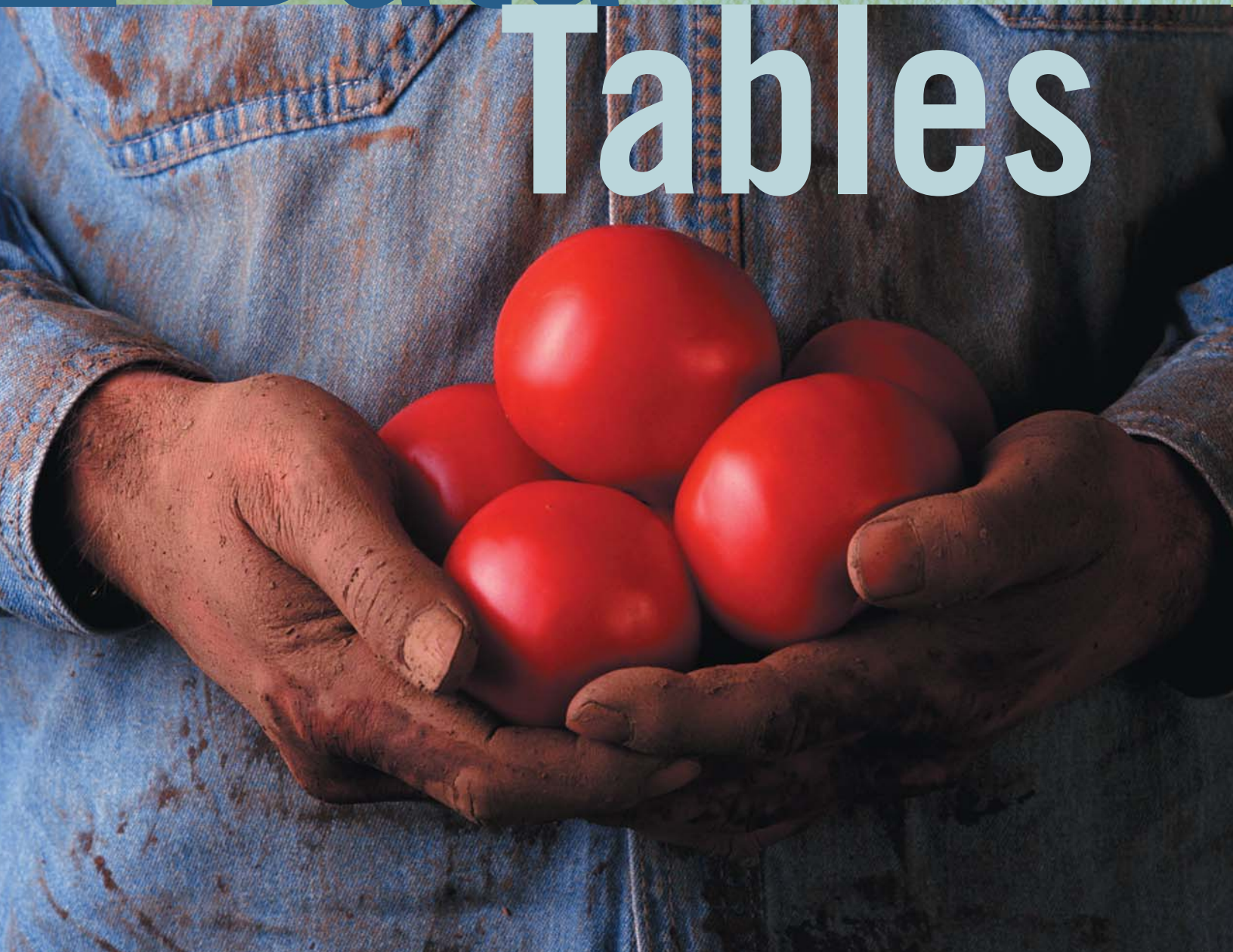




Data

Tables





II

PART

- 1 **Population and Education**
- 2 **Human Health**
- 3 **Gender and Development**
- 4 **Income and Poverty**
- 5 **Economics and Financial Flows**
- 6 **Institutions and Governance**
- 7 **Energy**
- 8 **Climate and Atmosphere**
- 9 **Water Resources and Fisheries**
- 10 **Biodiversity**
- 11 **Land Use and Human Settlements**
- 12 **Food and Agriculture**



WORLD RESOURCES 2005 Data Tables

Each edition of *World Resources* includes a statistical appendix, a compilation of country-level data culled from a variety of sources. This section presents some of the data required to build a basic picture of the state of the Earth in its human, economic, and environmental dimensions. In an increasingly interdependent, globalized world, a picture of the whole is needed to understand the interactions of human development, population growth, economic growth, and the environment. In addition, *World Resources 2005* provides a selection of data on global poverty and, in particular, on how the poor use natural resources.

The 12 data tables that follow are a subset of a larger online data collection: the *EarthTrends* database of the World Resources Institute. Based on the *World Resources* series, *EarthTrends* is a free, online resource that highlights the environmental, social, and economic trends that shape our world. The website offers the public a comprehensive collection of vital statistics, maps, and graphics viewable by watershed, district, country, region, or worldwide.



General Notes

The *World Resources 2005* data tables present information for 155 countries. These countries were selected from the 191 official member states of the United Nations based on their population levels, land area, and the availability of data. Many more countries are included in the *EarthTrends* online database. Country groupings are based on lists developed by the Food and Agriculture Organization of the United Nations (for developed and developing countries), the World Bank (for low-, medium-, and high-income countries), and the World Resources Institute (for regional classifications). See pages 224-226 for a full listing.

Several general notes apply to all the data tables in the report (except where noted otherwise):

- “..” in a data column signifies that data are not available or are not relevant (for example, country status has changed, as with the former Soviet republics).
- Negative values are shown in parentheses.
- 0 appearing in a table indicates a value of either zero or less than one-half the unit of measure used in the table; (0) indicates a value less than zero and greater than negative one-half.
- Except where identified by a footnote, regional totals are calculated using regions designated by the World Resources Institute. Totals represent either a summation or a weighted average of available data. Weighted averages of ratios use the denominator of the ratio as the weight. Regional totals are published only if more than 85 percent of the relevant data are available for a particular region. Missing values are not imputed.
- The regional totals published here use data from all 222 countries and territories in the *World Resources/EarthTrends* database (some of these countries are omitted from the current tables). Regional summations and weighted averages calculated with only the 155 countries listed in these data tables will therefore not match the published totals.
- Except where identified with a footnote, world totals are presented as calculated by the original data source (which may include countries not listed in WRI’s database); original sources are listed after each data table.
- When available data are judged too weak to allow for any meaningful comparison across countries, the data are not shown. Please review the technical notes for further consideration of data reliability.
- Comprehensive technical notes are available in the pages following each data table.

EarthTrends: The Environmental Information Portal

Much of the environmental information on the internet is fragmented, buried, or only available at a price. World Resources Institute's *EarthTrends* data portal gathers information from more than 40 of the world's leading statistical agencies, supplemented with WRI-generated maps and analyses, into a single, free repository for rapid searching and retrieving. *EarthTrends* supplements its content with detailed metadata that report on research methodologies and information reliability.

The *EarthTrends* online data source includes more than 40 data tables, similar to those on the following pages. *EarthTrends* also features over 2,000 two-page country profiles that highlight country-level statistics on key topics in sustainable development, as well as hundreds of maps and feature stories. The core of *EarthTrends* is a searchable database with over 600 time-series indicators, spanning 30-plus years: a corpus of statistical knowledge from which the data tables in this volume are drawn.

Two new additions to *EarthTrends* will be of particular interest to readers of this book. *EarthTrends* now features the *EarthTrends Poverty Resource* and the *EarthTrends Global Watersheds Collection*. The *EarthTrends Poverty Resource*, released in December 2004, provides a starting point for research on the nexus of poverty, governance, and ecosystems. It brings together a unique collection of data, maps, and other resources to help readers comprehend and analyze developing world poverty. In addition, the Poverty Resource contains dozens of subnational maps depicting the distribution of poverty and human well-being within countries. The *Global Watersheds Collection*, an updated version of the 1998 report *Watersheds of the World*, provides maps of land cover, population density, and biodiversity for 154 river basins and sub-basins around the world.

Since 2001, *EarthTrends* has remained an authoritative, independent source of information for users in more than 190 countries and territories, demonstrating that carefully compiled web-based information can provide an important basis for decision-making and policy development. The information on *EarthTrends* is varied. While researchers will value the raw data (over 500,000 records), much of the information is available in easy-to-use, printable formats, and can be adapted for educational or policy-oriented presentations.

Additional Data Products

In addition to the main, graphics-intensive site, *EarthTrends* offers users additional ways to access our collection of environmental information.

EarthTrends for Low-Bandwidth Users

In an effort to broaden global access to sustainable development information, WRI has developed a low-bandwidth companion to the *EarthTrends* site. View the entire *EarthTrends* collection of information without high-resolution graphics at <http://earthtrends.wri.org/text>.

World Resources/EarthTrends Data CD-ROM

Gain instant, portable access to the *EarthTrends* database on global conditions and trends with the *EarthTrends* CD-ROM. This time-saving research and reference tool contains all of the economic, population, natural resource, and environmental statistics contained in the *EarthTrends* website and the print edition of *World Resources 2005*. Available for order at <http://www.wristore.com>.

TerraViva! World Resources

Need more power and flexibility in arranging and understanding data? View the World Resources/EarthTrends database through state-of-the-art mapping, analytical, and statistical tools. Compare hundreds of environmental, social, and economic variables, generating maps, graphics, tables, or text as output. Available for order at <http://www.wristore.com>.

The screenshot shows the EarthTrends website interface. At the top, there is a navigation bar with the World Resources Institute logo, a search bar, and links for 'Text-Only', 'Site Map', and 'Go'. Below this is the main header 'EarthTrends The Environmental Information Portal'. A horizontal menu lists various categories: Coastal and Marine Ecosystems, Water Resources and Freshwater Ecosystems, Climate and Atmosphere, Population, Health and Human Well-being, Economics, Business and the Environment, Energy and Resources, Biodiversity and Protected Areas, Agriculture and Food, Forests, Grasslands and Drylands (highlighted in green), and Environmental Governance and Institutions. Below the menu is a large image of a forest. On the right side of the forest image is a vertical sidebar menu with the following items: SEARCHABLE DATABASE, DATA TABLES, COUNTRY PROFILES, MAPS, and FEATURES. Below the forest image is a box titled 'What is EarthTrends?' containing a brief description of the site. To the right of this box is a list of featured content: 'New This Month', 'About EarthTrends', 'Poverty Resource', and 'Watersheds Data'. Further right is a section titled 'Take EarthTrends with you!' with an image of a CD-ROM and text stating that CDs provide portable access to the data. At the bottom of the page, there is a footer with logos for 'THE WORLD BANK', 'UNEP', 'THE NETHERLANDS MINISTRY OF FOREIGN AFFAIRS', 'SIDA', 'UNDP', and 'USAID'. Below the footer is a row of links: '© 2005 World Resources Institute', 'Questions?', 'List of Data Providers', 'Related Links', and 'Updated Monthly'.

REGIONS

Classifications by the World Resources Institute

ASIA

(excluding the Middle East)
 Armenia
 Azerbaijan
 Bangladesh
 Bhutan
 Brunei Darussalam
 Cambodia
 China
 Georgia
 Hong Kong
 India
 Indonesia
 Japan
 Kazakhstan
 Korea, Dem People's Republic
 Korea, Republic
 Kyrgyzstan
 Lao People's Dem Republic
 Macau
 Malaysia
 Maldives
 Mongolia
 Myanmar
 Nepal
 Pakistan
 Philippines
 Singapore
 Sri Lanka
 Taiwan
 Tajikistan
 Thailand
 Timor-Leste
 Turkmenistan
 Uzbekistan
 Viet Nam

EUROPE

Albania
 Andorra
 Austria
 Belarus
 Belgium
 Bosnia and Herzegovina
 Bulgaria
 Channel Islands
 Croatia
 Czech Republic
 Denmark
 Estonia
 Faeroe Islands
 Finland
 France
 Germany
 Gibraltar
 Greece
 Hungary
 Iceland
 Ireland
 Isle of Man

Italy
 Latvia
 Liechtenstein
 Lithuania
 Luxembourg
 Macedonia, FYR
 Malta
 Moldova, Republic
 Monaco
 Netherlands
 Norway
 Poland
 Portugal
 Romania
 Russian Federation
 San Marino
 Serbia and Montenegro
 Slovakia
 Slovenia
 Spain
 Sweden
 Switzerland
 Ukraine
 United Kingdom

MIDDLE EAST AND NORTH AFRICA

Afghanistan
 Algeria
 Bahrain
 Cyprus
 Egypt
 Iran, Islamic Republic
 Iraq
 Israel
 Jordan
 Kuwait
 Lebanon
 Libyan Arab Jamahiriya
 Morocco
 Oman
 Palestinian Territories
 Qatar
 Saudi Arabia
 Syrian Arab Republic
 Tunisia
 Turkey
 United Arab Emirates
 Western Sahara
 Yemen

SUB-SAHARAN AFRICA

Angola
 Benin
 Botswana
 Burkina Faso
 Burundi
 Cameroon
 Cape Verde
 Central African Republic

Chad
 Comoros
 Congo
 Congo, Dem Republic
 Côte d'Ivoire
 Djibouti
 Equatorial Guinea
 Eritrea
 Ethiopia
 Gabon
 Gambia
 Ghana
 Guinea
 Guinea-Bissau
 Kenya
 Lesotho
 Liberia
 Madagascar
 Malawi
 Mali
 Mauritania
 Mauritius
 Mozambique
 Namibia
 Niger
 Nigeria
 Réunion
 Rwanda
 Saint Helena
 Sao Tome and Principe
 Senegal
 Seychelles
 Sierra Leone
 Somalia
 South Africa
 Sudan
 Swaziland
 Tanzania
 Togo
 Uganda
 Zambia
 Zimbabwe

NORTH AMERICA

Bermuda
 Canada
 Greenland
 Saint Pierre and Miquelon
 United States

CENTRAL AMERICAN AND CARRIBEAN

Antigua and Barbuda
 Aruba
 Bahamas
 Barbados
 Belize
 British Virgin Islands
 Cayman Islands
 Costa Rica

Cuba
 Dominica
 Dominican Republic
 El Salvador
 Grenada
 Guadeloupe
 Guatemala
 Haiti
 Honduras
 Jamaica
 Martinique
 Mexico
 Netherlands Antilles
 Nicaragua
 Panama
 Puerto Rico
 Saint Kitts and Nevis
 Saint Lucia
 Saint Vincent and Grenadines
 Trinidad and Tobago
 Turks and Caicos Islands
 Virgin Islands

SOUTH AMERICA

Argentina
 Bolivia
 Brazil
 Chile
 Colombia
 Ecuador
 Falkland Islands
 French Guiana
 Guyana
 Paraguay
 Peru
 Suriname
 Uruguay
 Venezuela

OCEANIA

American Samoa
 Australia
 Cook Islands
 Fiji
 French Polynesia
 Guam
 Kiribati
 Marshall Islands
 Micronesia, Fed States
 Nauru
 New Caledonia
 New Zealand
 Niue
 Northern Mariana Islands
 Palau
 Papua New Guinea
 Samoa
 Solomon Islands
 Tonga
 Vanuatu

DEVELOPING AND DEVELOPED WORLD

Classifications by the Food and Agriculture Organization of the United Nations

DEVELOPING

Afghanistan
Algeria
American Samoa
Angola
Antigua and Barbuda
Argentina
Aruba
Bahamas
Bahrain
Bangladesh
Barbados
Belize
Benin
Bermuda
Bhutan
Bolivia
Botswana
Brazil
British Virgin Islands
Brunei Darussalam
Burkina Faso
Burundi
Cambodia
Cameroon
Cape Verde
Cayman Islands
Central African Republic
Chad
Chile
China
Colombia
Comoros
Congo
Congo, Dem Republic
Cook Islands
Costa Rica
Côte d'Ivoire
Cuba
Cyprus
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Ethiopia
Falkland Islands
Fiji
French Guiana
French Polynesia
Gabon
Gambia
Ghana
Greenland
Grenada
Guadeloupe
Guam

Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
Hong Kong
India
Indonesia
Iran, Islamic Republic
Iraq
Jamaica
Jordan
Kenya
Kiribati
Korea, Dem People's Republic
Korea, Republic
Kuwait
Lao People's Dem Republic
Lebanon
Lesotho
Liberia
Libyan Arab Jamahiriya
Macau
Madagascar
Malawi
Malaysia
Maldives
Mali
Marshall Islands
Martinique
Mauritania
Mauritius
Mexico
Micronesia, Fed States
Mongolia
Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Netherlands Antilles
New Caledonia
Nicaragua
Niger
Nigeria
Niue
Northern Mariana Islands
Oman
Pakistan
Palau
Palestinian Territories
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Puerto Rico
Qatar

Réunion
Rwanda
Saint Helena
Saint Kitts and Nevis
Saint Lucia
Saint Pierre and Miquelon
Samoa
Sao Tome and Principe
Saudi Arabia
Senegal
Seychelles
Sierra Leone
Singapore
Solomon Islands
Somalia
Sri Lanka
Saint Vincent and Grenadines
Sudan
Suriname
Swaziland
Syrian Arab Republic
Taiwan
Tanzania
Thailand
Timor-Leste
Togo
Tonga
Trinidad and Tobago
Tunisia
Turkey
Turks and Caicos Islands
Uganda
United Arab Emirates
Uruguay
Vanuatu
Venezuela
Viet Nam
Virgin Islands
Western Sahara
Yemen
Zambia
Zimbabwe

DEVELOPED

Albania
Andorra
Armenia
Australia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Canada
Channel Islands
Croatia
Czech Republic
Denmark
Estonia

Faeroe Islands
Finland
France
Georgia
Germany
Gibraltar
Greece
Hungary
Iceland
Ireland
Isle of Man
Israel
Italy
Japan
Kazakhstan
Kyrgyzstan
Latvia
Liechtenstein
Lithuania
Luxembourg
Macedonia, FYR
Malta
Moldova, Republic
Monaco
Netherlands
New Zealand
Norway
Poland
Portugal
Romania
Russian Federation
San Marino
Serbia and Montenegro
Slovakia
Slovenia
South Africa
Spain
Sweden
Switzerland
Tajikistan
Turkmenistan
Ukraine
United Kingdom
United States
Uzbekistan

LOW-, MIDDLE-, AND HIGH-INCOME

Classifications by the World Bank

LOW INCOME

Afghanistan
 Angola
 Azerbaijan
 Bangladesh
 Benin
 Bhutan
 Burkina Faso
 Burundi
 Cambodia
 Cameroon
 Central African Republic
 Chad
 Comoros
 Congo
 Congo, Dem Republic
 Côte d'Ivoire
 Equatorial Guinea
 Eritrea
 Ethiopia
 Gambia
 Georgia
 Ghana
 Guinea
 Guinea-Bissau
 Haiti
 India
 Indonesia
 Kenya
 Korea, Dem People's Republic
 Kyrgyzstan
 Lao People's Dem Republic
 Lesotho
 Liberia
 Madagascar
 Malawi
 Mali
 Mauritania
 Moldova, Republic
 Mongolia
 Mozambique
 Myanmar
 Nepal
 Nicaragua
 Niger
 Nigeria
 Pakistan
 Papua New Guinea
 Rwanda
 Sao Tome and Principe
 Senegal
 Sierra Leone
 Solomon Islands
 Somalia
 Sudan
 Tajikistan
 Tanzania
 Timor-Leste
 Togo

Uganda
 Uzbekistan
 Viet Nam
 Yemen
 Zambia
 Zimbabwe

MIDDLE INCOME

Albania
 Algeria
 American Samoa
 Argentina
 Armenia
 Belarus
 Belize
 Bolivia
 Bosnia and Herzegovina
 Botswana
 Brazil
 Bulgaria
 Cape Verde
 Chile
 China
 Colombia
 Costa Rica
 Croatia
 Cuba
 Czech Republic
 Djibouti
 Dominica
 Dominican Republic
 Ecuador
 Egypt
 El Salvador
 Estonia
 Fiji
 Gabon
 Grenada
 Guatemala
 Guyana
 Honduras
 Hungary
 Iran, Islamic Republic
 Iraq
 Jamaica
 Jordan
 Kazakhstan
 Kiribati
 Latvia
 Lebanon
 Libyan Arab Jamahiriya
 Lithuania
 Macedonia, FYR
 Malaysia
 Maldives
 Marshall Islands
 Mauritius
 Mexico
 Micronesia, Fed States

Morocco
 Namibia
 Northern Mariana Islands
 Oman
 Palau
 Palestinian Territories
 Panama
 Paraguay
 Peru
 Philippines
 Poland
 Romania
 Russian Federation
 Saint Kitts and Nevis
 Saint Lucia
 Saint Vincent and Grenadines
 Samoa
 Saudi Arabia
 Serbia and Montenegro
 Seychelles
 Slovakia
 South Africa
 Sri Lanka
 Suriname
 Swaziland
 Syrian Arab Republic
 Thailand
 Tonga
 Trinidad and Tobago
 Tunisia
 Turkey
 Turkmenistan
 Ukraine
 Uruguay
 Vanuatu
 Venezuela
 Western Sahara

French Polynesia
 Germany
 Greece
 Greenland
 Guadeloupe
 Guam
 Hong Kong
 Iceland
 Ireland
 Isle of Man
 Israel
 Italy
 Japan
 Korea, Republic
 Kuwait
 Liechtenstein
 Luxembourg
 Macau
 Malta
 Martinique
 Monaco
 Netherlands
 Netherlands Antilles
 New Caledonia
 New Zealand
 Norway
 Portugal
 Puerto Rico
 Qatar
 Réunion
 San Marino
 Singapore
 Slovenia
 Spain
 Sweden
 Switzerland
 United Arab Emirates
 United Kingdom
 United States
 Virgin Islands

HIGH INCOME

Andorra
 Antigua and Barbuda
 Aruba
 Australia
 Austria
 Bahamas
 Bahrain
 Barbados
 Belgium
 Bermuda
 Brunei Darussalam
 Canada
 Cayman Islands
 Channel Islands
 Cyprus
 Denmark
 Faeroe Islands
 Finland
 France
 French Guiana

Population and Education: Technical Notes

DEFINITIONS AND METHODOLOGY

Total Population refers to estimates and projections of de facto population as of July 1 of the year indicated.

Percent of Population under Age 15 is the proportion of the total population younger than 15 years of age.

Percent of Population Age 65 and Over is the proportion of the total population 65 years of age and older.

Total Fertility Rate is an estimate of the average number of children a woman would have over the course of her entire life if current age-specific fertility rates remained constant during her reproductive years.

The four variables defined above are estimated by the United Nations Population Division (UNPD) for the years 1950-2000 and forecasted based on the assumptions enumerated below for the years 2001-2050.

Past estimates are calculated using census and survey results from all countries. The UNPD compiles, evaluates, and adjusts these data when necessary. Adjustments incorporate data from civil registrations (in developed countries), population surveys (in developing countries), earlier censuses, and, when necessary, population models based on information from similar countries.

The projections reported here assume medium fertility (the “medium-fertility assumption”). All future population projections are based on estimates of the 2000 base-year population and incorporate the three main components of population growth: fertility, mortality, and migration. *Fertility* is estimated by applying age-specific fertility rates to the projected female population using models based on past trends in fertility to project future declines. *Mortality* is projected on the basis of the models of life expectancy that assume a medium pace of mortality decline. For countries affected by the HIV/AIDS epidemic, mortality rates are predicted using a model developed by the Joint United Nations Program on HIV/AIDS (UNAIDS). *Migration* rates are estimated on the basis of past international migration estimates and an assessment of the policy stance of countries with regard to future international migration flows. The UNPD incorporates information on official immigration and emigration, labor migration, undocumented migration, and refugees.

For more information on methodology, see *World Population Prospects, 2002 Revision, Volume III: Analytical Report*. Online at http://www.un.org/esa/population/publications/wpp2002/WPP2002_Vol3.htm.

Mortality under Age 5 is the probability of a child dying between birth and age five expressed per 1,000 live births. Data for estimating mortality of children under age 5 is typically obtained from population census information, civil registration records on deaths of young children, United Nations Children’s Fund (UNICEF) Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS). For each country, UNICEF and its partners plotted all data from 1960 to the present on a graph; a curve was fitted through these data using a weighted least-squares regression model.

Refugees Granted Asylum Elsewhere is the number of refugees leaving a country who have been granted asylum status by a foreign government.

Refugees Repatriations is the number of refugees who have successfully returned (repatriated) to their home country.

In both columns, refugees are counted according to their home countries (“country of origin”), not their country of asylum. Data were collected in 2003 but include all persons that have migrated as refugees without returning to their home country. According to Article 1 of the 1951 Convention Relating to the Status of Refugees and the related 1967 Protocol, a refugee is a person who “owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country

of his nationality and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country.” This variable reflects the number of refugees recognized by the United Nations High Commissioner for Refugees (UNHCR), which generally relies on host government reporting to obtain data, supplemented with information collected by aid workers.

Internally Displaced Persons (IDPs) are defined by the United Nations as “persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border.” The UNHCR estimates that globally there are 25 million internally displaced people in over 50 countries. Since they have not crossed into another country, IDPs are generally not afforded the same protections and assistance given to refugees. Estimates are from the Global IDP Project and incorporate a wide variety of sources, including non-governmental organizations (NGOs), academic research, governments, and news agencies.

Literacy Rates measure the proportion of the population in a specific age group who can both read and write with understanding a short, simple statement on their everyday life. **Adult Literacy Rates** refer to all residents of a country or region over the age of 15; **Youth Literacy Rates** evaluate the population of a country between the ages of 15 and 24 in the year specified. Youth literacy rates are increasingly used to gauge the impact of primary education as well as the speed with which illiteracy can be eradicated.

Most literacy data are collected during national population censuses and supplemented by household surveys, labor force surveys, employment surveys, industry surveys, and agricultural surveys when they are available. UNESCO uses these data to graph a logistic regression model. When census and survey data are not available, literacy rates for a specific country are estimated based on neighboring countries with similar characteristics.

Net School Enrollment Ratio (NER) is defined as the enrollment of the official age group for a given level of education expressed as a percentage of the population from the same age group. The theoretical maximum value is 100 percent. A high NER denotes a high degree of participation of the official school-age population. If the NER is below 100 percent, users should not assume that the remaining school-age population is not enrolled in any school; they could be enrolled in school at other grade levels. **Primary Education** is defined by the International Standard Classification of Education (ISCED) as the “beginning of systematic apprenticeship of reading, writing and mathematics.” Programs are typically six years long and represent the beginning of compulsory education in many countries. **Secondary education** follows primary education, and is characterized as being subject-oriented with specialized fields of learning. Students achieve a full implementation of basic skills. Programs may be academic, vocational, or technical in nature.

Net enrollment ratio is calculated by dividing the number of pupils enrolled who are of the official age group for a given level of education by the total population of the same age group. National governments provide the United Nations Educational, Scientific, and Cultural Organization (UNESCO) with enrollment data based on a series of electronic questionnaires. When data from national governments are not available or are of inferior quality, UNESCO will estimate enrollment ratios from background data, if available.



FREQUENCY OF UPDATE BY DATA PROVIDERS

UNPD publishes country-level statistics every two years with annual revisions of key estimates. UNICEF and UNHCR publish the most recently available data in an annual report, with more frequent updates online. Education, literacy and IDP data are updated irregularly. Most updates include revisions of past data.

DATA RELIABILITY AND CAUTIONARY NOTES

Total Population, Fertility, and Life Expectancy: Since demographic parameters are estimated on a country-by-country basis, reliability varies among countries. For some developing countries, estimates are derived from surveys rather than censuses, especially when countries lack a civil registration system or have one that does not achieve full coverage of all vital events. Also, for developing countries the availability of detailed information on fertility and mortality is limited and the data on international migration flows are generally inadequate. Although estimates are based on incomplete data and projections cannot factor in unforeseen events (i.e., famine, wars), U.N. demographic models are widely accepted and use well-understood principles, which make these data as comparable, consistent across countries, and reliable as possible.

Mortality Under Age 5: Estimates were calculated based on a wide variety of sources of disparate quality. For information on the underlying data for each country's regressions, refer to the country estimates and new country data available from UNICEF online at <http://www.childinfo.org/cmr/kh98meth.html>.

Refugees: Since the determination of refugee status varies among countries, UNHCR will estimate numbers in order to provide a normalized dataset. Data are "provisional and subject to change," and accuracy is limited by the politically sensitive nature of refugee estimates and the circumstances under which many refugees live. UNHCR attempts to harmonize the data in order to allow cross-country comparisons.

Internally Displaced Persons: Due to the highly political nature of displacement and the conditions in which many displaced peoples find themselves, accurate data are difficult to collect. While the numbers presented are broad estimates, these data are the best online on the topic.

Adult Literacy Rate: The availability and quality of national statistics on literacy vary widely. National census and survey data are typically collected only once every decade. In addition, many industrialized countries have stopped collecting literacy data in recent years, based on the sometimes incorrect assumption that universal primary education means universal literacy. When census and survey data are not available for a particular country, estimates are sometimes made based on neighboring countries. Actual definitions of adult literacy are not strictly comparable among countries. Some countries equate persons with no schooling with illiterates, or change definitions between censuses. In addition, UNESCO's definition of literacy does not include people who, though familiar with the basics of reading and writing, do not have the skills to function at a reasonable level in their own society.

Net School Enrollment: Even though UNESCO has applied the same methodology to analyze all of the country data, definitions of "schooling" and "enrollment" are not strictly comparable among countries. As net enrollment ratios approach 100 percent, inconsistencies with enrollment and/or population data are more likely to skew the resulting ratios. As a result, some net enrollment ratios are greater than 100 percent. Difficulties also arise when a substantial proportion of students begin school earlier than the prescribed age, or when the reference date for entry into primary education does not coincide with the birthdays of all eligible students.

SOURCES

Total Population, Population by Age Group, and Fertility Rates: United Nations Population Division. 2003. *World Population Prospects: The 2002 Revision*. Dataset on CD-ROM. New York: United Nations. Online at <http://www.un.org/esa/population/ordering.htm>.

Mortality under Age 5: United Nations Children's Fund (UNICEF). 2004. *State of the World's Children: Girls, Education, and Development*. New York: UNICEF. Online at <http://www.unicef.org/sowc04/>.

Net Refugee Migration: United Nations High Commissioner for Refugees (UNHCR). 2004. *Global Refugee Trends: Overview of Refugee Populations, New Arrivals, Durable Solutions, Asylum-Seekers and Other Persons of Concern to UNHCR*. Geneva: UNHCR. Online at <http://www.unhcr.ch/statistics>.

Internally Displaced Persons: Global IDP Project. 2004. *Internal Displacement: A Global Overview of Trends and Developments in 2003*. Geneva: Norwegian Refugee Council. Online at http://www.idpproject.org/global_overview.htm.

Adult Literacy Rate: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics. *Literacy Rates by Country and by Gender*, July, 2004 Revision. Paris: UNESCO. Online at <http://www.uis.unesco.org/>.

Net School Enrollment: United Nations Educational Scientific, and Cultural Organization (UNESCO) Institute for Statistics. 2004. *Statistical Tables: Gross and Net Enrollment Ratios*. Paris: UNESCO. Online at <http://www.uis.unesco.org/>.



2 Human Health: Technical Notes

DEFINITIONS AND METHODOLOGY

Life Expectancy at Birth is the average number of years that a newborn baby is expected to live if the age-specific mortality rates effective at the year of birth apply throughout his or her lifetime.

Physicians per 100,000 Population indicates the density of doctors in a country. "Physician" includes graduates of a faculty or school of medicine who are working in any medical field (including teaching, research, and practice).

Improved Water Source includes any of the following types of drinking water sources: household connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater collection. To be counted, at least 20 liters per person per day of improved water must be available within one kilometer of a user's dwelling. Examples of unimproved water sources include unprotected wells and springs, vendor-provided water, tanker-provided water, and bottled water. These last examples are considered "unimproved" because they are not consistently available in sufficient quantities. **Improved Sanitation** includes any of the following excreta disposal facilities: connection to a public sewer, connection to a septic tank, pour-flush latrine, simple pit latrine, and ventilated improved pit latrine. Examples of an unimproved sanitation system include open pit latrines, public or shared latrines, and service or bucket latrines.

Data were collected from assessment questionnaires and household surveys and plotted on a graph for each country to show coverage in available years (not necessarily 2002). A trend line was drawn and reviewed by a panel of experts from WHO and UNICEF to determine the level of sanitation and water available in 2002.

Underweight Prevalence, an indicator of malnutrition, refers to the proportion of children under five years of age whose weight-for-age is more than two standard deviations (for moderate underweight) or more than three standard deviations (for severe underweight) below the median weight-for-age of a reference population. **Stunting prevalence**, an indicator of chronic malnutrition, refers to the percentage of children under five whose height-for-age is more than two (moderate stunting) and three (severe stunting) standard deviations from the median of the reference population.

Malnutrition data were obtained from Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS), and other national-level surveys. Where possible, only comprehensive or representative national data have been used.

Adults Ages 15-49 Living With HIV or AIDS is the estimated percentage of people aged 15-49 living with HIV/AIDS. **Change Since 2001** measures the percent change in the total population infected with AIDS or HIV between 2001 and 2003. These estimates include all people with HIV infection, whether or not they have developed symptoms of AIDS, who are alive at the end of the year specified. Data for this age group capture those in their most sexually active years. Measuring infection within this age range also allows greater comparability for populations with different age structures. Estimates for a single point in time and the starting date of the epidemic were used to plot an epidemic curve charting the spread of HIV in a particular country.

Antiretroviral Therapy (ART) Use Rate is the estimated percentage of adults with advanced HIV infection receiving antiretroviral therapy. This therapy can dramatically reduce HIV-related mortality and improve the quality of life of those infected. The estimated number of people receiving treatment is determined by national program-monitoring reports or estimates from local WHO offices. The number of adults with advanced HIV infection is estimated by the Joint United Nations Programme on HIV/AIDS (UNAIDS) to be 15 percent of the total number of infected adults.

Tuberculosis Incidence Rate is the estimated number of new tuberculosis (TB) cases per 100,000 people in the year specified. The estimates include all cases (pulmonary, smear positive, and extrapulmonary). If left untreated, each person with an infectious case of TB will infect 10-15 people every year. It is estimated that TB caused 2 million deaths in 2002 and is now the leading cause of death in people infected with HIV. Data are collected by country using a standard collection form. Initial estimates are derived using surveys of the prevalence of infection and are then refined using a consultative and analytical process involving a panel of epidemiological experts at WHO.

Reported Malaria Cases is the total number of malaria cases reported to the WHO by countries in which malaria is endemic. Most countries report only laboratory confirmed cases, but some countries in Sub-Saharan Africa report clinically diagnosed cases as well. Transmitted to humans by the bite of an infected mosquito, malaria is one of the world's prevalent health crises, killing more than one million people annually. Data on malaria are collected from a variety of surveys, including Routine Health Information Systems (HIS), MICS, DHS, Demographic Surveillance Sites (DSS), and Rolling Back Malaria (RBM) baseline surveys.

Percent of Children Under Age Five Using Treated Bed Nets is the percent of children under age five in each country that sleep under a net treated with an insecticide to ward off mosquitoes, a powerful method of preventing malaria infections. According to UNICEF, the majority of deaths from malaria occur in children under age 5. Data are obtained by UNICEF from DHS, MICS, and other national surveys.

Health Care Spending per Capita is defined as the sum of government and private expenditures on health, expressed on a per-person basis. The estimates are provided in international dollars, which minimizes the consequences of differing price levels among countries. **Government Health Spending** includes all public outlays reserved for the enhancement of the health status of the population and/or the distribution of medical care. Expenditures by all levels of government (national, regional, and local), extrabudgetary agencies, and external resources such as grants are included. The estimates for extrabudgetary expenditure on health include purchase of health goods and services by schemes that are compulsory and government-controlled. **Private Health Spending** is the sum of expenditures by prepaid plans and risk-pooling arrangements, public and private enterprises for medical care and health-enhancing benefits (outside of payment to social security), nonprofit institutions that primarily serve households, and household out-of-pocket spending.

Per capita totals were calculated by WHO using population estimates from the Organization for Economic Co-operation and Development (OECD) and the United Nations Population Division.

Information on government health expenditures are obtained from the OECD, the International Monetary Fund (IMF), national health-accounts reports, government finance data, statistical yearbooks, and public-finance reports. Information for private health expenditures are obtained from national health-accounts reports, statistical yearbooks and other periodicals, official web sites, reports from non-governmental organizations, household surveys, academic studies, government ministries, and professional and trade associations.

FREQUENCY OF UPDATE BY DATA PROVIDERS

Both the UN Population Division and the Joint United Nations Program on HIV/AIDS (UNAIDS) publish country-level statistics every two years with annual revisions of key estimates. UNICEF publishes the most recent available data each year. WHO publishes country-level statistics annually and updates the *Global Atlas of Infectious Diseases* database as new information becomes available.



DATA RELIABILITY AND CAUTIONARY NOTES

Life Expectancy: The United Nations Population Division (UNPD) estimates demographic parameters on a country-by-country basis, so data reliability varies among countries. In some developing countries, census data are not available or are incomplete, and estimates concerning population trends are derived from surveys. Although estimates are based on incomplete mortality data and projections cannot factor in unforeseen events (e.g., famine, wars), UN demographic models are widely accepted and use well-understood qualities, making these data fairly reliable.

Physicians per 100,000 Population: Data reliability varies by country. Due to out-of-date health personnel records, some countries mistakenly include retired physicians or physicians no longer working in the health sector, resulting in overestimates. Also, this indicator speaks solely of the quantity of physicians, not the quality or accessibility of the personnel. It does not show the difference in urban and rural concentrations. The exact definition of “physician” may vary among countries. Some countries may include interns, physicians that are retraining, and those working in the private sector.

Improved Water Sources and Sanitation: These data have become more reliable as WHO and UNICEF shift from provider-based information (national census estimates) to consumer-based information (survey data). Nonetheless, estimates were calculated based on a wide variety of sources of disparate quality, and comparisons among countries should be made with care. Definitions of urban and rural are not consistent across countries. The assessment does not account for intermittent or poor quality of water supplies. WHO emphasizes that these data measure use of an improved water supply and excreta disposal system, but access to sanitary and safe systems cannot be adequately measured on a global scale.

Malnutrition in Children under Five: The data included for these variables cover a wide range of years and sources. Some data refer to periods other than 1995–2002, measure stunting or percentage underweight in a different age range than 0–5, or were collected for only part of a country. Since data are not available for more affluent countries, the regional totals reported here may be larger than the actual averages.

Adults Ages 15–49 Living with HIV or AIDS: While HIV surveillance systems are generally more extensive than those for other diseases, data reliability still varies on a country-by-country basis. The extent of uncertainty depends primarily on the type of epidemic—infection rates for generalized (high-level) epidemics are calculated differently from rates for concentrated (low-level) epidemics—and on the quality, coverage, and consistency of a country’s surveillance system. A detailed description of the methods, software, quality of data, and development of ranges for these data was published in the journal *Sexually Transmitted Infections* in July 2004.

Antiretroviral Therapy Use Rate: The data have been reviewed by UNAIDS and compared with other sources to consolidate validity. The reliability of the national data presented in national reports is dependent on the quality of information provided by the countries themselves. Some countries have very small or highly localized epidemics, so the rates presented here do not necessarily reflect national commitment and action. This indicator does not distinguish between the different types of therapy available nor does it measure the cost, quality, or effectiveness of the treatment. In certain settings, a system may not yet be in place to collect data from community-based organizations, private prescribers, and pharmacies. The estimated proportion of the total infected population with advanced HIV infection (currently 15 percent) may require revision, as the proportion varies according to the stage of the HIV epidemic and the coverage and effectiveness of ART.

Tuberculosis Incidence Rate: Data are reviewed at all levels of WHO, and WHO headquarters attempts to complete any missing responses and resolve any inconsistencies. The quality of the information provided by a particular country is dependent on the quality of its national surveillance system.

Reported Malaria Cases: Malaria infection-rate data are less accurate than estimates of HIV/AIDS or tuberculosis. Data may reflect only a fraction of the true number of malaria cases in a country because of incomplete reporting systems or incomplete coverage by health services, or both. Also, many malaria patients may seek treatment outside of the formal health sector. Case detection and reporting systems vary widely.

Health Care Spending: The estimates provided here should be considered the best estimates of WHO and not the official estimates of its member states. WHO has compared the data to a variety of sources, including inpatient care expenditure and pharmaceutical care expenditure, in an effort to ensure the plausibility of the estimates that have been collected. For further information on data collection and reliability, refer to the World Health Report methodology available at http://www.who.int/whr/2004/en/09_annexes_en.pdf.

SOURCES

Life Expectancy: United Nations Population Division (UNPD). 2003. *World Population Prospects: The 2002 Revision*. Dataset on CD-ROM. New York: United Nations. Online at <http://www.un.org/esa/population/ordering.htm>.

Physicians Per 100,000 Population, Tuberculosis Incidence Rate, and Reported Malaria Cases: World Health Organization (WHO). 2004. *Global Atlas of Infectious Diseases*. Geneva: WHO. Online at <http://globalatlas.who.int/GlobalAtlas/>.

Use of Improved Water Source and Sanitation: United Nation’s Children’s Fund (UNICEF) and World Health Organization (WHO). 2005. *Meeting the MDG Drinking Water and Sanitation Target: A Mid-Term Assessment of Progress*. New York: UNICEF. Online at http://www.unicef.org/wes/mdgreport/who_unicef_WESestimate.pdf.

Malnutrition in Children Under Five: United Nations Children’s Fund (UNICEF). 2004. *State of the World’s Children: Girls, Education, and Development*. New York: UNICEF. Online at <http://www.unicef.org/sowc04/>.

Adults Ages 15–49 Living with HIV or AIDS: Joint United Nations Programme on HIV/AIDS (UNAIDS). 2004. *Report on the Global AIDS Epidemic*. Geneva: UNAIDS. Online at <http://www.unaids.org/bangkok2004/report.html>.

ART Use Rate: Joint United Nations Programme on HIV/AIDS (UNAIDS). 2003. *Progress Report on the Global Response to the HIV/AIDS Epidemic (Follow-up to the 2001 United Nations General Assembly Special Session on HIV/AIDS)*. Geneva: UNAIDS. Online at http://www.unaids.org/ungass/en/global/ungass00_en.htm.

Percent of Children Under Age 5 Using Treated Bed Nets: United Nations Children’s Fund (UNICEF). 2005. *Childinfo.org*. New York: UNICEF. Online at <http://childinfo.org>.

Health Care Spending: World Health Organization (WHO). 2004. *World Health Report*. Geneva: WHO. Online at http://www.who.int/whr/2004/en/09_annexes_en.pdf.



For more information, please visit <http://earthtrends.wri.org/datatables/population>

	Gender Empowerment Measure (0-1 scale, 1 = complete equality)		Maternity and Family Planning				Education and Literacy				Income and Labor		Parliamentary Seats Held by Women (percent of total)
	2003	1990-99 (a)	Contraceptive Prevalence (percent) 1990-2002 (a)	Women With Unmet Family Planning Needs Ratio (deaths per 100,000 live births) 1990-2002 (a)	Maternal Mortality Ratio (deaths per 100,000 live births) 2000	Skilled Attendants at Delivery (percent of births) 1995-00	Ratio of Women to Men		Annual Earned Income (international dollars)		Female Professional and Technical Workers (percent of total) 1992-01 (a)		
							Enrolled in Secondary Education 2001-02	Literacy Rate (percent) 2000-04	1991-00 (a,b)				
									Women	Men		Women		Men
2004	1990-99 (a)	2002 (a)	2002 (a)	2000	1995-00	2001-02	2000-04	Women	Men	1992-01 (a)			
Sub-Saharan Africa	..	..	20.2	22.4	940 i	42 i	..	54.4	69.8	..	..	..	13.5
Angola	..	..	6.2	..	1700	45	81	..	..	1,627	2,626	..	15.5
Benin	..	..	18.6	27.2	850	66	46	25.5	54.8	876	1,268	..	7.2
Botswana	0.56	..	40.4	..	100	94	107	81.5	76.1	5,353	10,550	52	17.0
Burkina Faso	..	5.2	11.9	4.4	1000	31	67	8.1 j	18.5 j	855	1,215	..	11.7
Burundi	..	..	15.7	..	1000	25	75	43.6	57.7	561	794	..	18.5
Cameroon	..	..	19.3	13.0	730	60	81	59.8	77.0	1,235	2,787	..	8.9
Central African Rep	..	..	27.9	16.2	1100	44	..	33.5	64.7	889	1,469	..	..
Chad	..	..	7.9	9.4	1100	16	..	37.5	54.5	760	1,284	..	5.8
Congo	..	..	..	..	510	..	73	77.1	88.9	707	1,273	..	10.6
Congo, Dem Rep	..	..	31.4	..	990	61	..	..	..	467	846	..	10.2
Côte d'Ivoire	..	..	15.0	43.4	690	63	..	..	..	818	2,222	..	8.5
Equatorial Guinea	..	..	..	..	880	65	58	..	..	16,852	42,304	..	5.0
Eritrea	..	..	8.0	27.0	630	21	67	..	..	654	1,266	..	22.0
Ethiopia	..	..	8.1	35.8	850	6	65	33.8	49.2	516	1,008	..	7.8
Gabon	..	..	32.7	28.0	420	86	..	..	..	4,937	8,351	..	11.0
Gambia	..	15.9	9.6	..	540	55	70	..	..	1,263	2,127	..	13.2
Ghana	..	..	22.0	23.0	540	44	83	65.9	81.9	1,802	2,419	..	9.0
Guinea	..	..	6.2	24.2	740	35	..	..	..	1,569	2,317	..	19.3
Guinea-Bissau	..	..	7.6	..	1100	35	..	..	..	465	959	..	..
Kenya	..	..	39.0	23.9	1000	44	88	78.5	90.0	962	1,067	..	7.1
Lesotho	..	29.4	30.4	..	550	60	127	90.3	73.7	1,357	3,578	..	17.0
Liberia	..	..	6.4 j	..	760	51	..	39.3	72.3	..	..	..	..
Madagascar	..	..	18.8	25.6	550	46	..	..	..	534	906	..	6.4
Malawi	..	..	30.6	29.7	1800	56	74	48.7	75.5	427	626	..	9.3
Mali	..	..	8.1	28.5	1200	41	..	11.9 j	26.7 j	635	1,044	..	10.2
Mauritania	..	..	8.0	31.6	1000	57	76	31.3	51.5	1,581	2,840	..	4.4
Mozambique	..	..	5.6	6.7	1000	44	63	31.4	62.3	840	1,265	..	30.0
Namibia	0.57	..	28.9	22.0	300	78	114	82.8	83.8	4,262	8,402	55	21.4
Niger	..	..	14.0	16.6	1600	16	63	9.3	25.1	575	1,005	..	1.2
Nigeria	..	..	15.3	17.5	800	42	..	59.4	74.4	562	1,322	..	5.8
Rwanda	..	..	13.2	37.0	1400	31	93	63.4	75.3	968	1,570	..	45.0
Senegal	..	19.6	12.9	32.6	690	58	68	29.7	49.0	1,140	2,074	..	19.2
Sierra Leone	..	..	4.3	..	2000	42	..	..	..	337	815	..	14.5
Somalia	..	..	..	..	1100	34	..	..	..	..	..	..	..
South Africa	..	37.8	56.3	15.0	230	84	108	85.3	86.7	6,371	14,202	..	27.8
Sudan	..	..	8.3	26.0	590	86 j	..	49.1	70.8	867	2,752	..	9.7
Tanzania, United Rep	..	..	25.4	21.8	1500	36	..	69.2	85.2	467	660	..	21.4
Togo	..	..	25.7	32.3	570	49	..	45.4	74.3	941	2,004	..	7.4
Uganda	..	..	22.8	24.4	880	39	79	59.2	78.8	1,088	1,651	..	24.7
Zambia	..	..	34.2	18.3	750	43	78	73.8	86.3	571	1,041	..	12.0
Zimbabwe	..	32.8	53.5	12.9	1100	73	89	86.3	93.8	1,757	3,059	..	10.0
North America	..	..	76.2	..	..	..	..	..	..	..	..	..	18.1
Canada	0.79	46.6	74.7	..	6	98	99	..	..	22,964	36,299	54	23.6
United States	0.77	29.0	76.4	..	17	99	98	..	..	27,338	43,797	55	14.0
C. America & Caribbean	..	..	64.4	..	190 i	82 i	..	84.8	88.3	..	..	..	21.4
Belize	0.46	..	46.7	..	140	83	..	77.1	76.7	2,376	9,799	52	9.3
Costa Rica	0.66	..	75.0	..	43	98	103	95.9	95.7	4,698	12,197	28	35.1
Cuba	..	..	73.3	..	33	100	99	96.8	97.0	..	..	..	36.0
Dominican Rep	0.53	32.8	64.7	12.5	150	98	125	84.4	84.3	3,491	9,694	49	15.4
El Salvador	0.45	..	59.7	8.2	150	90	100	77.1	82.4	2,602	7,269	46	10.7
Guatemala	..	..	38.2	23.1	240	41	93	62.5	77.3	2,007	6,092	..	8.2
Haiti	..	..	27.4	39.8	680	24	..	50.0	53.8	1,170	2,089	..	9.1
Honduras	0.36	..	61.8	7.0	110	56	..	80.2	79.8	1,402	3,792	36	5.5
Jamaica	..	..	65.9	..	87	95	104	91.4	83.8	3,169	4,783	..	13.6
Mexico	0.56	16.3	68.4	..	83	86	107	88.7	92.6	4,915	12,967	40	21.2
Nicaragua	..	29.4	68.6	14.7	230	67	117	76.6	76.8	1,520	3,436	..	20.7
Panama	0.49	22.3	58.2 j	..	160	90	107	91.7	92.9	3,958	7,847	49	9.9
Trinidad and Tobago	0.64	..	38.2	..	160	96	109	97.9	99.0	5,916	13,095	51	25.4
South America	..	..	74.4	..	190 i	82 i	..	88.8	90.0	..	..	..	14.7
Argentina	0.65	22.4	..	..	82	98	106	97.0	97.0	5,662	15,431	53	31.3
Bolivia	0.52	18.1	53.4	26.1	420	69	97	80.7	93.1	1,559	3,463	40	17.8
Brazil	..	23.1	76.7	7.3	260	88	111	86.5	86.2	4,594	10,879	62	9.1
Chile	0.46	..	..	..	31	100	..	95.6	95.8	5,442	14,256	52	10.1
Colombia	0.50	24.4	76.9	6.2	130	86	111	92.2	92.1	4,429	8,420	50	10.8
Ecuador	0.49	..	65.8	10.0	130	69	100	89.7	92.3	1,656	5,491	44	16.0
Guyana	..	..	37.3	..	170	86	..	..	..	2,439	6,217	..	20.0
Paraguay	0.42	..	57.4	11.3	170	71	102	90.2	93.1	2,175	6,641	54	9.6
Peru	0.52	..	68.9	10.2	410	59	93	80.3	91.3	2,105	7,875	44	18.3
Suriname	..	..	42.1	..	110	85	139	..	..	..	..	..	51
Uruguay	0.51	29.2	..	..	27	100	114	98.1	97.3	5,367	10,304	52	11.5
Venezuela	0.44	..	..	..	96	94	116	92.7	93.5	3,125	7,550	61	9.7
Oceania	..	..	64.1	..	..	..	..	..	..	..	..	..	12.4
Australia	0.81	..	76.1 j	..	8	100	99	..	..	23,643	33,259	55	26.5
Fiji	0.34	..	..	..	75	100	106	91.4 j	94.5 j	2,838	7,855	9	5.9
New Zealand	0.77	..	74.9	..	7	100	..	..	..	18,168	26,481	52	28.3
Papua New Guinea	..	..	25.9	..	300	53	78	..	..	1,586	2,748	..	0.9
Solomon Islands	..	..	..	..	130	85	..	..	..	1,239	1,786	..	0.0
Developed	..	..	68.7	..	..	..	..	98.6 k	99.1 k	..	..	..	18.5
Developing	..	..	59.4	..	440	55 i	..	69.4 k	83.4 k	..	..	..	13.6

a. Data are for the most recent year available within the range of dates shown. b. Excludes agricultural wages. c. Including some cases of sterilization for non-contraceptive reasons. d. Data pertain to all sexually active women. e. Data pertain to women born in 1945, 1950, 1955, 1960, 1965, or 1968. f. Data pertain to former Yugoslavia, excluding the province of Kosovo and Metohija. g. Data exclude Northern Ireland. h. Data pertain only to the Jewish population. i. Regional totals are calculated by UNICEF and combine South America, Central America, and the Caribbean. j. Data refer to years or periods other than those specified in the column heading. k. Regional totals were calculated by UNESCO.

Gender and Development: Technical Notes

DEFINITIONS AND METHODOLOGY

Gender Empowerment Measure is a composite index that quantifies women's opportunities. The measure is calculated from three components. *Political participation and decision-making power* is measured by the proportional share, by gender, of parliamentary seats. *Economic participation and decision-making power* is measured by (a) the proportional share, by gender, of positions as legislators, senior officials, and managers; and (b) the proportional share, by gender, of professional and technical positions. *Power over economic resources* is measured by the estimated earned income for women and men, in US dollars adjusted for purchasing power parity (PPP). Variables in these three areas are weighted equally and indexed by their relationship to the ideal scenario (i.e., 50-50 distribution between genders is considered the ideal for representation in parliaments). The gender empowerment measure for a particular country is presented on a scale of 0-1, with higher numbers representing greater levels of equality.

Woman-Headed Households is the percent of occupied housing units whose members acknowledge a woman as the head of the household. In many countries, female-headed households suffer from a lower and more precarious tenure status than male-headed households, which leads to greater insecurity for themselves and their dependents. Data were collected primarily through census data and household surveys. In other cases, data may come from specific housing studies carried out by different UN groups. Public housing boards, housing financial institutions, real-estate agencies, and nongovernmental organizations have also supplied data when census or household data were unavailable.

Contraceptive Prevalence Rate is the percentage of women of reproductive age (15-49 years) in a marital or consensual union who are currently using contraception.

Women with Unmet Family Planning Needs is the percentage of fertile women who are not using contraception and report that they do not want children or want their next child with a delay of two years or more. Contraception includes both modern (sterilization, the pill, condoms, vaginal barrier methods, etc.) and traditional (periodic or prolonged abstinence, withdrawal, etc.) methods. Data were compiled primarily from surveys based on nationally representative samples of women aged 15-49. The surveys used for data compilation include Demographic and Health Surveys (DHS), UNICEF's Multiple Indicator Cluster Surveys (MICS), and Family Health Surveys (FHS).

Maternal Mortality Ratio is the annual number of deaths of women from pregnancy-related causes, either when pregnant or within 42 days of birth or termination of pregnancy. Measured per 100,000 live births, it quantifies the risk of death once a woman has become pregnant. Women in countries with both high fertility and high maternal mortality run the highest lifetime risks of death as a result of childbearing. (Reduction of maternal mortality is one the United Nations' MILLENNIUM Development Goals.) Estimates of maternal mortality were obtained by UNICEF from a variety of sources, including government reporting, household surveys, and DHS.

Skilled Attendants At Delivery is the percentage of births attended by physicians, nurses, midwives, or primary health care workers trained in midwifery skills. Women are most in need of skilled care during delivery and the immediate postpartum period, when roughly three-quarters of all maternal deaths occur. Multiple Indicator Cluster Surveys (MICS), developed by UNICEF with partners in 1997, were used by governments in 66 countries to collect the data presented here. Demographic and Health Surveys (DHS) provided relevant data to UNICEF for more than 35 additional countries. For the majority of remaining countries, national governments provided non-MICS data. Where no reliable official figures exist, estimates have been made by UNICEF. Where possible, only comprehensive or representative national data have been used.

Ratio of Women to Men Enrolled in Secondary Education represents the ratio of female to male gross enrollment in secondary schooling. A ratio of 100 indicates equality in representation. Lower numbers represent a higher percentage of male than female enrollment. The data are for the 2001-2002 school year. The ratio is calculated by WRI by dividing the gross enrollment of males by that of females for secondary education. The result is multiplied by 100 to produce the final ratio. UNICEF calculates gross enrollment data by dividing the number of pupils enrolled in a given level of education, regardless of age, by population in the relevant official age group, and then multiplying by 100 to produce a ratio.

Literacy Rate, shown here for both men and women, is generally defined as the percentage of the population aged 15 years and over who can both read and write, with understanding, a short, simple statement on their everyday life. This indicator can be used to measure the achievement of literacy programs and the effectiveness of primary education. According to UNESCO, "literacy represents a potential for further intellectual growth and contribution to economic-socio-cultural development of society." Adult literacy correlates with GNP per capita, life expectancy, fertility rates, infant mortality, and urbanization. Most literacy data are collected during national population censuses. Typically, censuses are held only once in a decade, so UNESCO supplements these data with household surveys, labor force surveys, employment surveys, industry surveys, and agricultural surveys when they are available.

Annual Earned Income, shown here for both men and women, is an estimate of the annual earning power available to workers in the nonagricultural sector. Data are reported in 2002 international dollars adjusted for purchasing power parity (PPP). Direct measures of income disaggregated by gender are unavailable for most countries. In order to calculate this indicator, UNDP uses a ratio of female non-agricultural wage to the male non-agricultural wage, male and female shares of the economically active population, total male and female population, and GDP per capita (PPP). These data are obtained from the World Bank's World Development Indicators and the United Nations Population Division.

Female Professional and Technical Workers is women's share of total positions defined according to the International Standard Classification of Occupations (ISCO-88) Major Group 2. This classification includes physical, mathematical and engineering science professionals, life science and health professionals, teaching professionals and other (business, social science, legal, religious) professionals. Values were calculated by UNDP on the basis of occupational data from the International Labor Organization (ILO) LABORSTA database. The ILO receives these data from country labor surveys.

Parliamentary Seats Held by Women is calculated based on the total number of seats in parliament and the number of seats occupied by women. When there is both an upper house and a lower house of parliament, the total number of women in both houses is divided by the total number of seats in both houses. Data are current as of April 1, 2004. The Inter-Parliamentary Union compiles these data based on information provided by national parliaments.



FREQUENCY OF UPDATE BY DATA PROVIDERS

The Gender Empowerment Index and labor data are published annually by UNDP in the *Human Development Report*. Literacy and education data are compiled annually by UNESCO. UNICEF publishes maternal health indicators in its annual *State of the World's Children*. Household data are released by UN-Habitat in its Human Settlement Statistics database approximately every five years. Data on world contraceptive use are updated every two years. The Inter-Parliamentary Union updates its Women in Parliament data set monthly to reflect elections.

DATA RELIABILITY AND CAUTIONARY NOTES

Gender Empowerment Measure: This index is calculated for the purposes of comparing across countries, so data must be obtained from international datasets, limiting the variables that can be used for the calculation. Without these constraints, other variables that are more detailed could have been used to measure more accurately the political, professional, and economic empowerment of women.

Women-Headed Households: Data reliability varies on a country-by-country basis. Data for women-headed households are limited and were collected over a 15-year period. The reader should use caution when comparing across countries.

Contraceptive Prevalence Rate and Women with Unmet Family Planning Needs: The data refer only to women ages 15-49 who are married or in a consensual union. Information on single men or women is not as widely available, although it constitutes a significant proportion of contraceptive use (or lack thereof).

Maternal Mortality Ratio: The purpose of these estimates is to draw attention to the existence and likely dimensions of the problem of maternal mortality. The data are not intended to serve as precise estimates. The margins of uncertainty associated with these values are large and the estimates cannot be used to monitor trends.

Skilled Attendants at Delivery: The data included for this variable cover a wide range of years and sources. Some data refer to periods other than 1995-2002. Comparisons between countries should be made with caution due to the resulting potential for variability in data quality and timing for individual countries.

Ratio of Women to Men Enrolled in Secondary Education: While UNESCO keeps the most complete global data set on enrollment levels, problems do remain. The availability and quality of national school enrollment statistics vary widely, particularly for developing countries. Even though UNESCO has applied the same methodology to analyze all of the country data, definitions of "schooling" and "enrollment" are not strictly comparable among countries.

Literacy Rate: The availability and quality of national statistics on literacy varies widely, particularly for developing countries. When census and survey data are not available for a particular country, estimates need to be made based on neighboring countries. Even when census and survey data are available, they are typically collected only once every decade. In addition, many industrialized countries have stopped collecting literacy data in recent years, based on the assumption, sometimes incorrect, that universal primary education means universal literacy. Even though UNESCO has applied the same methodology to analyze all of the country data, actual definitions of adult literacy are not strictly comparable among countries. Some countries assume that persons with no schooling are illiterate, or change definitions between censuses. In addition, UNESCO's definition of literacy does not include people who, though familiar with the basics of reading and writing, do not have the skills to function at a reasonable level in their own society. Practices for identifying literates and illiterates during actual census enumeration may also vary, and errors in literacy self-declaration can affect data reliability. Therefore, users should exercise caution when making cross-country comparisons.

Annual Earned Income: Since direct measures of income disaggregated by gender are unavailable for most countries, this indicator is calculated by UNDP from wage figures including both men and women, estimates of the size of the labor force by gender, and ratios of male-to-female income.

Female Professional and Technical Workers: The collection and reporting of labor statistics is governed by a well-defined set of standards developed through a number of international agreements. The ILO applies rigorous quality standards to the data it receives. However, as is the case with all large datasets that rely on government reporting, there are likely to be some irregularities.

SOURCES

Gender Empowerment Measure, Annual Earned Income, and Female Professional and Technical Workers: United Nations Development Programme (UNDP). 2004. *Human Development Report*, Tables 24 and 25. New York: UNDP. Available in print and online at <http://hdr.undp.org/reports/global/2004/>.

Woman-Headed Households: United Nations Human Settlements Programme (UN-HABITAT). 2001. *Global Report on Human Settlements: Statistical Annexes*. Table A-4. Nairobi: UN-HABITAT. Online at <http://www.unchs.org/habredd/statprog.htm>.

Contraceptive Prevalence Rate and Women With Unmet Family Planning Needs: United Nations Population Division. 2004. *World Contraceptive Use*. New York: UN. Online at http://www.un.org/esa/population/publications/contraceptive2003/WallChart_CP2003.pdf.

Skilled Attendants At Delivery, Maternal Mortality Ratio: United Nations Children's Fund. 2004. *State of the World's Children: Girls, Education, and Development*, Table 8. New York: UNICEF. Available in print and online at <http://www.unicef.org/sowc04/>.

Ratio of Women to Men Enrolled in All Levels of Education and Literacy Rates: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics. 2004. *World Statistical Tables*. Paris: UNESCO. Online at <http://www.uis.unesco.org/>.

Parliamentary Seats Held by Women: Inter-Parliamentary Union (IPU). 2004. *Women in National Parliaments*. Geneva: IPU. Online at <http://www.ipu.org/wmn-e/classif.htm>.



Income and Poverty: Technical Notes

DEFINITIONS AND METHODOLOGY

Gross Domestic Product (GDP) Per Capita is the total annual output of a country's economy divided by the population of the country for that year. GDP is the final market value of all goods and services produced in a country in a given year, equal to total consumer, investment, and government spending. Dollar figures for GDP are converted to international dollars using purchasing power parity (PPP) rates and are not adjusted for inflation. An international dollar buys roughly the same amount of goods and services in each country.

PPP rates account for the local prices of goods and services, allowing GDP estimates to be adjusted for cost of living and more accurately compared across countries. PPP rates are estimated through extrapolation and regression analysis using data from the International Comparison Programme (ICP). Computation of the PPP involves deriving implicit quantities from national accounts expenditure data and specially collected price data and then revaluing the implicit quantities in each country at a single set of average prices. GDP data for most developing countries are collected from national statistical organizations and central banks by visiting and resident World Bank missions. The data for high-income economies are from the OECD.

The **Survey Year** shows the years in which the surveys used to collect national poverty data, international poverty data, and income inequality data were administered.

National Poverty Rates show the percent of a country's population living below a nationally established poverty line. Estimates include total poverty rates and rates in both urban and rural areas. Values are calculated on a country-by-country basis according to the needs of the poor in a given country. Data for the National Poverty Rates are derived from surveys prepared for the World Bank and conducted between 1985 and 2002. Surveys asked households to report either their income, or, preferably, their consumption levels. These nationally representative household surveys were conducted by national statistical offices, private agencies under the supervision of government, or international agencies. The level of income that is used to determine national poverty lines varies among countries. As the cost of living is frequently higher in urban areas, the urban poverty line is higher than the rural poverty line in the same country.

International Poverty Rates data are based on nationally representative primary household surveys conducted by national statistical offices, or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank country departments. Surveys were conducted between 1985 and 2002. PPP exchange rates, such as those from the Penn World Tables or the World Bank, are used because they take into account local prices and goods and services not traded internationally. In past years, the World Bank has calculated poverty estimates using PPPs from the Penn World Tables. Beginning in 2002 the World Bank used 1993 consumption PPP estimates produced at the Bank.

Population Living Below \$1/day is the percentage of the population of a country living on less than \$1.08 a day at 1993 international prices, equivalent to \$1 in 1985 prices when adjusted for purchasing power parity. This amount is calculated as the consumption level necessary to basic life maintenance, and income below this level is referred to as "extreme poverty." **Population Living Below \$2/day** is the percentage of the population of a country living on less than \$2.15 a day at 1993 international prices, equivalent to \$2 in 1985 prices when adjusted for purchasing power parity.

Poverty Gap measures both the breadth and severity of poverty below thresholds (poverty lines) of \$1.08/day and \$2.15/day at 1993 international prices (equivalent to \$1 and \$2 respectively in 1985 prices, adjusted for purchasing power parity). Measured as a percentage, the indicator shows the "poverty deficit" of the country's

population, where the poverty deficit is the per capita amount of resources that would be needed to bring all poor people to the poverty line through perfectly targeted cash transfers.

For example, a greater proportion of the population in Laos is living on less than \$2/day than in El Salvador—73 percent vs. 58 percent. While Laos has a greater breadth (incidence) of poverty, the poverty in El Salvador is more severe, so the two countries both have poverty gaps that approach 30 percent. It would require the same investment in both countries relative to the total population in each to bring the entire population to the poverty line: $30\% \times \$2/\text{day} = \$0.60/\text{day}$ per capita.

In technical terms, the poverty gap is defined as the mean distance from the poverty line expressed as a percentage of the poverty line, counting the distance of the non-poor as zero. It is calculated by dividing the average income shortfall by the poverty line. For example, in a country with a poverty line of \$1/day and three average daily incomes—\$1.60, \$0.90, and \$0.50—the poverty gap would be 20 percent. (Three shortfalls—\$0.00, \$0.10, and \$0.50—are averaged to yield a mean shortfall of \$0.20, and the resulting poverty gap is $\$0.20/\$1.00 = 20$ percent)

The **Gini Index** measures income inequality by quantifying the deviation of income or consumption distribution from perfect equality. A score of zero implies perfect equality while a score of 100 implies perfect inequality. If every person in a country earned the same income, the Gini Index would be zero; if all income was earned by one person, the Gini Index would be 100. The Gini Index is calculated by compiling income (or expenditure) distribution data. For developing countries, the Gini Index is compiled from household survey data; for high-income countries the index is calculated directly from the Luxemburg Income Study database, using an estimation method consistent with that applied for developing countries. Once compiled, income or expenditure distribution data are plotted on a Lorenz curve, which illustrates the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini Index is calculated as the area between the Lorenz curve and a hypothetical (45-degree) line of absolute equality, expressed as a percentage of the maximum area under the line.

Unemployment Rate is defined as the percentage of the total labor force which is simultaneously without work, available to work, and actively seeking work. Definitions may vary among countries. The World Bank receives its data on national unemployment rates from the International Labour Organization's (ILO) Bureau of Statistics. The ILO compiles this information from a combination of sources, including labor force surveys, national estimates, social insurance statistics, and employment office statistics. The information presented here is the annual average of the monthly, quarterly, or biannual unemployment estimates.

The **Human Development Index** is comprised of three sub-indices that measure health and lifespan, education and knowledge, and standard of living. It attempts to describe achievement of development goals related to quality of life using data that can be compared across countries and time. It is aggregated from 4 indicators: *life expectancy*, *adult literacy*, *the gross school enrollment index*, and *GDP per capita*. *Life expectancy* is the average number of years that a newborn baby is expected to live using current age-specific mortality rates. *Adult literacy* is defined as the percentage of the population aged 15 years and over which can both read and write, with understanding, a short, simple statement on their everyday life. The *gross enrollment index* measures school enrollment, regardless of age, as a percentage of the official school-age population. *Gross Domestic Product (GDP)* per capita measures the total annual output of a country's economy per person. These four indicators are classified in three separate categories—life expectancy, education, and GDP—which are indexed independently and then weighted equally to calculate the final index. More information is available at <http://hdr.undp.org>.



The **Human Poverty Index** is a composite indicator that describes a population's deprivation from three development goals related to quality of life: health, literacy, and sufficient standard of living. The index is scaled from 0-100, with 100 representing the highest possible level of poverty.

Data presented here are from two separate surveys. Non-OECD countries are evaluated using the "HP-1" index based on four indicators: probability at birth of not surviving to age 40 (1/3 total index value), adult illiteracy rate (1/3 total index value), children underweight for age (1/6 total index value), and population without access to an improved water source (1/6 total index value). OECD countries are evaluated using the "HP-2" index with four different indicators: probability at birth of not surviving to age 60, adults lacking functional literacy skills, population below income poverty line, and long-term unemployment. The four OECD indicators are weighted equally in calculating the final index. For more information, see <http://hdr.undp.org>.

FREQUENCY OF UPDATE BY DATA PROVIDERS

Human Development Index and **Human Poverty Index** data are published annually by the United Nations Development Programme (UNDP) in the *Human Development Report*. **Poverty Rates** and **Income Inequality** data are updated irregularly as surveys are conducted in individual countries; new survey results are compiled and released annually in the World Bank's World Development Indicators. **GDP Per Capita** and **Unemployment Rates** are updated annually in World Development Indicators.

DATA RELIABILITY AND CAUTIONARY NOTES

GDP per capita (PPP): While the World Bank produces the most reliable global GDP estimates available, many obstacles inhibit data collection and compilation of accurate information. Informal economic activities sometimes pose a measurement problem, especially in developing countries, where much economic activity may go unrecorded. Obtaining a complete picture of the economy requires estimating household outputs produced for local sale and home use, barter exchanges, and illicit or deliberately unreported activity. Technical improvements and growth in the services sector are both particularly difficult to measure. Purchasing power parity (PPP) rates are based on price surveys that do not include a full selection of goods and services, and not all countries participate in the International Comparison Program. The World Bank is in the process of developing updated PPP estimates from new price surveys

National Poverty Rates: National poverty lines are based on the calculation of the minimum income necessary to purchase a fixed amount of essential food and non-food items. Since these needs vary by nation, the poverty rates in this category are not comparable among countries, and, unlike international poverty rates, should not be used for comparison. However, national poverty rates can provide a more complete sense of poverty in a nation by describing poverty levels unique to each country and showing the differences between urban and rural areas.

International Poverty Rates: The quality of surveys underlying these estimates varies, and even similar surveys may not be strictly comparable. For example, surveys can be based on either household consumption or household income. Consumption data are considered to be more accurate and accord better with the standard of living, but when consumption data are not available, surveys based on household income are used. Household consumption can also differ widely, for example, based on the number of distinct categories of consumer goods they identify. Comparisons across countries at different levels of development pose a

potential problem because of differences in the relative importance of consumption of nonmarket goods. The local market value of all in-kind consumption (including consumption from own production, particularly important in underdeveloped rural economies) should be included in the measure of total consumption expenditure. Similarly, the imputed profit from production of nonmarket goods should be included in income. This is not always done, though such omissions were a far bigger problem in surveys before the 1980s. Most survey data now include valuations for consumption or income from own production. Nonetheless, valuation methods vary. For example, some surveys use the price in the nearest market, while others use the average farm gate selling price.

Although the \$1/day and \$2/day poverty lines are commonly used, there exists an ongoing debate as to how well they capture poverty across nations. Values should be treated as rough statistical approximations of the number of people earning or consuming at a given level rather than a certain prognosis of how many people are poor. International poverty rates do not capture other elements of poverty, including lack of access to health care, education, safe water, or sanitation.

Income Inequality: Values are derived in part from household surveys that measure expenditure in different countries. Despite recent improvements in survey methodology and consistency in the type of data collection, income distribution indicators are still not strictly comparable across countries. Surveys can differ in the type of information requested—for example, whether income or consumption is used. The distribution of income is typically more unequal than the distribution of consumption. Even where two surveys request income information, definitions of income may vary. Consumption is usually a much better welfare indicator, particularly in developing countries. The households that are surveyed can differ in size and in the extent of income sharing among members, and individuals within a household may differ in age and consumption needs. Differences among countries in these respects may bias comparisons of distribution.

Unemployment Rate: Though the quality of the underlying data compiled by the ILO varies and differences in national reporting standards do exist, the final estimates should be considered generally accurate. The ILO has developed a rigorous accounting procedure, and balances government reports with employment office statistics as well as its own surveys and the knowledge of in-country experts.

Human Development Index and Human Poverty Index: These two indices have been constructed specifically to use data from respected sources and calculated in a fashion as to allow for time-series analysis and cross-country comparisons. Ultimately, there is some degree of subjectivity in the creation of any index of this sort, but the data underlying the index can be considered reliable. For a discussion of the collection of international statistics and their limitations, see the "Note on Statistics in the Human Development Report" in the Technical Notes and Definitions appendix of the Human Development Report 2004.

SOURCES

GDP, National Poverty Rates, International Poverty Rates, Income Inequality, and Unemployment Rates: World Bank. 2004. World Development Indicators Online. Washington, DC: The World Bank. Available at <http://www.worldbank.org/data/online/onlinebases.htm>.

Human Development and Human Poverty Indices: United Nations Development Programme. 2004. *Human Development Report 2004*. New York: United Nations. Available at <http://hdr.undp.org/reports/global/2004/>.



For more information, please visit <http://earthtrends.wri.org/datatables/economics>

	Gross Domestic Product (GDP), Constant 1995 \$US						Financial Flows (million current \$US)			Workers' Remittances as a Percent of Gross National Income (GNI) 2002	Average Annual Inflation (b) (percent) 1998-2003
	Total (million dollars) 2002	Average Annual Growth Rate (percent) 1992-2002	Per Capita (dollars) 2002	Distribution by Sector (percent)			Cross-Border Mergers and Acquisitions (net inflows) (a) 2003	Foreign Direct Investment (net inflows) 2002	Official Development Assistance and Aid 2002		
				Agriculture 2002	Industry 2002	Services 2002					
Sub-Saharan Africa	393,001	3.1	593	17	29	53	..	7,826	17,507	..	..
Angola	8,305	5.2	623	8	68	24	..	1,312	421	..	175.5
Benin	2,872	5.0	443	36	14	50	..	41	220	2.70	2.8
Botswana	7,245	5.7	3,983	2	47	50	..	37	38	..	7.9
Burkina Faso	3,051	4.5	284	31	18	51	..	8	473	1.52	1.8
Burundi	1,012	(1.6)	143	49	19	31	..	0	172	..	8.8
Cameroun	11,038	3.6	710	44	19	37	..	86	632	..	1.6 d
Central African Rep	1,331	3.0	332	57	22	21	..	4	60	..	2.6
Chad	2,017	3.3	238	38	17	45	..	901	233	..	3.8
Congo	2,560	1.9	700	6	63	30	..	331	420	0.05	1.5
Congo, Dem Rep	4,660	(3.4)	90	58	19	23	..	32	807	..	276.8 d
Côte d'Ivoire	11,941	3.4	776	26	20	53	..	230	1,069	..	3.0
Equatorial Guinea	742	24.2	2,444	9	86	5	..	323	20	..	..
Eritrea	716	5.0	160	12	25	63	..	21	230	..	..
Ethiopia	8,334	5.5	122	42	11	47	..	75	1,307	0.51	1.8
Gabon	5,685	2.6	4,323	8	46	46	..	123	72	..	..
Gambia	509	3.7	356	26	14	60	..	43	61	..	3.9 d
Ghana	8,671	4.2	437	36	24	40	..	55	50	0.79	22.9
Guinea	4,861	4.3	633	24	37	39	1	0	250	0.48	..
Guinea-Bissau	241	0.1	187	62	13	25	..	1	59	..	2.7
Kenya	10,172	2.1	323	16	19	65	(2)	50	393	..	6.4
Lesotho	1,205	3.7	552	16	43	41	..	81	76	0.19	..
Liberia	657	17.2	197	..	..	..	(37)	(65)	52	..	..
Madagascar	3,562	2.6	215	32	13	55	5 e	8	373	..	9.3
Malawi	1,744	3.8	157	37	15	49	..	6	377	0.05	23.3
Mali	3,548	4.6	327	34	30	36	..	102	472	3.30	1.9
Mauritania	1,451	4.4	533	21	29	50	..	12	355	..	4.2
Mozambique	4,229	8.3	223	23	34	43	88 e	406	2,058	..	11.3
Namibia	4,398	3.9	2,411	11	31	58	67	..	135	0.10	9.4
Niger	2,387	3.3	209	40	17	43	..	8	298	..	1.7
Nigeria	32,953	2.3	254	37	29	34	..	1,281	314	..	12.2
Rwanda	2,405	4.2	295	42	22	37	..	3	356	0.38	2.9
Senegal	6,287	4.7	618	15	22	63	..	93	449	..	1.6
Sierra Leone	862	(2.9)	165	53	32	16	..	5	353	..	4.9
Somalia	..	..	..	..	..	..	..	(0)	194	..	..
South Africa	182,280	2.7	4,201	4	32	64	995	739	657	..	6.3
Sudan	11,507	6.0	335	39	18	43	768 e	633	351	7.36	8.7 k
Tanzania, United Rep	7,179	3.9	213	44	16	39	2	240	1,233	..	..
Togo	1,545	3.1	320	40	22	38	..	75	51	4.13	2.0
Uganda	8,597	6.7	363	32	22	46	..	150	638	6.15	3.1
Zambia	4,292	1.5	422	22	26	52	..	197	641	..	24.0 d
Zimbabwe	6,771	1.2	521	17	24	59	..	26	201	..	77.0 d
North America	9,962,239	3.5	31,089	2	23	75 c	..	60,134	..	..	..
Canada	741,060	3.6	23,621	..	..	..	(10,884)	20,501	..	..	2.4
United States	9,221,179	3.5	31,891	2	23	75 c	(12,726)	39,633	..	..	2.5
C. America & Caribbean	473,654	2.7	3,009	6	27	68	..	18,609	2,254	2.48	..
Belize	817	4.2	3,568	15	20	65	..	25	22	1.71	1.1
Costa Rica	15,479	4.6	3,938	8	29	62	11	662	5	1.32	10.3
Cuba	..	..	..	..	..	..	..	..	61	..	..
Dominican Rep	18,388	6.2	2,128	12	33	55	..	961	157	9.71	9.9
El Salvador	11,501	3.8	1,758	9	30	61	417	208	233	14.31	2.3
Guatemala	18,532	3.8	1,552	22	19	58	..	110	249	7.51	6.6
Haiti	2,851	0.8	338	27	16	57	..	6	156	..	15.5
Honduras	4,806	2.8	716	13	31	56	..	143	435	11.35	9.5
Jamaica	5,682	0.1	2,107	6	31	63	(4,127)	481	24	16.03	7.6
Mexico	374,729	3.2	3,721	4	26	70	..	14,622	136	1.64	7.9
Nicaragua	..	..	497	18	25	57	..	174	517	9.88	7.7
Panama	11,288	3.8	3,418	6	14	80	(120)	57	35	0.72	1.0
Trinidad and Tobago	7,206	4.2	5,526	2	41	58	87	737	(7)	..	4.2
South America	1,643,751	2.3	4,093	8	26	66	..	26,319	2,386	0.65	..
Argentina	249,537	1.3	6,842	11	32	57	1,788	785	0	..	6.6
Bolivia	8,240	3.5	952	15	33	52	..	677	681	1.05	2.4
Brazil	810,244	2.7	4,642	6	21	73	2,206	16,566	376	0.34	8.1
Chile	84,689	5.0	5,441	9	34	57	56	1,713	(23)	..	3.2
Colombia	99,472	2.0	2,276	14	30	56	35	2,023	441	3.03	8.2
Ecuador	223,511	1.8	1,796	9	28	63	273	1,275	216	7.49	39.7
Guyana	724	3.5	950	31	29	41	0.3 e	44	65	7.75	5.2 d
Paraguay	9,382	1.5	1,701	22	28	50	..	(22)	57	1.52	9.3
Peru	64,305	4.0	2,380	8	28	64	156	2,391	491	1.30	2.2
Suriname	447	2.9	1,905	11	20	69	..	..	12	1.53	42.1
Uruguay	18,469	1.2	5,447	9	27	64	9	177	13	0.24	8.8
Venezuela	74,732	0.4	2,978	3	43	54	164	690	57	..	19.7
Oceania	567,617	3.7	18,031	4	26	70 c	..	17,585	1,319	..	..
Australia	485,640	4.0	24,455	4	26	71 c	(4,836)	16,622	..	..	3.4
Fiji	2,396	2.7	2,736	16	27	57	1	77	34	..	2.4
New Zealand	73,613	3.2	18,947	..	..	..	1,199	823	..	0.41	2.1
Papua New Guinea	4,600	1.1	879	27	39	33	82	50	203	..	12.9
Solomon Islands	234	(1.3)	534	..	..	..	..	(7)	26	..	8.3
High Income (l)	28,547,160	2.6	29,541	2	27	71 c	..	483,001	1,852	..	..
Middle Income (l)	5,864,176	3.4	1,979	9	34	56	..	133,443	27,370	..	..
Low Income (l)	979,032	5.0	431	26	26	48	..	14,640	27,652	..	..

a. Equal to the value of sales minus purchases for all cross-border mergers & acquisitions (M&As). b. Based on the Consumer Price Index (CPI). c. Sectoral GDP data for these countries and regions are from 2001. d. Average annual growth from 1998-2002. e. Data are for cross-border sales only; purchases are either equal to zero or data are unavailable. f. For the time period 1995-2002.

g. For the time period 1992-2001. h. For the time period 1992-2000. i. Values are from 2001. j. Values are from 2000. k. Average annual growth from 1998-2001. l. With the exception of FDI inflows regional aggregates for low-, middle-, and high-income countries are obtained directly from the World Bank, not calculated from a list of countries by WRI.

Economics and Financial Flows: Technical Notes

DEFINITIONS AND METHODOLOGY

Gross Domestic Product (GDP), Constant 1995 Dollars is the sum of the value added by all producers in an economy. Data are expressed in millions of U.S. dollars. Currencies are converted to dollars using the International Monetary Fund's (IMF) average official exchange rate for 2002. Gross domestic product estimates at purchaser values (market prices) include the value added in the agriculture, industry, and service sectors, plus taxes and minus subsidies not included in the final value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion of natural resources. To obtain series of constant price data that one can compare over time, the World Bank rescales GDP and value added by industrial origin to a common reference year, currently 1995.

National accounts indicators for most developing countries are collected from national statistical organizations and central banks by visiting and resident World Bank missions. The data for high-income economies are obtained from the Organisation for Economic Cooperation and Development (OECD) data files (see the OECD's monthly *Main Economic Indicators*). Additional data are obtained from the United Nations Statistics Division's *National Accounts Statistics: Main Aggregates and Detailed Tables* and *Monthly Bulletin of Statistics*.

Average Annual Growth Rate of GDP is the average percentage growth of a country or region's economy for each year between (and including) 1992 and 2002. WRI assumes compound growth and uses the least-squares method to calculate average annual percent growth. The least squares method works by fitting a trend line to the natural logarithm of annual GDP values. The slope (m) of this trend line is used to calculate the annual growth rate (r) using the equation $r = e^m - 1$. The growth rate is an average rate that is representative of the available observations over the entire period. It does not necessarily match the actual growth rate between any two periods.

Gross Domestic Product Per Capita is the total annual output of a country's economy divided by the mid-year population. GDP per capita values are obtained directly from the World Bank.

Distribution of GDP by Sector is the percent of total output of goods and services that are a result of value added by a given sector. These goods and services are for final use occurring within the domestic territory of a given country, regardless of the allocation to domestic and foreign claims. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC) revision 3. The ISIC is a classification system for economic activity developed and maintained by the United Nations.

Agriculture corresponds to ISIC divisions 1-5 and includes forestry and fishing. **Industry** corresponds to ISIC divisions 10-45 and comprises the mining, manufacturing, construction, electricity, water, and gas sectors. **Services** correspond to ISIC divisions 50-99 and include value added in wholesale and retail trade (including hotels and restaurants); transport; and government, financial, professional, and personal services such as education, health care, and real estate services. Value added from services is calculated as total GDP less the portion from agriculture and industry, so any discrepancies that may occur in the GDP distribution by sector calculation will appear here.

Cross-Border Mergers and Acquisitions (M&As) are defined as the joining of two firms or the takeover of one by another when the parties involved are based in different national economies. Data are presented here as the net inflows of M&A capital (sales less purchases) and are in millions of U.S. dollars.

The United Nations Conference on Trade and Development (UNCTAD) obtains these data from Thomson Financial Securities Data Company. Data are reported at the time of transaction and recorded by the governments of both the target firm and the purchasing firm. WRI calculates net inflows by subtracting the total value of purchases of firms within a country from total value of acquisitions made by firms within that country. Transaction amounts are recorded at the time of transfer, rather than contract.

Foreign Direct Investment (FDI) is private investment in a foreign economy to obtain a lasting management interest (10 percent or more of voting stock) in an enterprise. The IMF defines FDI in its *Balance of Payments Manual* as the sum of equity investment, reinvestment of earnings, and inter-company loans between parent corporations and foreign affiliates. Data are in million current U.S. dollars. FDI became the dominant means for funds transfer from rich to poor countries after the liberalization of global financial markets in the 1970s and accounts for more than one-half of financial flows to developing countries. Data are based on balance of payments information reported by the IMF, supplemented by data from the OECD and official national sources.

Official Development Assistance (ODA) and Aid includes concessions by governments and international institutions to developing countries to promote economic development and welfare. The data shown here record the actual receipts of financial resources or of goods or services valued at the cost to the donor, less any repayments of loan principal during the same period. Values are reported in million current US dollars. Grants by official agencies of the members of the Development Assistance Committee (DAC) of the OECD are included, as are loans with a grant element of at least 25 percent, and technical cooperation and assistance. The data on development assistance are compiled by the DAC and published in its annual statistical report, *Geographical Distribution of Financial Flows to Aid Recipients*, and the DAC annual *Development Co-operation Report*.

WRI calculates **Remittances as a Percent of GNI** by dividing workers' remittances by Gross National Income. Both values are originally in current U.S. dollars, and the quotient is expressed as a percentage.

Workers' remittances include the transfer of earned wages by migrant workers to their home country. It includes all transfers by migrants who are employed or intend to remain employed for more than a year in another economy in which they are considered residents. Transfers made by self-employed workers are not considered remittances, as this indicator attempts to describe money raised through labor rather than entrepreneurial activity. Since 1980, recorded remittance receipts to low- and middle-income countries have increased six-fold.

Average Annual Inflation Rate is the average annual percentage change in consumer prices between (and including) 1998 and 2003. The inflation rates shown here are based on the Consumer Price Index (CPI), which measures the change in cost to the average consumer of acquiring a basket of goods and services, using the Laspeyres formula. WRI assumes compound growth and uses the least-squares method to calculate average annual percent growth. The least squares method works by fitting a trend line to the natural logarithm of annual consumer price values. The slope (m) of this trend line is used to calculate the annual growth rate (r) using the equation $r = e^m - 1$. The growth rate is an average rate that is representative of the available observations over the entire period. It does not necessarily match the actual growth rate between any two periods.



FREQUENCY OF UPDATE BY DATA PROVIDERS

The World Bank publishes *World Development Indicators* each year in April. Data for this table were taken from the 2004 on-line edition, which typically include values through 2002 or 2003. UNCTAD updates the *World Investment Report* annually.

DATA RELIABILITY AND CAUTIONARY NOTES

Gross Domestic Product: The World Bank produces the most reliable global GDP estimates available. Informal economic activities sometimes pose a measurement problem, however, especially in developing countries, where much economic activity may go unrecorded. Obtaining a complete picture of the economy requires estimating household outputs produced for local sale and home use, barter exchanges, and illicit or deliberately unreported activity. Technical improvements and growth in the services sector are both particularly difficult to measure. How consistent and complete such estimates will be depends on the skill and methods of the compiling statisticians and the resources available to them. Because values are measured in U.S. dollars, these data do not account for differences in purchasing power among countries.

Mergers and Acquisitions: Values are calculated based on the year that a deal closes, not at the time a deal is announced. M&A values may be paid out over more than one year. Data are accepted “as is” from national surveys. Some underreporting of data may occur, though as all transactions are registered in both the country of the purchasing firm and the targeting firm, this is likely to be uncommon.

Foreign Direct Investment: Because of the multiplicity of sources, definitions, and reporting methods, data may not be comparable across countries. (Data do not include capital raised locally, which has become an important source of financing in some developing countries.) In addition, data only capture cross-border investment flows when equity participation is involved and thus omit non-equity cross-border transactions. For a more detailed discussion, please refer to the World Bank’s *World Debt Tables 1993-1994*, volume 1, chapter 3.

Official Development Assistance: Data are not directly comparable, since the ODA figures do not distinguish among different types of aid, which can affect individual economies in different ways. Because data are based on donor-country reports, they may not match aid receipts recorded in developing and transition economies. According to the World Bank, “the nominal values used here may overstate the real value of aid to the recipient.” The purchasing power of foreign aid can decrease when price and exchange rates fluctuate, grants are tied to specific policy restrictions, or technical assistance pays for the work of firms in other countries.

Worker Remittances: Data on worker remittances are reported by the countries receiving the transfers. Variations in reporting standards do exist, particularly in determining the residency status of a worker.

Inflation Rate: Data are based on CPIs, which are updated frequently and based on the prices of explicit goods and services. However, the weights used in calculating CPIs are derived from household expenditure surveys, which can vary in quality and frequency across countries. The definition of a household, the specific “basket” of goods chosen, and the geographic location of a survey can vary across countries and within a specific country over time. According to the World Bank, these data are “useful for measuring consumer prices within a country, [but] consumer price indexes are of less value in making comparisons across countries.”

SOURCES

GDP, Financial Flows (excluding M&A data), Remittances, and Inflation data: The World Bank, Development Data Group. 2004. *World Development Indicators 2004* online. Washington, D.C.: The World Bank. Available at <http://www.worldbank.org/data/onlinedbs/onlinebases.htm>.

Mergers and Acquisitions: United Nations Conference on Trade and Development (UNCTAD). 2004. *World Investment Report 2004: The Shift Towards Services*. Annex tables B.7 “Cross-border M&A sales by region/economy of seller” and B.8 “Cross-border M&A purchases by region/economy of purchaser.” New York and Geneva: United Nations. Available at <http://www.unctad.org/Templates/Page.asp?intItemID=1465&lang=1>.



Institutions and Governance

Sources: Polity IV Project, Transparency International, World Bank, International Telecommunications Union, Privacy International, Freedom House

	Governance Indices			Regulatory Barriers to Starting a Business, 2004		Government Expenditures (as a percent of Gross Domestic Product)			Access to Information		
	Level of Democracy (-10 - 10, 10 = most democratic)	Political Competition (0 - 5, 5 = most competitive)	Corruption Perceptions Index (0 - 10, 10 = least corrupt)	Average Number of Days to Incorporate	Percent of GNI Per Capita (a)	Public Health 2000	Public Education (b) 2000	Military 2000	Digital Access Index (1 - 100, 100 = most access)	Status of Freedom of Information (FOI) Legislation 2005	Press Freedom Index (0 - 100, 0 = most free)
	2002	2002	2003	Incorporate	Incorporate	2000	2000	2000	2002	2005	2004
	..	..	..	50	79	5.4	4.1	2.3	..	..	..
World	..	..	..	50	79	5.4	4.1	2.3	..	..	..
Asia (excl. Middle East)	..	..	..	..	..	4.5	..	1.4	..	..	..
Armenia	5	4	3.0	25	7	3.2	2.9	3.6	30	Law Enacted	64
Azerbaijan	-7	2	1.8	123	15	0.7	3.9	2.6	24	Pending Effort	71
Bangladesh	6	3	1.3	35	91	1.6	2.5	1.4	18	Pending Effort	68
Bhutan	-8	2	..	62	11	3.5	5.2	..	13	..	68
Cambodia	2	4	..	94	480	1.7	1.8	3.5	17	..	63
China	-7	1	3.4	41	15	2.0	..	2.1	43	..	80
Georgia	5	3	1.8	25	14	1.1	2.2	0.6	37	Law Enacted	54
India	9	4	2.8	89	50	0.9	4.1	2.3	32	Law Enacted	c 41
Indonesia	7	4	1.9	151	131	0.6	1.5	1.1	34	Pending Effort	55
Japan	10	5	7.0	31	11	6.0	3.6	1.0	75	Law Enacted	18
Kazakhstan	-6	2	2.4	25	11	2.1	..	0.8	41	..	74
Korea, Dem People's Rep	-9	1	..	..	..	1.8	..	..	..	..	98
Korea, Rep	8	4	4.3	22	18	2.6	3.8	2.8	82	Law Enacted	29
Kyrgyzstan	-3	2	2.1	21	12	2.0	2.9	1.8	32	..	71
Lao People's Dem Rep	-7	1	..	198	19	1.5	2.3	2.0	15	..	82
Malaysia	3	3	5.2	30	25	1.8	6.2	1.7	57	..	69
Mongolia	10	5	..	20	8	4.4	..	2.5	35	..	36
Myanmar	-7	1	1.6	..	..	0.3	1.3	2.3	17	..	95
Nepal	-4	3	..	21	74	1.6	3.7	0.9	19	..	65
Pakistan	-5	2	2.5	24	36	1.0	1.8	4.4	24	Law Enacted	c 59
Philippines	8	4	2.5	50	20	1.7	3.5	1.1	43	Pending Effort	d 34
Singapore	-2	2	9.4	8	1	1.3	..	4.7	75	..	64
Sri Lanka	6	3	3.4	50	11	1.8	..	4.5	38	Pending Effort	53
Tajikistan	-1	3	1.8	..	..	0.9	..	1.2	21	Law Enacted	e 73
Thailand	9	4	3.3	33	7	2.1	5.4	1.5	48	Law Enacted	39
Turkmenistan	-9	1	..	..	..	3.0	..	3.8	37	..	95
Uzbekistan	-9	1	2.4	35	17	2.8	..	..	31	Law Enacted	e 84
Viet Nam	-7	1	2.4	56	29	1.5	..	..	31	..	82
Europe	..	..	..	..	..	6.5	..	2.0	..	..	..
Albania	7	4	2.5	47	32	2.4	..	1.2	39	Law Enacted	49
Austria	10	5	8.0	29	6	5.6	5.8	0.8	75	Law Enacted	23
Belarus	-7	2	4.2	79	25	4.6	..	1.3	49	..	84
Belgium	10	5	7.6	34	11	6.2	..	1.4	74	Law Enacted	9
Bosnia and Herzegovina	..	..	3.3	54	46	3.1	..	9.5	46	Law Enacted	48
Bulgaria	9	4	3.9	32	10	4.0	..	2.7	53	Law Enacted	35
Croatia	7	4	3.7	49	14	7.8	..	2.9	59	Law Enacted	37
Czech Rep	10	5	3.9	40	11	6.5	4.4	2.0	66	Law Enacted	23
Denmark	10	5	9.5	4	0	6.8	8.3	1.5	83	Law Enacted	8
Estonia	6	3	5.5	72	8	4.5	..	1.6	67	Law Enacted	17
Finland	10	5	9.7	14	1	5.0	5.9	1.3	79	Law Enacted	9
France	9	5	6.9	8	1	7.1	5.8	2.6	72	Law Enacted	19
Germany	10	5	7.7	45	6	8.0	4.5	1.5	74	Pending Effort	16
Greece	10	5	4.3	38	35	5.3	3.8	4.9	66	Law Enacted	28
Hungary	10	5	4.8	52	23	5.1	4.9	1.7	63	Law Enacted	20
Iceland	..	..	9.6	..	..	7.8	6.0	..	82	Law Enacted	8
Ireland	10	5	7.5	24	10	4.7	4.3	0.7	69	Law Enacted	16
Italy	10	5	5.3	13	16	6.0	4.6	2.1	72	Law Enacted	33
Latvia	8	4	3.8	18	18	3.5	5.9	1.0	54	Law Enacted	17
Lithuania	10	5	4.7	26	4	4.4	..	1.8	56	Law Enacted	18
Macedonia, FYR	9	4	2.3	48	12	5.1	..	2.1	48	Pending Effort	53
Moldova, Rep	8	3	2.4	30	19	2.9	4.0	0.4	37	Law Enacted	63
Netherlands	10	5	8.9	11	13	5.5	..	1.6	79	Law Enacted	12
Norway	10	5	8.8	23	3	6.5	6.8	1.8	79	Law Enacted	9
Poland	9	4	3.6	31	21	4.2	5.0	1.9	59	Law Enacted	19
Portugal	10	5	6.6	78	14	6.2	5.8	2.1	65	Law Enacted	14
Romania	8	4	2.8	28	7	5.2	..	2.5	48	Law Enacted	47
Russian Federation	7	4	2.7	36	7	3.7	2.9	3.6	50	Pending Effort	f 67
Serbia and Montenegro	7	4	2.3	51	10	5.9	..	5.9	45	Law Enacted	g 40
Slovakia	9	4	3.7	52	6	5.1	4.1	1.7	59	Law Enacted	21
Slovenia	10	5	5.9	61	12	6.1	..	1.2	72	Law Enacted	19
Spain	10	5	6.9	108	17	5.3	..	1.2	67	Law Enacted	19
Sweden	10	5	9.3	16	1	7.1	..	2.1	85	Law Enacted	8
Switzerland	10	5	8.8	20	9	5.9	..	1.1	76	Law Enacted	c 9
Ukraine	7	4	2.3	34	18	2.9	4.2	3.6	43	Law Enacted	68
United Kingdom	10	5	8.7	18	1	5.9	..	2.5	77	Law Enacted	19
Middle East & N. Africa	..	..	..	..	..	3.5	..	5.9	..	..	..
Afghanistan	-66	-66	..	..	..	2.7	..	..	..	..	72
Algeria	-3	3	2.6	26	27	2.7	..	3.5	37	..	63
Egypt	-6	2	3.3	43	63	1.8	..	2.5	40	..	76
Iran, Islamic Rep	3	3	3.0	48	7	2.7	4.4	3.9	43	..	79
Iraq	-9	1	2.2	..	..	1.0	..	..	..	..	66
Israel	10	5	7.0	34	6	5.7	7.3	8.2	70	Law Enacted	28
Jordan	-2	4	4.6	36	52	3.8	..	9.0	45	..	63
Kuwait	-7	2	5.3	35	2	2.7	..	8.0	51	..	57
Lebanon	-66	-66	3.0	46	132	..	3.0	5.4	48	..	66
Libyan Arab Jamahiriya	-7	1	2.1	..	..	1.5	..	..	42	..	94
Morocco	-6	2	3.3	11	12	1.6	5.0	4.1	33	..	61
Oman	-8	2	6.3	34	5	2.4	..	10.6	43	..	74
Saudi Arabia	-10	1	4.5	64	70	3.3	..	10.6	44	..	80
Syrian Arab Rep	-7	1	3.4	47	34	2.2	..	5.5	28	..	80
Tunisia	-4	3	4.9	14	11	4.6	6.8	1.7	41	..	80
Turkey	7	3	3.1	9	26	4.4	3.5	5.0	48	Law Enacted	52
United Arab Emirates	..	1	5.2	54	27	2.7	..	2.5	64	..	75
Yemen	-2	3	2.6	63	269	1.4	10.0	5.4	18	..	67



For more information, please visit <http://earthtrends.wri.org/datatables/governance>

	Governance Indices			Regulatory Barriers to Starting a Business, 2004		Government Expenditures (as a percent of Gross Domestic Product)			Access to Information		
	Level of Democracy (-10 - 10, 10 = most democratic) 2002	Political Competition (0 - 5, 5 = most competitive) 2002	Corruption Perceptions Index (0 - 10, 10 = least corrupt) 2003	Average Number of Days to Incorporate	Percent of GNI Per Capita (a) 2004	Public Health 2000	Public Education (b) 2000	Military 2000	Digital Access Index (1 - 100, 100 = most access) 2002	Status of Freedom of Information (FOI) Legislation 2005	Press Freedom Index (0 - 100, 0 = most free) 2004
Sub-Saharan Africa	..	..	..	63	225	2.7	..	1.9	..	..	..
Angola	-3	3	1.8	146	885	1.9	2.7	4.9	11	Law Enacted	e
Benin	6	4	..	32	197	1.8	3.1	..	12	..	30
Botswana	9	4	5.7	108	11	3.7	..	3.7	43	Pending Effort	30
Burkina Faso	0	4	..	135	153	1.8	..	1.7	8	..	39
Burundi	0	3	..	43	192	2.0	3.4	6.0	10	..	75
Cameroon	-4	3	1.8	37	183	1.1	3.2	1.4	16	..	67
Central African Rep	-5	3	..	14	205	2.1	..	..	10	..	64
Chad	2	3	..	75	344	2.4	..	1.5	10	..	74
Congo	-4	2	2.2	67	318	1.4	..	..	17	..	54
Congo, Dem Rep	-77	-77	..	155	603	1.4	..	..	12	..	80
Côte d'Ivoire	4	3	2.1	58	134	1.0	4.6	..	13	..	65
Equatorial Guinea	-5	2	..	..	..	1.3	0.6	..	20	..	89
Eritrea	-7	2	..	..	..	3.7	..	..	13	..	89
Ethiopia	1	3	2.5	32	77	1.1	4.8	9.8	10	Pending Effort	66
Gabon	-4	2	..	..	..	1.6	3.9	..	34	..	62
Gambia	-5	2	2.5	..	..	2.9	2.7	1.1	13	..	63
Ghana	6	4	3.3	85	88	2.4	..	1.0	16	Pending Effort	28
Guinea	-1	3	..	49	208	1.8	1.9	1.5	10	..	71
Guinea-Bissau	5	3	..	..	..	3.4	..	4.4	10	..	63
Kenya	8	4	1.9	47	53	2.1	6.3	1.6	19	Pending Effort	60
Lesotho	8	3	..	92	58	4.9	10.0	3.1	19	Pending Effort	40
Liberia	0	3	..	..	..	3.2	..	..	..	..	75
Madagascar	7	4	2.6	44	65	1.6	3.2	1.2	15	..	41
Malawi	5	4	2.8	35	141	3.0	..	0.9	15	Pending Effort	52
Mali	6	3	3.0	42	187	1.8	..	2.5	9	..	27
Mauritania	-6	2	..	82	141	2.7	..	..	14	..	64
Mozambique	6	4	2.7	153	96	3.8	..	2.4	12	Pending Effort	45
Namibia	6	4	4.7	85	19	4.8	..	3.4	39	Pending Effort	34
Niger	4	0	..	27	396	1.5	2.8	1.1	4	..	56
Nigeria	4	0	1.4	44	95	0.4	..	0.8	15	Pending Effort	53
Rwanda	-4	2	..	21	317	3.0	2.8	3.8	15	..	82
Senegal	8	4	3.2	57	113	2.6	3.2	1.4	14	..	37
Sierra Leone	5	3	2.2	26	..	2.6	..	3.6	10	..	58
Somalia	-77	-77	..	..	..	1.2	..	..	..	..	80
South Africa	9	4	4.4	38	9	3.6	..	1.5	45	Law Enacted	24
Sudan	-6	2	2.3	..	..	1.1	..	3.0	13	..	85
Tanzania, United Rep	2	3	2.5	35	187	2.1	..	..	15	Pending Effort	50
Togo	-2	3	..	53	229	1.5	4.8	..	18	..	78
Uganda	-4	2	2.2	36	131	3.1	..	2.2	17	Pending Effort	44
Zambia	1	3	2.5	35	23	2.9	..	0.6	17	Pending Effort	63
Zimbabwe	-7	2	2.3	96	305	3.8	..	4.9	29	Law Enacted	h
North America	..	..	..	..	..	5.8	4.9	3.0	..	..	..
Canada	10	5	8.7	3	1	6.4	5.2	1.2	78	Law Enacted	15
United States	10	5	7.5	5	1	5.8	4.9	3.1	78	Law Enacted	13
C. America & Caribbean	..	..	..	..	..	2.7	..	..	..	..	..
Belize	..	..	4.5	..	..	2.4	6.2	..	47	Law Enacted	22
Costa Rica	10	5	4.3	77	26	4.7	4.4	..	52	..	19
Cuba	-7	1	4.6	..	..	6.1	8.5	..	38	..	96
Dominican Rep	8	4	3.3	78	25	2.2	..	..	42	Law Enacted	39
El Salvador	7	4	3.7	115	128	3.6	2.5	0.7	38	Pending Effort	42
Guatemala	8	4	2.4	39	63	2.2	1.7	0.8	38	Pending Effort	62
Haiti	-2	3	1.5	203	176	2.5	..	..	15	..	79
Honduras	7	4	2.3	62	73	3.2	..	..	29	Pending Effort	52
Jamaica	9	4	3.8	31	15	2.9	6.3	..	53	Law Enacted	17
Mexico	8	4	3.6	58	17	2.6	..	0.5	50	Law Enacted	36
Nicaragua	8	3	2.6	45	170	3.7	..	1.3	19	Pending Effort	37
Panama	9	5	3.4	19	25	5.3	5.0	..	47	Law Enacted	45
Trinidad and Tobago	..	..	4.6	..	..	1.8	3.8	..	53	Law Enacted	25
South America	..	..	..	..	..	3.4	..	1.5	..	..	..
Argentina	8	4	2.5	32	16	4.9	4.6	1.3	53	Pending Effort	f
Bolivia	9	4	2.3	59	174	3.5	5.5	1.5	38	Pending Effort	f
Brazil	8	4	3.9	155	12	3.1	3.8	1.3	50	Pending Effort	36
Chile	9	4	7.4	27	10	2.9	3.9	2.8	58	Pending Effort	23
Colombia	7	3	3.7	43	27	3.7	4.8	3.4	45	Law Enacted	63
Ecuador	6	3	2.2	92	47	2.2	..	..	41	Law Enacted	42
Guyana	6	3	..	..	..	4.2	..	..	43	..	20
Paraguay	7	3	1.6	74	158	3.0	4.9	1.0	39	Pending Effort	54
Peru	9	4	3.7	98	36	2.6	..	2.0	44	Law Enacted	34
Suriname	..	..	..	..	..	6.3	..	..	46	..	18
Uruguay	10	5	5.5	45	48	5.1	2.8	1.1	54	Pending Effort	26
Venezuela	6	3	2.4	116	15	3.4	..	1.1	47	..	68
Oceania	..	..	..	..	..	6.2	4.9	1.6	..	..	..
Australia	10	5	8.8	2	2	6.2	4.7	1.7	74	Law Enacted	14
Fiji	5	3	..	64	25	2.6	6.0	2.1	43	Pending Effort	29
New Zealand	10	5	9.5	12	0	6.2	6.0	1.3	72	Law Enacted	10
Papua New Guinea	10	5	2.1	56	31	3.8	2.3	0.8	26	Pending Effort	25
Solomon Islands	..	..	..	35	44	4.6	3.5	..	17	..	30

a. Gross national income. b. May include subsidies for private or religious schools. c. Law is not yet implemented. d. Extensive access is available through the national constitution. e. Limited implementation. f. Executive order implementing FOI adopted. g. Laws in Montenegro still pending. h. This law is primarily used to suppress media, while its FOIA provisions are unused.

Key to Indices:

Level of Democracy (Polity IV): Scaled from -10 to 10, -10 represents a fully autocratic regime, 10 a fully democratic regime. -66 represents an interruption in government due to foreign occupation. -77 signifies a period of interregnum after a collapse of centralized political authority.
Political Competition (Polity IV): Assigned a value from 0 to 5: 0 = unregulated, 1 = most repressed (least competitive), and 5 = most competitive (least repressed).
Corruption Perceptions Index (Transparency International): Scaled from 0 (most corrupt) to 10 (least corrupt).
Digital Access Index (International Telecommunications Union): Scaled from 0 to 100, 100 represents highest access.
Press Freedom Index (Freedom House): Scaled from 1 to 100. 1-30 = Free, 31-60 = Partly Free, 61-100 = Not Free.



Institutions and Governance: Technical Notes

DEFINITIONS AND METHODOLOGY

The **Level of Democracy** is a scale measuring the degree to which a nation is either autocratic or democratic. A score of plus 10 indicates a strongly democratic state; a score of minus 10 a strongly autocratic state. A democratic government possesses fully competitive political participation, institutionalized constraints on executive power, and guarantee of civil liberties to all citizens. An autocratic system sharply restricts or suppresses competitive political participation, and its chief executives are chosen by an elite group and exercise power with few institutionalized constraints.

The **Level of Political Competition** measures the extent to which alternate preferences for policy and leadership can be pursued in the political arena. On a scale of 0-5, one of the following categories is assigned to a country: (0) "Not Applicable" is used for a political system without stable groups. (1) "Repressed" is assigned to totalitarian party systems, authoritarian military dictatorships, and despotic monarchies—any regime where oppositional activity is not permitted outside of the ruling party. Repressed regimes also have the power and ability to carry out systematic repression. (2) "Suppressed" political systems contain some limited political competition outside of government; however, peaceful political competition and large classes of people are excluded from the political process. (3) "Factional" polities contain parochial or ethnic-based political factions that compete for influence in order to promote agendas that favor the interests of group members over common interests. (4) "Transitional" arrangements accommodate competing interests, but some factionalism associated with parochial interests may still be present. (5) "Competitive" systems are characterized by relatively stable and enduring political groups with regular competition and voluntary transfer of power. Small parties or political groups may, however, be restricted.

The Level of Democracy and Political Competition indices are reported by the Polity IV Project of the Center for International Development & Conflict Management. The Polity IV indices are compiled by a panel of experts using multiple historical sources for each country, combined with reference to a variety of standard sources.

The **Corruption Perceptions Index (CPI)** measures the degree to which corruption—the abuse of public office for private gain—is perceived to exist among public officials and politicians. Ratings range in value from 10 (least corrupt) to 0 (most corrupt). CPI is a composite index compiled by Transparency International from the results of 17 surveys reported by 13 different independent institutions.

Regulatory Barriers to Starting a Business measure the average amount of time and money necessary to register and incorporate a new business venture in the largest city of a given country. These two indicators are measured in days and as a percent of the per capita gross national income (GNI). Governments differ significantly in the requirements they set for these processes. Broadly speaking, higher values represent regulatory environments that stifle the creation of new enterprises.

Data are obtained from the World Bank's Doing Business Database. World Bank staff collect this information in an extensive investigative process involving surveys and the input of local experts. Surveys are sent to lawyers working as business retainers in the country of interest. Respondents are asked to list the steps required to begin a business and to estimate both the cost and amount of time required to perform each. Respondents' answers are compared and normalized in order to present a clear picture of the regulations surrounding the start of a business as well as shortcuts and common methods used for compliance. Survey results are corroborated by other in-country experts in business law and practice.

Government Expenditures as a percent of gross domestic product (GDP) roughly indicate the economic importance of public health, public education, and military activities on national economies.

Public Health Expenditure consists of recurrent and capital spending from government (both central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. The estimates of health expenditure come mostly from the World Health Organization's (WHO) *World Health Report 2003* and its subsequent updates, and from the OECD for its member countries, supplemented by World Bank poverty assessments and country-sector studies. Data are also drawn from the World Bank and the International Monetary Fund.

Public Education Expenditure consists of public spending on public education plus subsidies to private education at the primary, secondary, and post-secondary levels. Foreign aid for education is excluded. Education expenditure estimates are provided to the World Bank by the Institute for Statistics of the United Nations Educational, Scientific, and Cultural Organization (UNESCO). UNESCO compiles its data from annual financial reports of central or federal governments and state or regional administrations.

Military Expenditure is defined by the Stockholm International Peace Research Institute (SIPRI) as "all current and capital expenditure on: (a) the armed forces, including peacekeeping forces; (b) defense ministries and other government agencies engaged in defense projects; (c) paramilitary forces, when judged to be trained and equipped for military operations; and (d) military space activities." Expenditures include the cost of procurements, personnel, research and development, construction, operations, maintenance, and military aid to other countries. Civil defense, veteran's benefits, demobilization, and destruction of weapons are not included as military expenditures. SIPRI obtains military expenditure data from several sources. Primary sources include national budget documents, defense white papers, public finance statistics, and responses to surveys. Surveys are administered by either SIPRI, the United Nations, or the Organization for Security and Co-operation in Europe (OSCE). Secondary sources include data published by the North Atlantic Treaty Organization (NATO), the International Monetary Fund (IMF), the *Europa Yearbook*, and country reports of the Economist Intelligence Unit.

The **Digital Access Index** reflects the ability of each country's population to take advantage of internet communication technologies. It is a composite score of eight variables describing availability of infrastructure, affordability of access, educational level, quality of information and communication technology (ICT) services, and Internet usage. The index is calculated by the International Telecommunications Union (ITU). ITU receives data on information technology from governments and industry associations. Data on education and literacy rates are provided by UNESCO's Institute for Statistics.

Freedom of Information (FOI) Legislation requires disclosure of government records to the public. There are now 48 countries with comprehensive FOI laws, plus a dozen or so countries with FOI-related constitutional provisions that can be used to access information. Data are collected by Privacy International on a country-by-country basis and were last updated in February 2005. "." in a data column signifies countries with no FOI legislation or no available data.

The **Press Freedom Index** is defined by Freedom House as "the degree to which each country permits the free flow of information," measured on a scale of 1 to 100. Countries with a score between 1 and 30 are considered to have a "free" media; 31 to 60, "partly free"; and 61 to 100, "not free." Freedom House emphasizes that this survey does not measure press responsibility; rather, it measures the degree of freedom in the flow of information. Data are collected from overseas correspondents, staff travel, international visitors, the findings of human rights organizations, specialists in geographic and geopolitical areas, the reports of governments, and a variety of domestic and international news media. The final index measures three separate categories of influence on the media: national laws and administrative decisions; censorship and intimidation; and quotas, licensing biases, or government funding.



FREQUENCY OF UPDATE BY DATA PROVIDERS

All variables are updated annually except for the Digital Access Index, which was most recently released by ITU in November, 2003.

DATA RELIABILITY AND CAUTIONARY NOTES

Many of the data in this table are index calculations and therefore contain an unavoidable amount of subjectivity. Indices typically measure ideas and behaviors rather than discrete physical quantities. While these data can illustrate rough comparisons and trends over time, rigid score comparisons and rankings are discouraged.

Level of Democracy and Political Competition: The Polity IV data are subject to substantial cross-checking and inter-coder reliability checks. The least reliable calculations are typically the most recent, due to “the fluidity of real-time political dynamics and the effects this immediacy may have on the assignment of Polity codes in a semi-annual research cycle.”

Corruption Perceptions Index (CPI): CPI is based solely on the perceptions of local residents, expatriates, business people, academics, and risk analysts. Hard empirical data such as cross-country comparisons of prosecutions or media reporting are not used because they may measure the extent of anti-corruption efforts instead of the extent of actual corruption.

Regulatory Barriers to Starting a Business: The data have been subject to a rigorous series of quality-control measures in order to ensure accuracy and comparability across countries. However, problems do remain. Data only measure the time and expense of starting an enterprise in the largest city of each country. Only businesses who employ more than 50 people or have more than five local owners are included. Smaller enterprises that are not measured here may have the most difficulty navigating bureaucratic and legal requirements. These data also assume the ability of the business to hire a lawyer well-versed in the regulations regarding the starting of a business, a service not available to many smaller entrepreneurs.

Public Health Expenditure: The values reported here represent the product of an extensive effort by WHO, OECD, and the World Bank to produce a comprehensive data set on national health accounts. Nonetheless, there are some difficulties with the data. Few developing countries have health accounts that are methodologically consistent with national accounting procedures. Data on public spending at the sub-national level is not aggregated in all countries, making total public expenditure on health care difficult to measure. WHO cautions that these data should only be used for an “order of magnitude” estimate, and that specific cross-country comparisons should be avoided.

Public Education Expenditure: Recent data are preliminary. In some cases data refer only to a ministry of education’s expenditures, excluding other ministries and local authorities that spend a part of their budget on educational activities. Spending on religious schools, which constitutes a large portion of educational spending in some developing countries, may be included. The World Bank cautions that these data do not measure the effectiveness or levels of attainment in a particular educational system.

Military Expenditure: The entire data set has been carefully compiled with extensive analysis by a single provider, SIPRI, which makes these data fairly reliable. When a time series is not available, or a country’s definition of military expenditure differs from SIPRI’s, estimates are made based on analysis of official government budget statistics. Estimates are always based on empirical evidence, not assumptions or extrapolations. SIPRI cautions that military expenditure does not relate directly to military capability or security.

Status of Freedom of Information Legislation: While the FOI data have been thoroughly researched, there are unavoidable difficulties in assigning each country to one of three categories. Some countries have laws guaranteeing access, but the laws are not enforced. Others guarantee access to government documents in specific categories, excluding access in other categories. A more thorough description of each country’s policies is available at <http://www.privacyinternational.org/issues/foia/foia-survey.html>.

Press Freedom Index: Freedom House has been reviewing press freedom since 1979; the Press Freedom Survey emerged in its current form in 1994. The data are reproducible and the index components are clear. The data are considered to be reliable; nonetheless, there is an unavoidable amount of subjectivity in any index calculation.

SOURCES:

Level of Democracy and Political Competition: Polity IV Project. 2003. *Polity IV Project: Political Regime Characteristics and Transitions*. College Park: University of Maryland. Available at <http://www.bsos.umd.edu/cidcm/inscr/polity/index.htm>.

Corruption Perceptions Index: Transparency International. 2003. *2003 Corruption Perceptions Index*, Table 1. Berlin: Transparency International. Available at http://www.transparency.org/pressreleases_archive/2003/2003.10.07.cpi.en.html.

Regulatory Barriers to Starting a Business: The World Bank, Rapid Response Research Group. 2004. *Doing Business Database*. Washington, D.C.: The World Bank. Available at <http://rru.worldbank.org/DoingBusiness/ExploreTopics/StartingBusiness/CompareAll.aspx>.

Government Expenditures: The World Bank Development Data Group. *World Development Indicators Online*. Washington, DC: The World Bank. Available at <http://worldbank.org/data/onlinepbs/onlinebases.htm>.

Digital Access Index: International Telecommunications Union (ITU). 2003. *World Telecommunication Development Report*. Available at http://www.itu.int/newsarchive/press_releases/2003/30.html.

Freedom of Information Legislation: Banisar, David. 2005. *Freedom of Information and Access to Government Records Around the World*. Washington, DC: Privacy International.

Press Freedom Index: Freedom House. 2004. *The Annual Survey of Press Freedom 2004*. New York: Freedom House. Available at <http://www.freedomhouse.org/research/pfsratings.xls>.



7 Energy: Technical Notes

DEFINITIONS AND METHODOLOGY

Total Energy Consumption is the amount of primary energy from all sources (coal, nuclear, hydroelectric, etc.) used annually by a particular country or region. Consumption equals indigenous production plus imports minus exports, stock changes, and energy delivered to international marine bunkers. Energy losses from transportation, friction, heat, and other inefficiencies are included here. The original source material published by the International Energy Agency (IEA) refers to these values as Total Primary Energy Supply (TPES). To facilitate comparisons among different sources of energy, the heat content of all energy commodities is presented in metric tons of oil equivalent (toe), which measures the energy contained in a metric ton (1000 kg) of crude oil. One toe is equal to 10⁷ kilocalories, 41.868 gigajoules, or 11,628 kilowatt-hours (kWh).

Basic energy statistics are collected by the IEA from a variety of sources. In OECD member countries, national administrations fill out five annual questionnaires. In non-OECD countries, statistics are collected from the distribution of questionnaires, communication with international organizations such as the United Nations, co-operation with national statistical bodies, and direct contact with energy consultants and companies. If data are not available from any of these sources, they are estimated by the IEA. The energy produced by fossil fuels is calculated using conversion factors per unit mass of fuel (e.g., 10,000 kcal/kg of oil). Since energy sources such as coal and crude oil may vary in quality, the IEA uses specific conversion factors supplied by national administrations for the main categories of energy sources and uses (i.e., production, imports, exports). The energy produced by non-fossil fuels is more complicated to measure; the IEA must first assume a primary form of energy to measure using global or regional efficiency averages, and then calculate the primary energy equivalent. Please refer to the original source for further information on the variables and collection methodologies.

Energy Consumption Per Capita is the amount of energy, as defined above, consumed on average by each person, expressed in kilograms of oil equivalent (kgoe). This variable was calculated by dividing total consumption by population figures from the United Nations Population Division.

Energy Consumption by Source data show the amount of energy consumed in five different categories as a percentage of total consumption:

Fossil Fuels include crude oil and natural gas liquids, petroleum products, coal and coal products, and natural gas. Coal and coal products include hard coal, lignite, patent fuel, coke, blast furnace gas, coke-oven gas, brown coal briquettes (BKB), and peat. Oil and natural gas products include crude oil, natural gas liquids, refinery feedstocks, petroleum products, natural gas, gas works gas, and other hydrocarbons. The inclusion of petroleum products accounts for domestic processing of crude oil as well as assorted petroleum imports. Petroleum products refer to refinery gas, ethane, liquefied petroleum gas, aviation gasoline, motor gasoline, jet fuels, kerosene, gas/diesel oil, heavy fuel oil, naphtha, white spirit, lubricants, bitumen, paraffin waxes, petroleum coke, and other products.

Solid Biomass includes any plant matter used directly as a fuel or converted into other forms before combustion, including wood; vegetal waste including wood waste and crop waste used for energy; animal materials and wastes; sulphite lyes (also known as black liquor, this is a sludge that contains the lignin digested from wood for paper making); and other solid biomass. Inputs to charcoal production are included here. However, since charcoal is a secondary product, the IEA excludes final charcoal production numbers to avoid double counting.

Nuclear includes all energy produced by nuclear power plants from nuclear fission. The consumption data shown here assume an average thermal efficiency of 33 percent.

Hydroelectric shows the energy content of the electricity produced in hydro power plants. The output from pumped storage plants is not included in these values.

Other Renewables include energy from biogas, liquid biomass, geothermal, solar, ocean, and wave systems. *Biogas energy* is produced by the fermentation of animal dung, human sewage or crop residues. *Liquid biomass energy* is produced from bio-additives such as ethanol (alcohol). *Geothermal technologies* use the heat of the earth to generate energy. *Solar energy* includes the production of electricity from solar photovoltaic cells as well as the production of both electricity and heat from solar thermal energy. Passive solar energy for the direct heating, cooling, and lighting of dwellings or other buildings is not included here. *Ocean energy* includes the production of electricity from the mechanical energy of ocean waves and tides or from the thermal energy (heat) stored in the ocean. *Wind energy* uses the mechanical energy of the wind for generating electricity.

Population Relying on Solid Fuels measures the percentage of the total population that burns solid fuels in their households. Solid fuels include coal or biomass such as dung, charcoal, wood, or crop residues. The World Health Organization (WHO) measures the prevalence of solid fuel usage because the burning of solid fuels in traditional stoves causes high levels of indoor air pollution, emitting dangerous pollutants such as carbon monoxide and particulates.

Electricity Consumption per Capita measures the average kilowatt-hours (kWh) of electrical power generated per person in a particular country or region. Public electricity plants, private electricity plants, and combined heat and power (CHP) plants are all included. Electricity output from crude oil and natural gas liquids is not included here. Electricity consumption equals production and imports minus exports and distribution losses.

Population with Access to Electricity is defined as the percentage of the total population that has electrical power in their home. It includes commercially sold electricity, both on and off the grid. For those countries where access to electricity has been assessed through government surveys, it also includes self-generated electricity.

Proved Fossil Fuel Reserves are generally measured as quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions. In order to facilitate comparisons among different sources of energy, fossil fuel reserves estimates have been converted to metric tons of oil equivalent (toe). A toe measures the energy contained in a metric ton (1000 kg) of crude oil.

Coal reserves include anthracite, bituminous, sub-bituminous, and lignite coal. The standard conversion factors for one ton of oil equivalent are 1.5 tons of anthracite and bituminous coal and 3 tons of sub-bituminous and lignite coal. **Oil** includes gas condensate and natural gas liquids (NGLs) as well as crude oil. Estimates were converted to metric tons of oil equivalent by BP, the data provider, using individual country conversion factors. **Natural Gas** was converted using the standard conversion factor of 0.9 million metric tons of oil equivalent per billion cubic meters of natural gas.



Net Fuel Imports measures the amount of fossil fuel that enters the national territorial boundaries of a country, whether or not customs clearance has taken place, minus the amount that leaves via export. Fossil fuel includes crude oil and natural gas liquids, petroleum products, coal and coal products, and natural gas. Quantities of crude oil and oil products imported under processing agreements (i.e., refining on account) are included. Quantities of oil in transit are excluded. Re-exports of oil imported for processing within bonded areas are shown as exports of product from the processing country to the final destination. Petroleum products refer to refinery gas, ethane, liquified petroleum gas, aviation gasoline, motor gasoline, jet fuels, kerosene, gas/diesel oil, heavy fuel oil, naphtha, white spirit, lubricants, bitumen, paraffin waxes, petroleum coke, and other petroleum products. Natural gas and gas-works gas are included. Natural gas is reported as coming from the country of origin. Coal imports includes all coal, both primary (including hard coal and lignite/brown coal) and derived fuels (including patent fuel, coke-oven coke, gas coke, BKB, coke oven gas, and blast furnace gas). Peat is also included. In most cases, coal in transit is not included. Regional totals include goods imported from other countries belonging to the same region. Consequently, these totals by no means represent a region's net imports or net exports.

FREQUENCY OF UPDATE BY DATA PROVIDERS

IEA and BP update their energy data annually. WHO updates their information every two years. These updates also often include revisions of past data. Data may therefore differ from those reported in past editions of the World Resources Report.

DATA RELIABILITY AND CAUTIONARY NOTES

Energy

The data on energy balances are based primarily on well-established and institutionalized accounting methodologies and are therefore considered reliable. One exception is fuelwood and other biomass fuels, which are estimated by the IEA based on small sample surveys or other incomplete information. Energy production estimates from nuclear power and renewable sources (hydroelectric, solar, geothermal, and wind power) are calculated using a number of assumptions about primary energy forms and plant efficiencies. As a result, these values may be less reliable than estimates of energy produced from fossil fuels, and the share of renewables in total energy consumption may appear different here than it would from other providers.

IEA data do not distinguish between "no data" (denoted in these tables with "...") and zero values. WRI has distinguished between the two where possible, but some values represented as zero should probably be indicated by ".." and vice versa.

Proven Fossil Fuel Reserves

Every effort is made to come up with a consistent series for reserves based on a common definition; however, in reality, different countries use different methodologies, and the data have varying levels of reliability. Since energy sources such as coal may vary in quality, converting the estimates into toe using standard conversion factors, rather than country specific conversion factors, introduces a level of uncertainty to the reserve estimates shown here.

Percent of Population Relying on Solid Fuels

The estimates of household solid fuel use were compiled with the help of several studies conducted over the past decade. It has been assumed that patterns in solid fuel use have not changed dramatically over this time period.

SOURCES

Energy and Electricity Consumption and Net Inputs: International Energy Agency (IEA). 2003. *Energy Balances of OECD Countries (2003 Edition)* and *Energy Balances of non-OECD Countries (2003 Edition)*. Paris: Organization for Economic Cooperation and Development (OECD). Electronic database online at <http://data.iea.org/ieastore/default.asp>.

Access to Electricity: International Energy Agency (IEA). 2002. *World Energy Outlook: Energy and Poverty*. Paris: International Energy Agency (IEA). Online at <http://www.worldenergyoutlook.org>.

Solid Fuel Use: World Health Organization (WHO). 2004. *World Health Report, Annex Table 7*. Geneva: World Health Organization (WHO). Online at http://www.who.int/whr/2004/en/09_annexes_en.pdf.

Proven Reserves Data: BP plc. 2004. *Statistical Review of World Energy*. London: BP plc. Online at <http://www.bp.com/statisticalreview2004>.



Climate and Atmosphere: Technical Notes

DEFINITIONS AND METHODOLOGY

Total Carbon Dioxide (CO₂) Emissions measures the mass of carbon dioxide produced during combustion of solid, liquid, and gaseous fuels, as well as from gas flaring and the manufacture of cement. Data are expressed in million metric tons. CO₂ emissions from land-use change are not included here. These estimates do not include bunker fuels used in international transportation. Where values were originally given in mass of carbon, WRI multiplied by 3.664 (the ratio of the molecular mass of CO₂ to that of carbon) to convert to mass of CO₂.

CO₂ Emissions Per Capita measures the mass of CO₂ produced per person for a country or region, in metric tons. WRI calculates per capita emissions with population estimates from the United Nations Population Division (2002 revision).

Data on carbon dioxide emissions are obtained from the World Resources Institute's Climate Analysis and Indicators Tool (CAIT). In order to provide the most complete and accurate data set, CAIT compiles data from the International Energy Agency (IEA), the Carbon Dioxide Information Analysis Center (CDIAC), and the Energy Information Agency (EIA). Fossil fuel emissions estimates for 131 countries are available from the IEA and reported in CAIT. WRI used CDIAC data on fossil fuel emissions for the 53 countries that lack IEA data. (Data for Lesotho were obtained from the EIA.) Data on emissions from cement manufacturing were obtained from CDIAC for all countries and added to the fossil-fuel emissions totals by WRI. A complete country-by-country listing of source and notes can be found at <http://cait.wri.org/cait.php?page=notes&chapt=2>.

Emissions are calculated by the IEA using the Intergovernmental Panel on Climate Change (IPCC) Reference Approach. CDIAC estimates are derived from energy statistics obtained from United Nations Statistical Office questionnaires and supplemented by official national statistical publications. The U.S. Energy Information Administration (EIA) estimates CO₂ emissions by country and year, based on energy balances.

Cumulative CO₂ Emissions from Fossil Fuels and Cement, 1950-2000 represents the total mass of CO₂ produced in all years from 1950 to 2000 as a result of the combustion of solid, liquid, and gaseous fuels, as well as from gas flaring and the manufacture of cement. CO₂ emissions from land use change are not included here. These estimates do not include bunker fuels used in international transportation. To estimate cumulative emissions in recently formed countries, WRI apportions emissions estimates based on current emissions and historical emissions from former countries and territories.

Cumulative CO₂ Emissions from Land-Use Change, 1950-2000 represents the total mass of carbon dioxide (CO₂) absorbed or emitted into the atmosphere between 1950 and 2000 as a result of man-made land-use changes (for example, deforestation, shifting cultivation, and vegetation re-growth on abandoned croplands and pastures). Positive values signify a positive net flux ("source") of CO₂, indicating that carbon dioxide has been released into the atmosphere. Negative values signify a negative net flux ("sink") of CO₂, indicating that carbon dioxide has been absorbed as a result of the re-growth of previously removed vegetation. Data include emissions from living and dead vegetation disturbed at the time of clearing or harvest, emissions from wood products (including fuel wood), and emissions from the oxidation of organic matter in the soil in years following initial cultivation. Ecosystems that are not directly affected by human activities such as agriculture and forestry are not included in these totals. The net flux of CO₂ for each country was calculated by R.A. Houghton at the Woods Hole Research Center based on regional fluxes. WRI calculated cumulative carbon emissions from land-use change using annual country-level data. For more information, refer to "Data Note: Emissions (and Sinks) of Carbon from Land-Use Change," online at <http://cait.wri.org>.

Carbon Dioxide Emissions by Sector shows the proportion of total CO₂ emissions from fossil fuel burning contributed by transportation, industry, and electricity production. The **Transportation** sector includes fossil fuel emissions from road, rail, air, and other forms of transportation, and agricultural vehicles while they are on highways. Data do not include international aviation or ship emissions. The **Industry and Construction** sectors include fossil fuel emissions in all industries and construction. The **Electricity** sector includes fossil fuel emissions from public electricity generation, combined heat and power generation, and heat plants. Emissions from electricity and heat production for use by the producer (autoproduction) for public or private activities are included here.

The emissions figures presented here are calculated by the IEA using the IPCC Sectoral Approach and default emission factors from the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories and the IEA energy balances.

Methane Emissions measures the total release of methane (CH₄) into the earth's atmosphere that results from human activities such as agricultural and industrial methane production. Values are expressed in thousand metric tons of CO₂ equivalent using the global warming potential (GWP), which allows the different gases to be compared on the basis of their effective contributions. One kilogram of methane is 23 times as effective at trapping heat in the earth's atmosphere as a single kilogram of CO₂ (using a time horizon of 100 years).

Nitrous Oxide Total Emissions represents the total release of nitrous oxide (N₂O) into the earth's atmosphere that results from human activities such as agriculture, biomass burning, industrial activities, and livestock management. Values are expressed in thousand metric tons of CO₂ equivalent using the GWP, which allows the different gases to be compared on the basis of their effective contributions. The global warming potential of one kilogram of N₂O is nearly 300 times that of a single kilogram of CO₂ (using a time horizon of 100 years).

Fluorinated Gases Emissions represents the total release of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) into the earth's atmosphere. These three groups of fluorinated gases ("f-gases") persist in the atmosphere for thousands of years. *Hydrofluorocarbons* are a by-product of HFC-23 and HCFC-22 (IPCC Source Categories 2E and 2F), which are used in the production of aerosols, refrigeration/AC compounds, solvents, foams, fire extinguishing compounds, semiconductors, and flat-panel displays. *Perfluorocarbons* are produced in the manufacture of semiconductors and as a byproduct of CF₄ and C₂F₆ in primary aluminum production (IPCC Source Categories 2C, 2E, and 2F). *Sulfur Hexafluoride* emissions are generated from magnesium processing, semiconductor production, and the use and manufacture of gas insulated switchgear in electricity distribution networks (IPCC Source Categories 2C and 2F). Values are expressed in thousand metric tons of CO₂ equivalent using the global warming potential (GWP), which allows the different gases to be compared on the basis of their effective contributions. The global warming potential of one kilogram of a fluorinated gas is several thousand times that of a single kilogram of CO₂ (using a time horizon of 100 years).

Most of the **Methane, Nitrous Oxide, and Fluorinated Gas** data shown here were compiled by WRI from *Non-CO₂ Gases Economic Analysis and Inventory*. This data set was prepared by the U.S. Environmental Protection Agency (EPA), covers 90 countries, and accounts for close to 90 percent of global emissions. The remaining data were either obtained from the EDGAR database of the Dutch National Institute of Public Health and the Environment (RIVM) or estimated by WRI based on regional totals and figures for earlier years. A complete listing of sources by country is available at <http://cait.wri.org/cait.php?page=notes&chapt=2>.



Total GHG Emissions include the total mass of carbon dioxide (CO₂) emitted from fossil fuel and cement manufacturing plus the CO₂ emissions equivalent of methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) in the year 2000. Data shown here exclude CO₂ from land-use change.

Kyoto Protocol Status indicates the year that a country ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC). Ratification (or its equivalents of acceptance, approval, or accession) binds the state to observe the treaty. The Kyoto Protocol was established in 1997 by the third session of the Conference of Parties (COP-3) to the UNFCCC. Upon ratification, Annex I (industrialized) countries commit themselves to reducing their collective emissions of six greenhouse gases by at least 5 percent from 1990 levels during the first commitment period, which is 2008-2012. Compared to emissions levels that would be expected by 2010 without emissions-control measures, the Protocol target represents a 30 percent cut. Under the Protocol, both developed and developing countries agree to limit emissions and promote adaptation to future climate change, submit information on their national climate-change program and inventories, promote technology transfer, cooperate on scientific and public research, and promote public awareness and education. The Protocol came into force on February 16, 2005, following ratification by Russia in November, 2004. More information is available in *A Guide to the Climate Change Convention Process*, online at <http://unfccc.int/resource/process/guideprocess-p.pdf>.

FREQUENCY OF UPDATE BY DATA PROVIDERS

Carbon dioxide emissions, cumulative emissions, and non-CO₂ greenhouse gas emissions are updated by WRI's CAIT tool when new data are available; most CO₂ emissions data are updated annually, while non-CO₂ GHG emissions are updated intermittently by RIVM and the EPA. Sectoral emissions data are updated by the IEA every year; as of spring, 2005, data are available from the original source through 2002. Sectoral emissions data from 2000 are included here to enable direct comparisons with the emissions data in this table.

DATA RELIABILITY AND CAUTIONARY NOTES

CO₂ Emissions: The IPCC Reference Approach (used here for most emissions estimates) can overestimate emissions because it uses energy supply data rather than combustion data. In a few cases, the estimates shown here differ significantly (by more than 5 percent) from those reported by individual countries or by the UNFCCC. This is because some countries use different energy figures than the IEA and WRI or treat bunker fuels differently. Other countries calculate emissions with specific calorific values instead of the averages used by the IEA.

Emissions data are synthesized by WRI from three different data sets, which presents both advantages and disadvantages. On the one hand, "filling" the gaps from different data sources improved the ability to make cross-country comparisons and related analyses. Yet comparability can be endangered when data points from different sources (using different methodologies) are placed side-by-side. For a complete discussion of CAIT's methodology, see http://cait.wri.org/downloads/cait_ghgs.pdf.

Cumulative CO₂ Emissions from Land-Use Change: CO₂ emissions estimates from land-use change are considerably less reliable than other CO₂ and GHG emissions estimates; as a result, data should be treated as order-of-magnitude estimates. The data provider states that yearly flux estimates are uncertain on the order of ± 150 percent for large fluxes, and ± 50 million tons of carbon per year for estimates near zero. The cumulative emissions presented here, however, are more accurate than the data for individual years. More information is available at: <http://cait.wri.org/downloads/DN-LUCF.pdf>.

CO₂ Emissions by Sector: Data shown in these columns are calculated using the IPCC Sectoral Approach, which surveys actual consumption of fossil fuels by each sector in order to calculate emissions. Other columns in the table have been calculated using the IPCC Reference Approach. While in theory the numbers should be identical, in practice there are minor variations between the data produced by the two methodologies.

Methane, Nitrous Oxide, and Fluorinated Gas Emissions: Generally, estimates of non-CO₂ GHG emissions are less certain than CO₂ emissions estimates. Estimates of nitrous oxide emissions are less certain than methane and fluorinated gas estimates. This data set provides a sound basis for comparability, however, since the methods used are comparable to IPCC methodologies, the global totals comply with budgets used in atmospheric studies, and the data were based on international information sources.

The data presented here may not match the official methane emissions estimates submitted by countries to the UNFCCC. In most cases, however, the differences are not substantial. In the year 2000, WRI estimated methane and nitrous oxide emissions for some countries (accounting for about 10 percent of all emissions); these estimates should be considered rough approximations.

SOURCES

Total and Cumulative Emissions: World Resources Institute. 2005. *Climate Analysis Indicators Tool (CAIT)*, version 2.0. Washington D.C.: World Resources Institute. Online at <http://cait.wri.org>.

CO₂ Emissions by Sector: International Energy Agency (IEA). 2003. *CO₂ Emissions from Fossil Fuel Combustion* (2003 Edition). Paris: Organization for Economic Cooperation and Development (OECD). Database online at <http://data.iea.org/ieastore/default.asp>.

Kyoto Protocol, Year Ratified: United Nations Framework Convention on Climate Change (UNFCCC). 2005. *Kyoto Protocol Status of Ratification*. Bonn: UNFCCC. Online at http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf.



Water Resources and Fisheries

Source: Food and Agriculture Organization of the United Nations

	Actual Renewable Water Resources (a)		Annual Water Withdrawals						Inland and Marine Fisheries Production (thousand metric tons) (c)				Trade in Fish and Fisheries Products (million US\$) (c)		Number of Fishers 2000	Fish Protein as a Percent of Animal Protein Supply 2002
	Total (km ³)	Per Capita (m ³ per person)	Total 2000	Per Capita (m ³ per person) 2000			Sector (percent), 2000 (b)			Capture		Aquaculture		Imports			Exports
				2000	2000	2000	Agri- culture	Indus- try	Dom- estic	1990- 1992	2000- 2002	1992	2002			
World	..	8,549	3,802.3	633	70	20	10	84,529.0	93,650.8	14,074.7	37,694.7	d	60,312.2	56,520.1	34,501,411	15
Asia (excl. Middle East)	..	4,079	2,147.5	631	81	12	7	34,528.9	44,189.1	11,745.9	33,275.1	d	22,301.9	19,051.0	28,890,352	..
Armenia	11	3,450	3.0	949	66	4	30	2.2	0.8	3.4	1.1	..	3.0	0.7	244	1
Azerbaijan	30	3,585	17.2	2,114	68	28	5	36.1	13.7	1.7	0.2	..	1.6	2.2	1,500	1
Bangladesh	1,211	8,089	79.4	576	96	1	3	684.2	1,058.8	210.1	718.8	..	6.2	328.3	1,320,480	52
Bhutan	95	40,860	0.4	204	95	1	4	0.3	0.3	0.0	0.0	..	..	..	450	..
Cambodia	476	32,876	4.1	311	98	1	2	106.3	372.9	7.2	14.3	..	3.2	27.9	73,425	57
China	2,830	2,206	630.3	494	68	26	7	7,449.7	16,690.0	7,206.8	26,132.7	..	1,927.0	4,029.1	12,233,128	19
Georgia	63	12,481	3.6	685	59	21	20	66.9	2.2	1.4	0.1	..	1.4	0.3	1,900	1
India	1,897	1,754	645.8	635	86	5	8	2,867.6	3,799.4	1,212.6	2,084.6	..	23.1	1,351.8	5,958,744	14
Indonesia	2,838	12,749	82.8	391	91	1	8	2,704.3	4,300.8	522.6	855.6	..	88.2	1,536.6	5,118,571	57
Japan	430	3,365	88.4	696	62	18	20	8,598.8	4,715.7	808.7	797.7	..	14,204.2	786.3	260,200	45
Kazakhstan	110	7,116	35.0	2,238	82	17	2	70.7	27.7	8.7	0.7	..	16.5	15.2	16,000	2
Korea, Dem People's Rep	77	3,387	9.0	405	55	25	20	406.0	208.1	56.7	64.7	..	25.8	138.2	129,000	27
Korea, Rep	70	1,454	18.6	397	48	16	36	2,321.9	1,828.6	364.9	294.9	..	1,619.9	1,195.9	176,928	40
Kyrgyzstan	21	3,952	10.1	2,048	94	3	3	0.3	0.1	0.9	0.1	..	1.4	0.0	154	1
Lao People's Dem Rep	334	57,638	3.0	567	90	6	4	18.6	31.2	10.4	50.6	..	2.0	0.1	15,000	40
Malaysia	580	23,316	9.0	392	62	21	17	966.3	1,270.6	65.8	158.4	..	335.9	359.6	100,666	38
Mongolia	35	13,232	0.4	178	52	28	20	0.1	0.2	..	..	..	0.4	0.1	0	0
Myanmar	1,046	20,870	33.2	699	98	1	1	731.6	1,183.1	14.0	113.8	..	1.4	210.4	610,000	46
Nepal	210	8,171	10.2	433	96	1	3	5.5	17.1	10.1	16.2	..	0.3	0.0	50,000	4
Pakistan	223	1,415	169.4	1,187	96	2	2	504.0	604.7	11.8	13.8	..	0.3	136.7	272,273	3
Philippines	479	5,884	28.5	377	74	9	17	1,875.4	1,961.2	391.8	423.9	..	89.0	396.4	990,872	39
Singapore	1	139	..	..	..	..	..	10.6	3.8	2.1	4.9	..	509.8	380.0	364	..
Sri Lanka	50	2,602	12.6	678	95	2	2	185.9	290.9	5.5	9.3	..	73.2	106.3	146,188	51
Tajikistan	16	2,537	12.0	1,965	92	5	4	0.2	0.1	3.1	0.1	..	0.2	..	200	0
Thailand	410	6,459	87.1	1,429	95	2	2	2,664.2	2,950.3	338.7	702.4	..	947.7	4,027.6	354,495	40
Turkmenistan	25	5,004	24.6	5,308	98	1	2	38.4	12.6	2.2	0.0	..	0.2	0.3	611	3
Uzbekistan	50	1,904	58.3	2,342	93	2	5	5.8	3.2	21.7	4.8	..	1.8	0.1	4,800	0
Viet Nam	891	10,805	71.4	914	68	24	8	826.1	1,483.0	164.4	515.9	..	44.9	1,764.2	1,000,000	29
Europe	..	10,655	400.3	581	33	52	15	19,025.1	15,773.3	1,470.1	2,064.1	d	23,051.7	19,356.0	855,333	12
Albania	42	13,056	1.7	551	62	11	27	5.3	3.5	2.1	0.5	..	6.5	7.0	1,590	2
Austria	78	9,569	2.1	261	1	64	35	0.5	0.4	3.1	2.5	..	177.6	11.9	2,300	4
Belarus	58	5,887	2.8	278	30	46	23	1.8	2.4	13.3	6.1	..	91.6	18.3	5,000	8
Belgium	18	1,770	..	..	..	..	..	39.5	29.7	0.8	1.7	..	1,030.7	520.2	544	..
Bosnia and Herzegovina	38	8,958	..	..	..	..	..	2.0	2.5	..	4.7	..	15.6	0.2	3,500	4
Bulgaria	21	2,721	10.5	1,296	19	78	3	41.1	9.5	7.9	3.0	..	14.7	5.8	1,483	2
Croatia	106	23,890	..	..	..	..	..	26.7	20.3	6.8	8.4	..	62.4	62.5	65,151	9
Czech Rep	13	1,286	2.6	250	2	57	41	..	4.8	..	19.6	..	84.0	31.0	2,243	5
Denmark	6	1,116	1.3	238	42	26	32	1,726.9	1,495.5	42.4	39.1	..	1,781.8	2,762.9	6,711	10
Estonia	13	9,794	0.2	120	5	39	56	266.6	106.6	1.0	0.3	..	45.7	112.0	13,346	13
Finland	110	21,093	2.5	479	3	84	14	140.6	150.5	18.6	15.4	..	129.6	15.3	5,879	14
France	204	3,371	40.0	674	10	74	16	595.1	620.3	250.6	256.0	..	3,082.0	1,067.7	26,113	9
Germany	154	1,866	47.1	572	20	68	12	259.7	213.8	78.6	56.4	..	2,343.5	1,098.0	4,358	6
Greece	74	6,764	7.8	712	81	3	16	141.2	94.2	14.1	93.6	..	319.2	221.3	19,847	11
Hungary	104	10,579	7.6	763	32	59	9	11.1	6.8	15.4	12.5	..	48.3	5.1	4,900	2
Iceland	170	582,192	0.2	543	0	66	34	1,375.8	2,031.0	2.7	3.9	..	65.2	1,309.5	6,100	29
Ireland	52	13,003	1.1	296	0	77	23	232.9	305.0	27.2	58.3	..	121.5	407.7	8,478	6
Italy	191	3,336	44.4	771	45	37	18	391.4	295.4	161.4	205.3	..	2,719.2	392.7	48,770	11
Latvia	35	15,507	0.3	124	12	33	55	341.4	126.1	1.9	0.4	..	43.5	93.0	6,571	7
Lithuania	25	7,276	0.3	76	7	15	78	330.3	127.0	4.5	1.9	..	78.5	57.4	4,700	27
Macedonia, FYR	6	..	..	..	..	..	..	0.2	0.2	1.0	1.3	..	6.7	0.1	8,472	3
Moldova, Rep	12	..	2.3	539	33	58	9	0.9	0.4	5.1	1.3	..	7.3	0.2	40	8
Netherlands	91	5,608	7.9	500	34	60	6	415.5	492.7	68.9	62.3	..	1,241.8	1,522.5	3,743	11
Norway	382	83,919	2.2	489	10	67	23	2,015.3	2,710.0	147.5	518.6	..	627.9	3,488.7	23,552	26
Poland	62	1,598	16.2	419	8	79	13	452.9	221.7	28.7	34.7	..	334.0	247.2	8,640	12
Portugal	69	6,821	11.3	1,125	78	12	10	310.3	192.9	5.9	8.1	..	914.3	284.2	25,021	21
Romania	212	9,512	23.2	1,031	57	34	9	86.3	7.3	29.7	9.9	..	38.8	2.4	8,519	2
Russian Federation	4,507	31,653	76.7	527	18	63	19	6,481.5	3,611.6	156.4	88.5	..	333.9	1,437.9	316,300	13
Serbia and Montenegro	209	..	..	..	..	..	..	3.0	1.2	2.3	2.7	..	35.1	0.3	1,429	1
Slovakia	50	9,266	..	..	..	..	..	..	1.5	..	0.9	..	34.7	2.0	215	5
Slovenia	32	16,080	..	..	..	..	..	3.9	1.8	0.9	1.2	..	28.7	6.0	231	4
Spain	112	2,711	35.6	874	68	19	13	1,086.7	1,006.9	199.2	296.2	..	3,640.0	1,777.8	75,434	18
Sweden	174	19,581	3.0	335	9	54	37	265.2	315.1	8.1	5.7	..	748.4	522.7	2,783	14
Switzerland	54	7,468	2.6	359	2	74	24	3.2	1.6	1.2	1.1	..	358.3	3.1	522	7
Ukraine	140	2,898	37.5	755	52	35	12	667.0	339.4	67.7	30.9	..	101.1	31.7	120,000	13
United Kingdom	147	2,474	9.5	163	3	75	22	788.0	726.2	55.9	167.3	..	2,249.4	1,305.9	17,847	10
Middle East & N. Africa	..	1,505	324.6	807	86	6	8	2,096.7	3,048.9	117.7	525.5	d	827.6	1,354.7	746,955	10
Afghanistan	65	2,608	23.3	1,087	98	0	2	1.1	0.9	..	..	..	..	..	1,500	..
Algeria	14	443	6.1	201	65	13	22	88.5	127.0	0.2	0.4	..	11.9	5.0	26,151	6
Egypt	58	794	68.7	1,013	78	14	8	272.6	412.7	62.5	353.1	..	147.1	1.6	250,000	23
Iran, Islamic Rep																

For more information, please visit <http://earthtrends.wri.org/datatables/freshwater>

	Actual Renewable Water Resources (a)		Annual Water Withdrawals					Inland and Marine Fisheries Production (thousand metric tons) (c)				Trade in Fish and Fisheries Products (million \$US) (c)		Number of Fishers 2000	Fish Protein as a Percent of Animal Protein Supply 2002
	Total (km ³)	Per Capita (m ³ per person)	Total (km ³) 2000	Per Capita (m ³ per person) 2000			1990-1992	2000-2002	Aquaculture		Imports 2000-2002	Exports 2000-2002			
				Agri-culture	Indus-try	Dom-estic			1990-1992	2000-2002					
Sub-Saharan Africa	..	6,322	113.4	173	88	4	9	4,126.4	5,159.6	25.4	63.1	812.1	1,862.1	1,995,694	20
Angola	184	13,070	0.3	28	61	16	22	121.3	250.6	..	..	17.5	22.4	30,364	34
Benin	25	3,585	0.3	40	74	11	15	35.3	37.1	..	0.0	7.2	2.3	61,793	21
Botswana	14	8,022	0.1	81	43	19	38	1.0	0.1	..	..	6.9	0.0	2,620	3
Burkina Faso	13	933	0.8	66	88	0	11	7.2	8.5	0.0	0.0	1.4	0.1	8,300	8
Burundi	4	509	0.2	37	82	1	17	20.8	11.8	0.0	0.1	0.1	0.2	7,030	17
Cameroon	286	17,520	1.0	65	74	8	18	70.7	114.4	0.1	0.2	23.7	0.5	24,500	34
Central African Rep	144	36,912	0.0	6	4	19	77	13.2	15.0	0.2	0.1	0.3	0.2	5,410	9
Chad	43	4,857	0.2	30	80	1	19	70.0	84.0	..	..	0.3	0.0	300,000	15
Congo	832	217,915	0.0	11	10	30	59	44.4	43.3	0.2	0.2	19.2	2.2	10,500	43
Congo, Dem Rep	1,283	..	0.4	7	31	16	52	171.7	214.6	0.7	2.6	33.5	0.4	108,400	43
Côte d'Ivoire	81	4,794	0.9	59	65	12	23	88.3	76.4	0.2	1.0	154.3	125.7	19,707	..
Equatorial Guinea	26	51,282	0.1	232	1	16	83	3.6	3.5	..	..	4.2	0.7	9,218	..
Eritrea	6	1,466	0.3	82	95	1	4	..	9.9	..	..	0.2	1.3	14,500	11
Ethiopia	110	1,519	2.6	40	93	6	1	4.6	14.5	0.0	0.0	0.2	0.0	6,272	2
Gabon	164	121,392	0.1	102	40	11	48	22.0	43.7	0.0	0.2	12.4	13.5	8,258	33
Gambia	8	5,472	0.0	24	67	11	22	21.5	36.4	0.0	0.0	0.7	2.8	2,000	61
Ghana	53	2,489	0.5	27	48	15	37	393.9	423.6	0.4	5.7	100.4	74.8	230,000	64
Guinea	226	26,218	1.5	187	90	2	8	49.5	100.2	0.0	0.0	6.6	2.0	10,707	43
Guinea-Bissau	31	20,156	0.1	81	91	1	9	5.2	5.0	..	..	0.2	4.4	2,500	6
Kenya	30	932	1.6	52	64	6	30	187.2	174.9	1.2	0.8	4.2	37.8	59,565	8
Lesotho	3	1,678	0.1	30	19	41	40	0.0	0.0	0.0	0.0	..	..	60	0
Liberia	232	66,533	0.1	36	56	15	28	8.3	11.5	0.0	0.0	2.1	0.1	5,143	26
Madagascar	337	18,826	15.0	937	96	2	3	102.3	136.4	0.7	7.7	10.0	106.9	83,310	17
Malawi	17	1,401	1.0	88	81	5	15	68.9	41.6	0.2	0.6	0.4	0.2	42,922	26
Mali	100	7,458	6.9	582	99	0	1	69.3	103.3	0.0	0.5	1.8	0.4	70,000	13
Mauritania	11	3,826	1.7	642	88	3	9	66.6	81.5	..	..	1.0	99.0	7,944	9
Mozambique	216	11,266	0.6	36	87	2	11	32.5	34.8	0.0	0.2	7.6	98.9	20,000	17
Namibia	18	8,921	0.3	142	63	5	33	374.6	587.4	0.0	0.1	16.5	334.6	2,700	14
Niger	34	2,710	2.2	204	95	1	4	3.0	20.2	0.0	0.0	0.6	2.4	7,983	3
Nigeria	286	2,252	8.0	70	69	10	21	287.5	458.2	13.3	26.9	197.6	17.6	481,264	29
Rwanda	5	613	0.1	10	39	14	48	3.2	6.9	0.1	0.4	0.1	..	5,690	8
Senegal	39	3,811	1.6	169	90	4	6	334.9	393.7	0.0	0.1	1.0	245.5	55,547	44
Sierra Leone	160	30,960	0.4	86	93	2	5	63.6	77.6	0.0	0.0	4.1	13.7	17,990	61
Somalia	14	1,309	3.3	378	100	0	0	24.1	19.4	..	..	0.1	3.1	18,900	..
South Africa	50	1,106	15.3	348	73	10	17	574.4	720.0	4.3	4.1	56.1	291.1	10,500	9
Sudan	65	1,879	37.3	1,187	97	1	3	33.2	56.3	0.2	1.2	0.6	0.3	27,700	2
Tanzania, United Rep	91	2,416	2.0	57	93	1	6	357.1	331.1	0.4	0.4	0.4	107.4	92,529	27
Togo	15	2,930	0.2	36	47	8	45	13.0	22.1	0.1	0.4	10.9	6.3	14,120	40
Uganda	66	2,472	0.3	13	39	15	45	241.6	220.7	0.1	2.7	0.1	54.8	57,862	23
Zambia	105	9,630	1.7	167	76	8	16	66.4	65.6	2.5	4.2	1.9	0.4	23,833	22
Zimbabwe	20	1,547	2.6	207	86	5	10	23.1	13.0	0.1	2.2	4.9	3.4	1,804	4
North America	..	19,992	525.3	1,663	38	48	14	6,908.1	6,071.6	409.1	628.6	11,651.6	6,345.6	303,784	7
Canada	2,902	91,419	46.0	1,494	12	69	20	1,471.7	1,026.2	44.9	151.0	1,371.2	2,883.9	8,696	10
United States	3,069	10,333	479.3	1,682	41	46	13	5,291.2	4,866.7	364.2	477.5	10,268.5	3,210.5	290,000	6
C. America & Caribbean	..	6,924	100.7	603	75	6	18	1,753.9	1,989.7	50.1	147.4	455.2	1,525.4	446,390	9
Belize	19	71,111	0.1	519	0	89	11	2.3	30.4	0.2	4.2	2.3	18.6	1,872	18
Costa Rica	112	26,447	2.7	681	53	17	29	16.8	34.4	1.6	12.7	25.0	129.9	6,510	4
Cuba	38	3,365	8.2	732	69	12	19	147.0	46.6	9.8	27.0	36.4	86.2	11,865	13
Dominican Rep	21	2,367	3.4	405	66	2	32	16.4	14.2	0.6	2.8	60.7	1.5	9,286	14
El Salvador	25	3,815	1.3	205	59	16	25	10.6	21.0	0.4	0.5	9.2	26.4	24,534	6
Guatemala	111	8,788	2.0	176	80	13	6	6.7	28.6	1.0	5.7	10.5	25.4	17,275	3
Haiti	14	1,663	1.0	123	94	1	5	5.1	5.0	..	..	5.9	3.6	4,700	9
Honduras	96	13,513	0.9	133	81	11	8	16.5	12.8	4.4	12.4	13.0	72.8	21,000	2
Jamaica	9	3,513	0.4	159	49	17	34	16.0	5.7	3.3	5.1	47.5	8.5	23,465	17
Mexico	457	4,357	78.2	791	77	5	17	1,297.3	1,388.6	24.6	67.9	165.1	659.1	262,401	8
Nicaragua	197	35,142	1.3	256	83	3	14	5.2	24.8	0.1	5.8	6.6	72.6	14,502	8
Panama	148	46,579	0.8	279	28	5	66	155.2	260.2	3.7	3.1	14.6	304.8	13,062	8
Trinidad and Tobago	4	2,938	0.3	237	6	27	67	12.3	10.6	0.0	0.0	9.2	10.8	7,297	14
South America	..	47,044	164.4	474	68	12	19	15,272.4	16,314.5	198.1	868.6	568.9	5,231.8	784,051	6
Argentina	814	20,941	29.1	784	74	9	16	632.9	928.4	0.4	1.5	58.5	810.7	12,320	4
Bolivia	623	69,378	1.4	167	83	3	13	5.7	5.9	0.3	0.4	6.7	0.0	7,754	3
Brazil	8,233	45,573	59.3	345	62	18	20	762.9	798.6	24.6	210.1	271.3	289.3	290,000	4
Chile	922	57,639	12.5	824	64	25	11	5,851.3	4,122.9	49.5	501.1	49.8	1,867.4	50,873	9
Colombia	2,132	47,469	10.7	254	46	4	50	119.9	131.6	15.6	63.9	74.8	177.4	129,410	5
Ecuador	432	32,747	17.0	1,367	82	5	12	282.1	499.2	100.5	66.2	10.4	651.6	162,870	6
Guyana	241	314,211	1.6	2,163	97	1	2	39.6	50.1	0.1	0.6	2.4	55.9	6,571	38
Paraguay	336	55,833	0.5	89	72	9	20	14.5	25.0	0.1	0.1	1.4	0.1	4,469	4
Peru	1,913	69,395	20.1	776	82	10	8	7,089.7	9,137.2	5.9	8.2	20.9	1,136.1	66,361	25
Suriname	122	277,904	0.7	1,565	93	3	4	8.3	18.4	0.0	0.4	3.5	9.0	3,628	22
Uruguay	139	40,419	3.1	941	96	1	2	120.1	109.0	0.0	0.0	13.9	104.0	4,023	4
Venezuela	1,233	47,122	8.4	345	47	7	45	335.2	430.1	1.3	16.0	55.4	130.4	44,302	..
Oceania	..	54,637	26.2	900	72	10	18	817.5	1,104.2	58.4	122.3	643.2	1,793.6	85,324	9
Australia	492	24,708	23.9	1,250	75	10	15	221.8	193.1	14.4	35.3	529.5	933.5	13,800	7
Fiji	29														

Water Resources and Fisheries: Technical Notes

DEFINITIONS AND METHODOLOGY

Actual Renewable Water Resources, measured in cubic kilometers per year (km^3/year), gives the maximum theoretical amount of water actually available for each country, although in reality a portion of this water may be inaccessible to humans. Actual renewable water resources are defined as the sum of internal renewable resources (IRWR) and external renewable resources (ERWR), taking into consideration the quantity of flow reserved to upstream and downstream countries through formal or informal agreements or treaties and possible reduction of external flow due to upstream water abstraction. IRWR include the average annual flow of rivers and the recharge of groundwater (aquifers) generated from endogenous precipitation—the precipitation occurring within a country's borders. ERWR represent the portion of the country's renewable water resources that is not generated within the country. ERWR include inflows from upstream countries (groundwater and surface water) and a portion of the water of border lakes or rivers.

Per Capita Actual Renewable Water Resources are measured in cubic meters per person per year ($\text{m}^3/\text{person}/\text{year}$). Per capita actual water resources were calculated by WRI using population data from the United Nations Population Division for the year 2004.

Annual Water Withdrawals, measured in cubic kilometers per year, is the gross amount of water extracted from any source, either permanently or temporarily, for a given use. It can be either diverted towards distribution networks or directly used. It includes consumptive use, conveyance losses, and return flow. Total water withdrawal is the sum of estimated water use by the agricultural, domestic, and industrial sectors. It does not include precipitation.

Per Capita Annual Withdrawals were calculated by WRI using national population data from the UN Population Division for the year 2000.

Withdrawals by Sector, expressed as a percentage, refers to the proportion of water used for one of three purposes: agriculture, industry, or domestic uses. All water withdrawals are allocated to one of these three categories. **Agricultural** uses of water primarily include irrigation and, to a lesser extent, livestock. **Industrial** use measures consumption by self-supplied industries not connected to any distribution network for manufacturing, cooling machinery and equipment, producing energy, cleaning and washing manufactured goods, and as a solvent. **Domestic** uses include drinking water plus water withdrawn for homes, municipalities, commercial establishments, and public services (e.g., hospitals).

Freshwater resources data were provided by AQUASTAT, a global database of water statistics maintained by the Food and Agriculture Organization of the United Nations (FAO). AQUASTAT collects its information from a number of sources—national water resources and irrigation master plans; national yearbooks, statistics, and reports; and national or international surveys.

When possible, FAO cross-checks information between countries to improve assessments in countries where information is limited. When several sources give different or contradictory figures, preference is always given to information collected at national or sub-national level. This preference is based on the assumption that no regional information can be more accurate than studies carried out at the country level. Unless proven inaccurate, official rather than unofficial sources were used. In the case of shared water resources, a comparison between countries was made to ensure consistency at river-basin level.

Inland and Marine Fisheries Production, Capture data refer to the nominal catch of fish, crustaceans, molluscs, aquatic mammals, and other aquatic animals taken for commercial, industrial, recreational, and subsistence purposes from marine, brackish, and inland waters. The harvest from aquaculture and other kinds of farming are excluded. Statistics for aquatic plants are also excluded from country totals. Total capture production includes freshwater fish (carp, tilapias, etc.), diadromous fish (river eels, salmon, etc.), marine fish (flounders, cods, redfishes, tunas, mackerels, sharks, etc.) crustaceans (lobster, shrimp, etc.), and molluscs (oyster, clams, squid, etc.). Data include all quantities caught and landed for both food and feed purposes but exclude catch discarded at sea.

Inland and Marine Fisheries Production, Aquaculture data refer to the harvest of fish, molluscs, crustaceans, and other aquatic animals cultivated in marine, inland, or brackish environments. Data do not include capture production. Statistics for aquatic plants are also excluded. Aquaculture is defined by FAO as “the farming of aquatic organisms, including fish, molluscs, crustaceans, and aquatic plants. Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. [It] also implies ownership of the stock being cultivated.” Aquatic organisms that are exploitable by the public as a common property resource are not included in aquaculture production.

Production of fish, crustaceans, and molluscs is expressed in live weight, the nominal weight of the aquatic organisms at the time of harvest. For a more detailed listing of the species mentioned above, refer to the original source at <http://www.fao.org/waicent/faostat/agricult/fishitems-e-e.html>.

Most fisheries statistics are collected by FAO from questionnaires sent to national fisheries agencies. When these data are missing or considered unreliable, FAO estimates fishery production based on regional fishery organizations, project documents, industry magazines, or statistical interpolations. Regional totals represent a sum of available data and may be incomplete.

Trade in Fish and Fisheries Products measures the value of all fisheries products, excluding non-edible shells and aquatic plants, entering (referred to as imports) or leaving (referred to as exports) a country's borders each year through trade. The totals reported here incorporate the same species as the FAO's Yearbook of Fishery Statistics (<ftp://ftp.fao.org/fi/stat/summary/default.htm>). The value of this trade is expressed in millions of U.S. dollars.

In accordance with internationally recommended practice, import statistics include fish caught by foreign fishing craft, whether or not processed on board, landed in domestic ports; export statistics include fish caught by domestic fishing craft, whether or not processed on board, landed in foreign ports. As such, land-bound countries can therefore export marine fish and fish products. Exports are generally on a free-on-board basis (i.e., not including insurance or freight costs). Regional totals are calculated by adding up imports or exports of each country included in that region. The regional totals should not be taken as a net trade for that region, since much trade occurs intra-regionally.

Number of Fishers includes the number of people employed full or part-time in commercial and subsistence fishing (both personnel on fishing vessels and on shore), operating in freshwater, brackish, and marine areas, and in aquaculture production activities. Data on people employed in fishing and aquaculture are collected by the FAO through annual questionnaires submitted to the national reporting offices of the member countries. When possible, other national and regional published sources are also used to estimate figures.

Fish Protein as a Percent of Animal Protein Supply is defined as the quantity of protein from both freshwater and marine fish, seafood, and derived products available for human consumption as a percentage of all available animal protein. FAO calculates per capita protein supply for all products, including fish, in its



collection of Supply/Utilization Accounts (SUAs) and food balance sheets. For each product, the SUA traces supplies from production, imports, and stocks to its utilization in different forms—addition to stocks; exports; animal feed; seed; processing for food and non-food purposes; waste (or losses); and lastly as food available for human consumption, where appropriate. For more detailed information, please refer to the following article: “Supply Utilization Accounts and Food Balance Sheets in the Context of a National Statistical System,” maintained on-line by FAO at <http://www.fao.org/es/ESS/Suafbs.htm>.

FREQUENCY OF UPDATE BY DATA PROVIDERS

Most freshwater data are not available in a time series and are updated intermittently; the global data set maintained on-line by AQUASTAT contains data collected over a time span of up to 30 years. Fisheries production and trade data are updated annually by the Fishery Information, Data and Statistics Unit (FIDI) of FAO. Number of fishers data are updated by FIDI every 2–4 years. The FAO updates the data on fish protein annually; the most recent updates incorporated in these tables are from July 2004.

DATA RELIABILITY AND CAUTIONARY NOTES

Water Resources and Withdrawals: While AQUASTAT represents the most complete and careful compilation to date of statistics on country-level water resources, the quality of the primary information on which it relies varies. Information sources are numerous but rarely complete. Some governments will keep internal water resources information confidential because they are competing for water resources with bordering countries. Many instances of water scarcity are highly localized and are not reflected in national statistics. In addition, the accuracy and reliability of information vary greatly among regions, countries, and categories of information, as does the year in which the information was gathered. All data should be considered order-of-magnitude estimates.

Actual Renewable Water Resources: Exchanges between countries are complicated when a river crosses the same border several times. Part of the incoming water flow may thus originate from the same country in which it enters, making it necessary to calculate a “net” inflow to avoid double counting of resources. In addition, the water that is actually accessible to humans for consumption is often much smaller than the total renewable water resources indicated in the data table.

Actual Renewable Water Resources Per Capita: Water resources data are from a different set of years than the population data used in the calculation. While the water resources data are usually long-term averages, inconsistencies may arise when combining it with 2000 population data. For more information about the collection methodology and reliability of the UN population data, please refer to the notes accompanying the Demographics and Education table.

Total Fisheries Production and Trade in Fish and Fisheries Products: While FISHSTAT provides the most extensive global time series of fishery statistics since 1950, there are some problems associated with the data. Country-level data are often submitted with a 1–2 year delay. Statistics from smaller artisanal and subsistence fisheries are particularly sparse. While these statistics provide a good overview of regional fisheries trends, data should be used with caution and supplemented with estimates from regional organizations, academic literature, expert consultations, and trade data. For more information, consult *Fishery Statistics Reliability and Policy Implications*, published by the FAO Fisheries Department and available on-line at <http://www.fao.org/DOCREP/FIELD/006/Y3354M/Y3354M00.HTM>.

Number of Fishers data are gross estimates. Many countries do not submit data on fishers, or submit incomplete information; some countries have occasionally omitted fish farmers from the total or included subsistence and sport fishers, as well as family members living on fishing. Apart from the gaps and the heavy presence of estimates due to non-reporting, the information provided by national statistical offices may not be strictly comparable due to the utilization of different definitions and methods in the assessment of the number of people engaged in fishing and aquaculture. FAO recognizes that these statistics are incomplete and may not accurately reflect the current level of employment in the fishing sector.

Fish Protein as a Percent of Total Protein Supply: Food supply is different from actual consumption. Figures do not account for discards (including bones) and losses during storage and preparation. Supply data should only be used to assess food security if they are combined with an analysis of food availability and accessibility. Nonetheless, the data are subject to “vigorous consistency checks.” According to FAO, the food supply statistics, “while often far from satisfactory in the proper statistical sense, do provide an approximate picture of the overall food situation in a country and can be useful for economic and nutritional studies, for preparing development plans and for formulating related projects.” For more information see *Food Balance Sheets: A Handbook*, maintained on-line by FAO at <http://www.fao.org/DOCREP/003/X9892E/X9892E00.htm>.

SOURCES

Renewable Water Resources and Water Withdrawals: Food and Agriculture Organization of the United Nations (FAO), Water Resources, Development and Management Service. 2003. AQUASTAT Information System on Water and Agriculture. Rome: FAO. Available at <http://www.fao.org/waigent/faoinfo/agricult/agl/aglw/aquastat/main/index.stm>.

Population Data (for per capita calculations): United Nations Population Division. 2003. World Population Prospects: The 2002 Revision. New York: United Nations. Data set on CD-ROM.

Total Fisheries Production and Trade in Fish and Fisheries Products: Food and Agriculture Organization of the United Nations (FAO), Fishery Information, Data and Statistics Unit. 2004. FISHSTAT Plus: Universal software for fishery statistical time series, Version 2.3. Rome: FAO. Available at <http://www.fao.org/fi/statist/FISOFT/FISHPLUS.asp>.

Number of Fishers: Food and Agriculture Organization of the United Nations (FAO), Fishery Information, Data and Statistics Unit (FIDI). 2000. Rome: FAO. More information available at <http://www.fao.org/fi/statist/fisoft/fishers.asp>.

Fish Protein as a Percent of Total Animal Protein Supply: Food and Agriculture Organization of the United Nations (FAO). FAOSTAT on-line statistical service. 2004. Rome: FAO. Available at <http://apps.fao.org>.



Biodiversity

Sources: United Nations Environment Programme - World Conservation Monitoring Centre, Ramsar Convention Bureau, United Nations Educational, Scientific, and Cultural Organization, International Union for Conservation of Nature and Natural Resources

	Protected Areas												Number of Known and Threatened Species			Net Legal Trade in Selected Wildlife Products as Reported by CITES (c)		
	All Areas Under IUCN Management		Marine Areas, IUCN Categories I-V, 2004 (a)		Wetlands of International Importance, 2005		Biosphere Reserves, 2004		Mammals		Birds		Plants (b)		Live Primates	Live Parrots	Animal Skins (d)	
	Total Area (1000 ha)	Percent of Total Land Area	I-V, Number 2004	Number 2005	Number 2004	Number 2005	Known Species 2004	Threatened 2003	Known Species 2004	Threatened 2003	Known Species 2004	Threatened 2003	Primates 2002	Parrots 2002	Animal Skins (d) 2002			
	806,722 e	6.1 e	3,459 e	1,420	459	4,629 f	..	10,000 g	..	270,000 h			
World	806,722 e	6.1 e	3,459 e	1,420	459	4,629 f	..	10,000 g	..	270,000 h		
Asia (excl. Middle East)	191,450	7.9	661	145 i	67	..	..	..	..	..	..	(19,001)	43,634	(723,299)
Armenia	299	10.1	..	2	..	78	9	302	12	3,553	1	..	..	0		
Azerbaijan	394	4.6	3	3	..	82	11	364	11	4,300	0	2	(1)	0				
Bangladesh	66	0.5	5	2	..	131	22	604	23	5,000	12	..	335	0				
Bhutan	1,181	29.6	..	..	..	92	21	625	18	5,468	7	..	..	0
Cambodia	3,750	20.5	2	3	1	127	23	521	24	..	31	..	..	(1)		
China	105,527	11.3	41	30	26	502	80	1,221	82	32,200	443	(14,322)	(53,326)	45,767				
Georgia	290	4.2	2	2	..	98	11	268	8	4,350	0	4	(5)	670				
India	15,291	4.9	120	19	4	422	85	1,180	79	18,664	246	4	75	(95)				
Indonesia	8,607	4.5	116	2	6	667	146	1,604	121	29,375	383	(3,250)	15,817	(873,858)				
Japan	3,123	8.4	164	13	4	171	37	592	53	5,565	12	5,978	17,489	292,287				
Kazakhstan	7,742	2.9	1	2	..	145	15	497	23	6,000	1	12	3	0				
Korea, Dem People's Rep	316	2.6	..	..	2	105	12	369	22	2,898	3	4	59	45,256		
Korea, Rep	350	3.6	7	2	2	89	12	423	34	2,898	0	194	48	30,095				
Kyrgyzstan	608	3.1	..	1	2	58	6	207	4	4,500	1	..	..	0		
Lao People's Dem Rep	..	..	..	..	..	215	30	704	21	8,286	19	..	..	0
Malaysia	1,366	4.1	67	4	..	337	50	746	40	15,500	683	196	3,791	(491,605)				
Mongolia	20,992	13.5	..	11	4	140	13	387	22	2,823	0	..	..	0		
Myanmar	174	0.3	1	1	..	288	39	1,047	41	7,000	38	(2)	3	0				
Nepal	1,127	7.6	..	4	..	203	29	864	31	6,973	7	..	2	(2)				
Pakistan	3,509	4.0	5	19	1	195	17	625	30	4,950	2	..	(476)	(3)				
Philippines	1,513	5.1	38	4	2	222	50	590	70	8,931	212	(2,654)	(591)	11				
Singapore	3	5.2	2	..	..	73	3	400	10	2,282	54	10	29,328	81,980		
Sri Lanka	637	9.6	19	3	3	123	21	381	16	3,314	280	5	199	0				
Tajikistan	2,603	18.3	..	5	..	76	7	351	9	5,000	2	..	..	0		
Thailand	6,516	12.7	19	10	4	300	36	971	42	11,625	84	310	15,650	103,742				
Turkmenistan	1,883	4.0	..	1	1	103	12	318	13	..	0	..	..	0		
Uzbekistan	2,050	4.6	..	1	1	91	7	343	16	4,800	1	..	20	0				
Viet Nam	1,099	3.4	12	1	4	279	41	837	41	10,500	145	(5,142)	2	(133,885)				
Europe	137,694	6.1	761	788 i	172	..	..	..	..	..	..	9,783	137,082	1,429,081
Albania	56	2.0	7	2	..	73	1	303	9	3,031	0	..	..	0		
Austria	2,346	28.0	..	17	5	101	5	412	8	3,100	3	7	868	7,969				
Belarus	1,304	6.3	..	7	3	71	6	226	4	2,100	0	8	..	1				
Belgium	83	2.7	2	9	..	92	9	427	10	1,550	0	1,135	(2,138)	64				
Bosnia and Herzegovina	27	0.5	..	1	..	78	8	312	8	..	1	..	(2)	0				
Bulgaria	593	5.4	1	10	16	106	12	379	11	3,570	0	(1)	26	36				
Croatia	339	6.0	18	4	1	96	7	365	9	4,288	0	11	56	26				
Czech Rep	196	2.5	..	11	7	88	6	386	9	1,900	4	31	(24,481)	8				
Denmark	933	21.8	72	38 j	1	81	4	427	10	1,450	3	(1)	(905)	2,917				
Estonia	350	7.6	..	11	1	67	4	267	3	1,630	0	4	0	130				
Finland	1,044	3.1	14	11	2	80	3	421	10	1,102	1	(1)	1	81				
France	1,624	3.0	83	22 j	10	148	16	517	15	4,630	2	3,373	30,981	272,532				
Germany	10,445	29.3	40	32	14	126	9	487	14	2,682	12	705	3,602	266,995				
Greece	239	1.8	14	10	2	118	11	412	14	4,992	2	269	17,170	2,343				
Hungary	821	8.8	..	23	5	88	7	367	9	2,214	1	37	(610)	(2,744)				
Iceland	476	4.7	9	3	..	33	7	305	0	377	0	..	97	1				
Ireland	78	1.1	12	45	2	63	4	408	8	950	1	(2)	42	2				
Italy	2,160	7.2	55	46	8	132	12	478	15	5,599	3	241	51,086	524,785				
Latvia	818	12.7	1	6	1	68	4	325	8	1,153	0	(2)	1	43				
Lithuania	592	9.2	3	5	..	71	5	227	4	1,796	0	12	236	0				
Macedonia, FYR	180	7.1	..	1	..	89	9	291	9	3,500	0	..	(176)	0				
Moldova, Rep	47	1.4	..	2	..	50	4	203	8	1,752	0	..	98	0				
Netherlands	175	4.9	10	49 j	..	95	9	444	11	1,221	0	819	(15,041)	45				
Norway	1,952	6.1	18	37 j	..	83	9	442	6	1,715	2	(1)	1,849	32				
Poland	3,417	11.0	6	8	9	110	12	424	12	2,450	4	19	649	196				
Portugal	399	4.4	26	12	1	105	15	501	15	5,050	15	11	19,732	0				
Romania	476	2.0	8	2	3	101	15	365	13	3,400	1	44	16	79				
Russian Federation	90,223	5.4	47	35	34	296	43	645	47	11,400	7	146	780	1,338				
Serbia and Montenegro	327	3.2	2	5	2	96	10	381	10	4,082	1	550	(1,241)	220				
Slovakia	357	7.3	..	13	4	87	7	332	11	3,124	2	12	(621)	41				
Slovenia	293	14.4	2	2	2	87	7	350	7	3,200	0	..	878	456				
Spain	4,059	8.0	38	49	27	132	20	515	20	5,050	14	101	34,436	304,775				
Sweden	4,364	9.8	95	51	1	85	5	457	9	1,750	3	(3)	(784)	6				
Switzerland	1,185	28.7	..	11	2	93	4	382	8	3,030	2	(13)	174	55,422				
Ukraine	1,937	3.3	17	33	6	120	14	325	13	5,100	1	5	1,264	160				
United Kingdom	3,731	15.3	153	159 j	9	103	10	557	10	1,623	13	2,266	17,798	(8,970)				
Middle East & N. Africa	33,360	2.7	91	77 i	26	..	..	..	..	..	..	194	40,945	63,360
Afghanistan	219	0.3	..	..	..	144	12	434	17	4,000	1	..	..	0
Algeria	11,864	5.1	4	26	6	100	12	372	11	3,164	2	..	3	0				
Egypt	4,536	4.6	17	2	2	118	6	481	17	2,076	2	..	39	55,111				
Iran, Islamic Rep	10,376	6.4	7	22	9	158	21	498	18	8,000	1	..	(1)	0				
Iraq	1	0.0	..	..	..	102	9	396	18	..	0	..	(1)	0	
Israel	379	18.4	19	2	1	115	13	534	18	2,317	0	(250)	9,873	(464)				
Jordan	913	10.2	1	1	1	93	7	397	14	2,100	0	265	4,980	0				
Kuwait	0	0.0	4	..	..	23	1	358	12	234	0	..	2,618	0		
Lebanon	4	0.3	1	4	..	70	5	377	10	3,000	0	20	1,415	1,651				
Libyan Arab Jamahiriya	122	0.1	3	2	..	87	5	326	7	1,825	1	78	3	0				
Morocco	326	0.8	4	4	2	129	12	430	13	3,675	2	(3)	7	19				
Oman	22	0.1	4	..	..	74	12	483	14	1,204	6	..	384	0		
Saudi Arabia	3,922	2.0	3	..	..	94	9	433	17	2,028	3	28	7,790	3,108		
Syrian Arab Rep	..	..	..	1	..	82	3	350	11	3,000	0	..	1	0	
Tunisia	28	0.2	2	1	4	78	10	360	9	2,196	0	18	75	15				
Turkey	571	0.7	14	9	..	145	15	436	14	8,650	3	34	2,211	3,847				
United Arab Emirates	0	0.0	..	..	..	30	5	268	11	..	0	2	1,112	60	
Yemen	..	..														

For more information, please visit <http://earthtrends.wri.org/datatables/biodiversity>

	Protected Areas											Net Legal Trade in Selected Wildlife Products as Reported by CITES (c)		
	All Areas Under IUCN Management Categories I-V, 2004 (a)		Marine Areas, IUCN Categories		Wetlands of International Importance, Number 2005		Biosphere Reserves, Number 2004		Number of Known and Threatened Species					
	Total Area (1000 ha)	Percent of Total Land Area	I-VI, Number 2004	Importance, Number 2005	Reserves, Number 2004	Mammals		Birds		Plants (b)		Live Primates 2002	Live Parrots 2002	Animal Skins (d) 2002
						Known Species 2004	Threatened 2003	Known Species 2004	Threatened 2003	Known Species 2004	Threatened 2003			
Sub-Saharan Africa	142,025	5.9	153	102 i	50	..	..	..	..	..	(8,916)	(198,174)	(383,039)	
Angola	5,271	4.2	4	..	..	296	11	930	20	5,185	26	(1)	(4)	0
Benin	778	6.7	..	2	2	159	6	485	2	2,500	14	..	2	(2,500)
Botswana	10,499	18.1	..	1	..	169	6	570	9	2,151	0	2	50	4
Burkina Faso	3,135	11.5	..	3	2	129	6	452	2	1,100	2	..	0	0
Burundi	146	5.4	..	1	..	116	7	597	9	2,500	2	..	(6)	0
Cameroun	3,456	7.4	2	..	3	322	42	936	18	8,260	334	(3)	(16,490)	(20)
Central African Rep	7,320	11.8	..	..	2	187	11	663	3	3,602	15	(1)	(10)	(4)
Chad	11,494	9.0	..	2	..	104	12	531	5	1,600	2	1	2	(43,538)
Congo	4,861	14.1	..	1	2	166	14	597	4	6,000	35	..	(8,201)	0
Congo, Dem Rep	11,868	5.1	..	2	3	430	29	1,148	30	11,007	65	..	(5,966)	0
Côte d'Ivoire	1,953	6.1	3	1	2	229	23	702	11	3,660	105	(4)	(4,017)	0
Equatorial Guinea	455	16.8	3	3	..	153	17	418	6	3,250	61	..	..	0
Eritrea	501	4.1	..	..	..	70	9	537	7	..	3	..	..	0
Ethiopia	5,518	4.9	..	..	..	288	35	839	20	6,603	22	..	(1)	(207)
Gabon	80	0.3	2	3	1	166	11	632	5	6,651	107	6	(28)	(5)
Gambia	1	0.0	5	1	..	133	3	535	2	974	4	60	..	0
Ghana	1,104	4.6	..	6	1	249	15	729	8	3,725	117	(11)	2	(6)
Guinea	51	0.2	..	12	4	215	18	640	10	3,000	22	(27)	(10,068)	(10)
Guinea-Bissau	..	..	..	1	1	101	5	459	1	1,000	4	(3)	(4)	0
Kenya	3,485	6.0	11	4	6	407	33	1,103	28	6,506	103	1	(1)	(2,461)
Lesotho	7	0.2	..	1	..	59	3	311	7	1,591	1	..	..	0
Liberia	129	1.3	1	1	..	183	20	576	11	2,200	46	..	(1,656)	(1)
Madagascar	1,404	2.4	7	3	3	165	49	262	34	9,505	276	2	(3,754)	(8,036)
Malawi	1,059	8.9	..	1	1	207	7	658	13	3,765	14	..	6	(60)
Mali	4,532	3.6	..	1	1	134	12	624	5	1,741	6	..	(12,750)	(56,413)
Mauritania	250	0.2	5	3	..	94	7	521	5	1,100	0	..	0	0
Mozambique	3,285	4.2	6	1	..	228	12	685	23	5,692	46	..	(19)	(291)
Namibia	3,214	3.9	4	4	..	192	10	619	18	3,174	24	2	828	(101)
Niger	9,694	8.2	..	7	2	123	10	493	2	1,460	2	(7)	1	0
Nigeria	3,254	3.6	..	1	1	290	25	899	9	4,715	170	(3)	0	(4)
Rwanda	194	7.7	..	..	1	206	13	665	9	2,288	3	..	..	0
Senegal	2,096	10.7	7	4	3	191	11	612	5	2,086	7	(1)	(20,245)	(5)
Sierra Leone	145	2.0	..	1	..	197	12	626	10	2,090	47	..	(100)	0
Somalia	180	0.3	1	..	..	182	15	642	13	3,028	17	..	..	0
South Africa	6,460	5.3	27	17	4	320	29	829	36	23,420	75	(678)	(114,898)	(49,156)
Sudan	8,616	3.5	1	..	2	302	16	952	10	3,137	17	(90)	(154)	(107,111)
Tanzania, United Rep	13,786	14.6	8	4	3	375	34	1,056	37	10,008	239	(844)	(39)	(1,384)
Togo	429	7.5	..	2	..	175	7	565	2	3,085	10	(24)	(508)	(1,500)
Uganda	1,763	7.3	..	2	1	360	29	1,015	15	4,900	38	3	(24)	(2)
Zambia	6,366	8.4	..	2	..	255	11	770	12	4,747	8	3	100	(27,609)
Zimbabwe	3,103	7.9	..	..	..	222	8	661	10	4,440	17	1	(465)	(88,934)
North America	131,738	6.7	659	57 i	60	..	..	..	..	..	..	20,739	36,241	(25,113)
Canada	52,069	5.3	219	36	13	211	16	472	19	3,270	1	1,209	3,473	(12,497)
United States	79,664	8.4	399	21	47	468	40	888	71	19,473	240	19,530	32,759	(12,616)
C. America & Caribbean	6,041	2.2	397	101 i	32	..	..	..	..	..	..	(1,525)	(2,370)	595,983
Belize	633	28.6	22	1	..	147	5	544	3	2,894	30	(2)	1	0
Costa Rica	477	9.3	21	11	2	232	13	838	18	12,119	110	4	1,918	0
Cuba	96	0.9	36	6	6	65	11	358	18	6,522	163	(3)	(20,103)	0
Dominican Rep	1,113	22.9	14	1	1	36	5	224	16	5,657	30	57	526	0
El Salvador	..	..	3	1	..	137	2	434	3	2,911	25	(7)	(6)	(1)
Guatemala	594	5.4	3	4	2	193	7	684	10	8,681	85	7	2,270	0
Haiti	7	0.3	..	..	..	41	4	271	15	5,242	28	..	..	0
Honduras	529	4.7	18	5	1	201	10	699	6	5,680	111	..	1,429	0
Jamaica	0	0.0	4	1	..	35	5	298	12	3,308	208	..	12	0
Mexico	1,205	0.6	37	55	16	544	72	1,026	57	26,071	261	341	12,152	602,606
Nicaragua	777	6.0	5	8	2	181	6	632	8	7,590	39	2	(5,038)	(4)
Panama	483	6.5	14	4	2	241	17	904	20	9,915	195	..	2,580	(6,629)
Trinidad and Tobago	24	4.8	9	1	..	116	1	435	2	2,259	1	..	308	0
South America	106,018	5.9	196	76 i	40	..	..	..	..	..	..	(1,518)	(46,218)	(917,236)
Argentina	5,911	2.1	29	13	11	375	32	1,038	55	9,372	42	3	(16,517)	(230,030)
Bolivia	12,082	11.1	..	8	3	361	26	1,414	30	17,367	70	2	..	(33,720)
Brazil	32,866	3.9	82	8	5	578	74	1,712	120	56,215	381	(4)	983	2,769
Chile	2,650	3.5	27	9	7	159	22	445	32	5,284	40	13	167	103
Colombia	9,786	8.6	13	3	5	467	39	1,821	86	51,220	222	3	9	(547,545)
Ecuador	2,308	9.3	4	11	3	341	34	1,515	69	19,362	..	1	..	1
Guyana	486	2.3	..	..	..	237	13	786	3	6,409	23	(918)	(12,264)	(1,000)
Paraguay	1,391	3.5	..	6	1	168	11	696	27	7,851	10	..	(6,552)	(91,317)
Peru	4,010	3.1	3	10	3	441	46	1,781	94	17,144	274	(298)	(3,301)	(197)
Suriname	1,846	12.7	7	1	..	203	12	674	0	5,018	27	(318)	(9,859)	0
Uruguay	30	0.2	4	2	1	118	6	414	24	2,278	1	2	(1,004)	(83)
Venezuela	31,357	34.2	19	5	1	353	26	1,392	25	21,073	67	(4)	2,120	(16,217)
Oceania	58,396	6.9	541	74 i	12	..	..	..	..	..	..	247	(11,136)	(38,122)
Australia	51,895	6.7	339	64	12	376	63	851	60	15,638	56	266	(95)	(10,147)
Fiji	16	9.9	15	..	..	15	5	112	13	1,518	66	..	18	(1)
New Zealand	6,401	24.0	76	5	..	73	8	351	74	2,382	21	(24)	(1,459)	106
Papua New Guinea	7	0.0	14	2	..	260	58	720	33	11,544	142	..	..	(28,080)
Solomon Islands	..	..	1	..	..	72	20	248	21	3,172	16	..	(9,594)	0
Developed	353,555	6.3	2,010	963 i	..	..	..	..	..	..	..	35,832	84,241	1,637,264
Developing	454,467	5.9	1,430	464 i	..	..	..	..	..	..	..	(35,821)	(84,241)	(1,635,648)

a. Extent of protected areas may include marine components that artificially inflate the percentage of land area protected. b. Total plant species refer to vascular plants only. Threatened plant species include both vascular plants and mosses. c. CITES trade is expressed as the balance of imports minus exports; negative numbers represent net exports. d. Trade in animal skins includes the skins of crocodiles, wild cats, lizards, and snakes. e. Global totals were calculated by WRI. f. Global estimate is from Wilson and Reeder's *Mammal Species of the World*, 1993. g. Estimate from Birdlife International's *Avibase* database. h. 1992 estimate from *Scientific American*. i. Transboundary sites may be included more than once in regional totals. See technical notes for full details. j. Includes sites in overseas territories.

VARIABLE DEFINITIONS AND METHODOLOGY

A **Protected Area** is defined by the World Conservation Union (IUCN) as “an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.” Since September 2002 the World Database on Protected Areas (WDPA) consortium has been working to produce an improved and updated database, available to the public and maintained by the United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC). The WDPA contains summary information for over 100,000 sites, including the legal designation, name, IUCN Management Category, size in hectares, location (latitude and longitude), and year of establishment. WRI calculated protected area data using the 2004 WDPA database.

IUCN categorizes protected areas by management objective and has identified six distinct categories of protected areas. WRI has calculated **Total Area** in thousand hectares and **Percent of Land Protected** for categories I-V.

Category Ia. Strict nature reserve: a protected area managed mainly for scientific research and monitoring; an area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features, and/or species.

Category Ib. Wilderness area: a protected area managed mainly for wilderness protection; a large area of unmodified or slightly modified land and/or sea retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

Category II. National park: a protected area managed mainly for ecosystem protection and recreation; a natural area of land and/or sea designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations; (b) exclude exploitation or occupation inimical to the purposes of designation of the area; or (c) provide a foundation for spiritual, scientific, educational, recreational, and visitor opportunities, all of which must be environmentally and culturally compatible.

Category III. Natural monument: a protected area managed mainly for conservation of specific natural features; an area containing one or more specific natural or natural/cultural features that is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities, or cultural significance.

Category IV. Habitat/species management area: a protected area managed mainly for conservation through management intervention; an area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Category V. Protected landscape/seascape: a protected area managed mainly for landscape/seascape conservation and recreation; an area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological, and/or cultural value, and often with high biological diversity.

Category VI. Managed mainly for the sustainable use of natural ecosystems. These areas contain predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while also providing a sustainable flow of natural products and services to meet community needs.

IUCN defines a **Marine Protected Area (MPA)** as: “any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.”

These MPAs include areas that are fully marine or littoral. “Littoral” is defined as any site which is known to incorporate at least some intertidal area.

Many MPAs have large terrestrial areas. The extent of the marine portion of most protected areas is rarely documented. The degree of protection varies from one country to another, and may bear little relationship to the legal status of any site. The total number of marine areas in IUCN categories I-VI is shown in this table.

Wetlands of International Importance, or Ramsar sites, are defined under the Wetlands Convention, signed in Ramsar, Iran, in 1971. In order to qualify as a Ramsar site, an area must have “international significance in terms of ecology, botany, zoology, limnology or hydrology.” The Convention on Wetlands is an inter-governmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. As of January 2005 there were 1420 Ramsar sites in 146 countries with an overall extent of 123,914,362 hectares.

Biosphere Reserves are terrestrial and coastal environments recognized under United Nations Educational, Scientific, and Cultural Organization's (UNESCO's) Man and the Biosphere Programme. Selected for their value to conservation, they are intended to foster the scientific knowledge and skills necessary for improving the balance between people and nature, and for promoting sustainable development. Ideally, biosphere reserves perform three main roles: (a) conservation in situ of natural and semi-natural ecosystems and landscapes; (b) the establishment of demonstration areas for ecologically and socio-culturally sustainable resource use; and (c) the provision of logistic support for research, monitoring, education, training, and information exchange. Biosphere reserves normally consist of three elements: a minimally disturbed core area for conservation and research; a buffer zone where traditional land uses, research, and ecosystem rehabilitation may be permitted; and a transition area. Biosphere reserves are nominated by national governments and remain under the sovereign jurisdiction of the state where they are located. As of November 2004 there were 459 biosphere reserves in 97 countries.

The **Total Number of Known Species** refers to the total number of a particular type of species in a given country. Data on **known mammals** exclude marine mammals. Data on **known birds** include only birds that breed in that country, not those that migrate or winter there. The number of **known plants** includes higher plants only: ferns and fern allies, conifers and cycads, and flowering plants.

The number of known species is collected by WCMC from a variety of sources, including, but not limited to, national reports from the Convention on Biodiversity, other national documents, independent studies, and other texts. Data are updated on a continual basis as they become available; however, updates vary widely by country. While some countries (WCMC estimates about 12) have data that were updated in the last six months, other species estimates have not changed since the data were first collected in 1992.

The **Number of Threatened Species** listed for all countries includes all species that are “critically endangered, endangered, or vulnerable” as defined by the IUCN, but excludes introduced species, species whose status is insufficiently known (categorized by IUCN as “data deficient”), those known to be extinct, and those for which status has not been assessed (categorized by IUCN as “not evaluated”). Species are classified as vulnerable or endangered if they face a risk of extinction in the wild in the immediate future (critically endangered), in the near-term (endangered), or in the medium-term (vulnerable). Threat categories are assigned based on total population size, distribution, and rates of decline. **Threatened birds** include breeding bird species plus all species that are known to migrate or winter in a given country. Where possible, **threatened mammals** include marine mammals.

Net Legal Trade in Selected Wildlife Products is the balance of imports minus exports of live primates, live parrots, and animal skins reported by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Negative values represent net exports. **Live primates** includes all species of monkeys, apes, and prosimians listed under CITES that were traded live in 2002. **Live parrots** includes individuals from the Psittaciformes species listed under CITES that were traded live in 2002. **Animal skins** includes whole skins of all crocodile, cat, lizard, and snake species that were traded in 2002. Data are obtained from trade records submitted by parties to the CITES convention and compiled by the secretariat in the CITES Trade Database.



International trade in wildlife and wildlife products, worth billions of dollars annually, causes serious declines in the numbers of many species of animals and plants. In response, CITES entered into force in 1975 with the purpose of protecting wildlife against overexploitation and preventing international trade from threatening species with extinction. Species are listed in appendices to CITES according to their degree of rarity and the threat posed by trade. International trade in either the listed species themselves or in products derived from the species requires permits or certificates for export, import, and re-export.

FREQUENCY OF UPDATE BY DATA PROVIDERS

Protected Areas data are updated annually by the WDPA. **Wetlands of International Importance** and **Biosphere Reserves** information is updated several times a year as new sites are added. Data for **Known Species** are updated when new information is provided to WCMC (see above). **Threatened Species** data are updated by IUCN on a continual basis. Species trade data are published in annual reports; the data presented here were published in 2004.

DATA RELIABILITY AND CAUTIONARY NOTES

Protected Areas: Due to variations in consistency and methodology of collection, data on protected areas are highly variable among countries. Some countries update their information with greater regularity or have more accurate data on extent of coverage. Many countries have an underreported number and/or extent of protected areas within their borders. Please see <http://parksdata.conserveon-line.org> for the latest revision.

Biosphere Reserves and Wetlands of International Importance: Reserves can be continuous or overlapping. Regional wetland totals may include some double counting of sites that are contained in more than one country. A full listing of these sites is available at <http://www.unesco.org/mab/BR-WH.htm> and at <http://www.unesco.org/mab/BR-Ramsar.htm>.

Number of Known Species: Values are preliminary estimates based on a compilation of available data from a large variety of sources. They are not based on species checklists. Data have been collected over the last decade without a consistent approach to taxonomy. This can result in significant variations in data quality among countries. Additionally, while the number of species in each country does change, not all countries have been updated; some data may not reflect recent trends. At best, only about 2% of the total species of the world are represented in the UNEP-WCMC Species Database. For this reason, it is important to recognize that numbers of known species in this table are vast underestimates of the actual species worldwide. Data for plant species are less reliable and consistent than data for birds and mammals. Global estimates were not obtained from UNEP-WCMC; see below for citations.

Number of Species Threatened: The total number of threatened species in species groups worldwide are frequently underestimated. For all species groups, there are many species that have yet to be described and whose status is yet unknown. In addition, while threat assessments have been conducted for all described species of mammals and birds, only a small portion of described plant species have been assessed.

Net Legal Trade in Selected Wildlife Products: Data on net exports and net imports as reported by CITES correspond to legal international trade and are based on permits issued, not actual items traded. Figures may be overestimates if not all permits are used that year. Some permits issued in one year are used at a later date;

therefore, numbers of exports and imports may not match exactly for any given year. Species traded within national borders and illegal trade in wildlife and wildlife products are not reflected in these figures. CITES trade data also do not reflect legal trade between non-CITES members. In addition, data on mortality of individuals during capture or collection, transit, or quarantine are also not reflected in these numbers.

SOURCES

Protected Areas (IUCN management categories, marine protected areas): United Nations Environment Programme - World Conservation Monitoring Centre (UNEP-WCMC). 2004. World Database on Protected Areas (WDPA). CD-ROM. Cambridge, U.K. Available at <http://sea.unepwcmc.org/wdbpa/download/wdpa2004/index.html>.

Ramsar Sites (Wetlands of International Importance): Ramsar Convention Bureau, Gland, Switzerland. Available at <http://ramsar.org/sitelist.pdf>.

Biosphere Reserves: United Nations Educational, Scientific, and Cultural Organization (UNESCO), Man and the Biosphere Programme, UNESCO-MAB Biosphere Reserve Directory, available at <http://www.unesco.org/mab/wnbr.htm>.

Known Species of Mammals, Plants, and Breeding Birds: United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC). 2004. Species Data (unpublished, September 2004). Cambridge, England: UNEP-WCMC. Web site available at <http://www.unep-wcmc.org>.

Known Species of Mammals, Global Total: Wilson, D. E., and D. M. Reeder (eds). 1993. *Mammal Species of the World*. Washington, DC: Smithsonian Institution Press.

Known Species of Birds, Global Total: LePage, D. 2004. *Avibase: The World Bird Database*. Port Rowan, Ontario: Bird Studies Canada. Available on-line at <http://www.bsc-eoc.org/avibase/avibase.jsp>.

Known Species of Plants, Global Total: May, R.M. 1992. "How many species inhabit the Earth?" *Scientific American* 267(4), 18-24.

Threatened Species of Mammals, Plants and Birds: World Conservation Union (IUCN). 2003. 2003 *IUCN Red List of Threatened Species*. Cambridge, UK: IUCN. Available at <http://www.redlist.org/info/tables/table5.html>.

International Legal Net Trade Reported by CITES: United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC). 2004. *Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) annual report data, World Conservation Monitoring Centre (WCMC) CITES Trade Database*. Cambridge, U.K. Available at <http://www.cites.org>.



Land Use and Human Settlements

Sources: Food and Agriculture Organization of the United Nations, University of Maryland, United Nations Environment Programme, United Nations Population Division, World Bank, United Nations Human Settlements Programme

	Total Land Area (1000 ha) 2002	Land Area Classifications Percent of Total Land Area That Is:										Population Density (people per km ²) 2000	Urban Population as a Percent of Total		Percent of Population Living in Cities With More Than		Percent of Urban Population Living in Slum Conditions 2001			
		Forested				Agricultural							Drys- lands (c)	2000	1990	100,000 People 2002		1 Million People 2002		
		MODIS Satellite (a) Imagery, 2000		FAO (b) Estimates, >10% Cover		Arable and Permanent Cropland		Permanent Pasture		2002	1992								2002	1992
		>50% Cover	>10% Cover	2000	1990	2002	1992	2002	1992											
World	13,066,880	24	50	29	30	12	12	27	26	..	45	47	43	..	..	32		
Asia (excl. Middle East)	2,406,300	21	38	20	20	21	20	34	34	..	135	35	30	19	12	40				
Armenia	2,820	9	23	12	10	20	20	30	24	98	104	65	67	56	47	2				
Azerbaijan	8,260	8	27	13	11	24	22	32	26	84	94	51	54	29	25	7				
Bangladesh	13,017	11	35	9	8	65	64	5	5	0	958	23	20	13	10	85				
Bhutan	4,700	61	73	64	64	4	3	9	7	0	44	8	6	0	0	44				
Cambodia	17,652	47	82	52	55	22	22	8	8	0	73	17	13	11	8	72				
China	932,742	15	31	17	15	17	14	43	43	34	133	36	27 ^e	17	11	38				
Georgia	6,949	42	67	43	43	15	16	28	30	34	76	53	55	38	28	9				
India	297,319	11	44	20	19	57	57	4	4	60	309	28	26	19	11	56				
Indonesia	181,157	78	100	55	62	19	16	6	7	3	111	42	31	24	16	23				
Japan	36,450	71	87	64	64	13	14	1	1	0	336	65	63	..	..	6		
Kazakhstan	269,970	1	4	4	4	8	13	69	69	99	6	56	57	34	8	30				
Korea, Dem People's Rep	12,041	..	..	68	68	22	21	0	0	0	185	60	58	34	14	1		
Korea, Rep	9,873	59	76	63	63	19	21	1	1	0	472	80	74	78	69	37				
Kyrgyzstan	19,180	2	9	5	4	7	7	49	47	55	25	34	38	20	0	52				
Lao People's Dem Rep	23,080	76	98	53	55	4	4	4	3	0	22	19	15	3	0	66				
Malaysia	32,855	82	97	59	66	23	23	1	1	0	70	62	50	40	19	2				
Mongolia	156,650	3	8	7	7	1	1	83	78	65	2	57	57	31	0	65				
Myanmar	65,755	61	86	51	59	16	15	0	1	..	70	28	25	16	10	26				
Nepal	14,300	34	71	26	32	23	17	12	12	9	160	14	9	7	5	92				
Pakistan	77,088	1	7	3	3	29	27	6	6	83	179	33	31	24	17	74				
Philippines	29,817	50	89	19	22	36	33	5	4	0	252	59	49	28	20	44				
Singapore	67	11	29	3	3	3	3	..	..	0	6478	100	100	..	..	0
Sri Lanka	6,463	33	91	30	35	30	29	7	7	24	283	21	21	14	13	14				
Tajikistan	13,996	0.1	3	3	3	8	7	23	25	40	43	26	32	15	0	56				
Thailand	51,089	28	82	29	31	38	40	2	2	7	119	31	29	17	14	2				
Turkmenistan	46,993	0.0	0.3	8	8	4	3	65	66	100	10	45	45	25	0	2				
Uzbekistan	41,424	0.0	2	4	4	12	12	54	55	99	56	37	40	29	13	51				
Viet Nam	32,549	43	86	30	28	27	21	2	1	0	236	24	20	17	12	47				
Europe	2,260,099	32	65	45	45	13	14	8	8	..	31	73	72	..	..	6		
Albania	2,740	16	67	34	37	26	26	16	15	0	108	42	36	15	0	7				
Austria	8,273	55	75	46	45	18	18	23	24	0	97	66	66	..	..	6		
Belarus	20,748	47	70	45	33	28	30	15	15	..	48	70	66	47	18	6				
Belgium (d)	3,282	24	48	23	22	26	24	21	211	0	310	97	96	..	..	15		
Bosnia and Herzegovina	5,120	57	92	44	44	21	20	20	23	0	78	43	39	20	0	8				
Bulgaria	11,063	29	66	33	31	32	39	16	16	53	73	69	66	33	15	6				
Croatia	5,592	44	81	32	31	28	24	28	19	0	79	58	54	23	0	8				
Czech Rep	7,728	41	68	33	33	43	..	13	..	13	130	74	75	26	13	6				
Denmark	4,243	13	48	11	10	54	60	9	5	0	124	85	85	..	..	6		
Estonia	4,239	74	94	46	43	15	27	2	6	0	30	69	71	36	0	12				
Finland	30,459	50	96	65	65	7	8	0	0	0	15	61	61	..	..	6		
France	55,010	26	61	28	27	36	35	18	20	0	108	76	74	..	..	6		
Germany	34,895	36	62	30	30	34	34	14	15	5	231	88	85	..	..	4		
Greece	12,890	16	62	27	25	30	31	36	41	45	83	60	59	..	..	6		
Hungary	9,210	18	61	20	19	52	54	12	13	46	108	64	62	38	26	6				
Iceland	10,025	3	35	0	0	0	0	23	23	..	3	92	91	..	..	1		
Ireland	6,889	25	62	9	7	16	15	48	49	0	54	59	57	..	..	6		
Italy	29,411	26	58	33	32	38	40	15	15	21	191	67	67	..	..	6		
Latvia	6,205	70	95	45	43	30	28	10	13	0	37	67	70	43	0	6				
Lithuania	6,268	45	75	31	30	48	49	8	7	0	54	67	68	40	0	6				
Macedonia, FYR	2,543	28	69	35	35	24	26	25	25	37	79	59	58	28	0	8				
Moldova, Rep	3,288	5	44	10	9	65	67	12	11	100	127	46	47	30	0	31				
Netherlands	3,388	13	42	9	9	28	27	30	31	0	383	64	60	..	..	9		
Norway	30,625	24	61	27	26	3	3	1	0	0	14	76	72	..	..	6		
Poland	30,629	31	60	29	28	46	48	13	13	19	124	62	61	35	15	6				
Portugal	9,150	11	70	40	34	30	33	16	9	29	109	53	47	..	..	14		
Romania	22,987	34	66	27	26	43	43	21	21	38	94	55	53	33	10	19				
Russian Federation	1,688,850	32	65	50	50	7	8	5	5	22	9	73	73	49	23	6				
Serbia and Montenegro	10,200	31	65	28	28	37	40	18	21	..	103	52	51	25	16	5				
Slovakia	4,808	49	73	44	41	32	..	18	..	0	110	57	57	12	0	6				
Slovenia	2,014	69	89	55	54	10	12	15	16	0	98	51	51	13	0	6				
Spain	49,944	13	48	28	27	37	40	23	21	69	81	76	75	..	..	6		
Sweden	41,162	56	90	60	60	7	7	1	1	0	20	83	83	..	..	6		
Switzerland	3,955	40	67	29	28	11	11	28	29	0	174	68	68	..	..	6		
Ukraine	57,935	16	52	16	15	58	59	14	13	65	82	67	67	41	19	6				
United Kingdom	24,088	21	57	12	11	24	27	46	48	0	242	89	89	..	..	6		
Middle East & N. Africa	1,291,988	1	3	2	2	8	8	28	24	..	31	58	54	39	24	36				
Afghanistan	65,209	0.1	1	2	2	12	12	46	46	94	33	22	18	18	9	99				
Algeria	238,174	0.1	1	1	1	3	3	13	13	21	13	57	51	32	12	12				
Egypt	99,545	0.0	0.5	0	0	3	3	..	..	8	68	42	43	38	28	40		
Iran, Islamic Rep	163,620	1	2	4	4	10	11	27	27	90	40	64	56	46	26	44				
Iraq	43,737	0.0	1	2	2	14	13	9	9	100	53	68	70	63	34	57				
Israel	2,171	0.3	9	6	4	20	20	7	7	69	287	92	90	81	62	2				
Jordan	8,893	0.0	0.2	1	1	4	4	8	8	9	56	79	72	58	47	16				
Kuwait	1,782	..	..	0	0	1	0	8	8	92	126	96	95	69	69	3		
Lebanon	1,023	1	26	3	4	31	30	2	1	59	334	87	83	66	53	50				
Libyan Arab Jamahiriya	175,954	0.0	0.1	0	0	1	1	8	8	23	3	85	80	94	62	35				
Morocco	44,630	0.2	5	7	7	21	22	47	47	92	65	56	48	36	16	33				
Oman	30,950																			

For more information, please visit <http://earthtrends.wri.org/datatables/forests>

	Total Land Area (1000 ha) 2002	Land Area Classifications Percent of Total Land Area That Is:									Population Density (people per km ²) 2000	Urban Population as a Percent of Total		Percent of Population Living in Cities		Percent of Urban Population Living in Slum Conditions 2001	
		Forested			Agricultural			Drylands (c)				2000	1990	100,000 People 2002	1 Million People 2002		
		MODIS Satellite (a) Imagery, 2000		FAO (b) Estimates, >10% Cover	Arable and Permanent Cropland		Permanent Pasture	2002	1992	2002							1992
		>50% Cover	>10% Cover	2000	1990	2002	1992										
Sub-Saharan Africa	2,362,209	18	52	20	22	8	7	35	35	..	27	34	28	22	13	73	
Angola	124,670	25	83	56	57	3	3	43	43	19	10	33	26	24	20	83	
Benin	11,062	0.3	94	24	30	25	16	5	5	88	55	42	35	28	0	84	
Botswana	56,673	0.1	21	21	23	1	1	45	45	100	3	50	42	0	0	61	
Burkina Faso	27,360	0.0	32	26	26	16	13	22	22	100	43	17	14	10	0	77	
Burundi	2,568	8	95	3	9	53	51	39	33	0	225	9	6	5	0	65	
Cameroon	46,540	57	91	50	55	15	15	4	4	13	32	49	40	25	18	67	
Central African Rep	62,298	58	98	37	37	3	3	5	5	20	6	41	38	21	0	92	
Chad	125,920	0.4	18	10	11	3	3	36	36	68	6	24	21	9	0	99	
Congo	34,150	70	94	65	65	1	1	29	29	0	10	52	48	22	0	90	
Congo, Dem Rep	226,705	72	99	58	60	3	3	7	7	0	21	30	28	30	19	50	
Côte d'Ivoire	31,800	21	98	22	30	22	19	41	41	..	49	44	40	36	24	68	
Equatorial Guinea	2,805	89	94	62	66	8	8	4	4	0	16	45	35	23	0	87	
Eritrea	10,100	0.0	3	13	14	5	..	69	..	83	32	19	16	22	0	70	
Ethiopia	100,000	9	52	4	5	11	10	20	41	58	59	15	13	5	4	99	
Gabon	25,767	87	97	82	82	2	2	18	18	0	5	81	68	49	0	66	
Gambia	1,000	2	73	43	39	26	16	46	45	97	116	26	25	15	0	67	
Ghana	22,754	12	91	27	32	28	19	37	37	66	82	44	37	20	13	70	
Guinea	24,572	25	98	28	30	6	6	44	44	14	33	33	25	20	19	72	
Guinea-Bissau	2,812	45	108	61	67	19	15	38	38	6	38	32	24	20	0	93	
Kenya	56,914	3	37	29	31	9	8	37	37	68	53	36	25	16	9	71	
Lesotho	3,035	0.5	62	0	0	11	11	66	66	0	59	18	17	9	0	57	
Liberia	9,632	81	99	31	38	6	6	21	21	0	26	45	42	43	43	56	
Madagascar	58,154	19	76	20	22	6	6	41	41	23	27	26	24	12	8	93	
Malawi	9,408	7	90	22	28	26	21	20	20	0	96	15	12	9	0	91	
Mali	122,019	0.1	13	11	11	4	2	25	25	80	10	30	24	12	9	93	
Mauritania	102,522	0.0	0.0	0	0	0	0	38	38	46	3	58	44	23	0	94	
Mozambique	78,409	20	95	38	39	6	5	56	56	38	22	32	21	19	9	94	
Namibia	82,329	0.0	4	10	11	1	1	46	46	91	2	31	27	11	0	38	
Niger	126,670	0.0	0.2	1	2	4	3	9	8	62	9	21	16	11	0	96	
Nigeria	91,077	7	59	15	19	36	36	43	44	58	124	44	35	35	18	79	
Rwanda	2,467	11	90	12	17	56	48	19	26	0	293	14	5	4	0	88	
Senegal	19,253	2	39	32	34	13	12	29	30	94	48	47	40	35	24	76	
Sierra Leone	7,162	54	99	15	20	8	8	31	31	0	62	37	30	26	22	96	
Somalia	62,734	0.1	12	12	13	2	2	69	69	80	14	33	29	21	12	97	
South Africa	121,447	3	38	7	7	13	12	69	68	66	36	56	49	39	29	33	
Sudan	237,600	3	24	25	28	7	6	49	47	67	13	36	27	26	18	86	
Tanzania, United Rep	88,359	11	85	41	42	6	5	40	40	..	37	32	22	14	7	92	
Togo	5,439	2	90	9	13	48	40	18	18	34	80	33	29	15	0	81	
Uganda	19,710	18	95	17	21	37	35	26	26	16	97	12	11	5	5	93	
Zambia	74,339	20	91	42	53	7	7	40	40	16	14	35	39	36	16	74	
Zimbabwe	38,685	3	78	49	57	9	8	44	44	67	32	34	29	28	18	3	
North America	1,879,066	29	55	24	23	12	12	13	14	..	16	79	75	27	13 f	6	
Canada	922,097	36	62	25	25	5	5	2	2	16	3	79	77	58 f	31 f	6	
United States	915,896	23	49	23	23	19	20	26	26	41	30	79	75	27 f	8 f	6	
C. America & Caribbean	264,826	27	66	29	33	16	15	38	37	..	64	67	64	41	26	24	
Belize	2,280	73	92	59	74	4	4	2	2	0	11	48	48	0	0	62	
Costa Rica	5,106	59	97	39	42	10	10	46	46	0	77	59	54	36	36	13	
Cuba	10,982	29	90	21	19	34	39	26	25	11	101	75	74	..	..	2
Dominican Rep	4,838	30	89	28	28	33	32	43	43	5	171	58	55	47	32	38	
El Salvador	2,072	34	95	6	9	44	41	38	31	0	295	58	49	32	27	35	
Guatemala	10,843	53	98	26	31	18	16	24	23	0	105	45	41	22	21	62	
Haiti	2,756	8	82	3	6	40	40	18	18	3	289	36	30	23	21	86	
Honduras	11,189	51	98	48	53	13	17	13	13	0	58	44	40	33	20	18	
Jamaica	1,083	58	96	30	34	26	22	21	22	31	235	52	52	35	0	36	
Mexico	190,869	21	56	28	31	14	14	42	41	69	51	75	73	54	32	20	
Nicaragua	12,140	44	95	25	34	18	13	40	40	0	39	56	53	33	25	81	
Panama	7,443	57	96	38	45	9	9	21	20	0	39	56	54	34	34	31	
Trinidad and Tobago	513	60	91	50	55	24	24	2	2	4	251	74	69	31	0	32	
South America	1,752,020	44	81	50	52	7	7	29	29	..	19	80	74	54	36	36	
Argentina	273,669	9	40	12	13	13	11	52	52	53	13	90	87	64	42	33	
Bolivia	108,438	49	74	48	50	3	2	31	31	..	8	62	56	39	31	61	
Brazil	845,942	49	93	64	66	8	7	23	22	15	20	81	75	54	36	37	
Chile	74,880	25	41	21	21	3	4	17	17	21	20	86	83	70	36	9	
Colombia	103,870	66	104	44	45	4	5	40	39	17	37	75	69	54	36	22	
Ecuador	27,684	53	83	37	42	11	11	18	18	63	44	60	55	50	35	26	
Guyana	19,685	91	102	79	81	3	3	6	6	0	4	36	33	30	0	5	
Paraguay	39,730	37	95	57	60	8	6	55	55	55	13	55	49	25	25	25	
Peru	128,000	58	72	51	53	3	3	21	21	37	20	73	69	48	28	68	
Suriname	15,600	85	89	86	86	0	0	0	0	0	3	74	65	..	..	7
Uruguay	17,502	4	97	7	4	8	7	77	77	0	19	92	89	51	51	7	
Venezuela	88,205	56	96	54	57	4	4	21	21	49	27	87	84	58	37	41	
Oceania	849,088	10	30	24	23	6	6	49	51	..	4	73	70	..	..	4
Australia	768,230	4	24	20	20	6	6	52	55	86	3	91	85	..	..	2
Fiji	1,827	..	..	45	46	16	14	10	10	0	45	49	42	21	0	68
New Zealand	26,799	43	73	29	28	13	13	52	52	0	14	86	85	..	..	1
Papua New Guinea	45,286	89	99	66	69	2	2	0	0	1	12	13	13	7	0	19	
Solomon Islands	2,799	82	90	88	89	3	3	1	1	0	15	16	14	0	0	8	
Developed	5,462,781	25	51	31	30	12	12	22	22	..	23	72	70	..			

Land Use and Human Settlements: Technical Notes

DEFINITIONS AND METHODOLOGY

Total Land Area is measured in thousand hectares and excludes the area under inland water bodies. Inland water bodies generally include major rivers and lakes. Data on land area were provided to the Food and Agriculture Organization (FAO) by the United Nations Statistical Division.

Forested Area is calculated by WRI as a percentage of total land area using data from MODIS satellite imagery analyzed by the Global Land Cover Facility (GLCF) at the University of Maryland and from FAO's *Global Forest Resources Assessment 2000* (FRA 2000).

MODIS Satellite Imagery identifies the percent of tree crown cover for each 500-meter pixel image of land area based on one year of MODIS photography. Data were aggregated to country-level by the GLCF at the request of WRI. The values presented here show the percentage of total land area with more than 10 percent or 50 percent of the ground covered by tree crowns.

The Food and Agriculture Organization (FAO) Estimates are drawn from *FRA 2000*. Forest area includes both natural forests, composed primarily of native tree species, and plantations, forest stands that are established artificially. If no other land use (such as agro-forestry) predominates, any area larger than 0.5 hectares with tree crowns covering more than 10 percent of the ground is classified as a forest. Forest statistics are based primarily on forest inventory information provided by national governments; national gathering methodologies can be found at <http://www.fao.org/forestry/fo/fra/index.jsp>. FAO harmonized these national assessments with the 10-percent forest definition mentioned above. In tropical regions, national inventories are supplemented with high resolution Landsat satellite data from a number of sample sites covering a total of 10 percent of the tropical forest zone. Where only limited or outdated inventory data were available, FAO used linear projections and expert opinion to fill in data gaps. If no forest statistics existed for 1990 and 2000, FAO projected forward or backward in time to estimate forest area in the two reference years.

Arable and Permanent Cropland is calculated by WRI as a percent of total land area. Arable land is land under temporary crops (double-cropped areas are counted only once), temporary meadows for mowing or pasture, land under market and kitchen gardens, and land temporarily fallow (less than five years). Abandoned land resulting from shifting cultivation is not included in this category. Permanent cropland is land cultivated with crops that occupy the land for long periods and need not be replanted after each harvest, such as cocoa, coffee, and rubber; this category includes land under trees grown for wood or timber. Wherever possible, data on agricultural land use are reported by country governments in questionnaires distributed by FAO. However, a significant portion of the data is based on both official and unofficial estimates.

Permanent Pasture is calculated by WRI as a percent of total land area. Permanent pasture is land used long-term (five years or more) for herbaceous forage crops, either cultivated or growing wild. Shrublands and savannas may be classified in some cases as both forested land and permanent pasture.

Drylands is calculated by WRI as the percent of total land area that falls within three of the world's six aridity zones—the arid, semi-arid, and dry sub-humid zones. The United Nations Convention to Combat Desertification (UNCCD) adopted this definition of drylands in order to identify areas where efforts combating land degradation should be focused and methods for attaining sustainable development should be promoted. The world is divided into six aridity zones based on the aridity index—the ratio of mean annual precipitation (PPT) to mean annual potential evapotranspiration (PET). Drylands of concern to the UNCCD include those lands with an aridity index between .05 and .65 (excluding polar and sub-polar regions).

Ratios of less than .05 indicate hyper-arid zones, or true deserts. Ratios of 0.65 or greater identify humid zones. The areas with an aridity index between .05 and .65 encompass the arid, semi-arid, and dry sub-humid areas. See the UNCCD's website at <http://www.unccd.int/main.php> for more information. Climatic data from 1950 to 1981 were used to define aridity zone boundaries for the globe with a resolution of about 50 km.

Population Density is calculated by WRI as the number of persons per square kilometer of land area using FAO land-area data shown in the first column. Population data are from the United Nations Population Division.

Urban Population as a Percent of Total is the proportion of a country's total population that resides in areas defined as urban in each of the countries of the world. These definitions vary slightly from country to country. Many countries define an urban area by the total number of inhabitants in a population agglomeration. Typically the threshold for considering a region urban is between 1,000 and 10,000 inhabitants. Other countries specify several of their cities or provinces as urban, and the remaining population is defined as rural. Estimates of the proportion of the population living in urban areas are obtained from national sources. Censuses and population registers are the most common sources of those counts. Once values of the urban proportion at the national level are established, they are applied to estimates and projections of the total national population from *World Population Prospects: The 2002 Revision*.

Percent of Population Living in Cities with More Than 100,000 and 1 Million People indicates population distribution and levels of urbanization within a country. WRI calculated percentages from the *Urban Population in World Bank Regions by City Size* data set and total population figures from the UN Population Division. Urban population data were primarily collected from national statistical offices, international organizations such as the United Nations, and the World Gazetteer web site. Data from national census bureaus in several OECD countries (Canada, United States) were added to complement this data set.

Percent of Urban Population Living in Slum Conditions is the proportion of a country's urban population that is living in households classified as slum dwellings. A slum household is defined by the United Nations Human Settlements Program (UN-HABITAT) as a group of individuals living under the same roof that lacks one or more of the following conditions: "secure tenure status, adequate access to improved water, adequate access to improved sanitation and other infrastructure, structural quality of housing, and sufficient living area."

While the same methodology was used to determine the slum population in all countries, data sources vary. Where available, household surveys, such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS), were the common sources of data. An effort was made to ensure that households were not counted twice, in the event that they lacked more than one of the indicators. In the absence of household surveys, or when household surveys did not provide answers for the desired indicators, the slum populations were estimated. Estimates were derived from a statistical model using available country data and the Human Development Index (HDI) of the United Nations Development Programme (UNDP).



FREQUENCY OF UPDATE BY DATA PROVIDERS

Total Land Area, Arable and Permanent Cropland Area, and Permanent Pasture data are updated annually by the FAO. **Population** data are updated every two years by the United Nations Population Division. **Forested Land Area** based on **Modis Satellite Imagery** was released by the GLCF in 2002. The *FRA* is published by the FAO every 5 years; data in this table are from the 2000 release. **Drylands Area** data were prepared in 1991; no update is planned. Data on urban population by city size are updated continually by the World Bank. **Urban Population Living in Slum Conditions** is the first global compilation of such data.

DATA RELIABILITY AND CAUTIONARY NOTES

Land-area data are intended for broad estimations only and not for strict comparisons. Land-area classification is inherently subjective; experts often express different opinions on the criteria for categorizing ecosystem and use types, and the resolution of the underlying satellite and survey information can vary widely among data sets. In addition, the information on land-area types shown here is from different sources and represents different time periods. They are not intended to represent exclusive land-cover types; some degree of overlap is present.

Forest Cover: As shown in the table, forest cover estimates differ widely based on collection methodology and classification used. FAO uses a more complex definition of forests than is used in the MODIS data set, requiring that there be 10 percent tree cover and that forestry be the predominant land use in the survey area. Thus some areas with tree cover of more than 10 percent may not be counted as forest if the predominant land use is determined to be agriculture, urban settlement, or some other nonforestry use. Because the MODIS tree-cover data set makes no such distinction, the tree cover in the "10 percent and above" categories will sum to a larger area than the FAO forest area for most countries.

MODIS Satellite Imagery: Following publication of the Global Land Cover Characteristics (GLCC) database by GLCF, a number of scientific teams assessed the accuracy of the GLCC's approach by comparing the results with higher-resolution satellite imagery. These teams found that the accuracy of the GLCF's approach was, depending on the assessment approach, in a range from 60 to nearly 80 percent, meaning that the assessment teams' classification of a given area agreed with the GLCF's classification between 60 and 80 percent of the time.

FAO Estimates: FAO acknowledges that the quality of primary data available remains poor, particularly for tropical countries, open woodland areas, and non-production forests. In most tropical countries, forests are not monitored comprehensively or frequently enough to map their extent accurately or to track their rate of change. In the absence of inventory data for specific dates (1990 and 2000), FAO's latest estimates of forest area and change over time are often based on projections and expert opinion and thus remain educated guesses. Just one or two satellite images appear to have been the prime source of new information for some countries with poor inventory data. Open woodlands are difficult to monitor by remote sensing techniques, and government forestry agencies tend not to survey them as part of normal forest inventories. Non-production forests are not included in these totals, even though many appear to meet the FAO definition of forests. While the quality of data from developed countries is generally better than from developing countries, problems still arise with estimates because of differences in national forestry definitions and systems of measurement, and the use of different reference periods. In northern countries, the boundary between forest and tundra is vague. For a discussion of some data reliability issues associated with *FRA 2000*, see <http://pdf.wri.org/fra2000.pdf>.

Drylands: The accuracy of land-area totals is limited by the 50-kilometer resolution of the data set. The climate data set was derived from a limited number of field observations. Actual boundaries between aridity zones are neither abrupt nor static, making delineated borders somewhat artificial. The data should therefore be considered useful as a general indicator of the extent of drylands within each country, rather than as an exact depiction of the climatic situation on the ground. Alternative methods for measuring extent of drylands area include use of soil moisture and agricultural production systems, although these methods may also be subject to similar problems such as low-resolution data, limited field observations, and subjectivity when delineating exact boundaries on the ground.

Percent of Urban Population Living in Slum Conditions: UN-HABITAT's definition of slum conditions, described above, may not always measure living conditions with sufficient precision. Sub-national coverage for the household surveys varies as does the international coverage for the different indicators. Despite these drawbacks, this is the most reliable global data set available on this complex issue.

SOURCES

Total Land Area and Cropland Area: Food and Agriculture Organization of the United Nations (FAO). 2004. FAOSTAT on-line statistical service. Rome: FAO. Available at <http://apps.fao.org>.

Forested Area, Modis Satellite Imagery: University of Maryland Global Land Cover Facility (GLCF). 2002. MODIS 500m Vegetation Continuous Fields Percent Tree Cover. Available at <http://glcf.umiaccs.umd.edu/data/>.

Forested Area, FAO Estimates: Food and Agriculture Organization of the United Nations (FAO). 2001. *Global Forest Resources Assessment 2000—Main Report*. Rome: FAO. Available at <http://www.fao.org/forestry/fo/fra/index.jsp>.

Dryland Area: U. Deichmann and L. Eklundh. 1991. *Global Digital Data Sets for Land Degradation Studies: A GIS Approach*. GRID Case Study Series No. 4. Nairobi, Kenya: United Nations Environment Program/Global Resource Information Database (UNEP/GRID).

Population Density: United Nations Population Division. 2003. *World Population Prospects: The 2002 Revision*. Dataset on CD-ROM. New York: United Nations. Available at <http://www.un.org/esa/population/ordering.htm>.

Urban Population: United Nations Population Division. 2004. *World Urbanization Prospects: The 2003 Revision*. Urban and Rural Areas Dataset (POP/DB/WUP/Rev.2003/ Table A.7). Data set in digital form. Available at <http://www.un.org/esa/population/ordering.htm>. New York: United Nations.

Population by City Size: The World Bank Group. 2004. *Urban Population in World Bank Regions by City Size*. Washington, DC: World Bank. Available at <http://www.worldbank.org/urban/env/population-regions.htm>.

Population Living in Slum Conditions: United Nations Human Settlements Program (UN-HABITAT). 2003. *Slums of the World: The Face of Urban Poverty in the New Millennium?* Nairobi: UN-HABITAT. Available at <http://www.unhabitat.org/publication/slumreport.pdf>.



Food and Agriculture

Source: Food and Agriculture Organization of the United Nations, International Federation of Organic Agriculture Movements, United States Department of Agriculture

	Land		Intensity of Agricultural Inputs					Per Capita Food		Food Aid, Security, and Nutrition				
	Agricultural Land (a) (000 ha)	Irrigated Cropland as a	Organic Cropland as a	Labor		Mechan-ization (tractors	Water	Production Index (1999-2001 =100)	2003	Cereals Received as	Net Cereal Imports (b)	Cereal Fed to	Calorie	Share of
		Percent of Total	Percent of Total	(workers per ha)	Fertilizer (kg/ha)	per 000 (ha)	Withdrawals (meters ³ /ha)			Food Aid (000 metric tons)	as a Percent of Consumption	Livestock as a Percent of Total Consumption	Supply Per Capita (kilocalories/person/day)	Calorie From Animal Products (percent)
2002	2002	2003	2001	2001	2001	2000	1983	2003	2002	2002	2003	2002	2002	
World	1,534,466	18.1	..	0.87	90.1	17.5	..	87.1	101.4	8,610	..	36.9	2,804	16.7
Asia (excl. Middle East)	500,878	34.2	..	2.02	139.0	12.3	..	..	..	2,182	..	20.6	2,682	14.3
Armenia	560	50.0	..	0.36	8.9	32.7	3,464	..	114.6	16	46.1	29.2	2,268	16.1
Azerbaijan	2,009	72.4	0.20	0.50	6.1	15.0	6,108	..	118.3	5	21.5	21.6	2,575	14.6
Bangladesh	8,429	54.5	..	4.58	170.8	0.7	8,999	91.8	97.8	353	6.6	0.0	2,205	3.1
Bhutan	165	24.2	..	5.83	..	..	2,500	119.4	76.2	0	22.5	..	..	..
Cambodia	3,807	7.1	..	1.22	..	0.5	1,052	89.6	99.9	25	3.4	..	2,046	9.4
China (c)	153,956	35.7	0.06	3.29	227.6 e	7.2	3,149	52.1	109.1	..	(1.4)	28.1	2,951	20.9
Georgia	1,064	44.1	..	0.48	26.3	16.1	2,005	..	112.3	18	48.3	39.3	2,354	17.6
India (d)	170,115	33.6	0.03	1.57	102.1	9.0	3,291	83.0	98.4	128	(5.5)	4.9	2,459	7.7
Indonesia	33,700	14.3	0.09	1.48	78.5 e	2.1	2,254	76.2	104.2	204	11.5	7.4	2,904	4.3
Japan	4,762	54.7	0.10	0.54	282.4	423.0	11,435	112.9	95.7	..	67.6	45.8	2,761	20.7
Kazakhstan	21,671	10.8	..	0.06	2.3	2.3	1,321	..	107.5	..	(47.4)	47.2	2,677	25.6
Korea, Dem People's Rep	2,700	54.1	..	1.21	100.5 e	25.9	2,480	108.7	106.0	975	26.5	..	2,142	6.5
Korea, Rep	1,877	60.6	0.05	1.20	379.4 e	106.5	..	76.7	92.4	..	65.0	46.3	3,058	15.6
Kyrgyzstan	1,411	76.0	..	0.38	18.8	18.0	6,587	..	99.0	2	11.5	39.8	2,999	19.6
Lao People's Dem Rep	1,001	17.5	0.01	2.15	12.8	1.1	..	68.9	112.6	6	1.4	..	2,312	7.1
Malaysia	7,585	4.8	..	0.24	149.1	5.7	736	60.8	108.4	..	69.0	41.4	2,881	18.1
Mongolia	1,200	7.0	..	0.26	2.7	4.2	195	132.4	95.8	..	58.2	..	2,249	39.7
Myanmar	10,611	18.8	..	1.71	9.0	1.0	3,110	84.2	116.2	..	(3.6)	4.9	2,937	4.8
Nepal	3,294	34.5	0.00	3.33	22.7	1.4	3,307	88.1	99.3	..	0.3	..	2,453	6.5
Pakistan (d)	22,120	80.5	0.08	1.14	132.9	14.5	7,407	78.8	97.9	1	(13.6)	3.9	2,419	18.1
Philippines	10,700	14.5	0.02	1.18	73.4 e	1.1	2,099	95.5	106.1	68	19.6	23.7	2,379	15.7
Singapore	2	..	..	..	..	..	..	893.0	71.0	..	..	14.1	..	..
Sri Lanka	1,916	33.3	0.65	2.02	127.7 e	4.2	6,280	115.4	100.1	81	29.0	..	2,385	7.1
Tajikistan	1,057	68.0	..	0.77	11.4	28.4	12,745	..	120.6	121	37.2	12.9	1,828	9.2
Thailand	19,367	25.6	0.02	1.12	92.0 e	11.4	4,597	90.2	103.2	1	(26.5)	..	2,467	12.0
Turkmenistan	1,915	94.0	..	0.38	54.0	26.1	14,182	..	98.1	..	..	18.3	2,742	15.4
Uzbekistan	4,827	88.7	..	0.62	149.1	35.2	11,210	..	103.4	119	3.8	18.6	2,241	17.5
Viet Nam	8,895	33.7	0.08	3.30	225.9 e	18.4	6,615	64.7	113.8	60	(25.5)	10.0	2,566	12.1
Europe	303,993	8.3	..	0.10	73.4	36.1	..	107.5	f	96	..	51.3	3,331	27.7
Albania	699	48.6	..	1.07	26.8 e	11.4	1,522	89.6	105.0	25	44.9	..	2,848	28.6
Austria	1,462	0.3	11.60	0.13	148.1	224.5	14	96.7	91.7	..	(9.7)	..	3,673	33.1
Belarus	5,730	2.3	..	0.11	121.5	11.5	134	..	110.9	..	11.9	50.8	3,000	26.2
Belgium	..	..	1.45	..	..	..	..	..	96.8	..	52.6	..	3,584	30.5
Bosnia and Herzegovina	1,093	0.3	..	0.11	38.8	26.2	..	..	83.8	54	28.2	62.2	2,894	13.5
Bulgaria	3,583	16.5	0.00	0.06	43.2 e	6.7	425	145.2	101.0	3	(25.0)	39.1	2,848	24.5
Croatia	1,588	0.3	0.00	0.10	110.7	1.5	..	..	92.6	..	(8.3)	71.1	2,799	19.2
Czech Rep	3,305	0.7	5.09	0.14	119.2 e	28.6	17	..	90.5	..	(1.9)	..	3,171	27.0
Denmark	2,284	19.6	6.65	0.05	134.2	53.5	234	87.5	101.4	..	(12.5)	..	3,439	38.1
Estonia	631	0.6	3.00	0.12	42.6	79.7	7	..	107.5	..	25.4	..	3,002	27.0
Finland	2,208	2.9	7.00	0.06	135.1	88.2	30	124.9	101.6	..	(6.0)	..	3,100	37.5
France	19,583	13.3	1.70	0.04	213.3	64.5	200	99.4	93.0	..	(55.0)	..	3,654	37.1
Germany	11,997	4.0	4.10	0.08	217.4	85.8	775	101.0	93.2	..	(22.2)	..	3,496	30.6
Greece	3,846	37.2	0.86	0.20	111.9 e	64.9	1,621	100.1	95.9	..	22.0	..	3,721	21.8
Hungary	4,804	4.8	1.70	0.10	94.5 e	23.6	511	115.5	95.3	..	(44.7)	..	3,483	32.6
Iceland	7	..	0.70	..	..	1288.4	29	129.7	104.3	..	..	..	3,249	41.5
Ireland	1,123	..	0.70	0.15	562.2	144.8	0	89.8	92.4	..	24.6	..	3,656	31.1
Italy	11,064	24.9	8.00	0.12	128.1	148.2	1,849	106.8	91.4	..	25.9	..	3,671	25.9
Latvia	1,861	1.1	0.81	0.08	35.0	30.1	19	..	111.0	..	(8.6)	..	2,938	28.2
Lithuania	2,989	0.2	0.25	0.07	54.2	34.2	6	..	109.6	..	(6.1)	..	3,325	26.3
Macedonia, FYR	612	9.0	..	0.19	36.4	88.2	..	..	91.1	..	29.1	44.9	2,655	21.8
Moldova, Rep	2,143	14.0	..	0.22	14.9	19.1	..	..	102.8	..	(22.9)	59.7	2,806	16.2
Netherlands	949	59.5	2.19	0.26	443.5	159.4	2,853	101.5	92.6	..	68.3	..	3,362	34.2
Norway	871	14.6	3.13	0.12	200.3	151.1	259	118.5	97.5	..	25.7	68.0	3,484	33.0
Poland	14,226	0.7	0.36	0.30	110.0 e	91.4	94	111.4	97.5	..	0.3	..	3,375	26.1
Portugal	2,705	24.0	2.20	0.23	76.9	62.5	3,258	68.2	97.4	..	64.8	..	3,741	29.1
Romania	9,899	31.1	0.27	0.16	37.2 e	16.6	1,339	124.2	106.2	1	(3.4)	59.2	3,455	20.5
Russian Federation	125,300	3.7	0.00	0.06	12.7	6.2	108	..	110.4	1	(16.9)	49.0	3,072	22.3
Serbia and Montenegro	3,724	0.8	0.30	0.26	66.7	109.2	..	..	97.7	0	(6.0)	65.6	2,678	35.0
Slovakia	1,559	11.7	2.20	0.17	74.5 e	14.7	..	..	91.0	..	(1.5)	..	2,889	27.5
Slovenia	198	1.5	1.91	0.09	357.0	562.6	..	..	106.4	..	37.3	..	3,001	32.1
Spain	18,715	20.2	2.28	0.07	122.3	48.4	1,331	74.4	106.5	..	28.4	..	3,371	27.8
Sweden	2,682	4.3	6.09	0.05	98.5	61.2	98	115.1	99.7	..	(11.8)	..	3,185	33.7
Switzerland	433	5.8	10.00	0.36	225.5	256.9	114	112.5	99.2	..	32.5	59.0	3,526	33.8
Ukraine	33,457	6.8	0.58	0.11	14.2	9.5	588	..	95.6	12	(53.8)	45.8	3,054	20.5
United Kingdom	5,803	2.9	4.22	0.09	327.9	87.7	47	107.0	96.8	..	2.1	..	3,412	30.6
Middle East & N. Africa	100,520	28.7	..	0.51	66.8	17.2	..	..	..	2,232	..	33.2	3,110	9.9
Afghanistan	8,054	29.6	..	0.74	2.3	0.1	2,836	..	..	388	..	..	..	..
Algeria	8,265	6.8	..	0.31	12.8 e	11.4	481	76.2	109.7	43	73.8	25.4	3,022	9.9
Egypt	3,400	100.0	0.19	2.52	392.0	26.8	16,364	68.6	95.7	11	34.1	32.7	3,338	7.6
Iran, Islamic Rep	17,088	43.9	..	0.38	80.1 e	14.3	..	72.6	106.7	10	24.1	21.2	3,085	9.5
Iraq	6,090	57.9	..	0.10	105.0 e	9.8	7,108	..	..	1,333	..	16.1	..	..
Israel	424	45.8	0.90	0.16	210.8	57.8	3,055	124.8	99.2	..	75.8	66.7	3,666	21.8
Jordan	400	18.8	..	0.48	55.9 e	14.4	1,896	110.0	121.9	205	91.4	49.8	2,674	9.2
Kuwait	15	86.7	..	0.93	..	5.9	23,333	56.7	103.9	..	114.4	42.9	3,010	17.4
Lebanon	313	33.2	0.07	0.14	187.1 e	26.5	2,757	78.1	96.1	48	81.6			

For more information, please visit <http://earthtrends.wri.org/datatables/agriculture>

	Land		Intensity of Agricultural Inputs				Per Capita Food Production Index (1999-2001 =100)		Food Aid, Security, and Nutrition					
	Agricultural Land (a) (000 ha) 2002	Irrigated Cropland as a Percent of Total 2002	Organic Cropland as a Percent of Total 2003	Labor (workers per ha) 2001	Fertilizer (kg/ha) 2001	Mechanization (tractors per 000 ha) 2001	Water Withdrawals (meters ³ /ha) 2000	1993	2003	Cereals Received as Food Aid (000 metric tons) 2002	Net Cereal Imports (b) as a Percent of Consumption 2002	Cereal Fed to Livestock as a Percent of Total Consumption 2003	Calorie Supply Per Capita (kilocalories /person/day) 2002	Share of Calorie Supply From Animal Products (percent) 2002
Sub-Saharan Africa	182,680	3.7	..	1.02	11.4	1.3	..	92.4	97.4 f	3,145	..	7.0	2,262	6.6
Angola	3,300	2.3	..	1.27	..	..	64	91.9	104.1	217	42.7	..	2,083	8.5
Benin	2,815	0.4	0.00	0.68	13.7	0.1	84	62.4	99.0	6	16.5	..	2,548	4.4
Botswana	380	0.3	..	0.94	12.3	15.8	161	162.2	100.4	..	168.2	12.2	2,151	18.1
Burkina Faso	4,400	0.6	..	1.34	0.4	0.5	179	72.8	108.6	21	7.3	4.8	2,462	4.6
Burundi	1,351	5.5	..	2.40	2.8	0.1	153	117.0	98.8	55	7.2	..	1,649	2.1
Cameroun	7,160	0.5	0.09	0.52	7.3 e	0.1	102	103.0	105.0	0	20.3	..	2,273	5.7
Central African Rep	2,024	..	..	0.63	0.3	0.01	1	88.9	101.5	5	21.1	..	1,980	9.9
Chad	3,630	0.6	..	0.76	4.8	0.05	53	92.0	101.4	16	5.5	..	2,114	6.6
Congo	240	0.4	..	2.60	21.0	3.0	18	125.8	97.6	14	102.6	..	2,162	6.1
Congo, Dem Rep	7,800	0.1	..	1.66	0.2	0.3	14	151.0	89.6	45	23.7	0.0	1,599	2.2
Côte d'Ivoire	6,900	1.1	..	0.42	9.2 e	0.6	82	83.2	91.8	13	43.3	1.9	2,631	4.1
Equatorial Guinea	230	..	..	0.59	..	0.7	4	96.6	90.4	..	..	..	..	..
Eritrea	503	4.2	..	2.87	10.9 e	0.9	574	..	74.6	184	471.3	2.7	1,513	5.4
Ethiopia	10,671	1.8	..	2.10	11.8 e	0.3	231	..	99.6	1,219	7.4	1.1	1,857	4.9
Gabon	495	3.0	..	0.42	0.6	3.0	104	119.3	95.4	..	68.5	..	2,637	12.7
Gambia	255	0.8	..	2.11	3.1	0.2	91	133.2	65.5	7	49.1	0.0	2,273	5.6
Ghana	6,331	0.2	0.16	0.95	5.3	0.6	43	57.7	107.6	43	18.2	3.2	2,667	4.5
Guinea	1,540	6.2	..	2.23	2.1	0.4	919	97.1	103.6	32	26.0	..	2,409	3.6
Guinea-Bissau	548	3.1	..	0.92	4.4	0.03	286	83.4	93.6	6	38.1	..	2,024	6.5
Kenya	5,162	1.7	0.00	2.34	29.1 e	2.4	223	96.6	94.2	84	22.2	1.9	2,090	11.9
Lesotho	334	0.3	..	0.84	34.0	6.0	31	119.9	104.2	38	240.7	6.8	2,638	4.3
Liberia	600	0.5	..	1.33	..	0.5	101	141.0	84.8	37	74.0	..	1,900	2.9
Madagascar	3,550	30.7	..	1.63	2.5	1.0	4,089	128.6	94.0	40	5.2	..	2,005	9.5
Malawi	2,440	1.2	0.01	1.98	11.7	0.6	362	82.4	79.5	156	17.9	2.3	2,155	2.7
Mali	4,700	2.9	..	0.99	8.9	0.6	1,469	104.0	96.3	7	4.7	1.5	2,174	9.6
Mauritania	500	9.8	..	1.28	5.8 e	0.8	3,000	109.1	97.6	63	..	0.0	2,772	17.5
Mozambique	4,435	2.4	..	1.82	5.9	1.4	133	99.7	98.1	95	27.8	1.0	2,079	2.3
Namibia	820	0.9	..	0.38	0.4	3.8	205	134.4	90.7	41	123.4	..	2,278	15.9
Niger	4,500	1.5	..	1.00	1.1	0.03	462	115.4	99.8	17	8.7	2.7	2,130	5.1
Nigeria	33,000	0.7	..	0.49	7.1	1.0	179	62.4	97.0	13	14.1	1.8	2,726	3.2
Rwanda	1,385	0.4	..	2.99	0.2	0.1	25	126.4	103.4	20	8.7	7.4	2,084	2.9
Senegal	2,500	2.8	0.10	1.26	12.0	0.3	598	72.2	86.0	2	58.4	0.0	2,280	9.1
Sierra Leone	600	5.0	..	1.86	0.5	0.1	643	137.3	96.6	50	52.8	0.0	1,936	3.8
Somalia	1,071	18.7	..	2.57	0.5	1.6	3,075	..	..	16	..	5.0	..	..
South Africa	15,712	9.5	0.05	0.11	48.5 e	4.6	708	94.6	100.1	21	11.4	34.4	2,956	12.2
Sudan	16,653	11.7	..	0.46	5.1 e	0.7	2,195	89.7	102.0	126	25.0	7.4	2,228	20.4
Tanzania, United Rep	5,100	3.3	0.14	2.93	1.6 e	1.5	374	129.3	97.3	51	7.7	2.2	1,975	6.3
Togo	2,630	0.7	..	0.45	7.3	0.03	30	93.0	96.2	..	16.0	13.9	2,345	3.4
Uganda	7,200	0.1	1.39	1.29	0.8	0.7	17	114.0	99.1	113	6.4	4.4	2,410	6.2
Zambia	5,289	0.9	0.06	0.58	6.9 e	1.1	250	107.6	102.7	35	75.8	3.4	1,927	4.9
Zimbabwe	3,350	3.5	..	1.08	45.4 e	7.2	670	95.5	85.1	174	61.7	8.5	1,943	7.7
North America	223,951	10.4	..	0.02	99.0	24.8	..	82.8	97.5 f	..	..	62.5	3,756	27.6
Canada	45,879	1.7	1.30	0.01	53.6 e	16.0	118	87.1	95.2	..	(47.5)	72.0	3,589	26.7
United States	178,068	12.6	0.23	0.02	110.7	27.1	1,105	82.3	97.8	..	(40.5)	61.3	3,774	27.7
C. America & Caribbean	42,178	19.3	..	0.40	66.9	10.6	..	..	..	415	..	45.1	2,878	17.1
Belize	102	2.9	1.30	0.25	45.2	11.6	2	67.7	94.0	..	31.7	..	2,869	20.7
Costa Rica	525	20.6	3.11	0.62	223.2 e	13.3	2,834	72.4	88.5	..	81.6	54.7	2,876	20.0
Cuba	3,788	23.0	0.16	0.17	46.1 e	19.3	1,264	128.3	107.9	1	61.8	..	3,152	12.3
Dominican Rep	1,596	17.2	0.40	0.37	61.1 e	1.2	1,404	138.2	102.6	..	61.4	57.1	2,347	14.8
El Salvador	910	4.9	0.31	0.85	80.4 e	3.8	934	88.2	95.1	70	40.8	33.9	2,584	13.2
Guatemala	1,905	6.8	0.33	1.03	107.6 e	2.3	844	85.1	95.5	118	46.1	29.4	2,219	9.2
Haiti	1,100	6.8	..	1.98	12.7	0.1	1,022	151.6	98.8	144	61.2	2.0	2,086	7.0
Honduras	1,428	5.6	0.06	0.54	106.1 e	3.6	486	114.6	101.1	27	52.4	42.8	2,356	14.4
Jamaica	284	8.8	0.26	0.93	73.4	10.8	730	86.4	97.8	..	80.8	33.8	2,685	14.6
Mexico	27,300	23.2	0.20	0.31	68.3 e	11.9	2,210	94.2	100.8	..	31.8	47.5	3,145	19.4
Nicaragua	2,161	4.3	0.14	0.18	8.9 e	1.3	393	107.0	110.7	55	19.6	30.6	2,298	7.8
Panama	695	5.0	0.24	0.36	42.0 e	7.2	357	126.9	98.5	..	51.5	32.1	2,272	23.9
Trinidad and Tobago	122	3.3	..	0.40	14.3 e	22.1	139	100.1	114.3	..	97.7	34.8	2,732	15.8
South America	126,594	8.3	..	0.21	78.7	10.4	..	76.0	107.5 f	289	..	52.4	2,851	21.2
Argentina	35,000	4.5	1.70	0.04	24.6 e	8.6	791	83.8	99.6	..	(174.9)	38.6	2,992	29.9
Bolivia	3,106	4.2	1.04	0.49	3.7	1.9	524	63.7	110.0	77	27.3	66.5	2,235	16.1
Brazil	66,580	4.4	0.24	0.19	102.9 e	12.1	562	68.5	114.2	..	12.8	62.3	3,050	22.2
Chile	2,307	82.4	1.50	0.43	209.1 e	23.5	3,468	67.5	102.0	..	31.4	50.9	2,863	21.4
Colombia	3,850	23.4	0.24	0.87	145.9 e	4.9	1,082	87.7	98.7	..	48.6	35.4	2,585	16.0
Ecuador	2,985	29.0	0.74	0.42	117.1 e	4.9	4,653	68.6	103.5	63	23.5	40.0	2,754	18.2
Guyana	510	29.4	0.01	0.11	25.5 e	7.1	3,226	65.0	105.2	26	(22.8)	8.1	2,692	16.0
Paraguay	3,115	2.2	0.38	0.23	21.5	5.3	147	81.4	107.4	..	(3.6)	3.0	2,565	22.1
Peru	4,310	27.7	0.42	0.71	74.7 e	3.1	3,900	66.8	105.7	124	38.7	40.6	2,571	13.1
Suriname	67	76.1	0.28	0.45	83.6	19.9	9,194	149.1	104.1	..	(12.5)	..	2,652	13.1
Uruguay	1,340	13.5	4.00	0.14	86.7 e	24.6	2,264	92.2	101.8	..	(18.9)	15.0	2,828	29.7
Venezuela	3,408	16.9	..	0.23	88.0 e	14.4	1,168	99.1	91.6	..	37.4	23.1	2,336	19.4
Oceania	53,664	5.4	..	0.06	59.9	7.2	..	90.4	98.7 f	..	..	62.5	..	..
Australia	48,600	5.2	2.20	0.01	47.1	6.2	356	85.3	95.9	..	156.4	64.8	3,054	33.8
Fiji	285	1.1	0.04	0.46	35.1	24.6	190	86.2	96.1	..	93.5	..	2,894	16.4
New Zealand	3,372	8.5	0.33	0.05	267.2	22.5	270	88.2	110.4	..	29.9	41.6	3,219	33.0
Papua New Guinea	870	..	0.41	2.22	13.7	1.3	1	103.4	98.					

DEFINITIONS AND METHODOLOGY

Agricultural Land, in thousand hectares, is the total area of all arable and permanent cropland. Arable land is land under temporary crops (those that are sown and harvested in the same agricultural year), temporary meadows for mowing or pasture, land under market and kitchen gardens, and land temporarily fallow (less than five years). Abandoned land resulting from shifting cultivation is not included under this category. Permanent cropland is land cultivated with crops that occupy the land for long periods and need not be replanted after each harvest, including land under trees grown for wood or timber. Land in permanent pasture is not included here.

Irrigated Cropland as a Percent of Total refers to the proportion of agricultural land equipped to provide water to crops. These include areas equipped for full and partial control irrigation, spate irrigation areas, and equipped wetland or inland valley bottoms.

Organic Cropland as a Percent of Total shows the portion of agricultural land converted to certified organic agriculture or in the process of conversion. Definitions of organic agriculture vary among countries. According to the International Federation of Organic Agriculture Movements (IFOAM), "Organic agriculture is an agricultural production system that promotes environmentally, socially, and economically sound production of food and fibers, and excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, livestock feed and additives, and genetically modified organisms." Data are obtained directly from IFOAM. The data shown here include pastures used for grazing. Data on land under organic management are a result of surveys undertaken between October and December of 2003 and research conducted by IFOAM. Experts from member organizations, certification bodies, and other institutions were asked to contribute statistics.

Intensity of Agricultural Inputs: Labor shows the labor input intensity of agricultural systems per hectare of agricultural land. WRI calculates labor intensity by dividing the number of agricultural workers by agricultural land area. Agricultural workers include all economically active persons engaged in agriculture, hunting, forestry, or fishing. According to the International Labor Organization (ILO), the economically active population "comprises all persons of either sex who furnish the supply of labor for the production of economic goods and services." The ILO derives the labor estimates from population censuses and sample surveys of the economically active population. When country data are missing, the ILO estimates figures from similar neighboring countries or by using special models of activity rates. The UN Food and Agriculture Organization (FAO) provided the annual figures used for these calculations through interpolating and extrapolating the ILO's decennial series.

Intensity of Agricultural Inputs: Fertilizer measures the mass in kilograms of the nutrients nitrogen (N), potash (K_2O), and phosphate (P_2O_5) consumed annually per hectare of cropland. Some countries report data based on the fertilizer year; i.e., 2001 data actually encompassed July 1, 2001 to June 30, 2002. Data are collected through the FAO fertilizer questionnaire, with support from the Ad Hoc Working Party on Fertilizer Statistics.

Intensity of Agricultural Inputs: Mechanization shows the number of tractors used in agriculture per thousand hectares of arable and permanent cropland. WRI calculates the intensity of tractor use with FAO's estimates on agricultural land area and the total number of tractors for each country. Tractors generally refer to total wheeled and crawler tractors, excluding garden tractors. Tractor intensity is useful for understanding the nature of production systems, as tractors tend to be used in areas with flatter lands and scarce labor. Information on agricultural machinery is reported to FAO by country governments through surveys.

Intensity of Agricultural Inputs: Water Withdrawals measures the volume of water used in the agricultural sector per square hectare of arable and permanent cropland. Water use for agriculture is defined as the water withdrawals that are attributed to the agricultural sector, used primarily for irrigation. WRI calculates water intensity using water-use data from FAO's AQUASTAT information system and agricultural land-use data from the FAOSTAT database. To estimate agricultural water use, an assessment has to be made both of irrigation water requirements and of water withdrawal for agriculture. AQUASTAT collects its information from a number of sources, including national water resources and irrigation master plans; national yearbooks, statistics and reports; reports from FAO; international surveys; and results from surveys made by national or international research centers.

The **Per Capita Food Production Index** shows the food output, excluding animal feed, of a country's agriculture sector relative to the base period 1999-2001. The per capita food production index covers all edible agricultural products that contain nutrients; coffee and tea are excluded. For a given year and country, the index is calculated by taking the disposable average output of all food commodities in terms of weight or volume during the period of interest and dividing that year's output by the average of the 1999-2001 output, and then multiplying by 100. In other words, the index values shown in this table indicate per capita food production levels larger than 1999-2001 levels if their values are larger than 100. Data shown here are for 1983 and 2003.

Cereals Received as Food Aid represents the total shipments of cereals transferred to recipient countries on a total-grant basis or on highly concessional terms. Cereals include wheat, barley, maize, rye, oats, millet, sorghum, rice, buckwheat, alpiste/canary seed, fonio, quinoa, triticale, wheat flour, and the cereal component of blended foods. To facilitate comparisons between deliveries of different commodities, processed and blended cereals are converted into their grain equivalent with specific conversion factors. Information on food aid shipments is provided to the FAO by the World Food Program (WFP).

Net Cereal Imports as a Percent of Consumption indicates whether countries are able to produce sufficient grain for domestic consumption. It is calculated by dividing the sum of net imports (imports minus exports) by total cereal consumption (production plus imports, minus exports). Cereals imported as food aid are included in net imports. This variable does not account for changes in cereal stocks. As a result, some numbers may be negative or greater than 100. Cereals include wheat, barley, maize, rye, oats, millet, sorghum, rice, buckwheat, alpiste/canary seed, fonio, quinoa, triticale, wheat flour, and the cereal component of blended foods. Import and export data have, for the most part, been supplied to FAO by governments, national publications and, most frequently, FAO questionnaires.

Cereal Fed to Livestock as a Percent of Total Consumption is calculated by dividing the total feed grain consumed by total domestic grain consumed. Grains include wheat, rice, corn, barely, sorghum, millet, rye, oats, and mixed grains. Grain consumption includes all domestic use during the local marketing year of the individual country. It is the sum of feed, food, seed, and industrial uses. Data are collected from a variety of sources. Whereas the FAO is required to use official country estimates, the USDA supplements official estimates with data collected from other sources. The international portion of the USDA data is updated with input from agricultural attachés stationed at U.S. embassies around the world, U.S. Foreign Agricultural Service (FAS) commodity analysts, and country and commodity analysts with the USDA's Economic Research Service (ERS). WRI calculates the percentage shown here from USDA grain consumption and feed estimates.



Calorie Supply Per Capita refers to the amount of available food per person per day, expressed in kilocalories. **Share of Calorie Supply from Animal Products** refers to the percent of available food that is derived from animal products, including all types of meat and fish; animal fats and fish oils; edible offal; milk, butter, cheese, and cream; and eggs and egg products. FAO compiles statistics on apparent food consumption based on Supply/Utilization Accounts (SUAs) maintained in FAOSTAT, its online statistical service. SUAs are time-series data using statistics on supply and utilization. For each food product, the SUA traces supplies from production, imports, and stocks to utilization in different forms—addition to stocks, exports, animal feed, seed, processing for food and non-food purposes, waste (or losses), and lastly, as food available to the population. For internal consistency, total food supply equals total utilization. FAO derives caloric values by applying the appropriate food composition factors to the quantities of the processed commodities, rather than examining primary commodities. Per capita supplies are derived from the total supplies available for human consumption by dividing the quantities of food by the total population actually partaking of the food supplies during the reference period.

FREQUENCY OF UPDATE BY DATA PROVIDERS

Data from FAO are updated annually, with the exception of production data, which are updated three times each year, and trade data, which are updated semiannually. Data on international organic agriculture was first published by IFOAM in 1998 and are updated annually. The USDA's Foreign Agricultural Service updates international grain production estimates every month.

DATA RELIABILITY AND CAUTIONARY NOTES

Agricultural Land and Irrigated Cropland: Data are compiled from various sources (national publications, FAO questionnaires, international publications, etc.). As a result, definitions and coverage do not always conform to FAO recommendations and may not always be completely consistent across countries.

Organic Cropland as a Percent of Total: Data for organic agriculture are collected by IFOAM from a variety of sources, including member organizations, certification bodies, and other institutions. Data collection methods vary depending on the institution and the country. Figures for percent of total agricultural land under organic management are calculated by IFOAM. Data on total agricultural land used in these calculations are different from those provided by FAO for total arable and permanent cropland.

Labor: Values vary widely among and within countries according to labor scarcity, production technologies, and costs of energy and machinery. The annual figures for total number of agricultural workers were obtained by interpolating and extrapolating past trends (1950–2000) taken from ILO decennial population series. As a result, fluctuations in the labor force may not be captured in annual figures. Labor intensity may be overestimated in countries with substantial fishing or forestry industries, since the total agricultural labor force includes some workers engaged in these activities.

Fertilizer: Data are excluded for some countries with a relatively small area of cropland, such as Iceland and Singapore. In these cases, the calculation of fertilizer consumed per hectare of cropland yields an unreliable number.

Mechanization: Data collection methods differ across countries, resulting in varying degrees of reliability. Some caution should be used in interpreting tractors-in-use figures because the data do not account for variations in the size and horsepower of different tractors.

Water Withdrawals: While AQUASTAT represents the most complete and careful compilation of water resources statistics to date, freshwater data are generally of poor quality. Sources of information vary but are rarely complete. Access to information on water resources is still sometimes restricted for reasons related to political sensitivity at the regional level. The accuracy and reliability of the information vary greatly among regions and countries. Data are typically collected in different years for different countries and interpolated or extrapolated to a single year.

Per Capita Food Production Index: Indices are not directly measured; they are derived from a set of formulas and algorithms. The calculation therefore contains an unavoidable amount of subjectivity. Reliability is limited by the accuracy and precision of agricultural production and price data. While these data can illustrate rough comparisons and trends over time, rigid score comparisons and rankings are discouraged. The country-level indices reported here may differ from other calculations of agricultural production due to varying concepts of production, coverage, weights, time reference of data, and methods of calculation.

Cereals Received as Food Aid: Data on shipments and receipts of food aid are governed by established accounting procedures and are generally considered to be reliable. These measurements represent the amount of cereals distributed to recipient countries; they are not a measure of consumption.

Cereal Fed to Livestock as a Percent of Total Consumption: As with any large and complex data set, there are numerous difficulties involved with maintaining accuracy and standardizing reporting standards across countries and commodities. In general, these data should be considered accurate, but users should exercise the usual caution in attempting to create reliable cross-country comparisons.

Calorie Supply: Figures shown here represent only the average calorie supply available for the population as a whole and do not necessarily indicate what is actually consumed by individuals. Even if data are used as approximations of per capita consumption, it is important to note that there is considerable variation in consumption among individuals. Food supply data are only as accurate as the underlying production, trade, and utilization data.

SOURCES

Total Agricultural Land, Irrigation, Labor, Fertilizer, Mechanization, Food Production Indices, Food Aid, and Calorie Supply: Food and Agriculture Organization of the United Nations (FAO). 2004. FAOSTAT on-line statistical service. Rome: FAO. Available at <http://apps.fao.org>.

Organic Cropland as a Percent of Total: Yussefi, M. and Willer, H. (editors). 2004. *The World of Organic Agriculture—Statistics and Emerging Trends—2004*. Tholey-Theley, Germany: IFOAM. Available at <http://www.ifoam.org>.

Water Withdrawals: Food and Agriculture Organization of the United Nations (FAO), Water Resources, Development and Management Service. 2003. AQUASTAT Information System on Water and Agriculture: Review of World Water Resources by Country. Rome: FAO. Available at http://www.fao.org/waicent/faoinfo/agricult/agl/aglw/aquastat/water_res/index.htm.

Cereal Fed to Livestock: United States Department of Agriculture (USDA), Economic Research Service, Foreign Agricultural Service (FAS). 2004. Production, Supply and Distribution Data on-line. Washington, DC: USDA. Available at <http://www.fas.usda.gov/psd/>.

