

# Population & Consumption

Every person has basic needs - a place to live, food and clothing, along with places to work, learn, and play, and the means to travel between these places. Meeting these needs requires consuming

**“Today’s global economy is driven by the mass consumerism that is packaged and marketed by promoting pseudo-experiences. Keeping the wild alive in our modern world requires daily vocations of attentiveness, understanding discipline, and commitment.”**

**– Mark Van Putten,  
President & CEO of the  
National Wildlife  
Federation**

resources. Widely differing consumption rates among developing and industrialized nations, along with varying access to natural resources, health care, education, voluntary family planning programs, and different fertility rates (the average number of children a woman will have in her lifetime) mean that the effect of population growth on the environment differs from country to country. Despite these differences, each one of us can reduce the impacts on wildlife and the environment through our individual consumption choices.

## Spaceship Earth

**Over the past century, our impacts on the natural world have risen dramatically as human population has soared. The Earth, like the smaller ecosystems that make up our global environment, has a carrying capacity – a limit to how many living creatures it can support.**

**Envision yourself as a spaceship captain responsible for all of the living beings on your ship and the life systems that support them. Now envision a crew of 6 billion. We are all members of spaceship Earth.**

Like humans, wildlife requires clean water and air, shelter, and an adequate food supply. However, as human habitations and land use increase, wildlife habitat is shrinking rapidly. Ensuring that wildlife have a place to roam in the world requires acknowledging the impact that humans have on the global environment.

Over 6 billion people make our planet their home. This means that there are over 6 billion people using Earth’s finite natural resources – water, oil, coal, and minerals – and generating waste. This also means that the consumption choices these 6 billion people make have far reaching impacts on the natural world.

## Everything Comes From Somewhere

Consumption is more than just a final product. Each “thing” that we consume, such as our morning coffee, has a cumulative impact on the environment. The impact begins when the land is cleared to plant coffee and continues with the generation of waste from the processing, packaging and consumption of the coffee. These environmental impacts are rarely reflected in the amount of money that we pay at the store.

However, eventually we pay in full. Traditionally, coffee has been grown under mature forest canopies which provide bird habi-

tat and prevent soil erosion. As coffee demand increases, farmers cut trees to clear additional land and apply pesticides and fertilizers. This forest destruction extensively alters migratory bird habitat and results in polluted runoff and soil erosion. Displaced product costs such as these are rarely benign and can vary from higher medical bills due to exposure to pollution, to being subjected to flash floods in areas where natural flood protection has been destroyed by mining practices. Finding a balance between people and nature means that we must consider these hidden impacts.

These impacts can be summed up as our ecological footprint — the amount of land and resources used to meet a given country’s consumption needs and to absorb the resulting wastes.

Many countries, particularly industrialized countries, rely heavily on imported foreign resources while at the same time overexploiting domestic resources.

When this happens, a country’s ecological footprint may be greater than its total land area.

As a species, we are growing “bigger” not just in numbers, but as resource consumers. In hunter-gatherer times, an average human consumed about 2,500 calories daily, all of it from food.

[continued on page 4]



# Population, Consumption Patterns and Environmental Impact

## United States

**Population:** 282,000,000  
**Population density:** 31 people per square Km  
**Percent urban:** 77  
**GDP (per person US\$):** \$35,000  
**Land area:** 9,158,960 sq. Km

On average, the U.S. consumes higher amounts of practically every resource than any other country on the planet. The average American uses 1,844 cubic meters of water and generates 21,700 Kg of CO<sub>2</sub> per year – that's nearly 20 times greater than the average Nigerian. In addition, American dependency on the automobile is greater than any other country on Earth. For every 1,000 people, there are 489 cars. Also, 1,688 liters of motor gasoline per capita are consumed each year to fuel our driving habits. The average American household produces 100 pounds of trash each week. Our demand for wood and forest products has resulted in the loss of 96% of our country's original forests.

## Brazil

**Population:** 170,100,000  
**Population density:** 20 people per square Km  
**Percent urban:** 81  
**GDP (per person US\$):** \$3,500  
**Land area:** 8,456,510 sq. Km

Brazil, home to many of the world's diverse plant and animal species, currently protects 4.4% of its land. The Amazon basin, a watershed equivalent in area to nine times the state of Texas, has 7% of its land protected. And not quite a third, 29%, of Brazil's land has been transformed by human development. Overall, the average Brazilian generates 1,692 Kg of CO<sub>2</sub> emissions annually.

## Germany

**Population:** 82,200,000  
**Population density:** 230 people per square Km  
**Percent urban:** 88  
**GDP (per person US\$):** \$22,750  
**Land area:** 357,000 sq. Km

Within Germany's Rhine River watershed, 26% of the original forest still remains. As for Germany's land, 50% has been converted for human development, and 86% of its water goes for industrial use. Germans consume 491 liters per capita of motor gasoline annually, and generate 10,514 Kg of CO<sub>2</sub> per year – approximately 13 times more than the average Nigerian.

## Ukraine

**Population:** 50,000,000  
**Population density:** 85 people per square Km  
**Percent urban:** 68  
**GDP (per person US\$):** \$706  
**Land area:** 603,700 sq. Km

In Ukraine, the second most populated country of the former Soviet Union, approximately 76% of the waterways are too polluted to drink or swim in. Annual industrial and household waste combined accounts for 1.95 billion tons of garbage. The average Ukrainian generates 7,751 Kg of CO<sub>2</sub> per year and consumes 84 liters of motor gasoline annually.

## Nigeria

**Population:** 127,000,000  
**Population density:** 139 people per square Km  
**Percent urban:** 44  
**GDP (per person US\$):** \$323  
**Land area:** 910,770 sq. Km

Nigeria, the most populated country in Africa, deforests 1,214 square kilometers of land for human use every year. In fact, 80% of Nigeria's land has been domesticated. The average Nigerian uses 45 cubic meters of water annually, and 54% of the water supply irrigates 1% of total cropland. He or she also generates 822 Kg of CO<sub>2</sub> emissions per year.

# Impacts Around the World

## India

**Population:** 1,016,000,000  
**Population density:** 342 people per square Km  
**Percent urban:** 28  
**GDP (per person US\$):** \$449  
**Land area:** 2,973,000 sq. Km

India, the world's second most populous country, is already experiencing resource shortages. Due to water scarcity, the average Indian survives on 588 cubic meters of water per year with 92% of all water resources used for agriculture. Currently, India has transformed 61% of its land for human development. There are 4 cars per 1,000 people in India. Lower fossil fuel consumption rates explain why the average Indian generates 1,050 Kg of CO<sub>2</sub> emissions annually – almost 20 times less than the average American produces.

## China

**Population:** 1,262,000,000  
**Population density:** 135 people per square Km  
**Percent urban:** 36  
**GDP (per person US\$):** \$853  
**Land area:** 9,326,000 sq. Km

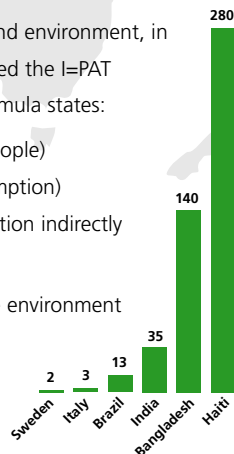
China, the most populated country in the world, consumes nearly 37,000 metric tons of fertilizer and catches 20,760,100 metric tons of fish per year. As a result of contaminated runoff from farms and roadways, 70% of China's waterways are too polluted to drink or swim in. Of China's 9 million sq. Km of land, 53% has been transformed for human use. There are 3 cars per 1,000 people. The average Chinese person generates 2,729 Kg of CO<sub>2</sub> emissions per year.

## Consumption I=PAT Formula

Paul Ehrlich, an authority on population and environment, in collaboration with his colleagues, developed the I=PAT (pronounced "eye-pat") formula. The formula states:

**Impact** equals **Population** (number of people) times **Affluence** (standard level of consumption) times **Technology** (environmental destruction indirectly caused by technology).

One child in the United States impacts the environment as much the number of children in the following countries:



## CASE STUDY:

# Consumption Patterns Affect Wildlife – The Case of the Pacific Northwest Salmon

Pacific Northwest salmon follow a lifecycle that carries them from the cold, clear, freshwater streams of the Northwest to the salty Pacific Ocean, and back to the inland streams in which they were born. Once there, the adult salmon spawn and die.

A century ago, there were approximately 30 million wild salmon that migrated up the Columbia River each year to spawn; today, roughly 3 million wild salmon survive. Their declining numbers are closely tied to the environmental impacts of America's consumption patterns – historic over-fishing, the introduction of hatchery fish, habitat degradation, and hydroelectric dams have all contributed to the decline of wild salmon populations.

- Historically, commercial fishermen harvested salmon faster than the fish could reproduce. To counteract the resultant salmon population decline, hatcheries began releasing fish into wild salmon habitat. These hatchery fish are genetically different from wild salmon, and through interbreeding with wild stocks, they have reduced the wild population's genetic resistance to disease.
- Habitat degradation, in the form of erosion and polluted run-off, is another threat to salmon. Human development, such as the construction of

subdivisions and parking lots, as well as practices associated with mining, logging, and agriculture, all contribute to erosion. Without vegetation to hold the soil down, rain washes silt into the rivers and streams.



Silt increases water temperature (the soil absorbs energy from sunlight) and reduces the amount of food and oxygen available in the water. Polluted runoff from farms, mines, and urban areas also enters local waterways and poses a threat to salmon populations.

- Human consumption of electricity and water for irrigation has led to unsustainable construction of hydroelectric dams – huge structures that slow the natural current of the river, raise the river's water temperature, and disrupt the natural lifecycle of the salmon as they migrate towards the ocean. The eight federal dams on the Columbia and Snake Rivers are responsible for killing about half of the adults returning upriver to spawn, and over half of the juvenile salmon migrating to the ocean.

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**The U.S. has 5% of the world's population, yet we consume over 25% of the world's resources.**

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**If the entire world consumed resources at the average consumption level of a citizen of the U.S., we would need 4 Earths to support us all!**

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**Did you know that to produce the meat for one fast food hamburger, you need 1.75 pounds of feed and 200 gallons of water? That same hamburger also results in 12 pounds of cow manure!**

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**“The major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries, which is a matter of grave concern, aggravating poverty and imbalances.”**

**– Agenda 21, United Nations Conference on Environment and Development (The Earth Summit), 1992.**

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## continued from page 1

Today, however, humans use an average of 31,000 calories each day, most of it from fossil fuel. As North Americans, we use six times that, relying on energy gleaned from forests, oil deposits, mines and grasslands that may lie hundreds of miles away from our supermarkets and gas pumps.

### Meeting Basic Needs

Consuming resources is a fundamental part of human existence. When population levels are low, individual consumption may not unduly impact the environment's ability to absorb wastes and provide clean water and adequate food. However, rising population and increasing resource consump-

tion have tipped the equilibrium which historically sustained all living things. Through a combination of voluntary family planning programs, capacity building and resource conservation, United States population assistance programs go a long way toward helping countries sustainably meet their basic needs.

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## Why Care?

Consumption patterns pose major threats to human health, the environment, and wildlife. Uncontrolled human development and exploitation of already

fragile lands lead to habitat fragmentation, erosion, and pollution that are harmful to wildlife. In order to ensure a livable environment for future

generations, we must find a balance – a balance between people and nature that recognizes what's good for wildlife is good for people.

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## What Can I Do?

To help in achieving a balance between people and nature, you can:

- Reduce your fossil fuel consumption by walking, biking, carpooling, and utilizing public transportation.
- Use efficient technologies such as compact fluorescent bulbs. Efficient technologies use less energy and therefore pollute less. Not only will your energy bill go down, but you will also be an eco-friendly consumer.
- Repair and maintain appliances, cars, and clothes. Appliances and cars use more energy than normal when they are not kept in prime working conditions. Keep your tires at optimum pressure and get regular oil changes. Donate your old appliances, vehicles, furniture, and clothes to charity when you no longer need them so they can be re-used.
- Buy organic. It reduces fertilizer and pesticide use.

- Reduce your meat consumption. It takes ten times the water and grain resources to produce one 2,000-calorie meal of meat than one 2,000-calorie serving of grains and vegetables.
- Reduce, re-use, and recycle whenever you can.
- Buy less. Make your own gifts, or donate to charity in someone's name. Products that are produced locally, organically grown, or produced with minimal environmental impact (such as shade-grown coffee) help conserve habitat and reduce our ecological footprint. Let manufacturers know that these issues are important to you!
- Say "no" to junk mail. You can ask to have your name removed from mailing lists by sending your name, home address, and signature to: Mail Preference Service, Direct Marketing Association, P.O. Box 9008, Farmingdale, NY 11735-9008.

- Support U.S. funding of international development assistance programs to help people worldwide meet their basic needs and develop in a sustainable manner. To find out more about how private investment can promote sustainable development projects, see NWF's Finance & Environment Program's website at [www.nwf.org/finance](http://www.nwf.org/finance).
- Encourage U.S. funding for international family planning programs such as the United Nations Population Fund and the United States Agency for International Development that help better the lives of women and children around the world while easing the burden of unsustainable population growth.
- Become active in programs, such as the National Wildlife Federation's Population & Environment Program, that work for these and related causes.

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