.06
193	Niger	0.06
193	North Korea	0.06
196	Bangladesh	0.05
196	Dominican Republic	0.05
198	Ivory Coast	0.04
199	Sierra Leone	0.02
200	Uganda	0.01

<sup>a</sup>Departures per thousand of population per year on aircraft registered in each territory.

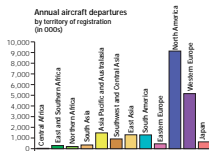
## 029 Aircraft Departures

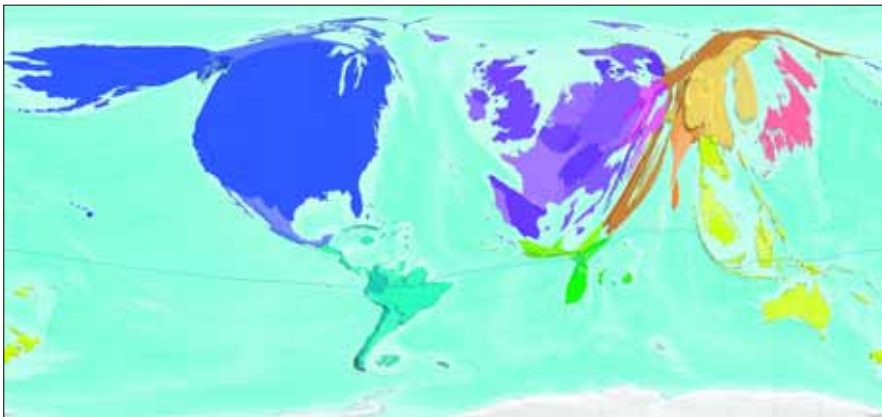
Territory size in this map indicates the number of aircraft departures by planes registered in each territory, in relation to population.

There are over 21 million civilian aircraft departures worldwide every year – the equivalent of 40 departures every minute. In this map, departures are attributed to the territories in which aircraft are registered rather than the territories where they take off. In most cases the difference between the two is small but there are exceptions,

such as Monaco, which has the second largest number of registered departures per person in the world but has no international airport.

North America and Western Europe are responsible for two-thirds of aircraft departures. Africa, by contrast, accounts for only 2.5% of all departures.





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## LONGEST AND SHORTEST DISTANCES FLOWN

Rank	Territory	Distance <sup>a</sup>
001	Nasau	231
002	Luxembourg	153
003	Iceland	113
004	Antigua and Barbados	100
005	Seychelles	90
006	Brunei	83
007	Singapore	82
008	Qatar	80
009	Malta	65
010	Cook Islands	56
191	Democratic Republic of Congo	0.14
192	Afghanistan	0.13
193	Dominican Republic	0.12
193	Guinea	0.12
193	Haiti	0.12
193	Rwanda	0.12
197	Tanzania	0.11
198	Uganda	0.08
199	Nigeria	0.06
200	North Korea	0.04

<sup>a</sup>Kilometres per head of the population flown per year by aircraft registered in that territory

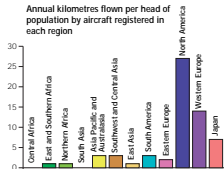
## 030 Aircraft Flights: Distances

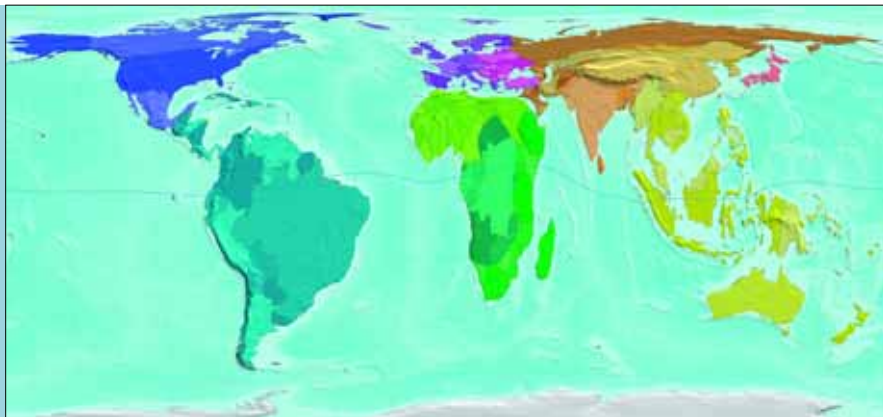
In 2000 civilian aircraft flew a total of 25 billion km (15.6 billion miles). Territory size in this map indicates the proportion of this total distance flown by civilian aircraft registered in each territory.

Civilian aircraft flew the equivalent of 630,000 times around the world during 2000. If the total distance flown by all passengers were divided equally among everyone in the world, each of us would fly 317 km each year. In reality, however, some people fly thousands of kilometres a year, while others have never been in an aeroplane.

The people who fly most tend to be from island territories, though there are many exceptions. People from the islands of Haiti and the Dominican Republic, for instance, are among those who fly least.

Annual kilometres flown per head of population by aircraft registered in each region





## MOST AND LEAST ANNUAL RAINFALL

Rank	Territory	Rainfall (cm) <sup>a</sup>
001	Micronesia	357
002	Dominica	344
003	Papua New Guinea	321
004	Solomon Islands	313
005	Tuvalu	303
006	Samoa	300
007	Brunei	298
008	Bangladesh	295
009	Costa Rica	293
010	Malaysia	289
191	Mauritania	9.2
192	Algeria	8.9
193	Oman	8.6
194	Bahrain	8.0
195	United Arab Emirates	7.8
196	Qatar	7.4
197	Saudi Arabia	5.9
198	Libya	5.7
199	Egypt	5.2
200	Western Sahara	4.5

<sup>a</sup> Average cm of rainfall per year; 1961-90  
(cm of rainfall = cm<sup>3</sup> of water per cm<sup>2</sup> of land).

## 045 Total Annual Rainfall

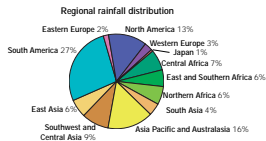
The size of each territory indicates the total volume of rain and other forms of precipitation falling in that territory per year.

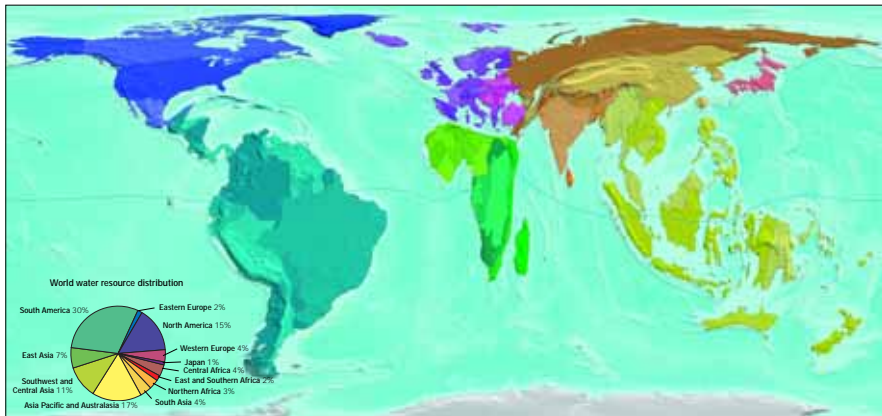
The countries with the highest rainfall per square kilometre tend to be those that experience monsoons. Malaysia, for instance, which has the tenth highest rainfall in the world, was known to the mariners of earlier times as 'the land where the winds meet' – the winds being the monsoons.

The word 'monsoon' may originate from the Arabic word *mausim*, which describes seasonal wind patterns that reverse

direction. Malaysia and many other territories in the tropics experience two monsoons a year: the southwest monsoon, which lasts from May until September, and the northeast monsoon, which lasts from November until March.

In fact, the territory with the highest rainfall by volume is Brazil, though this is an effect not only of climate but also of the country's large land area.





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#### MOST AND LEAST FRESHWATER RESOURCES

Rank	Territory	Fresh water (cm <sup>3</sup> ) <sup>a</sup>
001	Sao Tomé and Príncipe	227
002	Sierra Leone	223
003	Costa Rica	220
004	Liberia	208
005	Colombia	203
006	Bhutan	202
007	Panama	198
008	Taiwan	186
009	Malaysia	177
009	Papua New Guinea	177
190	Oatar	0.46
191	Oman	0.32
192	Turkmenistan	0.29
193	Niger	0.28
194	Guammas	0.20
195	Egypt	0.18
195	United Arab Emirates	0.18
197	Saudi Arabia	0.11
198	Mauritania	0.04
199	Libya	0.03

<sup>a</sup>km<sup>3</sup> of freshwater resources per cm<sup>2</sup> of land. Kuwait does not appear among the territories with least fresh water, as its resources are too small to be measured meaningfully.

## 046 Total Freshwater Resources

The size of each territory indicates the volume of naturally occurring fresh water – precipitation that flows into streams, rivers, lakes and groundwater aquifers – available annually for human use in that territory.

Worldwide, roughly 43,600 km<sup>3</sup> of fresh water is available annually – about half of the amount of water that falls as precipitation. Much of the difference between rainfall and freshwater resources is accounted for by evaporation.

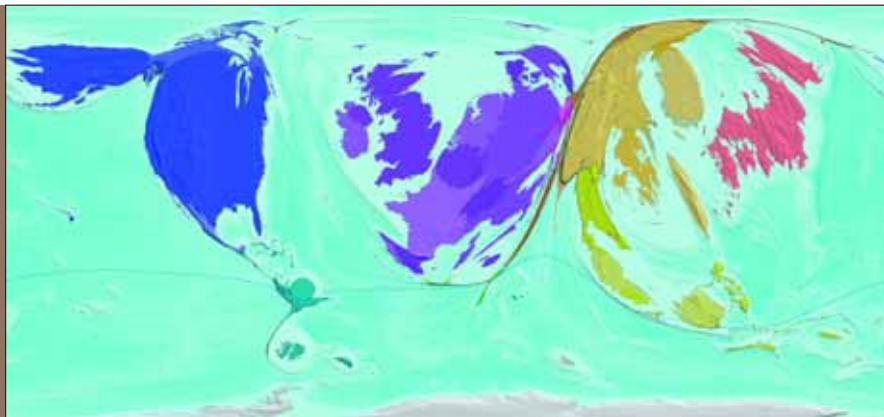
Territories with high rainfall, including many in South America and Asia Pacific and Australasia, typically have abundant water resources.

Fresh water produced artificially by removing the salt from sea water

(desalination) is not included in the data that generated this map. Kuwait, for example, has virtually no naturally occurring fresh water and produces most of what it consumes by desalination.

*'The Amazonian basin, where ten of the twenty largest rivers in the world are to be found ... represents one fifth of the entire freshwater reserves of the planet.'*

Brazilian Government's Ministry of External Affairs, 2002



#### HIGHEST AND LOWEST EXPORTERS OF HIGH-TECH GOODS IN 1990

Rank	Territory	per cent <sup>a</sup>
001	Malta	45
002	Ireland	41
003	Singapore	40
004	Malaysia	38
005	United States	33
006	Japan	24
006	United Kingdom	24
008	Thailand	21
009	Vanuatu	20
010	South Korea	18
191	France	16
191	Netherlands	16
193	Denmark	15
194	Canada	14
194	Haiti	14
196	Sweden	13
197	Fiji	12
197	Norway	12
197	Switzerland	12
200	Germany	11

<sup>a</sup>Value of high-tech exports as a percentage of the total value of the secondary goods (that is, manufactured goods as opposed to raw materials or components) exported by each territory.

## 067 High-Tech Exports 1990

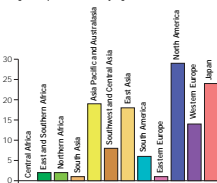
Territory size indicates the combined value of all high-tech exports from each territory during 1990, adjusted for purchasing power parity.

Exports of high-tech goods made up 16% of all exports of secondary goods in 1990. (By 2002 this proportion had risen to 21%: see Map 068.) 72% of all high-tech exports came from just eight territories: the United States, Japan, China, the United Kingdom, France, Germany, Hong Kong (now part of China but still a British colony in 1990) and South Korea. The table, however, shows that high-tech exports formed a high proportion of total exports of

manufactured goods in only four of those territories, and France and Germany were among the countries earning the lowest proportion of export income from such products.

The values of exports shown in the map have been adjusted for purchasing power parity (PPP), which takes account of the fact that the same amount of money buys more or less in different territories.

High-tech exports as a percentage of the value of all secondary goods exported in 1990, by region





#### HIGHEST EXPORTERS OF HIGH-TECH GOODS IN 2002

Rank	Territory	per cent <sup>1</sup>
001	Philippines	65
002	Malta	62
003	Singapore	60
004	Malaysia	58
005	Tajikistan	42
006	Ireland	41
007	Georgia	38
008	Costa Rica	37
009	South Korea	32
009	United States	32
011	Thailand	31
011	United Kingdom	31
013	Cuba	29
014	Netherlands	28
015	Hungary	25
016	Finland	24
016	Japan	24
018	China	23
019	Denmark	22
019	Norway	22

<sup>1</sup>Value of high-tech exports as a percentage of the total value of the secondary goods (that is, manufactured goods as opposed to raw materials or components) exported by each territory.

## 068 Current High-Tech Exports 2002

Territory size indicates the combined value of all high-tech exports using the latest available data, adjusted for purchasing power parity.

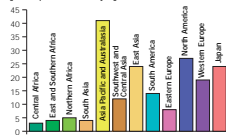
Worldwide earnings from the export of high-tech goods quadrupled between 1990 and 2002 (the latest year for which reliable data are available), reaching US\$2 trillion in 2002. Although the major exporters remained the same over this period, a significant portion of the increase came from growth among smaller players. Malaysia and

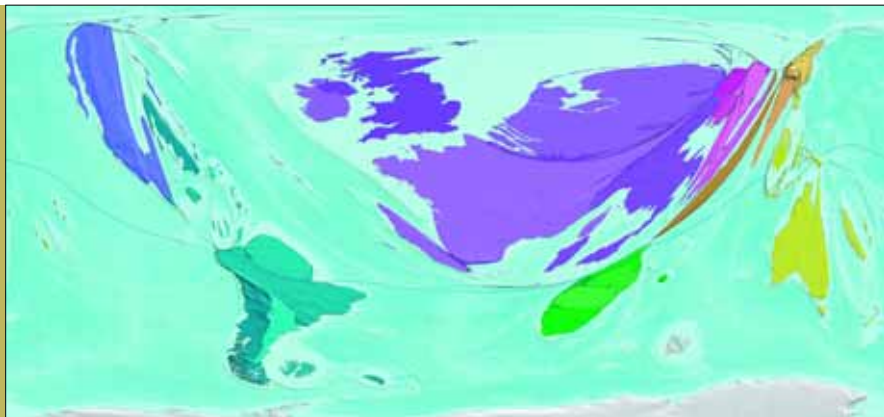
Singapore, for example, each reported a 20% increase; Malta, Finland and Indonesia reported increases of roughly 15%. All together high-tech exports made up 41% of all exports of secondary goods from Asia Pacific and Australasia territories, with individual figures ranging from 65% in the Philippines to 0% in Samoa and Tonga.

*'Since its establishment in 1991, the new and hi-tech industrial belt in the Pearl River Delta region has posted an average annual growth of over 40%.'*

Monina Wong, Researcher for Labour Action China, 2005

High-tech exports as a percentage of the value of all secondary goods exported in 2002, by region





#### HIGHEST AND LOWEST NET EXPORTERS OF ALCOHOL AND CIGARETTES

Rank	Territory	US\$ <sup>a</sup>
001	Netherlands	211
002	Niue	126
003	United Arab Emirates	117
004	Bahamas	104
005	Ireland	83
006	France	82
007	Australia	49
008	FYR Macedonia	47
009	Moldova	44
010	Chile	38
191	Portugal	30.59
192	Singapore	28.18
193	United Kingdom	27.63
194	Italy	23.61
195	Liechtenstein	22.61
195	Monaco	22.61
195	San Marino	22.61
195	Vatican City	22.61
199	Zimbabwe	20.31
200	Cuba	19.99

<sup>a</sup>Net exports, in US\$, of alcohol and cigarettes per head of population in each territory.

## 093 Alcohol and Cigarette Exports

Territory size is dictated by the annual value of combined net exports of alcohol and cigarettes from each territory for which data are known.

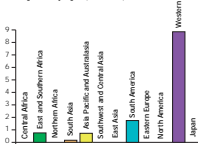
Alcohol and cigarettes account for 0.9% of all international trade in terms of monetary value, Western Europe being by far the largest net exporter, with more than two-thirds of the total. Within Western Europe, France and the Netherlands are the leaders; both are also in the top ten net exporters by population (that is net export dollars per capita). South America is the second largest region in terms of net exports of alcohol and cigarettes, although

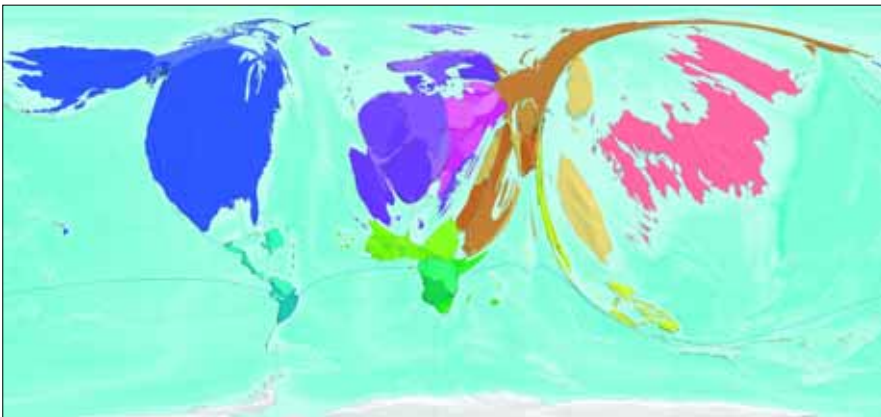
only one South American territory, Chile, makes it into the top ten exporters by population.

'Net exports' means the dollar value of all exports minus the dollar value of imports. When imports are larger than exports the net exports are zero and the country is not shown.

A total of 135 territories of the 200 represented in this book have no recorded net exports of alcohol or cigarettes

Regional net alcohol and cigarette exports annual earnings from net exports of alcohol and cigarettes by region (US\$ billion)





#### HIGHEST AND LOWEST NET IMPORTERS OF ALCOHOL AND CIGARETTES

Rank	Territory	US\$ <sup>a</sup>
001	Andorra	1172
002	Luxembourg	302
003	Greenland	213
004	Brunei	123
005	Iceland	117
006	Bahrain	92
007	Switzerland	77
008	Tuvalu	75
009	Norway	58
010	Belgium	48
<hr/>		
191	Malta	42.90
192	Estonia	42.02
193	St Kitts and Nevis	40.86
194	Qatar	40.31
195	Lebanon	36.39
196	Maldives	35.96
197	Antigua and Barbados	34.72
198	Finland	34.50
199	Taiwan	32.93
200	Grenada	29.43

<sup>a</sup>Net imports, in US\$, of alcohol and cigarettes per head of population in each territory

## 094 Alcohol and Cigarette Imports

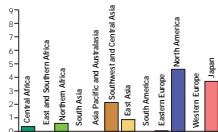
Territory size is dictated by the annual value of combined net imports of alcohol and cigarettes into each territory where data are known.

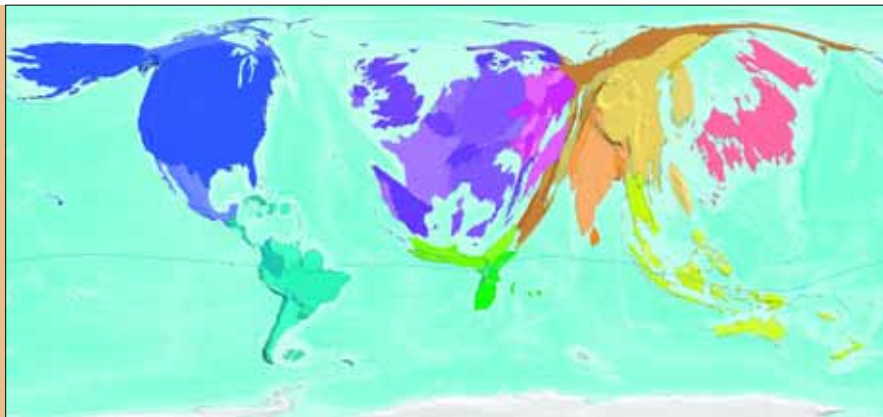
The United States and Japan have the highest net alcohol and cigarette imports in the world in terms of monetary value.

'Net imports' means the dollar value of all imports minus the dollar value of exports. When exports are larger than imports the net imports are zero and the country is not shown.

A total of 65 territories of the 200 represented in this book have no recorded net imports of alcohol and cigarettes.

Regional net alcohol and cigarette imports annual value of net alcohol and cigarette imports by region (US\$ billion)





#### GREATEST AND LEAST WEALTH PER PERSON IN 1990

Rank	Territory	US\$ <sup>a</sup>
001	United States	23,201
002	France	22,403
003	Switzerland	21,482
004	Canada	18,872
005	Japan	18,789
006	Greenland	18,662
007	Norway	18,466
008	Denmark	18,452
009	Sweden	17,695
010	Hong Kong	17,541
191	Bangladesh	640
192	Afghanistan	601
193	Uganda	592
194	Ethiopia	581
195	Niger	562
196	Malawi	558
197	Tanzania	540
198	Guinea	526
199	Democratic Republic of Congo	525
200	Chad	421

<sup>a</sup>GDP per head of the population in 1990, adjusted for PPP

## 147 Global Wealth in 1990

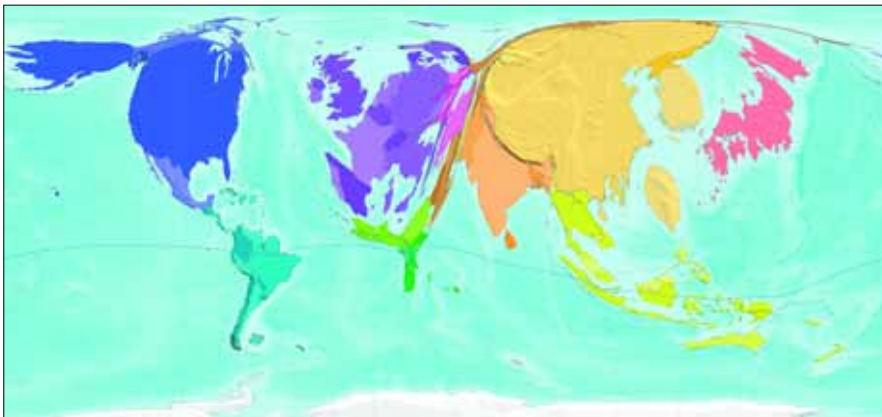
Territory size indicates gross domestic product for the year 1990, adjusted for purchasing power parity.

The gross domestic product (GDP) of a territory is a measure of its wealth. GDP is the total value of goods and services produced in a country during a given year. In this map, GDP has been adjusted for purchasing power parity (PPP), which accounts for the fact that the same amount of money buys more or less in different places.

In 1990, the region with the lowest GDP was Central Africa, with just 0.8% of the GDP of the richest region, North America. If just 1% of North America's GDP had been

redistributed to Central Africa, the region's GDP would have more than doubled.

Between 1960 and 1990 the average GDP per capita for the whole world doubled, and total GDP, adjusted for PPP, rose from US\$8 trillion to US\$27 trillion. This increase in wealth was distributed in a broadly similar pattern to the established wealth of territories, though there were some notable changes, such as the marked growth of Japan, China, South Korea and Taiwan.



Territories predicted to have the greatest and least wealth per person in 2015

Rank	Territory	US\$ <sup>a</sup>
001	Taiwan	64,519
002	Hong Kong	51,470
003	Singapore	48,645
004	Malta	42,407
005	Luxembourg	38,526
006	South Korea	38,249
007	United States	38,063
008	Norway	36,830
009	Japan	35,694
010	Ireland	34,677
<hr/>		
191	Comoros	533
192	Democratic Republic of Congo	525
193	Chad	493
194	Central African Republic	485
195	Zambia	480
196	Djibouti	446
197	Sierra Leone	443
198	Afghanistan	423
199	Tajikistan	361
200	Niger	348

<sup>a</sup>Projected GDP per head of the population in 2015, adjusted for projected PPP.

## 148 Global Wealth in 2015

Territory size indicates the projected gross domestic product for the year 2015, adjusted for projected purchasing power parity.

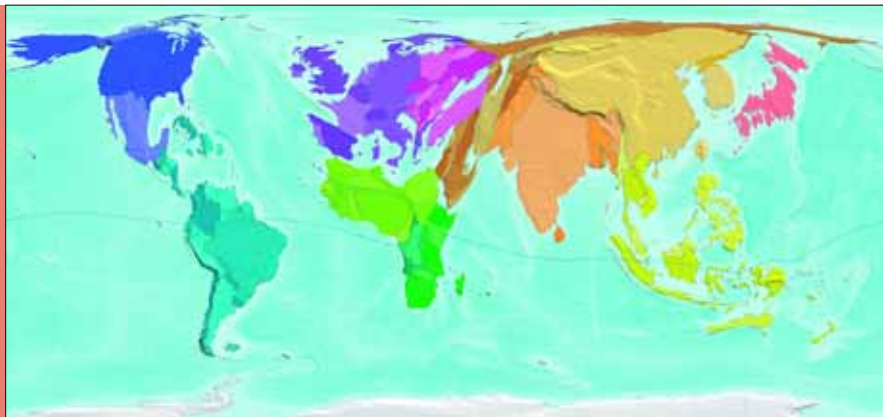
By the year 2015 it is predicted that China will be producing 27% of the world's wealth. Interestingly, China occupied almost exactly this position two millennia ago, when, in CE 1, it produced an estimated 26% of global GDP. Its share declined over the following centuries to only 5% by 1960.

While China is expected to recover its former position in the coming years, the picture elsewhere will be quite different. In the year CE 1 the Americas had only a fraction of the world's wealth, whereas today they have (and are expected to retain) the lion's share.

African territories currently play a small role on the international financial stage, which is not likely to change, while Eastern European territories are predicted to have decreasing proportions of world wealth.

*'Asia's rise is the economic event of our age. Should it proceed as it has over the last few decades, it will bring the two centuries of global domination by Europe and, subsequently, its giant North American offshoot to an end.'*

Martin Wolf, Associate Editor and Chief Economics Commentator at the *Financial Times*, 2003



Percentage of population living in urban areas

Rank	Territory	per cent
001	Hong Kong (China)	100
001	Singapore	100
003	Belgium	97
004	Kuwait	96
005	Iceland	93
006	Australia	92
006	Israel	92
006	Luxembourg	92
006	Oatar	92
006	Uruguay	92
191	Rwanda	17
192	Malawi	16
192	Solomon Islands	16
194	Ethiopia	15
194	Nepal	15
196	Papua New Guinea	13
197	Uganda	12
198	Burundi	10
199	Bhutan	8
199	Timor-Leste	8

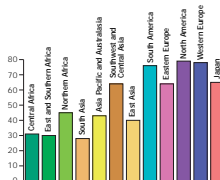
## 205 Urban Living

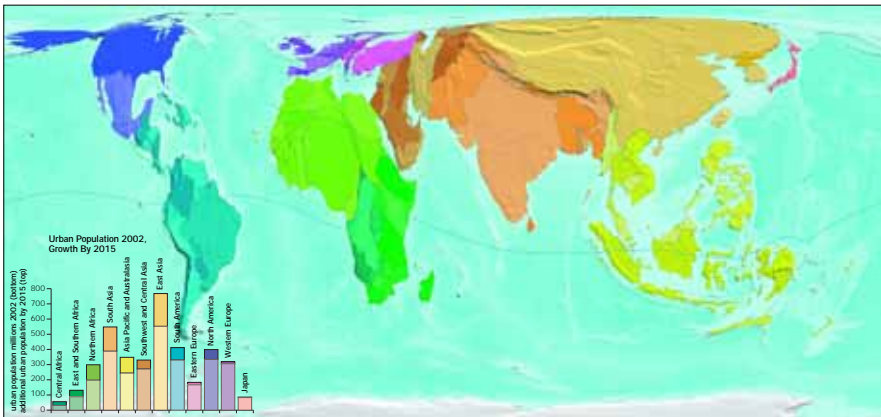
The proportion of each territory's population living in cities is shown here.

Areas of dense population facilitate trade and the provision of services. The first known city was built by the Sumerians 6,000 years ago in what is now Iraq. By 2002 (the latest date for which reliable figures are available), 48% of the world's population lived in urban areas, and that figure has almost certainly passed 50% since then. In every territory represented here there are many people living in urban areas, but there are still great contrasts between one territory and another.

Moreover, notwithstanding the purpose for which cities were originally founded, the most urbanized territories are not necessarily the richest. In Brazil, for example, 145 million people, 82% of the population, live in towns and cities. In Bhutan the corresponding figure is just 180,000 or 8% of the population. In just two territories 100% of the population lives in urban areas – Singapore and Hong Kong (which is part of China).

Percentage of population living in urban areas by region





#### TERRITORIES WITH THE HIGHEST AND LOWEST URBAN GROWTH 2002–2015

Rank	Territory	per cent <sup>a</sup>
001	Brunei	63
002	Palestine	47
003	Mauritania	45
004	Saint Lucia	44
005	Kuwait	41
006	Saudi Arabia	40
007	Oman	38
008	Rwanda	35
009	Equatorial Guinea	34
010	Afghanistan	33
191	Sweden	1.9
192	Denmark	1.6
192	Kazakhstan	1.6
194	Poland	1.5
195	Austria	1.4
195	Iceland	1.4
197	Hungary	1.1
198	Belarus	0.9
199	Czech Republic	0.8
200	Niue	0.7

<sup>a</sup>Projected increase in urban population by 2015 as a percentage of the population in 2002.

## 206 Urban Growth by 2015

Territory size indicates the projected percentage increase, between 2002 and 2015, in the number of people living in cities and towns.

The number of urban dwellers is projected to increase in all but 14 of our 200 territories between 2002 and 2015. The data used to generate this map constitute the projected increase in urban population by 2015 as a percentage of the population in 2002. Some of the increase will come from people being born in cities, and some

will come from people moving to cities from rural areas. There are many reasons to move to a town or city: they include the disappearance of rural ways of life and the perception (not always matched by reality) that urban life offers increased opportunities for work and higher standards of living.

In the 186 territories for which an increase is predicted there will be a combined total of 888 million more urban dwellers by 2015. In the 14 where a decrease is expected, the urban population will fall by about 6.5 million.

*'Massive urbanisation means hundreds of already near-bankrupt cities trying to cope in 20 years with the kind of problems London or New York only managed to address with difficulty in 150 years.'*

John Vidal, Environmental Editor for *The Guardian*, 2004



HIGHEST AND LOWEST NUMBERS OF BOOK TITLES PUBLISHED IN EACH TERRITORY PER MILLION OF POPULATION

Rank	Territory	Value
001	Vatican City	228,000 <sup>a</sup>
002	Iceland	5987
003	Denmark	2677
004	Switzerland	2538
005	Finland	2533
006	Estonia	2512
007	Andorra	2507
008	Luxembourg	2195
009	Ireland	2135
010	Monaco	2118
191	Algeria	4.2
192	Kenya	3.8
193	Mali	2.6
194	Democratic Republic of Congo	2.2
195	Angola	1.7
196	Burkina Faso	1.4
197	Togo	1.0
198	Indonesia	0.6
199	Burkina Faso	0.4
200	Ghana	0.3

<sup>a</sup>Vatican City (1,000) and Iceland (310,000) have populations smaller than 1,000,000. As a result, the values shown here appear very large.

## 249 New Books Published

Territory size indicates the number of new books published in each territory as a proportion of worldwide output in one year.

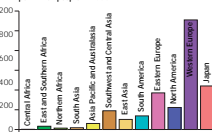
One million new books were published worldwide in 1999. The largest numbers came from the United Kingdom, China and Germany. The map is dominated by Western Europe, which is home to a large number of well-established publishing houses.

The definition of a 'new book' is a book or pamphlet title – a book has at least 50 pages, a pamphlet between five

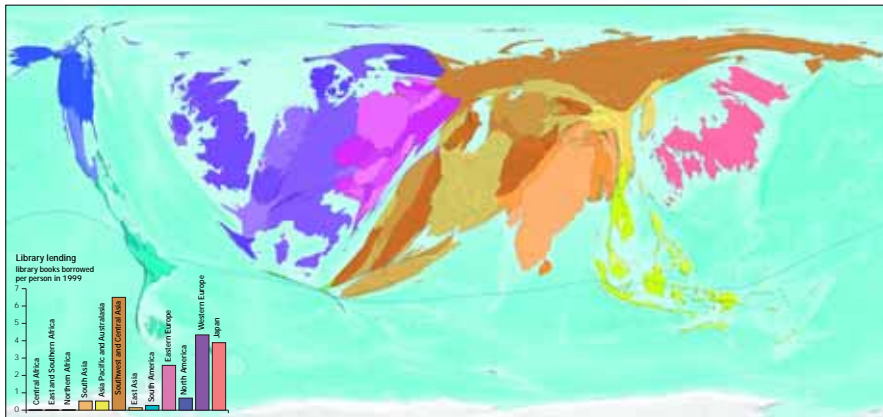
and 49 pages. For these purposes, the number of copies of a book that are sold is irrelevant: each new book or pamphlet published is counted only once.

The highest number of new titles per head of the population was produced by the Vatican City, where two were produced for every ten people in 1999. By contrast the average figure worldwide was 167 new titles published per million people.

New books published by region per million people in 1999







#### HIGHEST AND LOWEST NUMBER OF BOOKS BORROWED FROM PUBLIC LIBRARIES

Rank	Territory	Borrowings <sup>a</sup>
001	Finland	19
002	Denmark	14
003	Estonia	12
004	Netherlands	10
005	Latvia	9
005	Sweden	9
007	Russia	8
007	Slovenia	8
007	United Kingdom	8
010	Iceland	7
191	Ecuador	0.0938
192	Bahamas	0.0681
193	Turkey	0.0577
194	Togo	0.0288
195	Sierra Leone	0.0094
196	Saudi Arabia	0.0033
197	Uganda	0.0030
198	Myanmar	0.0019
199	Rwanda	0.0018
200	Burkina Faso	0.0005

<sup>a</sup>Number of books borrowed per head of the population in 1999.

## 250 Books Borrowed

Territory size is determined by the number of books borrowed from public libraries in each territory as a proportion of total worldwide borrowings

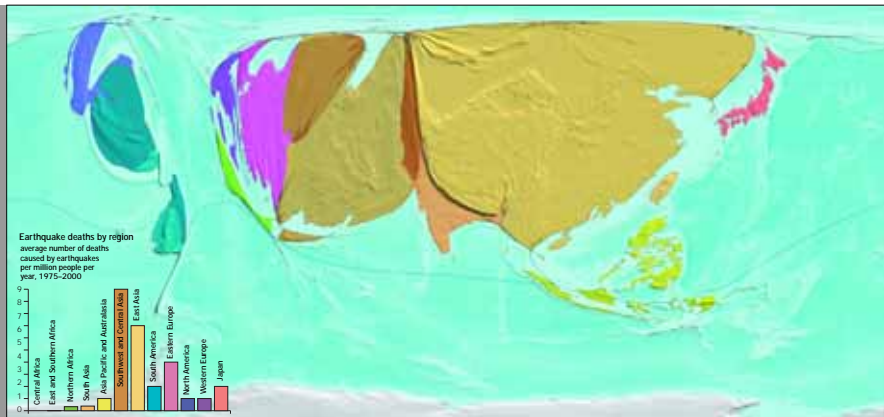
The numbers represented here show the total borrowings from public libraries. The statistics are not directly related to the number of books held in public libraries: a single book borrowed many times is counted many times, and one that never leaves the shelves is not counted at all. A public library is defined as one that lends books to the public free of charge or for a nominal sum.

Russian libraries experienced the largest number of borrowings in 1999, though there were high rates of borrowing also in Western Europe, Japan and Eastern Europe: most territories in each of these regions reported at least some borrowing. Elsewhere book borrowing was lower and many territories reported very little.

Some of the variations are due to differences in literacy rates – people who cannot read are unlikely to borrow books – and some to the lack of library provision in poorer countries. In places where people cannot afford to buy books they often cannot borrow them either.

*'In vain have you acquired knowledge, if you have not imparted it to others.'*

Deuteronomy/Rabbah (a homily on the book of Deuteronomy, one of the religious books of Judaism)



## EARTHQUAKE DEATHS, 1975-2000

Rank	Territory	Deaths <sup>a</sup>
001	Armenia	310
002	Guatemala	74
003	Iran	39
004	Afghanistan	14
005	Turkey	13
006	China	7
006	El Salvador	7
006	Hong Kong (China)	7
009	Philippines	4
009	Taiwan	4

Rank	Territory	Deaths <sup>b</sup>
011	Italy	3.8
012	Algeria	3.5
013	Mexico	3.4
014	Yemen	3.0
015	Romania	2.8
016	Solomon Islands	2.6
017	Vanuatu	2.3
018	Georgia	2.1
019	Colombia	1.9
019	Tajikistan	1.9

<sup>a</sup>Average number of deaths per year, 1975-2000.<sup>b</sup>Deaths per million of population per year, 1975-2000.

## 301 People Killed by Earthquakes

In the period 1975–2000 there were 471,000 deaths as the result of earthquakes. The territory size in this map indicates the proportion the number of these deaths that occurred in each territory.

Earthquakes occur most frequently and are most severe in zones close to active boundaries between the Earth's tectonic plates. Damaging earthquakes are common events in Colombia, China, Iran, Indonesia, India, Japan, the Philippines and Peru, among other places.

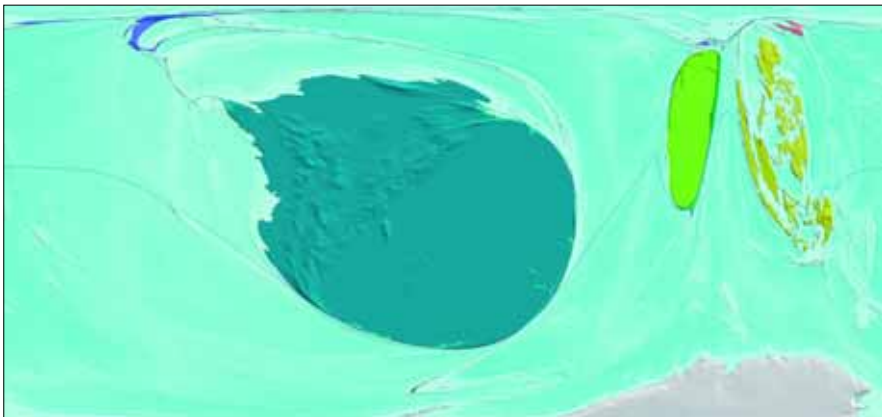
Between 1975 and 2000 there were an estimated 471,000 earthquake-related deaths, of which 52% occurred in China (mostly during the Tangshan earthquake of 1976) and 16% in Iran.

The number of deaths in an earthquake depends not only on the magnitude and duration of the earthquake

itself but also on how well prepared the infrastructure is to cope with the effects of a quake. The high death toll of almost 18,000 in the 1999 Izmit earthquake in Turkey, for example, was attributed in part to poor quality housing that could not withstand the tremors.

*'Tens of thousands of victims were pinned under the wreckage when the many poorly constructed three- and four-story commercial and residential buildings in the region collapsed in the quake ...'*

Demetri Psaropoulos, City Official in Izmit, Turkey, 1999



## VOLCANO DEATHS, 1975–2000

Rank	Territory	Deaths <sup>a</sup>
001	Colombia	877.31
002	Cameroon	68.58
003	Philippines	27.65
004	Indonesia	25.35
005	Mexico	4.62
006	United States	3.46
007	Ethiopia	2.46
008	Democratic Republic of Congo	2.35
009	Japan	1.81
010	Papua New Guinea	0.35

Rank	Territory	Deaths <sup>b</sup>
001	Colombia	20.17
002	Cameroon	4.37
003	St Vincent and the Grenadines	0.77
004	Philippines	0.35
005	Indonesia	0.12
006	Timor-Leste	0.09
007	Papua New Guinea	0.06
008	Comoros	0.05
008	Democratic Republic of Congo	0.05
008	Mexico	0.05

<sup>a</sup>Average number of deaths per year, 1975–2000.

<sup>b</sup>Deaths per million of population per year, 1975–2000.

## 302 People Killed by Volcanoes

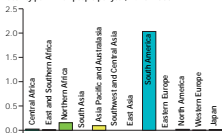
In the period 1975–2000 there were 24,000 deaths as the result of volcanoes. The territory size in this map indicates the proportion the number of these deaths that occurred in each territory.

Volcanic activity can endanger human life in various ways: lava flows, mud flows, pyroclastic flows (flows of hot ash, rocks and gases), landslides and the settling of ash can all pose a serious risk to life.

There were volcano-related deaths in only 17 of our 200 territories between

1975 and 2000. 86% of those occurred in Colombia, primarily in the town of Armero, which was inundated by mud flows following the eruption of the Nevado del Ruiz volcano on 13 November 1985. Almost 22,000 deaths were recorded.

Volcano deaths by region  
average number of deaths caused by volcanic activity per million people per year, 1975–2000





AVERAGE ANNUAL DEATHS RESULTING FROM DROUGHT PER MILLION OF POPULATION, 1975–2000

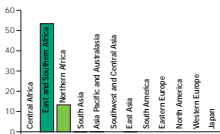
Rank	Territory	Deaths
001	Mozambique	208.00
002	Sudan	175.36
003	Ethiopia	167.43
004	Swaziland	17.48
005	Chad	13.90
006	Somalia	2.52
007	Papua New Guinea	0.67
008	Indonesia	0.24
009	Uganda	0.18
010	Kenya	0.10
011	China	0.101
012	Timor-Leste	0.098
013	Hong Kong (China)	0.094
014	Guinea	0.055
015	Pakistan	0.037
016	Burundi	0.035
017	India	0.015
018	Bangladesh	0.005
019	Brazil	0.004
019	Philippines	0.004

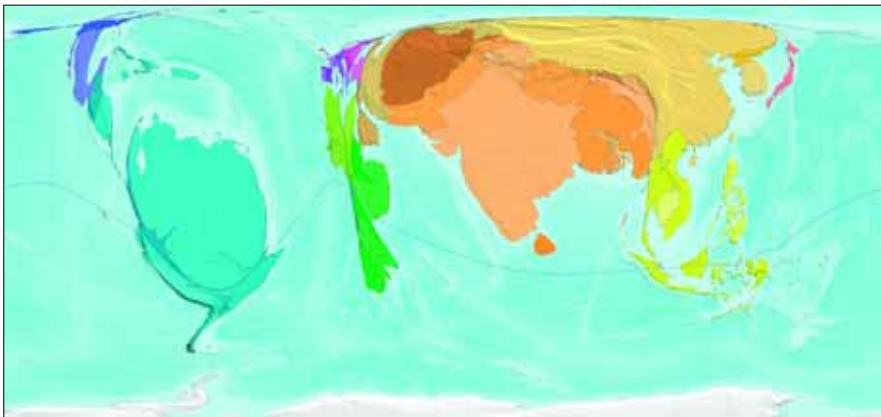
## 303 Deaths Caused by Drought

In the period 1975–2000 an estimated 560,000 deaths worldwide resulted from drought. The territory size in this map indicates the proportion of these deaths that occurred in each territory.

Between 1975 and 2000 there were drought-related deaths in 20 of the 200 territories covered by the atlas. 98% of these deaths occurred in just three territories: Mozambique, Sudan and Ethiopia. Sustained drought can result in crop failure, the death of livestock and ultimately human deaths from starvation. Unlike other disasters, droughts are slow to unfold and may continue for years.

Average annual deaths resulting from drought by region deaths per million people per year, 1975–2000





AVERAGE ANNUAL DEATHS RESULTING FROM FLOODING PER MILLION OF POPULATION, 1975–2000

Rank	Territory	Deaths
001	Venezuela	46.14
002	Afghanistan	15.10
003	Somalia	10.02
004	Djibouti	9.89
005	Tajikistan	8.90
006	Nepal	6.75
007	Puerto Rico	5.11
008	Bhutan	3.88
009	Honduras	3.76
010	El Salvador	3.38
011	Peru	2.98
012	Cambodia	2.84
013	Bangladesh	2.65
014	Guatemala	2.57
015	Mozambique	2.51
016	Yemen	1.95
017	Ecuador	1.93
018	Seychelles	1.92
019	Jamaica	1.72
020	Fiji	1.59

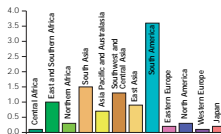
## 304 Deaths Caused by Floods

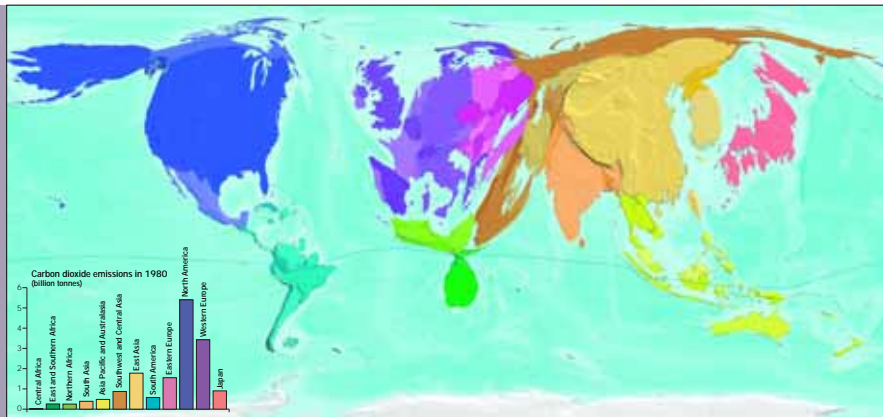
In the period 1975–2000 an estimated 170,000 deaths worldwide resulted from flooding. The territory size in this map indicates the proportion of these deaths that occurred in each territory.

Flooding kills people in every part of the world. Between 1975 and 2000 the highest death tolls from flooding occurred in South America, South Asia and East Asia. Central Africa, Japan and Western Europe each suffered less than 0.6% of total worldwide flood deaths.

The territory with the most flood deaths per head of population was Venezuela; 99% of these deaths took place in 1999, following days of unusually heavy rains. 1999 was also the year in the period 1975–2000 when most flood deaths took place worldwide.

Average annual deaths resulting from flooding by region  
deaths per million people per year, 1975–2000





#### HIGHEST AND LOWEST CARBON DIOXIDE EMISSIONS (IN TONNES) PER HEAD OF POPULATION IN 1980

Rank	Territory	Tonnes
001	Luxembourg	28.9
002	Bahamas	27.3
003	Brunei	25.5
004	Qatar	23.0
005	United States	16.3
006	Canada	13.4
007	Germany	13.1
008	Belgium	12.8
009	Tobago	12.4
010	Denmark	11.7
191	Comoros	0.050
191	Uganda	0.050
193	Niger	0.049
194	Bhutan	0.031
194	Burundi	0.031
194	Central African Republic	0.031
197	Nepal	0.030
198	Cambodia	0.029
199	Chad	0.028
200	Ethiopia	0.027

## 325 Carbon Dioxide Emissions 1980

The size of each territory indicates the proportion of global carbon dioxide emissions from that territory in 1980.

Roughly 60% of global warming resulting from human activities is caused by the emission of carbon dioxide, a colourless, odourless gas, produced principally by the burning of organic matter, such as fossil fuels. Emissions of carbon dioxide vary widely from place to place because of differences in life style and means of producing energy. The quantity of carbon

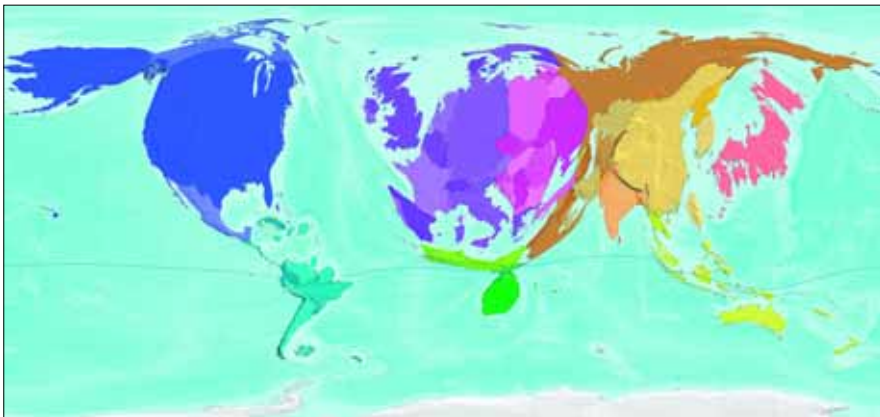
dioxide produced by a territory depends on the level and type of industrialization, types of transport in use, and fossil fuel consumption.

In 1980 16 billion tonnes of carbon dioxide were emitted worldwide. The territories emitting the largest total quantities of carbon dioxide were the United States and China. The most

polluting territories emit 1000 times more carbon dioxide per person than the least polluting. Even among the bit emitters there is huge variation: in 1980 the United States emitted 14 times as much carbon dioxide per head of population as China, for example.

*'... the world need[s] to differentiate between the survival emissions of the poor and luxury emissions of [the] rich.'*

Sunita Narain, Director of the Centre for Science and Environment in New Delhi, 2002



#### HIGHEST AND LOWEST CARBON DIOXIDE EMISSIONS (IN TONNES) PER HEAD OF POPULATION IN 2000

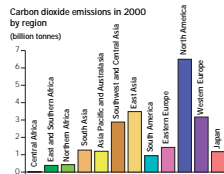
Rank	Territory	Tonnes
001	Qatar	64
002	Bahrain	27
003	Brunei	21
003	Kuwait	21
005	Trinidad and Tobago	20
006	Luxembourg	19
006	United States	19
008	Australia	18
008	United Arab Emirates	18
010	Saudi Arabia	17
191	Democratic Republic of Congo	0.095
192	Comoros	0.094
192	Malawi	0.094
192	Niger	0.094
192	Tanzania	0.094
192	Uganda	0.094
197	Burundi	0.048
197	Cambodia	0.048
199	Chad	0.047
200	Afghanistan	0.040

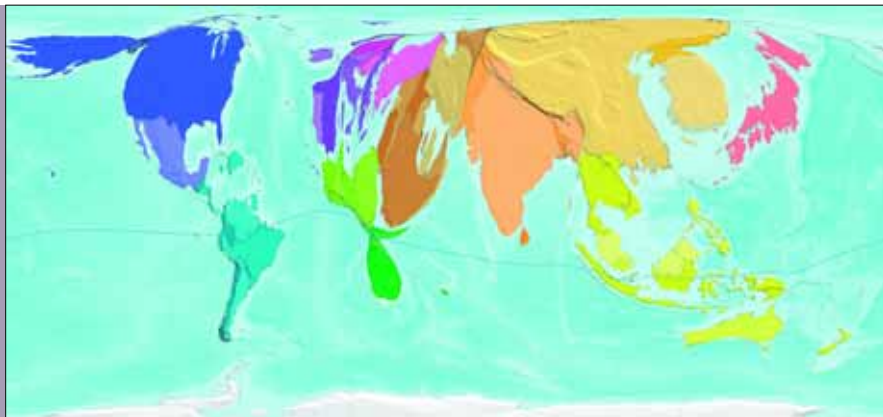
## 326 Carbon Dioxide Emissions 2000

The size of each territory indicates the proportion of global carbon dioxide emissions from that territory in 2000.

In the year 2000 almost 23 billion tonnes of carbon dioxide were emitted into the atmosphere worldwide, an increase of nearly 44% over the total for 1980. The territories emitting the largest total amounts of carbon dioxide were still the United

States and China: 28% of global emissions came from North American territories, while only 0.09% came from Central Africa. 66 territories emitted less than 1 tonne per head of population, while 21 territories emitted over 10 tonnes per person.





#### HIGHEST AND LOWEST INCREASES IN CARBON DIOXIDE EMISSIONS (IN TONNES) PER HEAD OF POPULATION, 1980-2000

Rank	Territory	Value
001	Qatar	41.1
002	Bahrain	15.6
003	Kuwait	11.7
004	Saudi Arabia	11.2
005	United Arab Emirates	10.1
006	Trinidad and Tobago	7.7
007	Australia	7.1
008	Singapore	6.4
009	Israel	6.3
009	South Korea	6.3
011	Libya	5.7
012	Oman	5.4
013	Malta	4.9
014	Malaysia	4.7
015	Ireland	4.6
016	Cyprus	4.2
017	Greece	3.8
018	New Zealand	3.4
018	Turkmenistan	3.4
020	Portugal	3.3

## 327 Increase of Carbon Dioxide Emissions

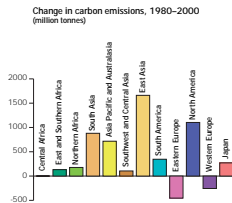
Territory size indicates the proportion of the overall increase in carbon emissions contributed by territories where emissions increased. The greater the size, the greater each territory's contribution.

Between 1980 and 2000, 72% of territories increased their emissions of carbon dioxide annually. The combined average increase was 6.6 billion tonnes per year. The remaining territories reduced their emissions by a combined average of 1.9 billion tonnes per year.

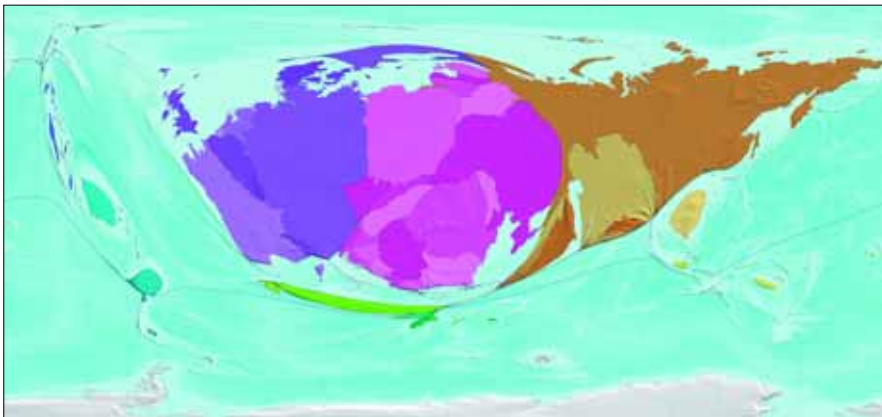
The largest increases in carbon dioxide emissions over this period were in China, the United States and India. 42% of the world's population lives in these three

territories; collectively they are responsible for 45% of world increases in carbon dioxide emissions. However, the increase per head of the population in the United States was more than three times larger than in China, and more than four times larger than in India.

The largest increases in carbon dioxide emissions per person over these 20 years occurred in Qatar, followed by Bahrain.







HIGHEST AND LOWEST DECREASES IN CARBON DIOXIDE EMISSIONS (IN TONNES) PER HEAD OF POPULATION, 1980-2000

Rank	Territory	Tonnes
001	Bahamas	21.6
002	Luxembourg	9.5
003	Kazakhstan	7.7
004	Estonia	6.7
005	Puerto Rico	4.6
006	Brunei	4.5
007	Romania	4.4
008	Serbia & Montenegro	4.3
009	Bulgaria	3.9
009	Ukraine	3.9
011	Poland	3.8
012	Germany	3.5
013	Denmark	3.4
014	Azerbaijan	3.3
014	Russia	3.3
016	Belgium	2.8
016	Moldova	2.8
016	Sweden	2.8
019	Belarus	2.7
019	Lithuania	2.7

## 328 Decrease of Carbon Dioxide Emissions

Territory size indicates the proportion of the overall decrease in carbon emissions contributed by territories where emissions decreased. The greater the size, the greater each territory's contribution.

Between 1980 and 2000, 28% of territories decreased their emissions of carbon dioxide annually. The combined average decrease was 1.9 billion tonnes per year. However, emission increases from other territories were three and a half times greater than this decrease (see Map 327).

Almost half of the decrease in emissions occurred in territories of the former Soviet

Union, though Russia itself was still the third largest emitter of carbon dioxide in 2000. Substantial cuts in emissions were also made by Germany (at 15%), Poland (at 8%) and France (at 6%). Decline in industrial production and the closure of factories contributed to some of the decreases.

Regional change in carbon emissions, 1980-2000 (million tonnes)

