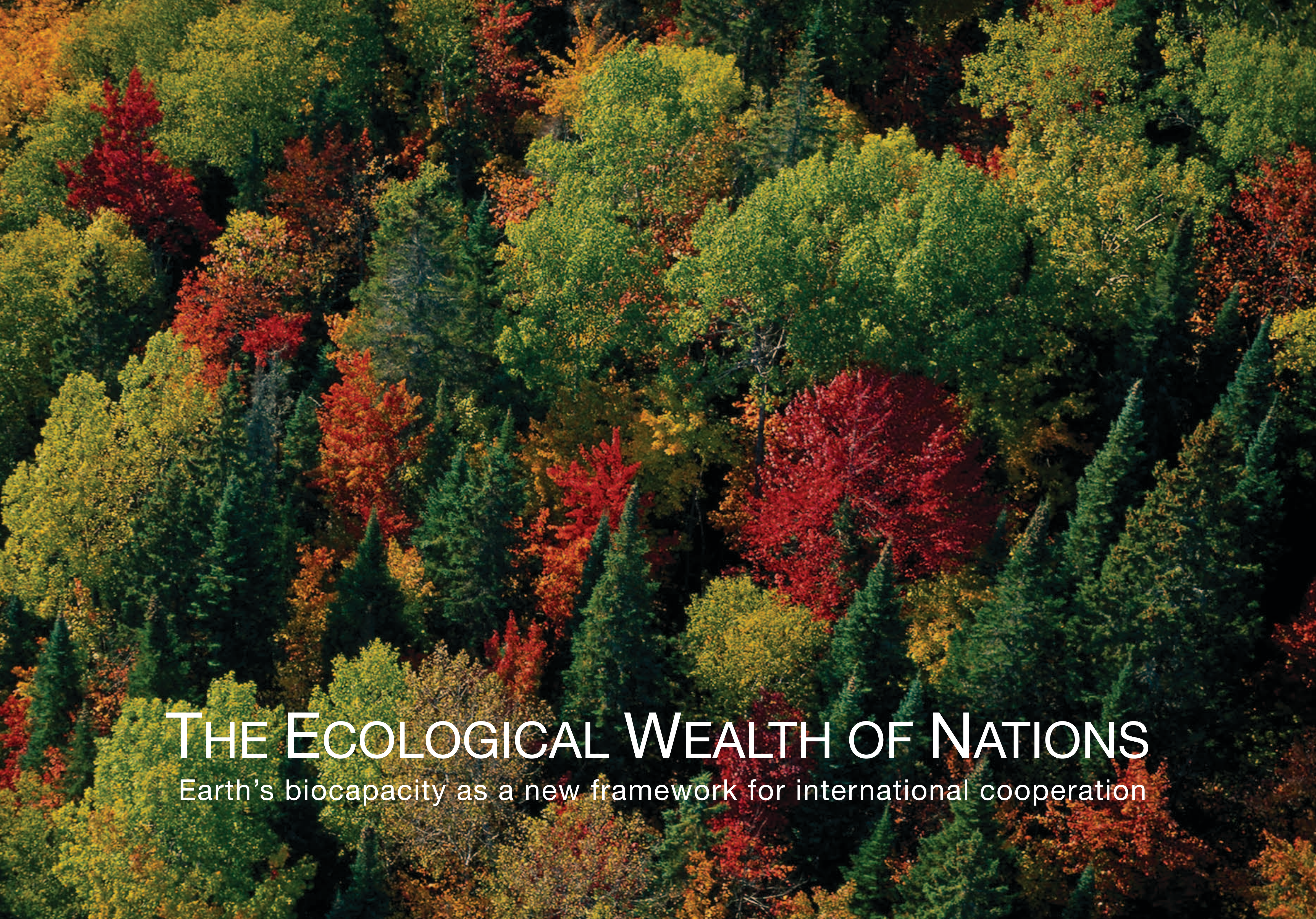

THE ECOLOGICAL WEALTH OF NATIONS

Earth's biocapacity as a new framework for international cooperation

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Global Footprint Network, promotes a sustainable economy by advancing the Ecological Footprint, a tool that makes sustainability measurable. Together with its partners, the network coordinates research, develops methodological standards and provides decision makers with robust resource accounts to help the human economy operate within the Earth's ecological limits.

Global Footprint Network
Advancing the Science of Sustainability

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Foreword

When I was born in 1962 most of the world's countries were using resources and emitting carbon dioxide at a rate that their own ecosystems could keep up with. Today, less than 20 percent of the world's population lives in countries where this is still the case.

How do we know this? By using Ecological Footprint accounting, a method for calculating society's use of nature's assets. Based on data from the United Nations, as well as in-country statistical sources, it compares humanity's Ecological Footprint (the demand our consumption places on the biosphere) with biocapacity (the biosphere's ability to meet this demand), providing a kind of bank statement for the planet. The results for 2006, which are presented in this report: Our Footprint now overshoots the Earth's biocapacity by more than 40 percent. In other words, the planet's living systems need to grow for about a year and five months to meet the demands we are placing on them in a single year.

Overshoot is possible only for a limited time. Similar to the financial world, we can temporarily eat into our ecological savings by drawing down our resource stocks; or we can take out a loan to be "repaid" at a future date, putting more carbon into the air than nature can currently absorb. But for how long can we do this, and at what cost in the interim? Based on current United Nations agencies' projections of moderate population growth, a slight decline in world hunger, partial decarbonization of global energy systems, and a continued increase in agricultural productivity, by the late 2030s humanity will need the equivalent of two Earths to keep up with our demands.

With demand so far out of synch with supply, and ecological debt accumulating from decades of ecological overspending, it is unrealistic to assume we can even reach this level of consumption. There just are not that many fisheries to overfish, forests to deforest, or atmospheres to fill up with CO2 before climate change wreaks havoc with food and water supplies.

We have a choice: Maintaining the "right to develop" – a key motivation behind this publication, and more broadly, the activities of Global Footprint Network – means moving away from our current course, one which all too often seems to be more about maintaining the "right to collapse." We must work with nature's budget, not against it, if we are to secure human well-being for both current and future generations.

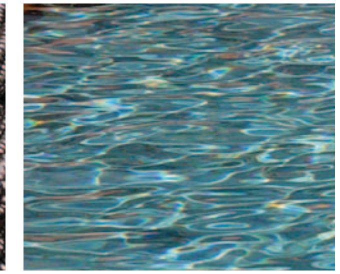
To succeed, and to make this success last, we need to alter the path we are on today. I am an unwavering optimist and am convinced we can. Consider this: If the current trends in biocapacity and Footprint represented financial trajectories, every planner, economist or minister would recognize the urgency of changing course, and develop an aggressive agenda for rectifying the situation. Nothing less is required with our current ecological trajectory. After all, more money can be printed, but nature's assets cannot.

Mathis Wackernagel, Ph.D.
President, Global Footprint Network

Exploring a new perspective





This report documents the demand that humanity is putting on the Earth's ecological assets, and the capacity of ecosystems to keep up with this demand, both globally and by individual nation. The analysis is primarily based on statistical information that countries report to the United Nations Food and Agriculture Organization (UN FAO), the UN Development Program (UNDP) and other international organizations

The purpose of this publication is to provide data rather than policy recommendations, and to open a creative debate over the implications of living in a resource-constrained world. Statistics show that humanity is using resources and turning them into wastes faster than the Earth's living systems can absorb these wastes or turn them back into resources. This information is intended to raise awareness and catalyze a discussion of the various risks and opportunities for individual countries created by this imbalance, exploring questions such as:

What does this global ecological overshoot mean to those countries that use less biological capacity than they have available?

Conversely, what does it mean for those who are running an ecological deficit?

What are the political, economic, social and strategic implications of eight countries controlling more than half the planet's biological capacity?

How can nations work together to best manage ecological assets so that they are not depleted or degraded, but rather, can continue to meet human demands while maintaining a healthy biodiversity?

The data presented in this publication are intended to enhance understanding of the extent, use and distribution of ecological assets, and their relationship to human well-being. It provides an objective and measurable starting point for politicians, decision-makers, opinion leaders and citizens to address the sustainability challenge — how to live well, while living within the means of the planet. This challenge is perhaps the key issue of the 21st century, and how it is resolved will likely determine the fate of humanity and the rest of the Earth's species.

Global Footprint Network invites all countries and organizations to participate in this debate, and to explore the implications of the Ecological Footprint and biocapacity data for national development, valuation of ecological services, and international agreements, such as those designed to protect biodiversity. In addition, these data provide an important perspective for shaping and evaluating post-Copenhagen initiatives related to the emission and capture of carbon dioxide from the burning of fossil fuels, deforestation and other sources.

In a world that is confronting simultaneous limits on food, water, soil, energy, climate and biodiversity, this perspective brings current ecological realities into sharper focus. In particular, it can help gauge whether proposed solutions will result in an absolute reduction in humanity's ecological overshoot, or will just transfer pressure from one stressed ecosystem to another.

Biocapacity and the sustainability challenge

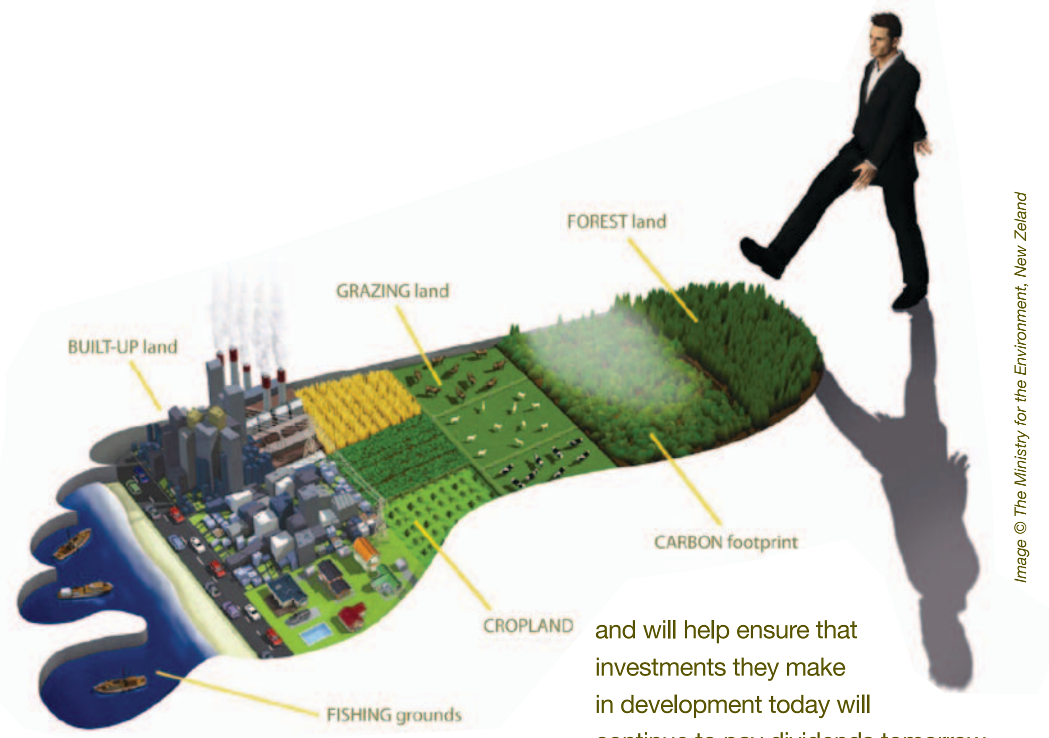


Image © The Ministry for the Environment, New Zealand

Increasing economic globalization and a rapidly growing world population are pushing resource consumption and fossil fuel emissions to unprecedented levels. The ecosystems that provide society with these resources and absorb its carbon emissions can no longer keep up. Just as we are moving toward a single global economy, scientists are coming to see the planet as a single, integrated, self-regulating organism. Thus, it is not surprising that as we surpass ecological limits, multiple consequences such as climate change, ocean acidification and biodiversity loss are emerging simultaneously. Solving this problem means addressing not just carbon or any other single limit in isolation. Instead, a more holistic approach is required to ensure that pressure is not just being shifted from one part of the biosphere to another.

The Ecological Footprint, a resource accounting tool, takes such a holistic approach by tracking flows of resources and carbon emissions through production, consumption and trade to show where ecological assets are available and where they are being used. Such a tool is vital in addressing the dangers of our ongoing ecological challenge. We have been running annual ecological deficits for at least a quarter of a century, and as this debt grows, the ecosystems that support our health and our economies are in increasing danger of deterioration or collapse. We cannot continue to ignore the importance of our ecological assets, and the fact that they are impacted by both poverty and affluence. Now, more than ever, it is essential to recognize that humanity's health and well-being depend on the health and well-being of the Earth's ecosystems.

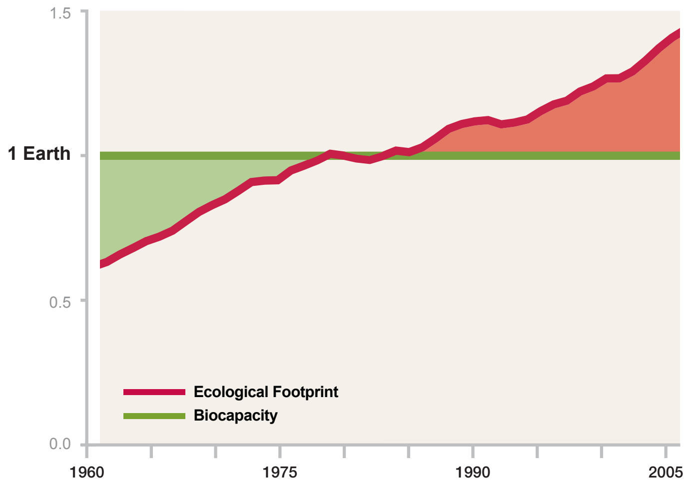
Countries that import food, fiber and timber resources or products that incorporate them are meeting their consumption demands by using ecological assets from outside their own borders, and are at risk if demand outpaces supply, or if resource shortages develop in the exporting country. Countries exporting these resources are using their ecological assets to generate revenue flows, in addition to meeting their own needs, and thus are at economic risk if domestic demand for these resources grows, or if resource productivity, and thus export income, declines. In addition, many countries generate more carbon emissions than their own ecosystems can sequester; if the world decides that countries will have to pay for these excess emissions, this may entail significant new costs.

Tracking resource and emissions flows is a key step in addressing pressure on these overburdened ecosystems. Reducing this pressure is not just altruistic. While doing so will benefit all of humanity and many other species, it is also in the self-interest of nations to know how much natural capital they have and how much they are using. Understanding whose ecological assets they are dependent on and who is dependent on theirs will help nations identify both risks and opportunities, and will help ensure that investments they make in development today will continue to pay dividends tomorrow. The Ecological Footprint helps clarify these risks and opportunities, laying the foundation for ecologically-sound decision-making and a new global collaboration, one based on the sharing of ecological assets, without their depletion or degradation.

Throughout this publication, you will see demonstrated the growing need for nations to recognize the value of their own ecological assets, as well as the need to find a way for humanity to live well, within the means of our planet. You will also learn more about the Ecological Footprint, and what it tells us about the current ecological balances of both individual countries and the world as a whole.

Global Ecological Limits

Figure 1: Human Demand on the Biosphere, 1961-2006



In 1961 we used a little more than half of the Earth's biocapacity; in 2006 we used 44% more than was available.

The Ecological Footprint measures the area of biologically productive land and water required to provide the resources used and absorb the carbon dioxide waste generated by human activity, under current technology. Accounting for a country's consumption Footprint starts with all goods and services produced in that country, then adds imports and subtracts exports.

Biocapacity is the area of productive land and water available to produce resources or absorb carbon dioxide waste, given current management practices. Both the Ecological Footprint and biocapacity are measured in standard units called global hectares (gha). One gha represents a hectare of forest, cropland, grazing land or fishing grounds with world average productivity.

While economies, populations and resource demands grow, the size of the planet remains the same. In 2006, humanity's Footprint exceeded global biocapacity by 44 percent (Figure 1). Moderate United Nations projections suggest demand will grow significantly faster than biocapacity, and that by the late 2030s, the capacity of two Earths will be needed to keep up with our consumption. Staying on this course would quickly diminish our room to maneuver, and the well-being of many of the planet's residents would be increasingly at risk.

In 2006, by September 11, humanity had used all the combined resource production and carbon sequestration capacity that the planet's ecosystems had available for that entire year. Since the mid-1980s, when global ecological overshoot first became a consistent reality, we have been drawing down the biosphere's principal rather than living off its annual interest. To support our consumption, we have been liquidating resource stocks and allowing carbon dioxide to accumulate in the atmosphere.

Ecological overshoot is possible only for a limited time before ecosystems begin to degrade and possibly collapse. This can already be seen in water shortages, desertification, erosion, reduced cropland productivity, overgrazing, deforestation, rapid extinction of species, collapse of fisheries and global climate change. New consequences of overshoot are regularly being discovered, and others may only become apparent long into the future.

The biosphere is made up of complex, interactive systems that are often unpredictable. Air, water, land, and life -- including human life -- combine forces to create a constantly changing world.

If these changes exceed certain thresholds conditions could depart from those that were present during the course of human evolution, making the planet a less hospitable place to us to live.

Photo of anvil clouds over the Pacific Ocean. NASA, 21 July, 2003

Ecological Footprint and biocapacity of nations

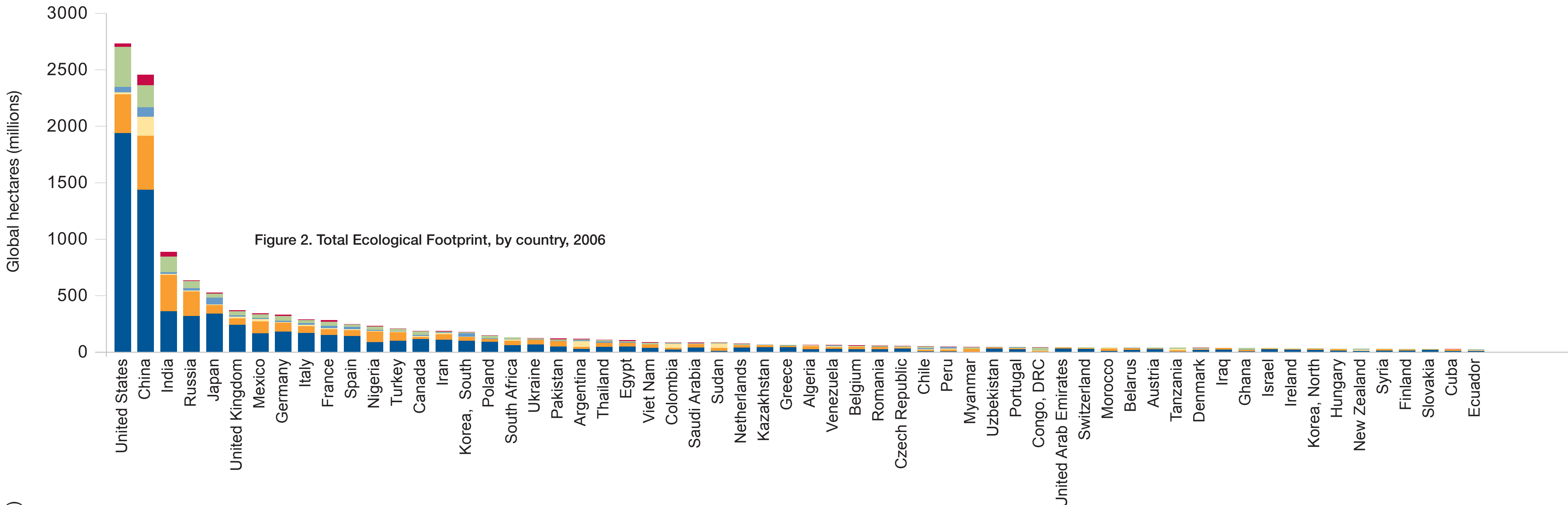


Figure 2. Total Ecological Footprint, by country, 2006

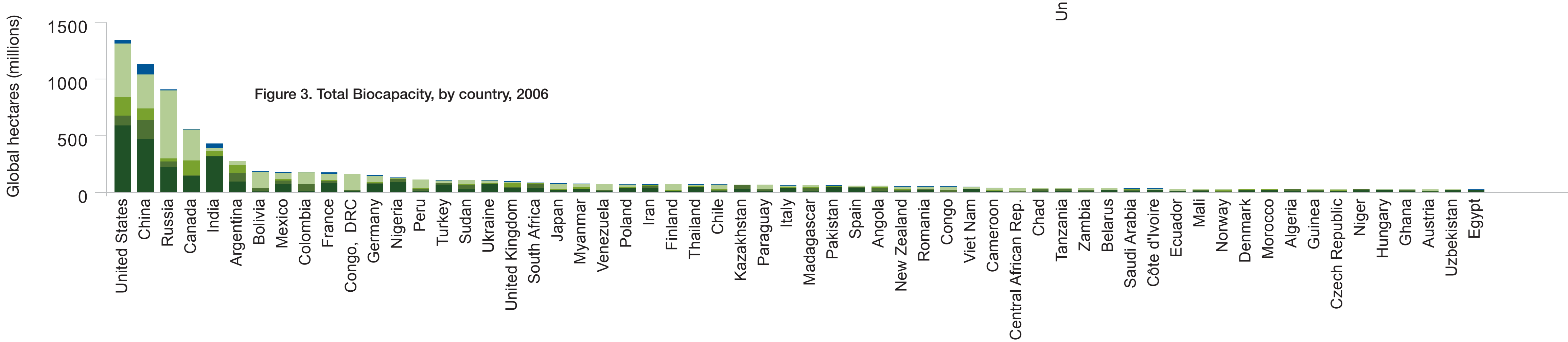


Figure 3. Total Biocapacity, by country, 2006

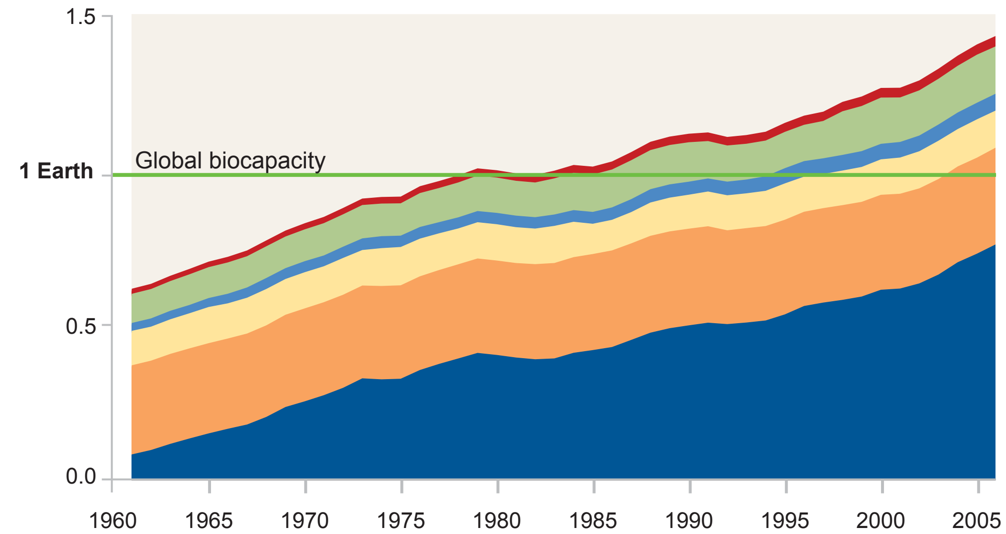
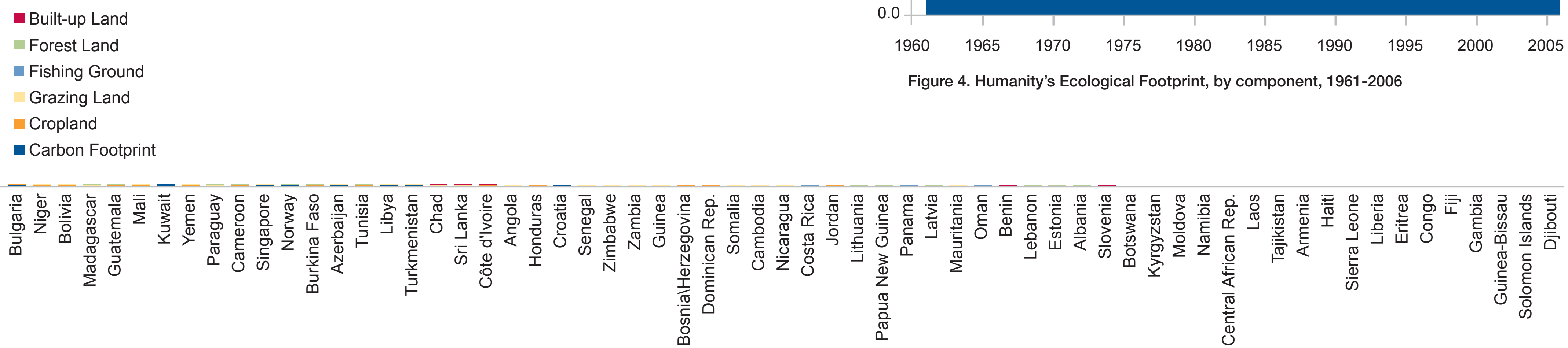
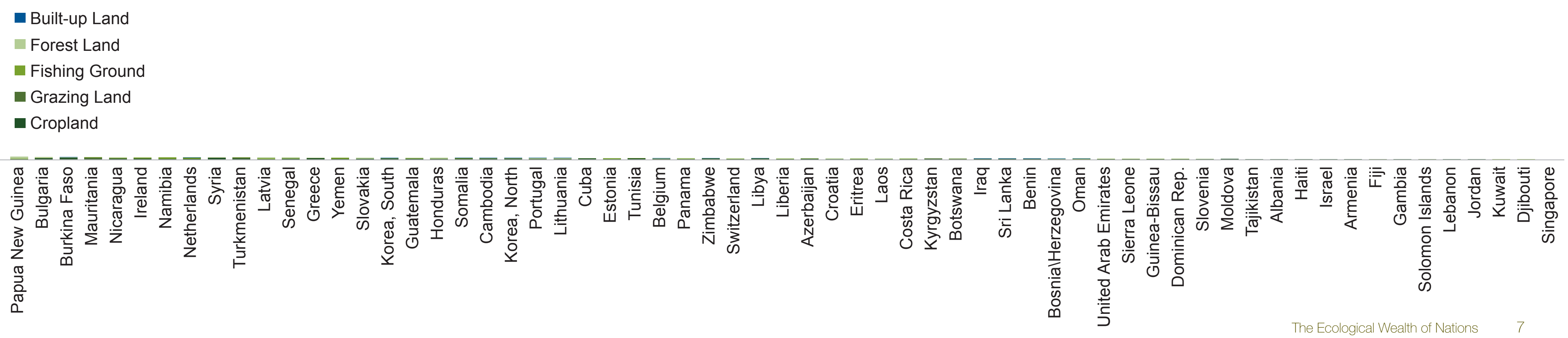
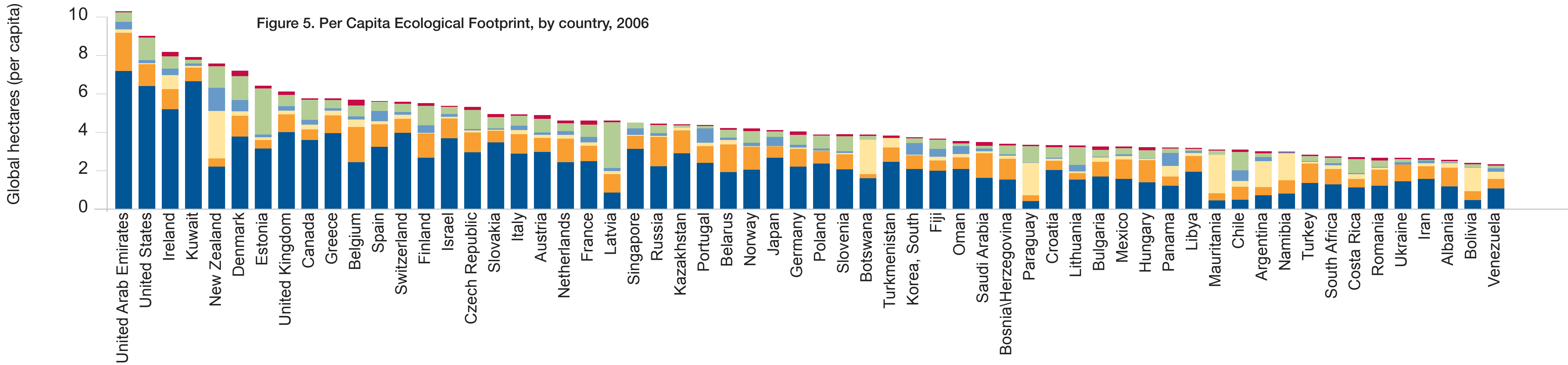
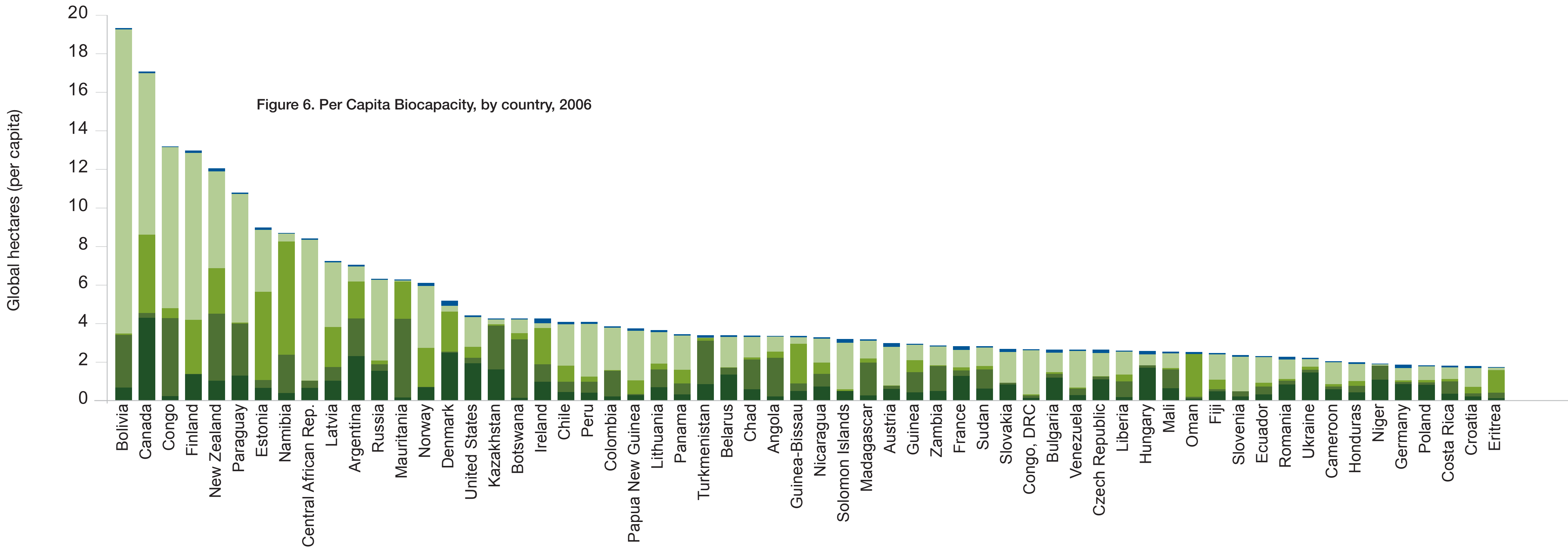


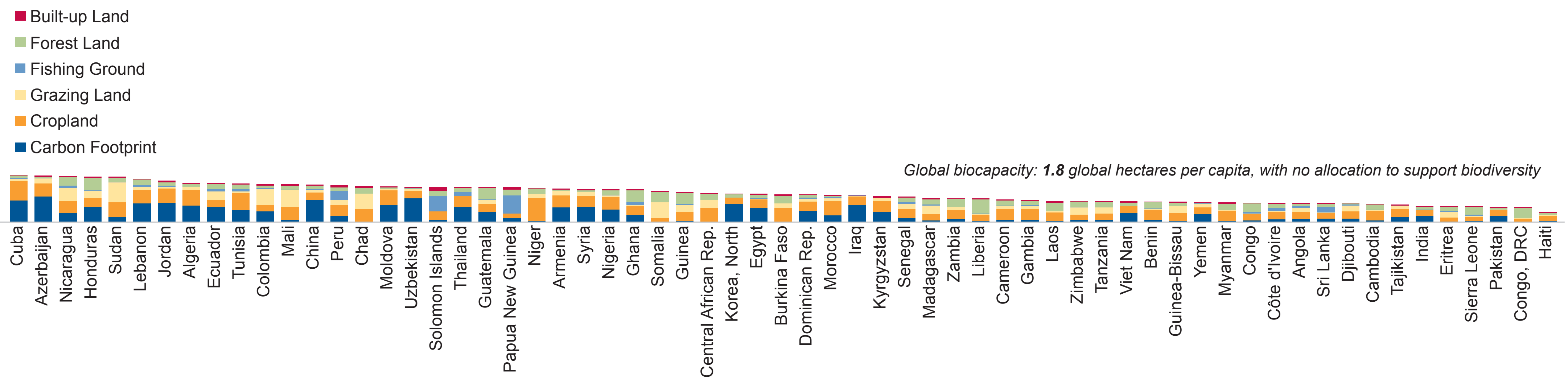
Figure 4. Humanity's Ecological Footprint, by component, 1961-2006

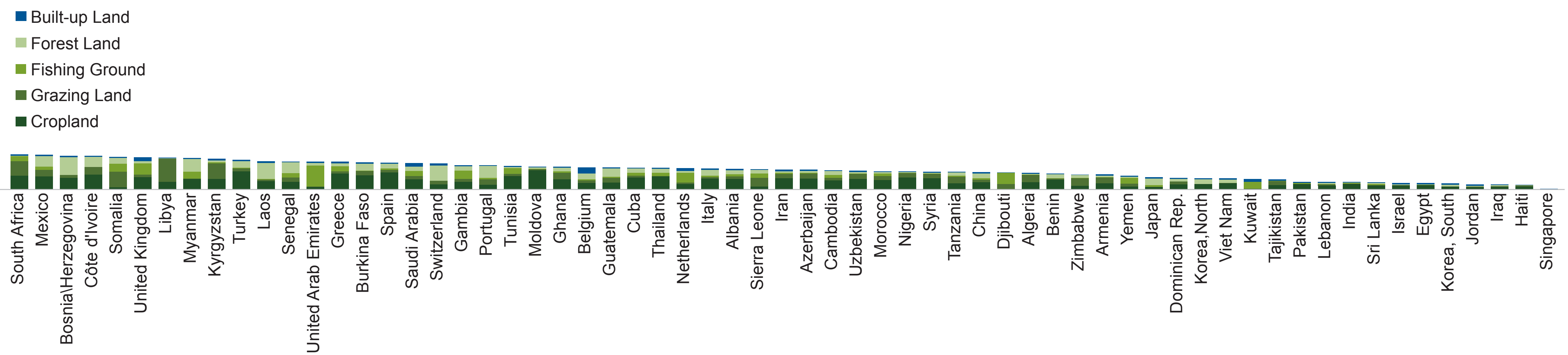





Global hectares (per capita)
10
8
6
4
2
0
Figure 5. Per Capita Ecological Footprint, by country, 2006
United Arab Emirates
United States
Ireland
Kuwait
New Zealand
Denmark
Estonia
United Kingdom
Canada
Greece
Belgium
Spain
Switzerland
Finland
Israel
Czech Republic
Slovakia
Italy
Austria
Netherlands
France
Latvia
Singapore
Russia
Kazakhstan
Portugal
Belarus
Norway
Japan
Germany
Poland
Slovenia
Botswana
Turkmenistan
Korea, South
Fiji
Oman
Saudi Arabia
Bosnia\Herzegovina
Paraguay
Croatia
Lithuania
Bulgaria
Mexico
Hungary
Panama
Libya
Mauritania
Chile
Argentina
Namibia
Turkey
South Africa
Costa Rica
Romania
Ukraine
Iran
Albania
Bolivia
Venezuela


Global hectares (per capita)
20
18
16
14
12
10
8
6
4
2
0
Figure 6. Per Capita Biocapacity, by country, 2006
Bolivia
Canada
Congo
Finland
New Zealand
Paraguay
Estonia
Namibia
Central African Rep.
Latvia
Argentina
Russia
Mauritania
Norway
Denmark
United States
Kazakhstan
Botswana
Ireland
Chile
Peru
Colombia
Papua New Guinea
Lithuania
Panama
Turkmenistan
Belarus
Chad
Angola
Guinea-Bissau
Nicaragua
Solomon Islands
Madagascar
Austria
Guinea
Zambia
France
Sudan
Slovakia
Congo, DRC
Bulgaria
Venezuela
Czech Republic
Liberia
Hungary
Mali
Oman
Fiji
Slovenia
Ecuador
Romania
Ukraine
Cameroon
Honduras
Niger
Germany
Poland
Costa Rica
Croatia
Eritrea


Built-up Land
Forest Land
Fishing Ground
Grazing Land
Cropland
Carbon Footprint
Global biocapacity: 1.8 global hectares per capita, with no allocation to support biodiversity
Cuba
Azerbaijan
Nicaragua
Honduras
Sudan
Lebanon
Jordan
Algeria
Ecuador
Tunisia
Colombia
Mali
China
Peru
Chad
Moldova
Uzbekistan
Solomon Islands
Thailand
Guatemala
Papua New Guinea
Niger
Armenia
Syria
Nigeria
Ghana
Somalia
Guinea
Central African Rep.
Korea, North
Egypt
Burkina Faso
Dominican Rep.
Morocco
Iraq
Kyrgyzstan
Senegal
Madagascar
Zambia
Liberia
Cameroon
Gambia
Laos
Zimbabwe
Tanzania
Viet Nam
Benin
Guinea-Bissau
Yemen
Myanmar
Congo
Côte d'Ivoire
Angola
Sri Lanka
Djibouti
Cambodia
Tajikistan
India
Eritrea
Sierra Leone
Pakistan
Congo, DRC
Haiti


Built-up Land
Forest Land
Fishing Ground
Grazing Land
Cropland
South Africa
Mexico
Bosnia\Herzegovina
Côte d'Ivoire
Somalia
United Kingdom
Libya
Myanmar
Kyrgyzstan
Turkey
Laos
Senegal
United Arab Emirates
Greece
Burkina Faso
Spain
Saudi Arabia
Switzerland
Gambia
Portugal
Tunisia
Moldova
Ghana
Belgium
Guatemala
Cuba
Thailand
Netherlands
Italy
Albania
Sierra Leone
Iran
Azerbaijan
Cambodia
Uzbekistan
Morocco
Nigeria
Syria
Tanzania
China
Djibouti
Algeria
Benin
Zimbabwe
Armenia
Yemen
Japan
Dominican Rep.
Korea,North
Viet Nam
Kuwait
Tajikistan
Pakistan
Lebanon
India
Sri Lanka
Israel
Egypt
Korea, South
Jordan
Iraq
Haiti
Singapore

Development that fits on one Earth

Humanity's challenge is to live well, while living within the capacity of the planet, and not degrading ecological assets to the detriment of future generations. This is the challenge of sustainable development.

Can living well be measured? The United Nations Human Development Index (HDI) measures life expectancy, education and literacy, and the ability to purchase needed goods and services. On a scale of 0.0 to 1.0, the UN defines a score of 0.8 as the threshold that indicates a high level of development.

But development can only be sustained if it is done within the Earth's ecological limits. This means that the average person's Ecological Footprint must not exceed the per capita biocapacity available on the planet — 1.8 global hectares, as of 2006. This figure assumes that humans will use all of the Earth's biocapacity. However, if we want to ensure the stability of the world's ecosystems and the many services they provide humanity, a significant percentage of this ecological budget must be allocated to support biodiversity. Thus in reality the area available to support each individual on the planet is less than 1.8 global hectares.

Ivory Coast. Crowd at Abengourou. © Yann Arthus-Bertrand

Human Development Index and Ecological Footprint of countries, 2006

As populations expand, the total demand for ecological resources typically increases, while the biocapacity available to support each individual's consumption shrinks.

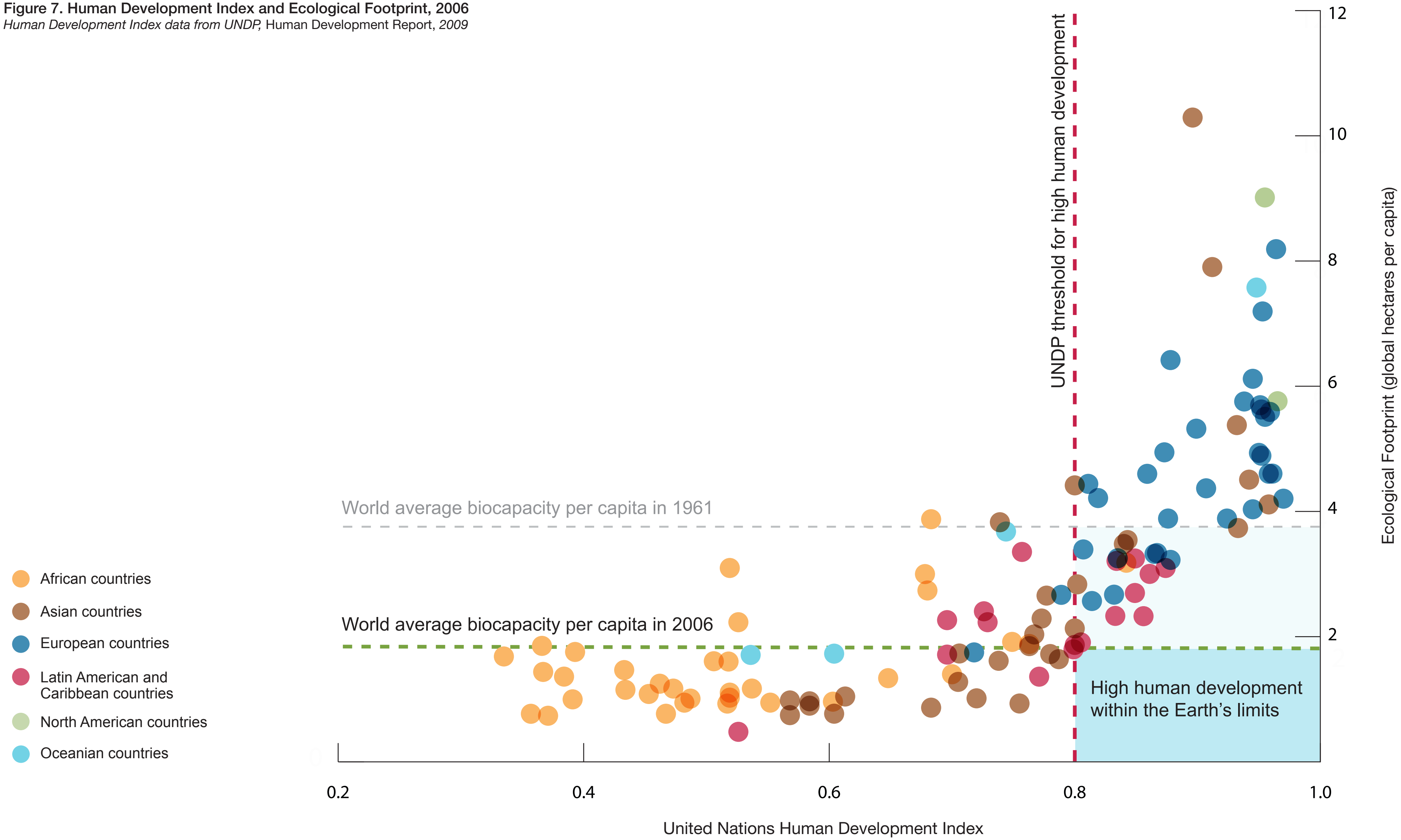
World population is rising at 1.3 percent a year. At this rate, population doubles approximately every 50 years. This lowers the per capita Footprint threshold for sustainable development, making it more difficult to attain.

Economic growth often comes in the form of increased per capita consumption of goods and services. When this is not offset by increased material and energy efficiency in the production of these goods and services, this means a larger per capita Footprint. While some countries may need to increase consumption just to meet basic needs, on a global scale an increase in the average Footprint makes sustainable development that much more elusive.

Taken together, the HDI and Footprint thresholds define minimum criteria that must be met if a globally sustainable society is to be achieved. On average, countries would enjoy a high level of development, with an HDI score above 0.8, and have an average Ecological Footprint less than the biocapacity available per person on the planet, 1.8 global hectares as of 2006. Note that in 1961 it would have been easier to meet the Footprint threshold; with considerably fewer people on the planet sharing the Earth's bounty, the biocapacity available per person then was about double what it was 45 years later.

Figure 7 shows where countries stood relative to these two criteria in 2006. Countries meeting both criteria would be located in the blue quadrant. In spite of international recognition almost 20 years earlier of the need for sustainable development, no single country was found there, nor on average was the world as a whole.

Figure 7. Human Development Index and Ecological Footprint, 2006
Human Development Index data from UNDP, Human Development Report, *2009*

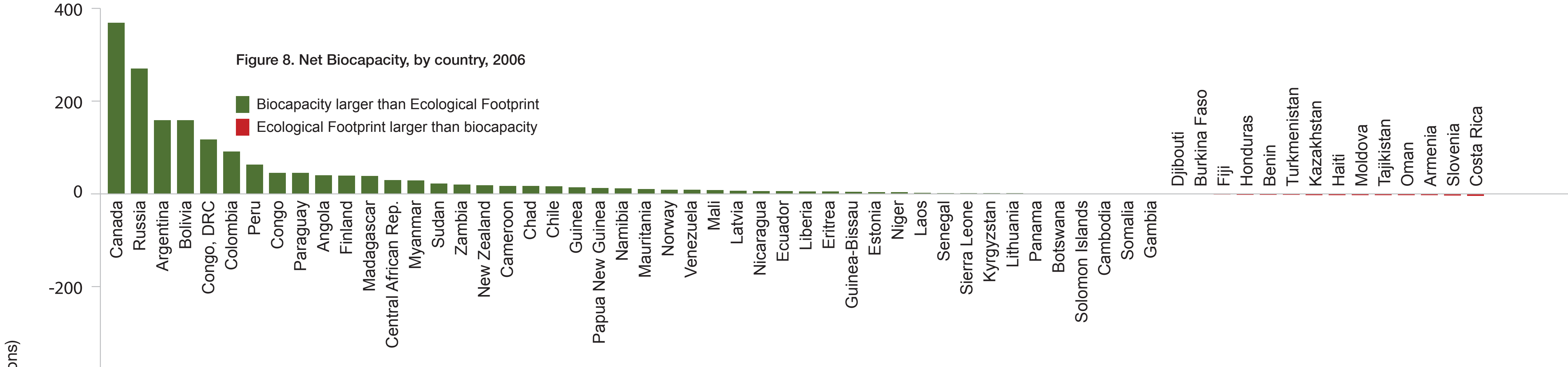


We're going to have to think of ourselves as a subsystem,
part of the natural world and that we depend upon it in two ways:
we'll have to take from the natural world resources
at a rate at which the natural world can regenerate and we'll have to throw back the wastes
from using those natural resources at a rate the natural world can assimilate.

Herman Daly

Kenya. Small African fields. © Yann Arthus-Bertrand

Biocapacity constraints and national well-being

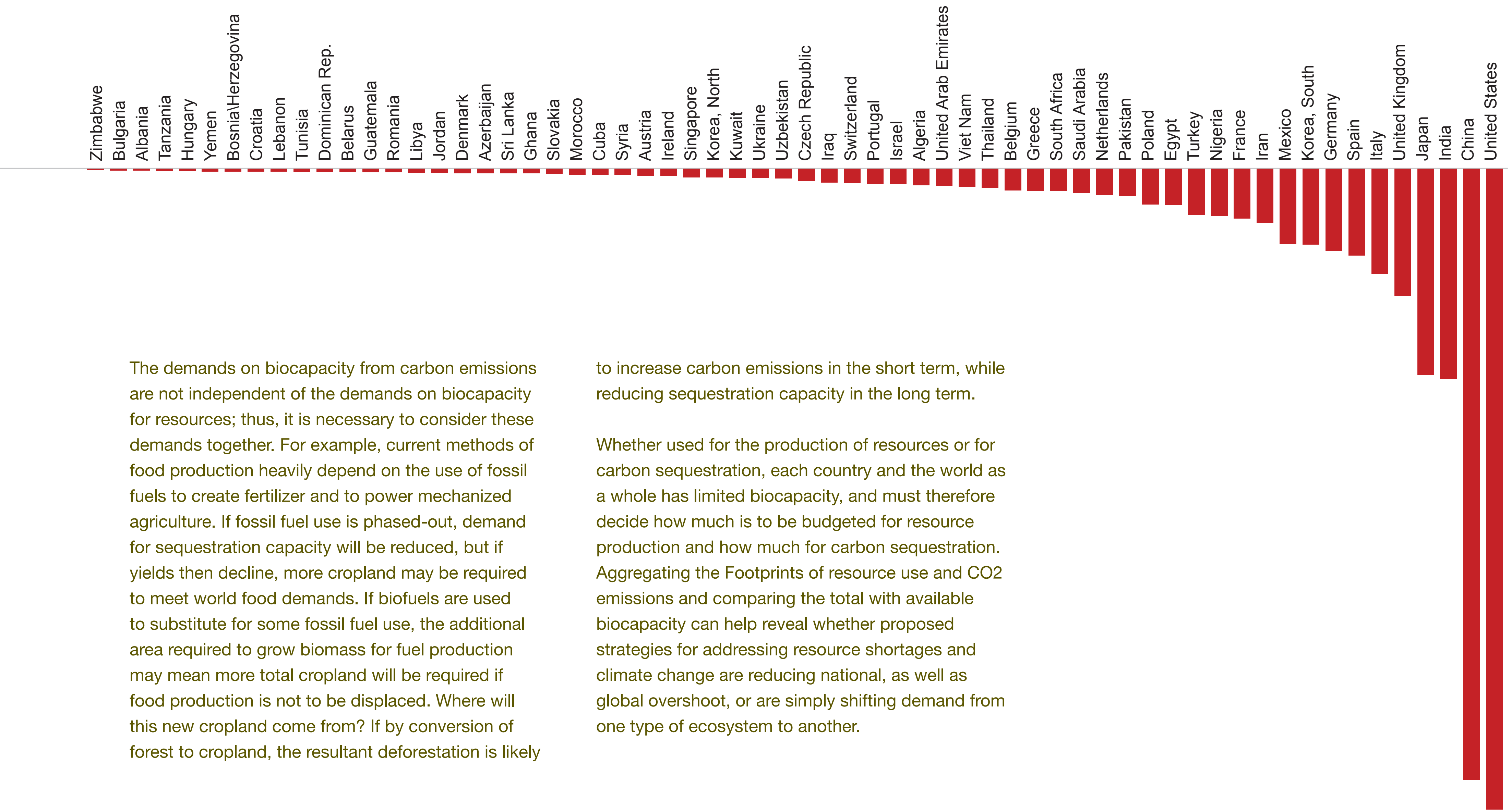


In an ever more globalized world, countries meet the demand for the resources they consume by using both their own biocapacity, and the biocapacity of other countries. With continuing growth in world population and, in many places, per capita consumption, competition for resources is rapidly increasing. As prices rise and shortages develop, countries may find it difficult to maintain their economies and the well-being of their residents -- and to achieve sought-after development goals or even to sustain existing successes. Wealthier countries will likely be buffered from the impacts of these resource shortages longer than countries with less purchasing power.

These shortages have already started to become apparent. In December 2007, the UN Food and Agriculture Organization began warning about absolute rather than distributional global food shortages (Rosenthal, 2007). One response has been an international "biocapacity grab," with countries buying up the rights to food production — that is, buying cropland biocapacity in other countries in order to ensure a continuing adequate supply of food.
Saudi Arabia, for example, has contracted for the use of large areas of land in Ethiopia, while South Korean companies have tried, thus far unsuccessfully, to obtain growing rights to half of the arable land in Madagascar (Rice, 2009).

In addition to these attempts to purchase biocapacity, a recent report by the UN Environmental Programme suggests that military conflicts over control of increasingly scarce natural resources will expand over the coming decades (UNEP, 2009).

Countries also make demands on biocapacity external to their own borders through the emissions of carbon dioxide that come from burning fossil fuels, deforestation, and industrial processes such as cement manufacturing. These emissions quickly disperse throughout the global atmosphere. Biocapacity somewhere on the planet is needed to sequester them if their accumulation in the atmosphere is to be avoided. With climate agreements, there soon may be significant costs imposed for emitting carbon dioxide, as well as significant economic benefits for those countries that have more sequestration capacity than they are using.



The demands on biocapacity from carbon emissions are not independent of the demands on biocapacity for resources; thus, it is necessary to consider these demands together. For example, current methods of food production heavily depend on the use of fossil fuels to create fertilizer and to power mechanized agriculture. If fossil fuel use is phased-out, demand for sequestration capacity will be reduced, but if yields then decline, more cropland may be required to meet world food demands. If biofuels are used to substitute for some fossil fuel use, the additional area required to grow biomass for fuel production may mean more total cropland will be required if food production is not to be displaced. Where will this new cropland come from? If by conversion of forest to cropland, the resultant deforestation is likely to increase carbon emissions in the short term, while reducing sequestration capacity in the long term.

Whether used for the production of resources or for carbon sequestration, each country and the world as a whole has limited biocapacity, and must therefore decide how much is to be budgeted for resource production and how much for carbon sequestration. Aggregating the Footprints of resource use and CO2 emissions and comparing the total with available biocapacity can help reveal whether proposed strategies for addressing resource shortages and climate change are reducing national, as well as global overshoot, or are simply shifting demand from one type of ecosystem to another.

A NEW MAP OF THE WORLD

"The world will no longer be divided by the ideologies of 'left' and 'right,' but by those who accept ecological limits and those who don't."

Wolfgang Sachs, Wuppertal Institute

How much is a country relying on domestic, versus foreign, biocapacity to satisfy its own consumption demands? How much of its biocapacity is being used to bolster its economy through exports? If the Footprint of a country's production does not exceed its own biocapacity, can this remaining biocapacity be managed for sequestration of carbon emissions and thereby earn carbon credits? Knowing the answers to such questions can help a country better manage its economic and social well-being.

Many countries rely, in net terms, on the biocapacity of other nations to meet domestic demands for goods and services. For example: Japan imports Ecuadorian wood to make paper; Europe imports meat fed on Brazilian soy; the United States imports Peruvian cotton; and China obtains lumber from Tanzania.

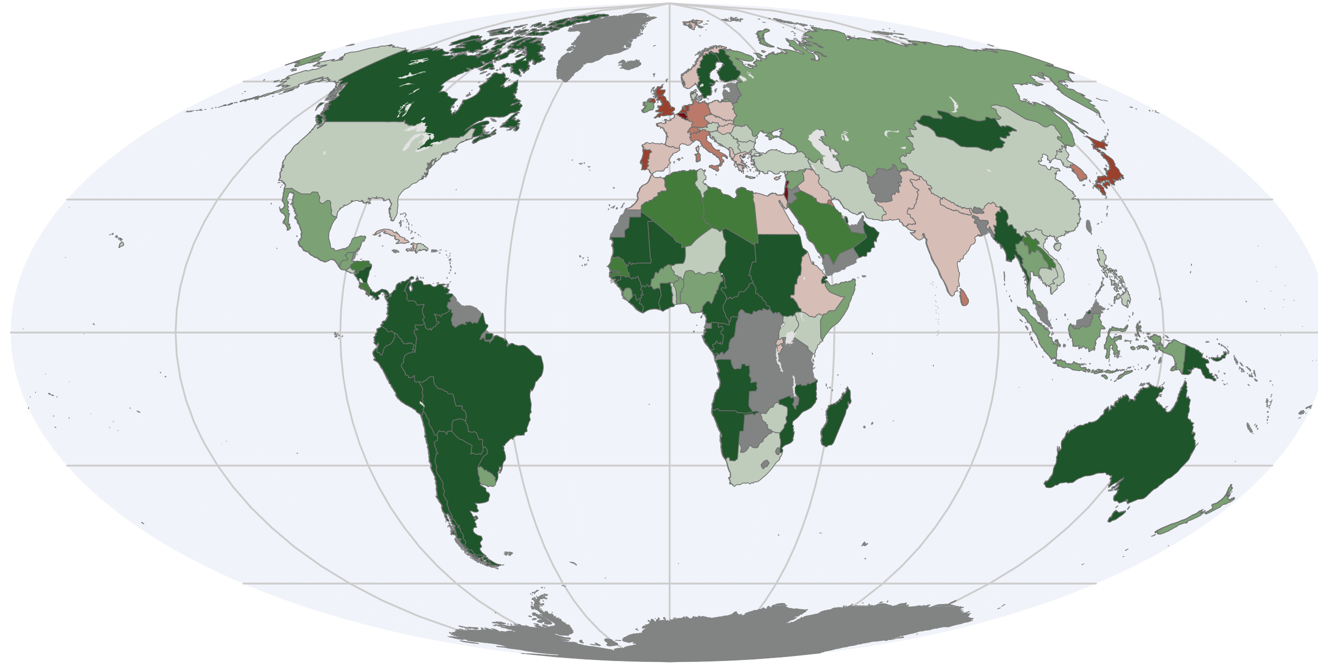
Because disruptions of this supply chain can negatively impact their economies and their quality of life, countries that are importing renewable resources are dependent on how well both their own ecological assets and those of their trading partners are being managed. Knowing where this biocapacity is located, and the stability of these assets in the face of political, economic and climatic challenges, can help a country manage its imports and select its trading partners to reduce the risks that come from exposure to trade in an increasingly resource-constrained world.

Map 1 in Figure 9 compares each country's total consumption Footprint with the biocapacity available within its own borders. In 1961, most of the world's population was living in countries that, in net terms, could provide the food, fiber and timber they were consuming and absorb their carbon emissions. By 2006 the situation had radically changed, with less than 20 percent of the world's population living in countries that can keep up with their own demands.

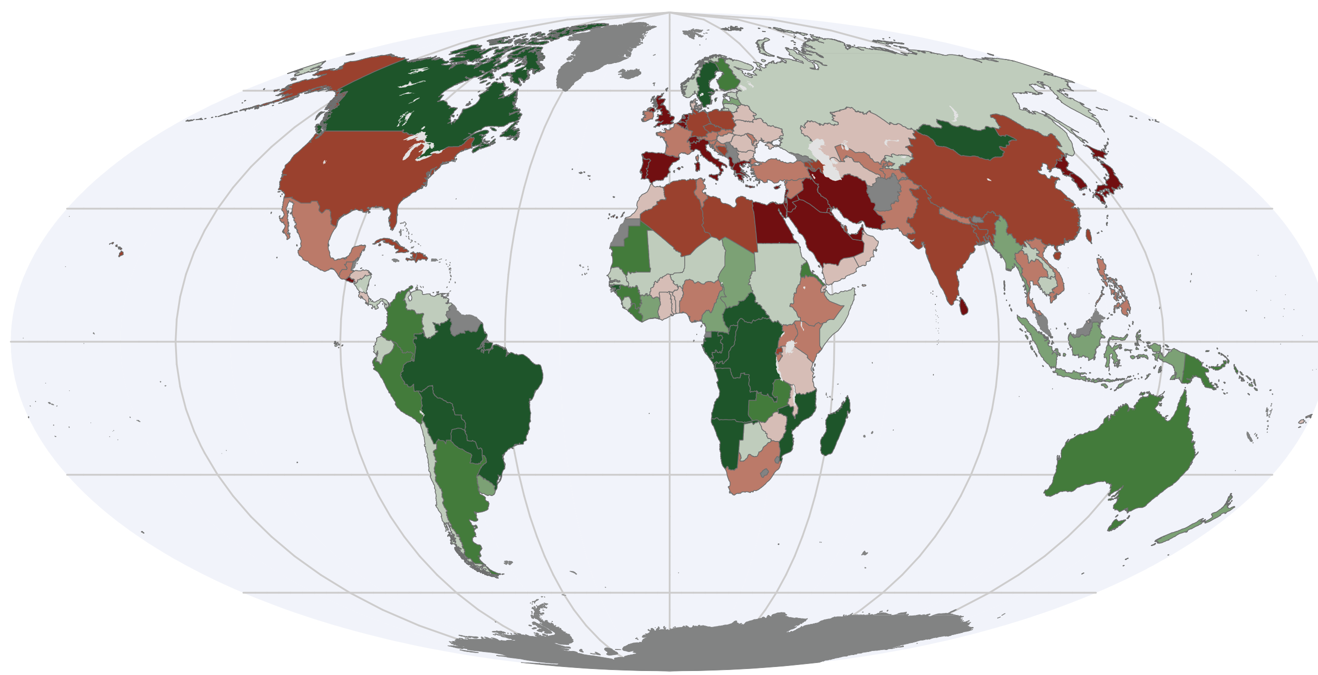
Reintegrating human society into the larger ecological community will take a new social and economic architecture, one more aligned with the Earth's physiology. The old geopolitical paradigm will need to give way to a new biopolitical one, and with this shift will come a transition from competition to collaboration, a richness of new possibilities, and creative new solutions for living well without transgressing the Earth's ecological limits.

Figure 9. Footprint of Consumption
Compared to Biocapacity, 1961 and 2006

- Footprint more than 150% larger than biocapacity
- Footprint 100-150% larger than biocapacity
- Footprint 50-100% larger than biocapacity
- Footprint 0-50% larger than biocapacity
- Biocapacity 0-50% larger than Footprint
- Biocapacity 50-100% larger than Footprint
- Biocapacity 100-150% larger than Footprint
- Biocapacity more than 150% larger than Footprint
- Insufficient data



1961



2006

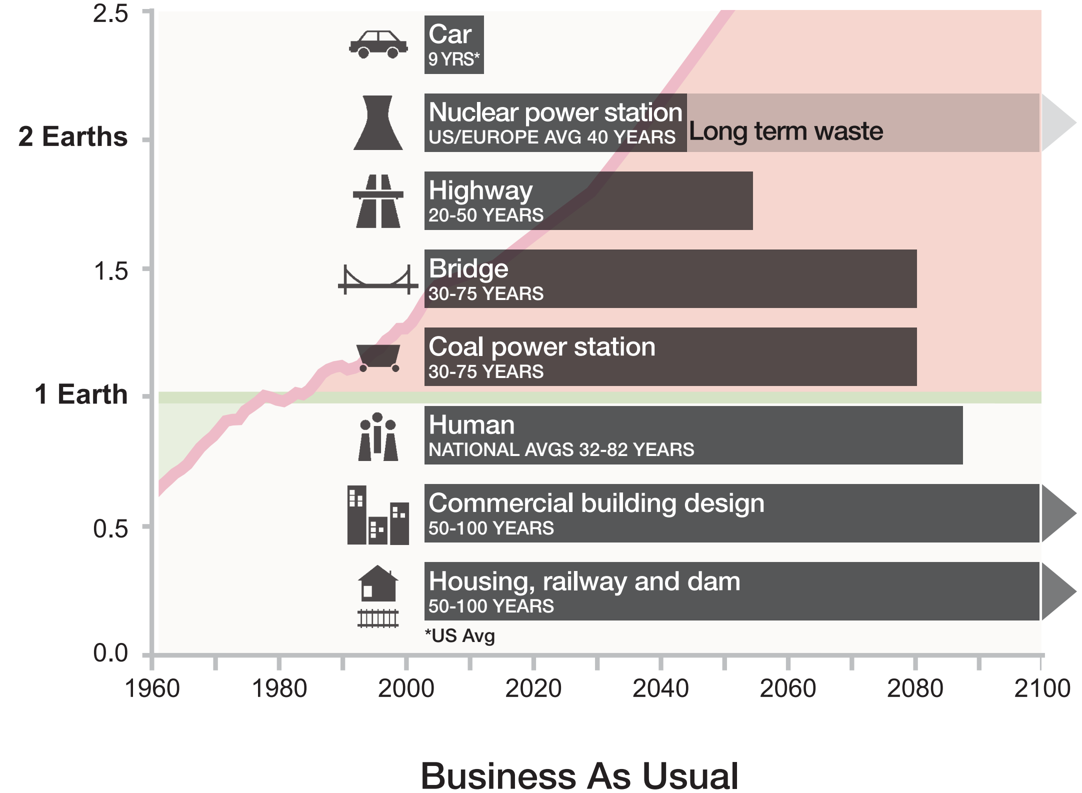
Achieving a sustainable society means, at a minimum, getting out — and staying out — of ecological overshoot. Doing so

will require both demand-side and supply-side management of the resources society uses and the wastes it generates. On the demand side, three factors determine the size of a country's, or the world's, Ecological Footprint: population (the number of people consuming); per capita consumption (the amount of goods and services each person uses); and resource and waste intensity (the efficiency with which these goods and services are produced). On the supply side, the amount of biocapacity available to meet this demand is a function of how much productive area is available, and how much it yields.

Remaining on our current path is not a viable option — ecological limits have already been transgressed, wastes are accumulating in the atmosphere and the oceans, ecosystems that we depend on are in decline all over the planet. In a world of overshoot, business-as-usual means exasperating an already growing ecological debt. This risks further climate change, ecosystem degradation, and possible permanent losses of productivity.

The good news is that change is possible, and that those who provide the strategies, technologies, products and services that support the transition to sustainability will be at a distinct advantage. Countries that find ways to create the greatest improvements in the well-being of their people on the smallest Footprints, while maintaining or even expanding their biocapacity, will be more resilient in the face of growing resource constraints and rising costs for carbon emissions, and will be able to maintain their development gains. New technologies that allow leapfrogging over formerly resource-intensive phases of development that are no longer necessary can help make this possible. Businesses that are early adopters in providing technological and other solutions will gain market advantage and remain relevant and competitive in a rapidly changing world.

Figure 10. Lifespans of People, Assets and Infrastructure



Infrastructure, because of its long life, will play an especially important role in determining whether the sustainability challenge will be successfully met.

The energy, transportation, housing and manufacturing systems we build today will be with us long into the future (Figure 8). If we invest in systems that can operate on a small Footprint, that do not have negative impacts on biocapacity, and that are flexible and resilient in face of changing resource constraints, they will provide lasting benefits. If, on the other hand, we design infrastructure that is dependent on a high level of resource throughput, or that damages or depletes the ecological services that make its operation possible, any benefits gained will be at best short-lived. Similarly, the way we manage agricultural, water and forestry systems will determine whether they will be able to provide an ongoing stream of renewable resources and carbon sequestration services.

With more than half the world's population already living in cities, and that percentage expected to grow, urban infrastructure and the supply chains that support it are especially critical. Cities provide unique opportunities for achieving efficiency gains in housing and mobility systems while improving quality of life. Utilities providing energy, water and waste management services can be integrated to generate Footprint reductions that in less densely populated areas might be more difficult to attain.

In addition to physical infrastructure, improvement in intellectual infrastructure, particularly in education and health care, will play an essential role. Education helps shape values, provides a framework for understanding sustainability, and builds the skills to develop solutions and new ideas. In countries with rapidly expanding populations, education, especially of women, along with improved health care and access to family planning options, can help mitigate the contribution of population growth to local and global overshoot.

Interpreting national Footprint and biocapacity trends

From 1961 to 2006, biocapacity per capita in most countries declined, often precipitously. This was not typically due to a loss of ecological productivity — on the contrary, agricultural yields increased significantly over that period. The dominant driver was population growth: more people sharing available ecological assets.

A country whose biocapacity exceeds the Ecological Footprint of its consumption has more room to maneuver. Its ecosystems can, in net terms, provide the food, fiber and timber demanded by its residents, and absorb the emissions from the energy used to fuel their consumption. This net biocapacity surplus can be used to produce goods for export, absorb carbon dioxide from other countries, or be set aside to protect biodiversity. All these options can generate financial benefits. In addition, as fossil fuels become increasingly expensive or unavailable, countries with a net biocapacity surplus have more options for producing energy from biomass.

Countries with ecological deficits — with consumption Footprints exceeding their own biocapacities — overharvest their own ecosystems, rely on imports to meet part of their consumption demands, and/or use the global commons as a sink for their carbon emissions. All these strategies carry risks: Overharvested ecosystems may lose productivity and collapse, and trade partners can decrease quantities and increase prices of their exports. Carbon emissions may cost more if carbon taxes or cap-and-trade schemes are instituted, or as prices for fossil fuels increase.

Carbon accounting alone is not sufficient to address risks to economic and social well-being and to identify opportunities in a resource-constrained world. For instance, Cameroon's carbon Footprint was negligible in 1961, and in 2006 was still only 8 percent of its total Footprint. However, biocapacity and Ecological Footprint trends clearly show that its net biocapacity surplus is rapidly disappearing, and it may soon run an ecological deficit. This poses a risk not revealed when looking at carbon in isolation. Unless Cameroon can afford to import resources, it may soon find it more difficult to meet its consumption demands.

National Ecological Footprint and biocapacity trends reveal potential tradeoffs and conflicts among different types of resource use —energy versus food, for example — as well as overarching risks to future well-being. The following pages show these trends for selected countries.

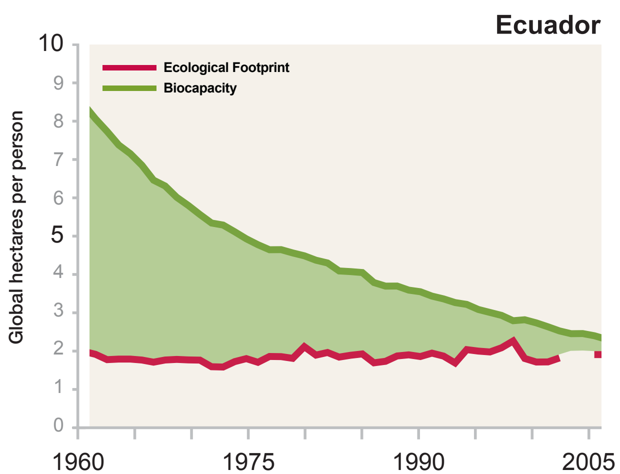


Figure 9: Ecuador's Footprint and biocapacity, per person, 1961-2006. In 1961, Ecuador's biocapacity was more than four times its Footprint, meaning the consumption demand of Ecuador's residents could be met, in net terms, using less than one-quarter the capacity of its own ecosystems. But by 2006, the country's Footprint was almost as large as its biocapacity. Of all the South American countries, Ecuador is closest to running an ecological deficit. As its per capita consumption has remained fairly constant over these decades, the rapid reduction of Ecuador's net ecological surplus is largely due to a decline in per capita biocapacity, mostly driven by the country's population growth. In December 2009 Ecuador launched a Presidential Mandate with a goal of no ecological deficit by 2013. Ecuador. Sierra region. *Fields near Quito © Yann Arthus-Bertrand.*

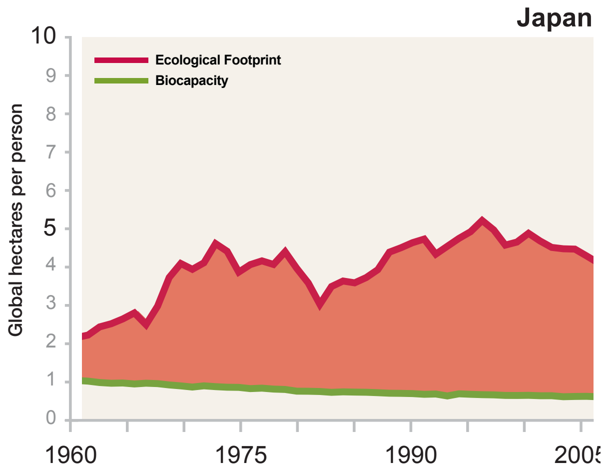


Figure 10: Japan's Footprint and biocapacity, per person, 1961-2006. While Japan's Footprint in 1961 was about twice its biocapacity, Japan's Footprint in 2006 was seven times its own biocapacity. In 1961, Japan had the seventh highest Footprint to biocapacity ratio of any country, and in 2006 it ranked fifth. Its ecological deficit is not just a reflection of carbon emissions to the global atmosphere. Even without the carbon component, Japan's Footprint is more than twice its biocapacity. Running an ecological deficit is possible for Japan because of its purchasing power, which is far greater than world average. But this deficit also indicates a potential risk for the Japanese economy as the world enters ever further into a resource constrained future. *Japan. Rice field near Oukura.*

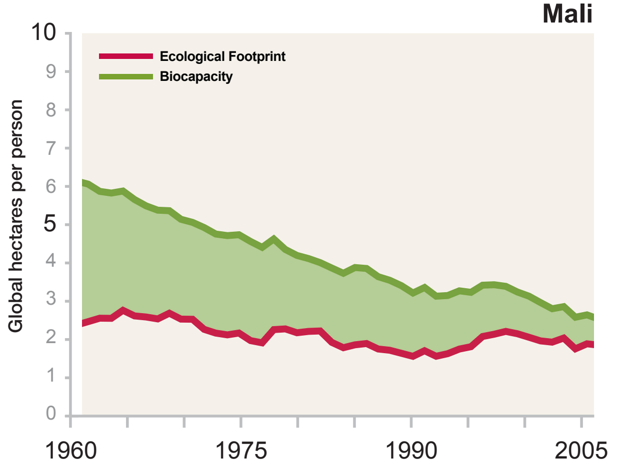
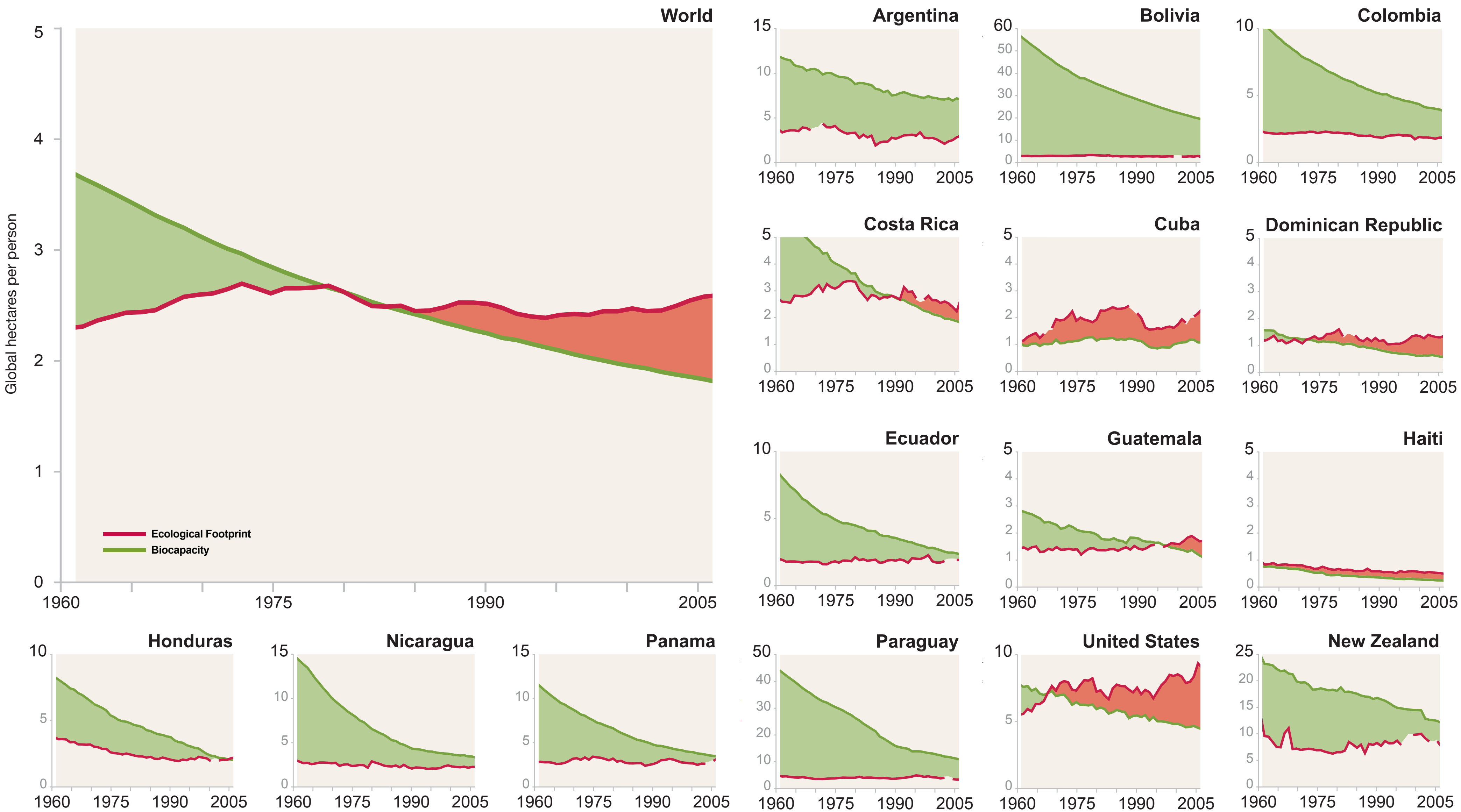


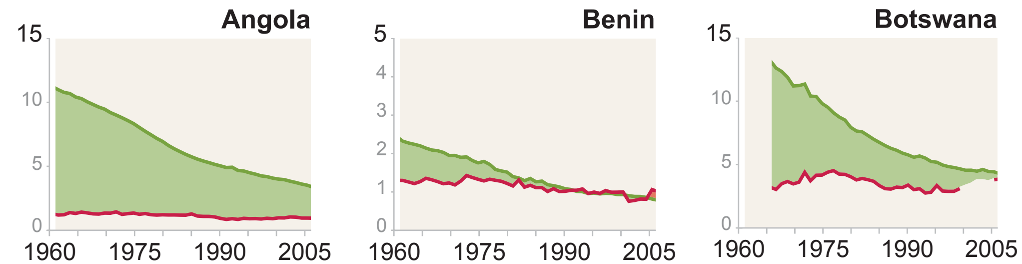
Figure 11: Mali's Footprint and biocapacity, per person, 1961-2006. Mali's per capita Footprint has declined slightly over the past 45 years. About half of its Footprint has been demand on grazing land, while the carbon component grew from essentially zero to about six percent of Mali's overall Footprint. With climate change, Mali's next decades may be more strongly influenced by the impact of climate on its biocapacity than by the size of its carbon Footprint. Mali's per capita biocapacity, about 6 global hectares in 1961, shrank by about two-thirds to 2.3 global hectares in 2006, While still 30 percent higher than world average, Mali's per capita biocapacity has declined more rapidly than the world's. This is due to two factors: more rapid population growth than world average, and slower increase in agricultural productivity than world average. Still Mali is among the few nations where biocapacity exceeds consumption demands. *Market gardening near Tombouctou. © Yann Arthus-Bertrand.*

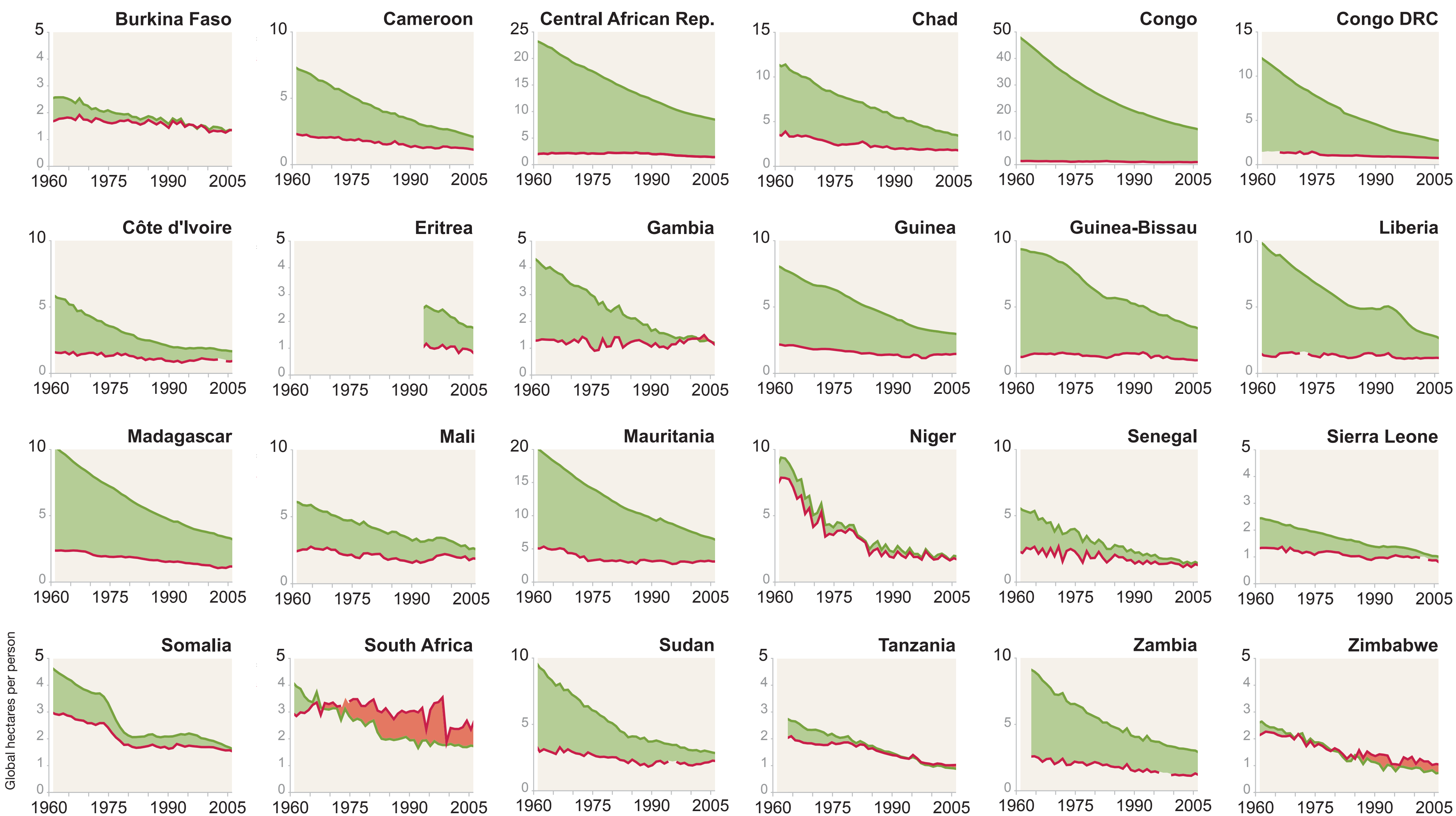
Gap in line indicates interpolation due to data anomaly.

World, Latin America, North America, and Oceania Ecological Footprint and Biocapacity, per capita,1961-2006



AFRICA ECOLOGICAL FOOTPRINT AND BIOCAPACITY, PER CAPITA, 1961-2006





Countries not shown to same vertical scale. Gap in line indicates interpolation due to data anomaly.

Ecological Footprint
Biocapacity

Country/Region[1]	Population [millions]	Change in Population, 1961-2006 [percent]	National Ecological Footprint [million gha]	Per capita Ecological Footprint [gha per capita]	Ecological Footprint Components: Carbon Footprint [gha per capita]	Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Built-up land [gha per capita]	Change in per capita Footprint, 1961-2006 [percent]
World	6,592.9	114	17,090.66	2.59	1.37	0.57	0.22	0.28	0.10	0.06	13
Latin America	564.7	150	1,375.32	2.44	0.60	0.58	0.71	0.36	0.11	0.08	-6
Argentina	39.1	87	117.49	3.00	0.71	0.43	1.36	0.20	0.20	0.09	-20
Bolivia	9.4	173	22.50	2.41	0.47	0.47	1.22	0.16	0.01	0.07	-20
Chile	16.5	110	50.99	3.10	0.49	0.67	0.32	0.95	0.55	0.12	-
Colombia	45.6	163	85.12	1.87	0.52	0.31	0.78	0.13	0.04	0.08	-21
Costa Rica	4.4	219	11.87	2.70	1.13	0.44	0.26	0.73	0.05	0.09	-1
Cuba	11.3	55	26.22	2.33	1.05	0.96	0.11	0.12	0.04	0.05	108
Dominican Republic	9.6	178	13.08	1.36	0.54	0.46	0.13	0.12	0.07	0.04	15
Ecuador	13.2	189	25.19	1.91	0.74	0.36	0.40	0.25	0.11	0.06	-4
Guatemala	13.0	206	22.32	1.71	0.51	0.36	0.22	0.55	0.03	0.05	18
Haiti	9.4	139	4.53	0.48	0.05	0.25	0.04	0.10	0.02	0.02	-48
Honduras	7.0	237	15.55	2.23	0.73	0.46	0.34	0.59	0.03	0.07	-41
Mexico	105.3	169	342.23	3.25	1.58	1.00	0.18	0.32	0.10	0.07	-
Nicaragua	5.5	204	12.52	2.26	0.43	0.61	0.62	0.42	0.12	0.06	-25
Panama	3.3	184	10.55	3.21	1.22	0.47	0.55	0.23	0.68	0.05	16
Paraguay	6.0	207	20.17	3.35	0.41	0.32	1.68	0.87	0.01	0.07	-32
Peru	27.6	170	49.59	1.80	0.30	0.53	0.24	0.18	0.45	0.10	-
Venezuela	27.2	245	63.39	2.33	1.07	0.51	0.36	0.13	0.19	0.07	-
North America	335.5	62	2,918.16	8.70	6.13	1.07	0.08	1.16	0.17	0.09	61
Canada	32.6	78	187.61	5.76	3.60	0.54	0.26	1.05	0.23	0.08	-
United States	302.8	60	2,730.32	9.02	6.41	1.12	0.06	1.17	0.16	0.09	64
Oceania	33.8	108	196.43	5.80	1.75	0.26	2.33	0.88	0.52	0.06	-35
Fiji	0.8	104	3.06	3.68	1.99	0.55	0.18	0.48	0.41	0.07	-
New Zealand	4.1	71	31.36	7.58	2.21	0.44	2.45	1.12	1.21	0.14	-45
Papua New Guinea	6.2	193	10.59	1.71	0.21	0.21	0.02	0.30	0.87	0.11	-
Solomon Islands	0.5	297	0.84	1.73	0.10	0.42	0.01	0.25	0.75	0.20	-

National Biocapacity [millions gha]	Per Capita Biocapacity [gha per capita]	Biocapacity Components[2] Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Change in per capita Biocapacity, 1961-2006 [percent]	Gross Domestic Product, 1961 [$ per capita][3]	Gross Domestic Product, 2006 [$ per capita][3]	Human Development Index, 1980	Human Development Index, 2006	Country/Region[1]
11,901.5	1.81	0.56	0.26	0.74	0.18	-51	-	-	-	-	**World**
3,065.2	5.4	0.72	0.90	3.40	0.33	-60	-	-	-	-	**Latin America**
276.0	7.1	2.32	1.94	0.78	1.91	-41	1,894	15,119	0.79	0.86	**Argentina**
180.9	19.3	0.67	2.75	15.77	0.07	-66	515	3,946	0.56	0.73	**Bolivia**
67.4	4.1	0.45	0.53	2.16	0.83	-	1,132	19,838	-	-	**Chile**
175.8	3.9	0.22	1.32	2.19	0.04	-63	613	7,745	0.69	0.80	**Colombia**
8.0	1.8	0.35	0.65	0.60	0.11	-72	969	11,605	0.76	0.85	**Costa Rica**
12.1	1.1	0.59	0.09	0.20	0.14	3	-	10,658	-	0.86	**Cuba**
5.4	0.6	0.25	0.13	0.12	0.02	-64	451	9,192	0.64	0.77	**Dominican Republic**
30.5	2.3	0.33	0.40	1.33	0.20	-73	577	6,198	0.71	0.81	**Ecuador**
14.1	1.1	0.35	0.22	0.41	0.05	-62	664	6,051	0.53	0.70	**Guatemala**
2.2	0.2	0.15	0.04	0.01	0.02	-69	316	1,556	0.43	0.53	**Haiti**
13.8	2.0	0.43	0.33	0.88	0.26	-76	445	3,564	0.57	0.73	**Honduras**
178.7	1.7	0.65	0.31	0.50	0.17	-	859	11,370	-	-	**Mexico**
18.2	3.3	0.74	0.66	1.25	0.57	-78	579	2,194	0.57	0.70	**Nicaragua**
11.3	3.4	0.33	0.56	1.79	0.70	-71	469	8,721	0.76	0.83	**Panama**
64.9	10.8	1.30	2.68	6.67	0.06	-76	469	4,652	0.68	0.76	**Paraguay**
112.5	4.1	0.41	0.57	2.73	0.27	-	716	6,625	-	-	**Peru**
72.1	2.7	0.29	0.34	1.91	0.05	-	1,473	12,594	-	-	**Venezuela**
1,897.3	5.7	2.17	0.29	2.22	0.89	-41	-	-	-	-	**North America**
556.4	17.1	4.30	0.26	8.39	4.05	-	2,287	36,584	-	-	**Canada**
1,340.9	4.4	1.94	0.29	1.55	0.56	-43	2,934	44,005	0.89	0.96	**United States**
434.0	12.8	1.90	4.95	2.82	3.09	-56	-	-	-	-	**Oceania**
						-					
2.1	2.5	0.48	0.11	1.32	0.50	-	496	6,326	-	-	**Fiji**
49.9	12.0	1.04	3.47	5.03	2.36	-52	2,441	25,484	0.86	0.95	**New Zealand**
23.2	3.7	0.30	0.05	2.59	0.70	-	177	2,336	-	-	**Papua New Guinea**
1.6	3.2	0.50	0.01	2.42	0.08	-	-	1,318	-	-	**Solomon Islands**

[1] Regional averages are calculated using values from *all* countries within each United Nations region; only selected countries are shown here. Dashes indicate missing or insufficient data.
[2] Also includes Built-up land biocapacity equal to the Built-up land Footprint, shown on previous page.
[3] In constant 2005 US $.

Country/Region[1]	Population [millions]	Change in Population, 1961-2006 [percent]	National Ecological Footprint [million gha]	Per capita Ecological Footprint [gha per capita]	Ecological Footprint Components: Carbon Footprint [gha per capita]	Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Built-up land [gha per capita]	Change in per capita Footprint, 1961-2006 [percent]
Africa	942.5	225	1,338.22	1.42	0.35	0.48	0.20	0.29	0.04	0.05	-61
Algeria	33.4	203	63.90	1.92	0.81	0.76	0.14	0.13	0.03	0.04	92
Angola	16.6	224	15.66	0.95	0.14	0.34	0.19	0.13	0.09	0.04	-26
Benin	8.8	272	8.85	1.01	0.10	0.50	0.05	0.30	0.03	0.03	-22
Botswana	1.9	242	7.20	3.88	1.60	0.23	1.78	0.19	0.01	0.06	-
Burkina Faso	14.4	210	19.55	1.36	0.02	0.67	0.22	0.37	0.01	0.08	-18
Cameroon	18.2	229	20.10	1.11	0.09	0.54	0.13	0.24	0.04	0.05	-53
Central African Rep.	4.3	174	6.13	1.44	0.02	0.68	0.38	0.29	0.00	0.07	-26
Chad	10.5	245	18.38	1.76	0.01	0.61	0.77	0.29	0.00	0.07	-51
Congo	3.7	259	3.55	0.96	0.09	0.30	0.03	0.41	0.08	0.05	-33
Congo, DRC	60.6	282	44.67	0.74	0.01	0.16	0.01	0.49	0.01	0.05	-
Côte d'Ivoire	18.9	518	17.89	0.95	0.13	0.36	0.05	0.21	0.13	0.06	-42
Djibouti	0.8	810	0.76	0.93	0.17	0.37	0.28	0.05	0.04	0.03	-56
Egypt	74.2	160	103.82	1.40	0.69	0.41	0.02	0.13	0.06	0.08	77
Eritrea	4.7	-	3.61	0.77	0.03	0.19	0.27	0.20	0.04	0.04	-
Gambia	1.7	348	1.80	1.08	0.12	0.50	0.14	0.19	0.08	0.04	-15
Ghana	23.0	213	36.87	1.60	0.35	0.42	0.05	0.57	0.16	0.05	-
Guinea	9.2	189	13.46	1.47	0.04	0.46	0.35	0.52	0.03	0.06	-33
Guinea-Bissau	1.6	196	1.64	1.00	0.05	0.39	0.34	0.16	0.00	0.06	-19
Liberia	3.6	231	4.12	1.15	0.06	0.30	0.02	0.70	0.03	0.04	-26
Libya	6.0	331	19.21	3.18	1.95	0.81	0.18	0.10	0.10	0.04	-
Madagascar	19.2	248	22.43	1.17	0.08	0.30	0.43	0.26	0.04	0.06	-51
Mali	12.0	193	22.17	1.85	0.12	0.62	0.83	0.18	0.01	0.08	-22
Mauritania	3.0	233	9.43	3.10	0.44	0.38	2.02	0.21	0.00	0.05	-39
Morocco	30.9	158	41.26	1.34	0.32	0.70	0.15	0.06	0.06	0.05	-11
Namibia	2.0	233	6.14	3.00	0.80	0.71	1.39	0.00	0.04	0.05	-
Niger	13.7	336	23.13	1.68	0.05	1.13	0.19	0.27	0.00	0.04	-77
Nigeria	144.7	234	232.59	1.61	0.61	0.63	0.06	0.21	0.04	0.05	-
Senegal	12.1	258	15.07	1.25	0.18	0.47	0.24	0.22	0.09	0.04	-46
Sierra Leone	5.7	150	4.41	0.77	0.05	0.20	0.04	0.37	0.08	0.03	-42
Somalia	8.4	193	12.82	1.52	0.01	0.20	0.76	0.49	0.00	0.05	-49
South Africa	48.3	171	132.17	2.74	1.29	0.78	0.21	0.30	0.10	0.06	-8
Sudan	37.7	222	84.11	2.23	0.27	0.70	0.99	0.22	0.00	0.05	-35
Tanzania	39.5	281	40.46	1.03	0.11	0.31	0.31	0.25	0.00	0.05	-
Tunisia	10.2	138	19.23	1.88	0.58	0.82	0.10	0.21	0.12	0.04	26
Zambia	11.7	262	13.69	1.17	0.16	0.44	0.15	0.36	0.01	0.05	-
Zimbabwe	13.2	241	13.69	1.04	0.12	0.25	0.36	0.28	0.00	0.03	-51

National Biocapacity [millions gha]	Per Capita Biocapacity [gha per capita]	Biocapacity Components[2] Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Change in per capita Biocapacity, 1961-2006 [percent]	Gross Domestic Product, 1961 [$ per capita][3]	Gross Domestic Product, 2006 [$ per capita][3]	Human Development Index, 1980	Human Development Index, 2006	Country/Region[1]
1,418.8	1.51	0.42	0.45	0.46	0.12	-68	-	-	-	-	**Africa**
27.2	0.82	0.37	0.35	0.04	0.01	-59	475	6,912	-	0.75	**Algeria**
55.6	3.36	0.22	2.01	0.78	0.31	-70	-	4,446	-	0.55	**Angola**
6.9	0.78	0.48	0.05	0.19	0.03	-68	172	1,417	0.35	0.49	**Benin**
7.9	4.27	0.15	3.02	0.70	0.33	-	153	8,918	-	-	**Botswana**
19.2	1.34	0.69	0.22	0.34	0.00	-47	153	1,366	0.25	0.38	**Burkina Faso**
37.2	2.05	0.59	0.13	1.14	0.13	-72	353	2,776	0.46	0.52	**Cameroon**
35.9	8.41	0.65	0.38	7.31	0.00	-64	297	871	0.34	0.37	**Central African Rep.**
35.3	3.38	0.60	1.54	1.07	0.10	-71	275	2,766	-	0.39	**Chad**
48.7	13.20	0.23	4.05	8.35	0.51	-73	220	5,202	-	0.60	**Congo**
161.5	2.66	0.14	0.13	2.29	0.05	-	245	390	-	-	**Congo, DRC**
31.3	1.65	0.74	0.36	0.48	0.01	-72	316	2,295	-	0.48	**Côte d'Ivoire**
0.7	0.84	0.00	0.28	0.00	0.54	-88	-	4,599	-	0.52	**Djibouti**
23.8	0.32	0.21	0.00	0.00	0.02	-41	304	5,587	0.50	0.70	**Egypt**
8.1	1.74	0.13	0.27	0.11	1.18	-	-	615	-	-	**Eritrea**
2.0	1.19	0.38	0.14	0.21	0.42	-73	222	1,415	-	0.45	**Gambia**
25.8	1.12	0.51	0.32	0.18	0.06	-	413	1,656	-	-	**Ghana**
27.0	2.94	0.42	1.06	0.80	0.60	-64	666	3,722	-	0.43	**Guinea**
5.5	3.35	0.49	0.41	0.34	2.05	-64	125	641	0.26	0.39	**Guinea-Bissau**
9.3	2.59	0.19	0.81	1.19	0.37	-74	-	381	0.37	0.43	**Liberia**
9.5	1.57	0.37	1.14	0.02	0.00	-	-	21,907	-	-	**Libya**
60.8	3.17	0.28	1.70	0.92	0.21	-69	251	880	-	0.54	**Madagascar**
30.3	2.53	0.64	0.98	0.76	0.07	-59	141	1,383	0.25	0.37	**Mali**
19.1	6.29	0.16	4.09	0.06	1.93	-69	150	2,374	-	0.52	**Mauritania**
27.7	0.90	0.46	0.20	0.08	0.11	-37	421	5,594	0.47	0.65	**Morocco**
17.8	8.71	0.40	1.99	0.41	5.87	-	805	6,642	-	-	**Namibia**
26.4	1.92	1.09	0.72	0.07	0.00	-78	257	881	-	0.34	**Niger**
129.9	0.90	0.60	0.20	0.02	0.02	-	293	2,205	-	-	**Nigeria**
16.5	1.37	0.37	0.22	0.52	0.21	-76	530	1,942	-	0.46	**Senegal**
5.7	0.99	0.15	0.41	0.18	0.21	-59	389	1,817	-	0.36	**Sierra Leone**
13.5	1.60	0.11	0.77	0.28	0.39	-66	-	478	-	-	**Somalia**
82.9	1.72	0.68	0.70	0.02	0.25	-58	1,047	10,375	0.66	0.68	**South Africa**
106.3	2.82	0.63	0.99	0.97	0.17	-71	-	2,152	-	0.53	**Sudan**
34.4	0.87	0.31	0.31	0.15	0.06	-	88	886	-	-	**Tanzania**
11.7	1.15	0.67	0.10	0.06	0.28	-37	618	9,937	-	0.76	**Tunisia**
33.5	2.86	0.51	1.29	0.99	0.03	-	537	2,111	-	-	**Zambia**
9.8	0.74	0.18	0.37	0.14	0.01	-72	480	2,281	-	-	**Zimbabwe**

[1]Regional averages are calculated using values from *all* countries within each United Nations region; only selected countries are shown here. Dashes indicate missing or insufficient data.

[2]Also includes Built-up land biocapacity equal to the Built-up land Footprint, shown on previous page.

[3]In constant 2005 US $.

Country/Region[1]	Population [millions]	Change in Population, 1961-2006 [percent]	National Ecological Footprint [million gha]	Per capita Ecological Footprint [gha per capita]	Ecological Footprint Components: Carbon Footprint [gha per capita]	Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Built-up land [gha per capita]	Change in per capita Footprint, 1961-2006 [percent]
Asia	3,983.9	129	6,031.71	1.51	0.80	0.38	0.06	0.14	0.08	0.06	46
Armenia	3.0	-	4.94	1.64	0.72	0.58	0.22	0.06	0.00	0.06	-
Azerbaijan	8.4	-	19.25	2.29	1.26	0.62	0.26	0.07	0.01	0.07	-
Cambodia	14.2	155	12.74	0.90	0.08	0.46	0.07	0.25	0.00	0.04	-54
China	1328.5	98	2,456.18	1.85	1.08	0.36	0.13	0.15	0.06	0.07	165
India	1151.8	153	886.01	0.77	0.31	0.28	0.01	0.12	0.01	0.04	-12
Iran	70.3	215	186.60	2.66	1.57	0.66	0.17	0.05	0.13	0.09	21
Iraq	28.5	277	37.96	1.33	0.84	0.42	0.03	0.01	0.01	0.02	-21
Israel	6.8	210	36.63	5.38	3.69	1.03	0.09	0.36	0.15	0.07	53
Japan	128.0	35	526.13	4.11	2.68	0.58	0.03	0.28	0.47	0.07	90
Jordan	5.7	515	11.66	2.04	0.94	0.69	0.08	0.17	0.07	0.08	-
Kazakhstan	15.3	-	67.63	4.42	2.91	1.18	0.15	0.13	0.01	0.06	-
Korea, North	23.7	111	33.23	1.40	0.88	0.31	0.00	0.14	0.01	0.05	25
Korea, South	48.0	87	179.46	3.73	2.09	0.69	0.04	0.24	0.61	0.06	267
Kuwait	2.8	805	21.96	7.90	6.65	0.71	0.10	0.19	0.12	0.14	-
Kyrgyzstan	5.3	-	6.72	1.28	0.50	0.55	0.11	0.03	0.00	0.09	-
Laos	5.8	183	6.01	1.04	0.07	0.41	0.08	0.39	0.01	0.10	-42
Lebanon	4.1	108	8.64	2.13	0.91	0.66	0.15	0.27	0.09	0.05	-
Myanmar	48.4	125	46.79	0.97	0.06	0.50	0.01	0.33	0.00	0.07	13
Oman	2.5	340	9.02	3.54	2.09	0.59	0.18	0.15	0.40	0.12	-
Pakistan	160.9	240	120.12	0.75	0.30	0.29	0.01	0.08	0.01	0.04	-16
Saudi Arabia	24.2	476	84.14	3.48	1.62	1.29	0.11	0.14	0.14	0.18	-
Singapore	4.4	159	19.75	4.51	3.14	0.66	0.06	0.30	0.32	0.02	-
Sri Lanka	19.2	93	17.90	0.93	0.16	0.30	0.01	0.15	0.26	0.04	-10
Syria	19.4	307	31.33	1.61	0.76	0.54	0.16	0.08	0.03	0.06	-
Tajikistan	6.6	-	5.75	0.87	0.26	0.39	0.15	0.02	0.00	0.06	-
Thailand	63.4	122	109.27	1.72	0.73	0.54	0.01	0.17	0.21	0.06	-
Turkey	73.9	155	209.60	2.84	1.37	1.01	0.08	0.26	0.04	0.08	19
Turkmenistan	4.9	-	18.75	3.83	2.46	0.74	0.49	0.00	0.01	0.12	-
UAE	4.2	4,235	43.72	10.29	7.19	1.98	0.19	0.49	0.38	0.06	-
Uzbekistan	27.0	-	46.70	1.73	1.16	0.39	0.08	0.03	0.00	0.07	-
Viet Nam	86.2	150	87.49	1.01	0.44	0.32	0.00	0.19	0.00	0.06	38
Yemen	21.7	308	21.32	0.98	0.40	0.32	0.16	0.03	0.02	0.05	-

National Biocapacity [millions gha]	Per Capita Biocapacity [gha per capita]	Biocapacity Components[2] Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Change in per capita Biocapacity, 1961-2006 [percent]	Gross Domestic Product, 1961 [$ per capita][3]	Gross Domestic Product, 2006 [$ per capita][3]	Human Development Index, 1980	Human Development Index, 2006	Country/Region[1]
2,867.1	0.7	0.33	0.08	0.15	0.10	-44	-	-	-	-	**Asia**
2.2	0.7	0.30	0.29	0.07	0.02	-	-	8,944	-	-	**Armenia**
8.3	1.0	0.54	0.26	0.11	0.02	-	-	8,446	-	-	**Azerbaijan**
13.4	0.9	0.45	0.12	0.20	0.14	-54	-	2,765	-	0.58	**Cambodia**
1,131.3	0.9	0.35	0.12	0.22	0.08	-17	117	7,303	0.53	0.76	**China**
428.8	0.4	0.27	0.00	0.02	0.04	-54	195	3,712	0.43	0.60	**India**
69.3	1.0	0.55	0.21	0.07	0.07	-65	429	9,739	0.56	0.78	**Iran**
7.0	0.2	0.14	0.02	0.05	0.01	-85	-	5,032	-	-	**Iraq**
2.2	0.3	0.20	0.01	0.03	0.02	-55	1,613	23,753	0.83	0.93	**Israel**
78.8	0.6	0.13	0.00	0.33	0.08	-41	1,203	31,236	0.89	0.96	**Japan**
1.5	0.3	0.12	0.02	0.03	0.00	-	865	5,292	-	-	**Jordan**
65.4	4.3	1.62	2.28	0.25	0.07	-	-	15,346	-	-	**Kazakhstan**
13.2	0.6	0.27	0.00	0.24	0.00	-61	-	-	-	-	**Korea, North**
14.2	0.3	0.14	0.00	0.09	0.00	-49	325	23,324	0.72	0.93	**Korea, South**
1.4	0.5	0.03	0.01	0.00	0.33	-	-	48,854	-	-	**Kuwait**
7.9	1.5	0.53	0.75	0.08	0.06	-	-	3,738	-	-	**Kyrgyzstan**
8.0	1.4	0.41	0.08	0.77	0.04	-63	-	2,230	-	0.61	**Laos**
1.5	0.4	0.20	0.06	0.06	0.01	-	-	8,175	-	-	**Lebanon**
75.2	1.6	0.52	0.01	0.61	0.35	-55	-	-	-	0.58	**Myanmar**
6.5	2.5	0.11	0.08	0.00	2.22	-	-	25,507	-	-	**Oman**
60.2	0.4	0.27	0.00	0.01	0.04	-56	203	3,473	0.40	0.57	**Pakistan**
31.4	1.3	0.50	0.16	0.21	0.25	-	-	22,220	-	-	**Saudi Arabia**
0.2	0.0	0.00	0.00	0.00	0.02	-59	795	43,167	0.79	0.94	**Singapore**
6.9	0.4	0.20	0.02	0.04	0.05	-43	369	5,877	0.65	0.76	**Sri Lanka**
17.0	0.9	0.55	0.22	0.04	0.00	-	152	2,637	-	-	**Syria**
3.3	0.5	0.23	0.18	0.01	0.02	-	-	2,771	-	-	**Tajikistan**
67.4	1.1	0.64	0.01	0.18	0.17	-	263	9,424	-	-	**Thailand**
108.4	1.5	0.90	0.13	0.31	0.05	-52	497	7,578	0.63	0.80	**Turkey**
16.6	3.4	0.86	2.25	0.02	0.15	-	-	10,951	-	-	**Turkmenistan**
5.8	1.4	0.14	0.00	0.13	1.03	-	-	53,496	-	-	**UAE**
24.8	0.9	0.52	0.23	0.06	0.03	-	-	2,002	-	-	**Uzbekistan**
47.4	0.6	0.32	0.00	0.16	0.01	-40	-	3,572	-	0.72	**Viet Nam**
14.6	0.7	0.14	0.15	0.05	0.28	-	-	1,309	-	-	**Yemen**

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[3]In constant 2005 US $.

Country/Region[1]	Population [millions]	Change in Population, 1961-2006 [percent]	National Ecological Footprint [million gha]	Per capita Ecological Footprint [gha per capita]	Ecological Footprint Components: Carbon Footprint [gha per capita]	Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Built-up land [gha per capita]	Change in per capita Footprint, 1961-2006 [percent]
Europe	731.3	22	3,297.47	4.51	2.49	1.06	0.12	0.50	0.22	0.12	33
Albania	3.2	91	8.15	2.57	1.18	0.96	0.25	0.08	0.02	0.08	43
Austria	8.3	18	40.72	4.89	2.98	0.72	0.16	0.73	0.11	0.19	96
Belarus	9.7	-	41.05	4.21	1.93	1.43	0.23	0.41	0.12	0.08	-
Belgium	10.4	14	59.42	5.70	2.44	1.84	0.38	0.56	0.17	0.31	32
Bosnia/Herzegovina	3.9	-	13.32	3.39	1.54	1.07	0.18	0.47	0.06	0.08	-
Bulgaria	7.7	-3	25.02	3.25	1.69	0.77	0.22	0.36	0.04	0.17	35
Croatia	4.6	-	15.20	3.34	2.03	0.49	0.09	0.56	0.06	0.11	-
Czech Republic	10.2	-	54.23	5.32	2.95	1.03	0.12	0.99	0.07	0.16	-
Denmark	5.4	18	39.07	7.19	3.77	1.10	0.21	1.24	0.60	0.28	12
Estonia	1.3	-	8.60	6.42	3.15	0.44	0.15	2.40	0.14	0.13	-
Finland	5.3	18	29.00	5.51	2.67	1.27	0.03	1.02	0.38	0.14	-
France	61.3	33	282.28	4.60	2.49	0.81	0.16	0.63	0.30	0.21	38
Germany	82.6	13	333.40	4.03	2.21	0.93	0.07	0.51	0.14	0.18	37
Greece	11.1	33	64.02	5.76	3.94	0.93	0.25	0.43	0.12	0.08	284
Hungary	10.1	0	32.45	3.23	1.39	1.16	0.06	0.41	0.03	0.17	10
Ireland	4.2	49	34.57	8.19	5.19	1.06	0.72	0.64	0.33	0.25	126
Italy	58.8	16	290.10	4.94	2.88	1.02	0.20	0.50	0.24	0.08	116
Latvia	2.3	-	10.53	4.60	0.86	0.97	0.15	2.39	0.16	0.07	-
Lithuania	3.4	-	11.32	3.32	1.54	0.35	0.09	0.93	0.33	0.10	-
Moldova	3.8	-	6.70	1.75	0.84	0.72	0.06	0.07	0.00	0.05	-
Netherlands	16.4	41	75.41	4.60	2.44	1.22	0.21	0.41	0.18	0.14	40
Norway	4.7	29	19.63	4.20	2.05	1.19	0.04	0.59	0.18	0.15	-
Poland	38.1	27	148.25	3.89	2.38	0.65	0.01	0.66	0.11	0.07	25
Portugal	10.6	19	46.23	4.37	2.41	0.85	0.19	0.14	0.74	0.04	74
Romania	21.5	16	57.50	2.67	1.21	0.84	0.09	0.33	0.05	0.14	46
Russia	143.2	-	635.97	4.44	2.23	1.51	0.05	0.43	0.15	0.06	-
Slovakia	5.4	-	26.64	4.94	3.48	0.59	0.06	0.59	0.07	0.15	-
Slovenia	2.0	-	7.78	3.89	2.07	0.79	0.06	0.78	0.10	0.09	-
Spain	43.9	43	247.01	5.63	3.25	1.16	0.17	0.46	0.53	0.05	120
Switzerland	7.5	37	41.67	5.59	3.98	0.72	0.20	0.43	0.14	0.11	90
Ukraine	46.6	-	124.20	2.67	1.45	0.87	0.01	0.17	0.11	0.07	-
United Kingdom	60.7	15	371.65	6.12	4.00	0.93	0.20	0.58	0.23	0.18	59

National Biocapacity [millions gha]	Per Capita Biocapacity [gha per capita]	Biocapacity Components[2] Cropland [gha per capita]	Grazing land [gha per capita]	Forest land [gha per capita]	Fishing grounds [gha per capita]	Change in per capita Biocapacity, 1961-2006 [percent]	Gross Domestic Product, 1961 [$ per capita][3]	Gross Domestic Product, 2006 [$ per capita][3]	Human Development Index, 1980	Human Development Index, 2006	Country/Region[1]
2,212.6	3.0	1.01	0.19	1.43	0.28	-21	-	-	-	-	**Europe**
3.2	1.0	0.53	0.12	0.20	0.09	-34	-	4,607	-	0.81	**Albania**
24.9	3.0	0.60	0.17	2.02	0.00	-15	2,030	35,659	0.87	0.95	**Austria**
33.0	3.4	1.36	0.34	1.58	0.02	-	-	21,277	-	-	**Belarus**
11.3	1.1	0.32	0.12	0.28	0.05	-25	1,968	33,784	0.87	0.95	**Belgium**
6.5	1.7	0.58	0.13	0.86	0.00	-	-	-	-	-	**Bosnia/Herzegovina**
20.4	2.7	1.20	0.19	0.99	0.10	-2	-	9,605	-	0.84	**Bulgaria**
8.2	1.8	0.22	0.15	0.98	0.34	-	-	13,593	-	-	**Croatia**
26.9	2.6	1.11	0.14	1.22	0.00	-	-	21,184	-	-	**Czech Republic**
28.2	5.2	2.50	0.04	0.29	2.09	-24	2,197	34,633	0.88	0.95	**Denmark**
12.0	9.0	0.67	0.39	3.21	4.59	-	-	18,080	-	-	**Estonia**
68.3	13.0	1.38	0.00	8.66	2.81	-	1,827	31,597	-	-	**Finland**
173.7	2.8	1.28	0.28	0.89	0.18	-9	1,935	30,119	0.88	0.96	**France**
154.1	1.9	0.87	0.10	0.64	0.08	0	-	31,291	0.87	0.95	**Germany**
15.2	1.4	0.79	0.10	0.14	0.25	1	1,241	27,532	0.84	0.94	**Greece**
25.9	2.6	1.72	0.11	0.57	0.01	8	-	17,212	0.80	0.88	**Hungary**
18.0	4.3	0.98	0.91	0.25	1.88	-22	1,373	41,085	0.84	0.96	**Ireland**
60.8	1.0	0.53	0.08	0.27	0.07	-21	1,737	29,048	0.86	0.95	**Italy**
16.6	7.2	1.03	0.72	3.34	2.08	-	-	13,905	-	-	**Latvia**
12.5	3.7	0.70	0.92	1.64	0.29	-	-	13,625	-	-	**Lithuania**
4.3	1.1	0.95	0.05	0.07	0.01	-	-	3,588	-	-	**Moldova**
17.2	1.0	0.27	0.06	0.08	0.50	-27	2,305	34,369	0.89	0.96	**Netherlands**
28.5	6.1	0.69	0.03	3.23	2.01	-	2,301	50,794	-	-	**Norway**
70.1	1.8	0.82	0.13	0.71	0.12	-38	-	13,919	-	0.88	**Poland**
12.5	1.2	0.24	0.26	0.57	0.08	6	822	20,273	0.77	0.91	**Portugal**
48.9	2.3	0.84	0.18	1.00	0.10	-6	332	9,348	-	0.83	**Romania**
906.2	6.3	1.55	0.33	4.18	0.21	-	-	13,073	-	-	**Russia**
14.4	2.7	0.83	0.09	1.60	0.00	-	-	16,214	-	-	**Slovakia**
4.7	2.4	0.22	0.25	1.80	0.00	-	-	25,020	-	-	**Slovenia**
58.0	1.3	0.84	0.13	0.24	0.06	-27	1,269	31,338	0.86	0.95	**Spain**
9.5	1.3	0.26	0.17	0.73	0.01	-28	3,574	37,483	0.90	0.96	**Switzerland**
103.5	2.2	1.47	0.14	0.40	0.15	-	-	9,676	-	-	**Ukraine**
95.7	1.6	0.62	0.11	0.11	0.56	1	2,192	32,103	0.86	0.95	**United Kingdom**

[1]Regional averages are calculated using values from *all* countries within each United Nations region; only selected countries are shown here. Dashes indicate missing or insufficient data.
[2]Also includes Built-up land biocapacity equal to the Built-up land Footprint, shown on previous page.
[3]In constant 2005 US $.

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Global Footprint Network Partner Organizations

INTERNATIONAL

- BioRegional Development Group
- Earth Day Network
- ICLEI Local Governments for Sustainability
- LEAD International
- nrg4SD (Network of Regional Governments for Sustainable Development)
- The Natural Step International
- WWF

AFRICA & MIDDLE EAST

- AGEDI (Abu Dhabi Global Environmental Data Initiative)
- Emirates Environmental Group
- Emirates Wildlife Society-WWF
- North West University Center for Environmental Management

ASIA

- Agenda21 Action Council for Gyeonggi-do
- CII (Confederation of Indian Industry)
- Ecological Footprint Japan
- GIDR (Gujarat Institute for Development Research)
- WWF - Japan

AUSTRALIA & OCEANIA

- Alberfield Pty Ltd
- Eco-Norfolk Foundation
- EcoSTEPS
- EPA Queensland
- EPA Victoria
- New Zealand Centre for Ecological Economics
- RMIT University Centre for Design
- The GPT Group
- Zero Waste SA

EUROPE

- Agir21
- Agrocampus Ouest
- Ambiente Italia
- Bank Sarasin & Co. Ltd
- Best Foot Forward
- BRASS Centre
- Carbon Decisions
- Centre for Sustainable Tourism and Transportation
- CERAG
- CESTRAS (Centro de Estudos e Estratégias para a Sustentabilidade)
- Charles University Environment Center
- Conseil régional Nord Pas de Calais
- DANDELION Environmental Consulting and Service Ltd.
- De Kleine Aarde (The Small Earth)
- Ecole Nationale Supérieur des Mines de Saint-Étienne
- Ecolife
- EcoRes
- Empreinte Ecologique SARL
- Finnish Ministry of the Environment
- Foundation for Global Sustainability
- IFF Social Ecology
- IRES Piemonte Research Institute
- KÖVET Association for Sustainable Economies
- Nature Humaine
- nef (new economics foundation)
- Novatlantis
- OeKU
- Optimum Population Trust
- Pictet Asset Management SA
- Plattform Footprint
- PROECOENO
- Rete Lilliput
- Skipso
- St. Petersburg State University
- SERI (Sustainable Europe Research Institute)
- Tartu University
- The Web of Hope
- University of Siena - Ecodynamics Group
- Water Footprint Network
- Welsh Assembly Government

CENTRAL & SOUTH AMERICA

- Acuerdo Ecuador
- Ecossistemas Design Ecológico
- Fan (Fundación Amigos de la Naturaleza)
- Instituto de Ecología Política
- Libélula – Comunicación
- RECYCLA Chile
- (PUCP) The Pontifical Catholic University of Peru
- Universidad de Colima

NORTH AMERICA

- AASHE (Association for the Advancement of Sustainability in Higher Education)
- British Columbia Institute of Technology
- CASSE (Center for the Advancement of the Steady State Economy)
- Children's Environmental Literacy Foundation
- Dartmouth-Hitchcock Medical Center
- EcoMark
- Global Green USA
- Hawaii County Resource Center
- Info Grafik
- Natural Logic, Inc.
- One Earth Initiative
- Paul Wermer Sustainability Consulting
- Planet2025 Network
- Portfolio 21 Investments, Inc.
- Sustainable Earth Initiative
- The City of Calgary
- The Cloud Institute for Sustainability Education
- The Sustainable Scale Project
- Together Campaign
- Utah Population and Environment Coalition
- ZeroFootprint

"We must learn to view the Earth's resources not as our own infinite pantry, but as a limited luxury that, if used responsibly, everyone – now and in the future – can continue to benefit from. This means using existing robust accounting tools to analyze the current situation and to track humanity's path into the future. Global Footprint Network has developed such a tool, which measures not only how much biocapacity we have, and how much we use, but also who is using what and where. This data can serve not only as the starting point for meaningful and impactful dialogue between nations, but as a cornerstone for future policy decisions, as the sustainable governance of natural resources is sorely needed around the globe."

Freddy Ehlers, Secretary-General, Comunidad Andina (Andean Community)

Global Footprint Network
Advancing the Science of Sustainability

GLOBAL FOOTPRINT NETWORK
Global Footprint Network is an international science and policy institute working to advance sustainability through use of the Ecological Footprint, a resource accounting tool that measures how much nature we have, how much we use and who uses what. By making ecological limits central to decision making, we are working to end overshoot and create a society where all people can live well, within the means of our one planet. Global Footprint Net has offices in Oakland (California, USA), Brussels (Belgium), Zurich (Switzerland) and Washington, DC (USA). *www.footprintnetwork.org*