



# Staying Within Our Limits

The last 200 years have transformed the American continent. Forests have given way to skyscrapers; fertile valleys bloomed with subdivisions and dot-com office parks; open plains have been cross-hatched with railway lines and interstates. Technology and industry have allowed us to vastly multiply the rate with which we can harvest nature's bounty. Yet, for all our 21st-century gadgetry and cyberspace-based commerce, we are still as dependent upon nature as the trappers and fisherman of our pre-industrial past—if not more so. And unfortunately, we have become so good at exploiting nature—not just as a country but as a species—that we are now reaping much more than what nature can renew.

Globally, humans use nature 50 percent faster than planet Earth can renew those resources and absorb the waste, such as CO<sub>2</sub>.<sup>1</sup> This means that it takes the planet almost a year and a half to regenerate the resources humans use in one year. In the US, however, our demand on nature's services is much greater than the world average. According to Global Footprint Network's 2010 National Footprint Accounts, if everyone lived like an American, it would take almost five planets to produce what we consume and absorb our waste.

⋮ Mathis Wackernagel  
 ⋮ Global Footprint Network

**Globally, humans are now using nature 50 percent faster than planet Earth can renew those resources and absorb the waste, such as CO<sub>2</sub>.**

The consequences of this overspending are dire. In the last two years, America has been wrestling with the biggest economic downturn in recent history, the result of years of living beyond our means. Yet for decades, we have also been living beyond our ecological means, and the risks of this debt dwarf those of the current financial crisis. With nature, unlike with the financial crisis, no bailout is possible.

The accounting is simple: We currently have only one planet that supports life. The surface of Earth is about 125 billion acres. But since most is ice, desert and deep ocean, only about one-quarter of it is productive (fishing grounds, forests, grazing land, crop land, etc.). With a world population of about 7 billion, this gives us roughly 5 acres per person. That's the budget.

Unfortunately, by the 1980s, human demand on resources was systematically exceeding the budget of what nature could renewably provide, a condition known as ecological overshoot. Overshoot has many manifestations: climate change is the most prominent and visible indicator that human pressure on the planet has reached a critical point. Particularly in the industrialized nations, carbon emissions from fossil fuel have become the dominant pressure exerted by humanity on nature. Yet it is certainly not the only pressure.

We are already seeing other disturbing signs of planetary overuse: peak energy, biodiversity loss, depleted fisheries, soil erosion and freshwater stress to name a few. We are facing a global supply-demand crunch of essential resources—an era that author and educator Richard Heinberg aptly calls “peak everything.”<sup>2</sup>

In an era of multiple resource pressures, it makes little sense to argue which peak is more important. They are all part of the same phenomenon: we are simply putting more demand on nature's services than it can

handle. By addressing the common cause, we can rectify our path, rather than solving one problem at the expense of another.

To balance the books on our use of nature, we need clear metrics by which to understand and measure human pressures. The Ecological Footprint is one such tool, telling us how much nature we have, how much we use and who uses what.

## What the Ecological Footprint Tells Us

Everything we consume—from a fresh tomato at the farmers' market to the plasma screen TV in the living room—originates in material that comes from nature. The Ecological Footprint tallies all the resources it takes to support a person's or population's lifestyle—the energy to power their homes, the cars they drive to work, the gifts they buy for their children's birthdays, etc.—and calculates the land and sea required to produce those resources and absorb the related waste, including CO<sub>2</sub> emissions. The Ecological Footprint also includes each person's share of their society's infrastructure: schools, hospitals, military, highway systems and the like.

**One planet and about 7 billion residents gives us roughly 5 global acres per person.**



**That's the budget.**

**It now takes the planet almost a year and six months to regenerate the resources humans use in one year.**



The average person's footprint in the US is 20 global acres.\*

\*All data from Global Footprint Network 2010 National Footprint Accounts.

**In the US, the average person's Ecological Footprint is 20 global acres, the equivalent of 18 football fields.**

**And then there are countries like China, whose average Footprint is a little more than 5.1 global acres, close to the global budget.**



In China, 5.1 global acres.\*

Ecological Footprint accounting enables us to compare human demand against biocapacity—what nature can supply—in the same way that financial accounting tracks expenditures against income. It allows us to look at nature's entire budget, rather than its separate components.

According to the most recent data, the average Ecological Footprint per capita was just under 7 acres per person. However, some countries' resource demands are significantly greater than average, and many are substantially smaller. In the US, the average person's Ecological Footprint is 20 global acres, the equivalent of 18 football fields.<sup>3</sup>

At the other end of the spectrum are countries like Haiti, Afghanistan and Malawi with Ecological Footprints of less than 1.3 global acres per capita—in most cases, too small to provide for the basic needs for food, housing and sanitation.

Resource consumption in the US breaks down as follows: How we get around—cars, airplanes, buses and trains—accounts for 24 percent of our Footprint. Housing and utilities account for 19 percent; food for 15 percent; services for 20 percent and goods for 11 percent. Our per capita share of government spending—infrastructure such as highways, bridges and dams—accounts for 11 percent.

For most activities in industrialized countries, the majority of the activity's Ecological Footprint is due to carbon emissions. In the US, the carbon Footprint (the amount of land and sea it would take to absorb all the carbon we emit) is 70 percent of our total Footprint. Worldwide, carbon accounts for half the Ecological Footprint and is its most rapidly growing component, having increased 700 percent since 1961.

### Retooling Our Society for a Resource-Constrained Age

Although high-income nations tend to be clustered at the high end of the Footprint scale, nations with similar living standards—as measured by UN statistics on longevity, income, literacy rate, child mortality and other

factors—can have very different levels of resource consumption. The average resident of the European Union, for example, has a Footprint half that of the average American (although still well above what is replicable worldwide).

Why is this the case? The answer lies partially in the way our societies are structured. Consider Italy, which has a per capita Footprint of 12 acres.

Most people live in compact cities, where they can walk to work, school and shopping or use extensive bus and train systems. Public transportation is easily accessible and is often more convenient and cheaper than driving. People get much of their food from local markets and food producers and eat less packaged and frozen food.

Also, by being in more compact cities with less housing surface per person, the houses consume less energy for cooling and heating.

In the US, some of our Ecological Footprint is related to individual choices we make that affect our resource consumption. Much of our Ecological Footprint, however, is the result of infrastructure decisions made by business leaders and policy-makers, in some cases decades ago: decisions such as investing in highways rather than public transportation, and suburban growth over concentrated, urban development.

Considering the rapid escalation of overshoot and the slow rate at which human institutions, land-use patterns, infrastructure and populations change, the most

A family and their belongings in Bhutan.



A family and their belongings in the US.



Photos courtesy Peter Menzel from his book, *Minimal World*

critical action steps must focus on decisions that affect us for many years. Human-made infrastructure—homes, roads, office structures, power plants, dams, transportation systems—may last 50 or 100 years and shape our way of living for their lifetime.

The Ecological Footprint can help leaders and policy-makers understand what choices will have the farthest-reaching, most systemic positive or negative impact. As we decide where to put our money and efforts, we must ask—and press our leaders to ask—the following question: are we investing in resource opportunities

that allow us to live efficiently or resource traps that force us into highly resource consumptive lifestyles?

### Striving for Better

Each year, the amount of resources we demand per person increases. Meanwhile, the amount of people competing for these resources also increases. And as we continue to use up nature faster than it can renew itself, we liquidate our stocks of these resources, further tightening the budget of what is available.

Our five-planet level of resource consumption in the US is physically impossible to replicate worldwide. Yet

**Our five-planet level of resource consumption in the US is physically impossible to replicate worldwide.**

resource-efficient cities and infrastructure, fostering best-practice green technology and innovation and making resource limits central to decision-making at all levels of leadership. And the good news is future-proofing our economies has tremendous

we all know there is a strong desire and urgency to live like Americans. As the world's resource debt grows, it becomes increasingly difficult to secure a higher level of resource consumption for vast segments of humanity. Therefore, we have a problem. If we continue to build our success on using ever more resources, we are preparing for our demise. At the same time, if we can push the ingenuity and revisioning needed to address our resource challenges, we can be best positioned to benefit from the future, rather than be steamrolled by it.

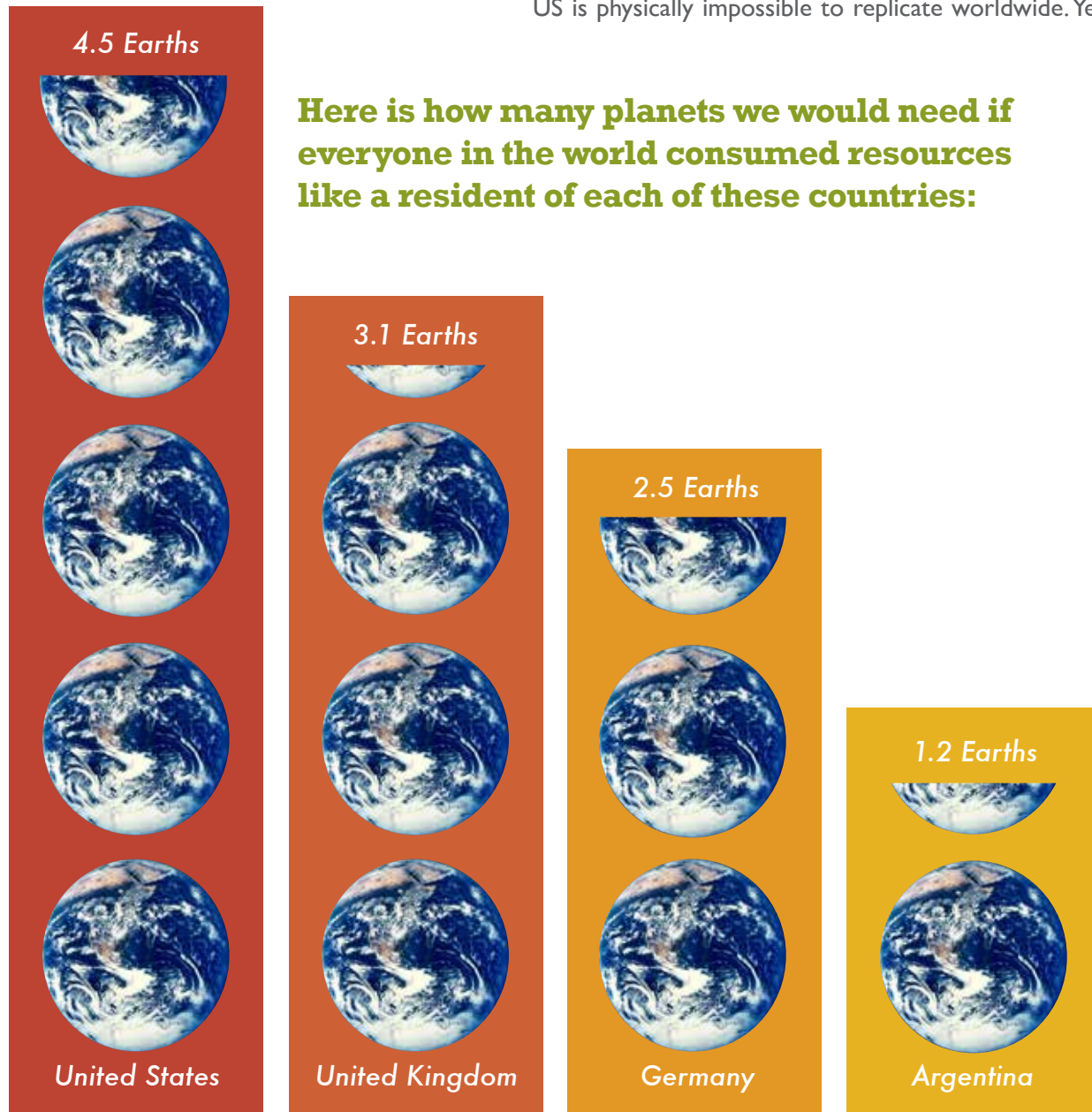
payback. Sustainability doesn't simply save the planet; it also ensures a long-term revenue stream for pioneer investors—those with the foresight to plan and make changes now for resource constraints in the future.

Human ingenuity has transformed the way we use nature. We must now put that talent toward another transformation: creating a society that provides prosperity and opportunity within the bounds of what the planet can provide.

While the data may be shocking, there are key opportunities to reverse current trends, among them creating

.....

*Mathis Wackernagel, PhD, is a founder and president of Global Footprint Network ([www.footprintnetwork.org](http://www.footprintnetwork.org)), an international think-tank supporting the creation of a sustainable economy by advancing the use of the Ecological Footprint. Wackernagel has worked on sustainability issues and lectured at more than 100 universities on all continents except Antarctica. Wackernagel, along with Professor William Rees, created the "Ecological Footprint" concept, now a widely used sustainability measure. Wackernagel's awards include an honorary doctorate from the University of Berne, a 2007 Skoll Award for Social Entrepreneurship, a 2006 WWF Award for Conservation Merit and the 2005 Herman Daly Award of the US Society for Ecological Economics.*



**Here is how many planets we would need if everyone in the world consumed resources like a resident of each of these countries:**



### What About **YOUR** Footprint?

Calculate your family's Footprint and make a commitment to **cut it in half**. Visit Global Footprint Network's website [www.footprintnetwork.org](http://www.footprintnetwork.org) to calculate now.

For steps on how you can **make the changes that matter**, see Center for a New American Dream's essay, *Key Steps For Living Lighter*. (page 58)