



# The Ecological Footprint

## One Goal, One Planet

Make the change; protect Earth...you too are accountable.

text by Robyn Linn Weinstein

Since the 1980s, humanity's demand on nature has exceeded Earth's ability to regenerate its natural resources, depleting the biosphere's natural capital, damaging ecosystems, and creating a build-up of waste, risking the loss of biodiversity altogether.

Humanity's demand on nature—the Ecological Footprint—is now 25 percent greater than the planet's ability to meet this demand, and it increases at the same rate each year. The footprint is an ecological accounting tool that measures how much land and water area a human population requires to produce the resources it consumes and to absorb its wastes under prevailing technology. The footprint compares our use of productive area on land, sea, or landfill, which is measured using a common metric system like currency. Measurements are taken in local hectares or global hectares; one hectare represents two and a half acres of productive space. For example, if one productive land area in California yields 1000 lettuce heads within 20 hectares, it is compared directly to an area in Massachusetts, which yields 1000 lettuce heads within 15 hectares—the comparison is made between the equal amount of productive space.

"It now takes Earth one year and three months to regenerate what we use in a year. This global ecological deficit or 'overshoot' is depleting the natural capital on which both human life and biodiversity depend," says Dr. Mathis Wackernagel, Co-Founder and Executive Director of the Global Footprint Network.

There are many factors contributing to the overshoot, including overpopulation; excessive emissions of CO<sub>2</sub> from fossil fuels; and automobile, airline, and transportation overloads that contribute to Earth's distress. "Overshoot or excess consumption means that the rich are living off the natural resources of the poor who suffer most when ecosystems are degraded or collapse. In today's high-speed era of expanding world markets, this notion is lost in a dizzying glut of numbers about trade deficits and gross national product. Acting in the spirit of justice is not only about redistribution, but also about restraint," explains Sandra Menteith, Office Manager of Oz GREEN in Australia. The truth is: unless we all act now, there will be no planet left for any life to survive.

According to the *Footprint of Nations 2005 Report*, the average global footprint is 22 global hectares (gha), which is 2.2 gha or 57 acres per person. Nevertheless, Earth's biological capacity is only 16 gha, which is 1.8 gha per person or 41 acres. The global ecological balance becomes -6 gha, with a per person ecological balance of -0.3 gha, resulting in an overshoot of 6 global hectares, or 13 acres. At present rates of consumption, we would need 1.39 earths to insure that future generations are at least as well off as we are now.

"Humanity is living off its ecological credit card and can only do this by liquidating the planet's ecological assets," says Wackernagel.

The footprint is like a checking account. If we start using more than what is available, the 'account' goes negative. That's just how it works; each resource we use is deducted from Earth's balance. Every person, state, and country is evaluated from a local level, then results are factored globally. Every product that is made and purchased, each gallon of gas that is burned, each tree that is cut, every time you turn on a light, it all adds up.

"Some people only look at Wall Street and the economy in terms of finances, but what about stabilizing our natural capital? What about the Earth's issues? It becomes a self-interest cause. Individuals must make a moral dedication to change their own lives. The only way Earth can eventually stabilize is if people start taking the initiative to make choices for themselves," says Wackernagel.

The Global Footprint Network evolved as a response to the overwhelming demand of effectively measuring human beings' impact on Earth's resources, thanks to Wackernagel's persistence and realization of natural truth. His long interest in energy constraints and carrying capacity issues has sparked global awareness through one common goal—saving our planet. He co-invented the Ecological Footprint tool with his colleague, William Rees, in 1990 as a result of Wackernagel's Ph.D. dissertation.

"We [human beings] think the planet is much bigger than it really is. Food seems unlimited. In high income countries like the United States, people are shielded. The U.S. is taking its own resources times two—with the ability to use resources in other places. The ecological reality is that there is limited stock. We're just not seeing it firsthand," says Wackernagel.

Only four years ago, the global Ecological Footprint was 14 gha with 2.2 gha per person. Now, the planet has 11.2 gha or 27.7 billion acres of productive land and sea surfaces available for regeneration, with 1.8 gha per person. The planet is vanishing under our own feet, and we will be held accountable for its collapse.

Countries like Darfur and Haiti; however, are dealing with the limited resources. These countries have very little capitalization; unlike the U.S., they are not able to import items that are unavailable. In other words, the U.S. is importing items from other countries and leaving them dry. When will this all end? When Earth is ripped of all its resources? Or will individuals begin to realize the damage they're causing, not only to people in other countries, but to the entire planet and all of civilization.

It was once considered that people moved too fast and the planet too slow, but now we are realizing that it's just the opposite. The depletion of our natural resources is constant, and the reality is that positive changes

are happening much too slowly. Because government agencies, universities, and public organizations move too slow with these changes, it could be a very long time before we see any major difference in Earth's ecosystem and climate that reverse the effects of global warming.

Environmental organizations are not the only institutions educating the public of such demands for sustainability. We are aware that some wealthy individuals and celebrities, like Leonardo DiCaprio and Al Gore, have taken major initiatives to create global awareness.

Former Vice President Al Gore, in his documentary *An Inconvenient Truth*, questions the human moral standards and the government's choice of supporting the crisis of global warming: 'Why must we choose between the economy or the environment?' As Wackernagel explained, the self-interest cause must outweigh the materialistic desires to have more. The key is to have efficiency, sustainability, and necessity—not excess.

DiCaprio's eco-site, [www.leonardodicaprio.org](http://www.leonardodicaprio.org), offers two short online movies, *Global Warning* and *Water Planet*, both of which share valuable facts and data. In the film *Global Warning*, DiCaprio says that oil is essentially ancient sunlight that plants have captured over the billions of years the Earth has been in existence; the burning of fossil fuels (oil, coal, and gas) has created over 700 billion tons of CO<sub>2</sub> in the ecosystem. By burning this fuel, we're actually causing the temperature of Earth to increase, which is known as global warming.

"Climate change is the main driver; fresh water, fish collapse, it's all happening now. We all must engage and turn it around. We must all give up one substance and reduce our metabolism, metaphorically speaking. We do everything in excess; it's time to acknowledge that we cannot expand on a limited planet," says Wackernagel.

**Because the federal government refuses to take the initiative, each state must manage on their own.** Currently, the state of New York is following California's footsteps. They are adding 800 megawatts of renewable energy to their grids—enough renewable energy to power 400,000 homes. It's now up to each state to mandate renewable energy policies, and it all starts with one person. Are you in the position to lead your state towards renewable living standards?

In 2003, the average CO<sub>2</sub> emitted from fossil fuels in the world per person was 1.06 billion global hectares. The United Arab Emirates (with a population of only 3 million people) emitted an average of 9.06 billion global hectares per person of CO<sub>2</sub> from fossil fuels—the highest in the world. The second highest was Kuwait (with 2.5 million people) emitting 6.38 billion gha per person, and third

highest was the United States (with a population of 294 million people) emitting 5.66 billion gha per person. The Earth's total capacity to regenerate CO<sub>2</sub> in 2003 was 6.17 billion global hectares.

## CO<sub>2</sub>

The burning of fossil fuels, mostly for our transportation and deforestation, are the main contributors to greenhouse gases. CO<sub>2</sub> remains in the atmosphere between 50 and 200 years, which eventually causes the temperature of the atmosphere to rise gradually, but steadily. As Earth's temperature gets hotter, the more carbon dioxide is trapped into the atmosphere from the sun.

According to NASA Goddard Space Studies: This heating effect of air on the surface, called the atmospheric greenhouse effect, is due mainly to water vapor in the air, but also is enhanced by carbon dioxide, methane, and other infrared-absorbing trace gases. It is the increase in these gases with time (led by carbon dioxide release from burning oil, gas, and coal) that leads to the potential for future climate change.

The sun transmits infrared radiation directly towards Earth's atmosphere, heating up its surface. The ice caps, now found only at the polar regions of the planet, deflect this infrared radiation. Also, infrared radiation is deflected away from Earth by its outer atmosphere. When there were more ice caps on Earth, the average temperature (throughout the planet) was much lower. Now, because there are fewer ice caps on Earth, the temperature constantly increases. As the temperature of the atmosphere continues to increase at one degree each year, it reveals a direct relationship between higher levels of CO<sub>2</sub> emissions and higher temperatures in the atmosphere.

"In only the last 200 years, humanity has been directly responsible for the disappearance of over half of our tropical forests. In current temporal terms, we are losing the equivalent of 3800 acres of tropical forest and four unique species every single hour," according to the Green Culture's website.

Countries like Europe have taken part in a global effort to limit the greenhouse gas emissions from 2008 to 2012. **The protocol, known as Kyoto, was thrown out by the current White House administration after they claimed there was not enough data to make a direct correlation between human impact and greenhouse gases.** The government stated that Kyoto was bad for the economy.

"The Bush administration recently signed an agreement to loosen the regulations on the mountaintop

removal of coal—moving in exactly the opposite direction of where we need to go," says Dr. John Talberth, Director of Sustainable Indicators for Redefining Progress.

President Bush's new regulation states that under the new law, only one permit will be needed to strip Appalachian mountaintops of coal, rather than having to obtain several permits. Previously, coal companies were not allowed to disturb land within 100 feet of a stream, but now harmful blasts will destroy even more streams, mountaintops and forests, and harm species much easier than before.

Scientists and most of humanity disagree with the government's decisions to turn their heads on environmental issues. Scientists support the evidence that the burning of fossil fuels is contributing directly to the atmosphere's increase in temperature, yet the current U.S. government would rather support conglomerates like Exxon Mobil, so the top executives can receive large compensations from lobbyists. While neglecting the planet and its resources, the importing of foreign oil and coal has made billions of dollars for U.S. officials. But what happens when foreign oil runs out, and we've missed the opportunity to capitalize on natural fuel? Is that the way to take care of our planet?

DiCaprio explained to our Entertainment Director, Maria Salas, "I think all you have to do is sort of watch the news and say to yourself 'I am not a scientist, I am not an expert in the matter. But my God, things seem to be changing much faster and in a much different way than they ever had before.'"

But most experts believe it's going to take much more than a hopeful mindset and a few alterations in a person's daily lifestyle. It's going to take action.

"It's about creating awareness as individuals and evaluating our carbon footprint and consumption habits. Also, restructuring the national exchanges to a local level, re-localizing our economy by using renewable platforms, and purchasing energy-efficient products. There must be policy shifts to make these changes happen on a global level," says Talberth.

We must acknowledge sustainable lifestyle developments and become aware of how much we are consuming, where it comes from, and where its residual wastes will go. It begins in the home and spreads from there. You must lead by example to show others—understanding that what we take, use, and abuse will have a lasting impact on the planet.

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**Cars and CO2**

As human beings have evolved, so has the demand for transportation. The actual driving of cars is the highest source of CO2 emissions; pollutants are also emitted during the car-making process. And, as Man continues to pump oil from tropical rainforests, the more devastation occurs to Earth's ecosystems.

If you have the mentality of 'whatever I do will not make a difference,' think again. "You may think your footprint is not a problem, and it may not impact you at this exact moment, but we have a collective problem," says Wackernagel. **"We're not winning on arguments. We must hold hands with each other and join the efforts together. Collectively, the problem is larger than people realize."**

Every person who turns on the engine, gasses up their car, and uses their air conditioning is contributing to global warming. For example, when one gallon of gasoline is combined with oxygen, the carbon within the gasoline produces 20 pounds of CO2 that leads to greenhouse gases resulting in global warming. If you aren't particularly enthusiastic about hybrid vehicles, just choose a car that is smaller and lighter; less parts from the manufacturing process and less overall consumption of gasoline. We all have to do our part to help reduce the CO2 emissions on Earth.

"We must invest in things that sustain in the long run," says Wackernagel. "Not just purchasing a large car or home because you can. But if you have children, think of what

they can inherit. You won't want to make large investments on items that are not sustainable for the future."

The solution—retrace your steps, or footprints. Find locally grown, organic foods; use energy-efficient appliances; turn off all electricity when not in use—especially air conditioners; walk, bike, carpool, or purchase a hybrid vehicle; don't purchase more food than what you need; use solar panels on your roof; buy solar charges for cell phones and computers; inflate your tires once a month; and don't fly unless you must. Look for products that have less packaging resulting in less waste, and always recycle. Try visiting local co-op stores and going to a weekly farmers market. Start thinking locally to make a global impact.

There is an incredible amount of work to be done. By doing your own individual part in reducing your footprint and bringing awareness to others, you can make a difference and change the future of the planet. The true question remains, as Gore stated, "What obstacles are on people's minds to understanding this?" Once you understand the concept of sustainability, you need to start making changes to your daily lifestyle. Humanity created global warming, and humanity can prevent the entire collapse of our planet. At this time, it's not a matter of what if; it's a matter of when.

In order to determine your individual footprint, visit [www.myfootprint.org](http://www.myfootprint.org) and [www.kidsfootprint.org](http://www.kidsfootprint.org) for children. Also, visit [www.climatecrisis.net](http://www.climatecrisis.net) for more information on *An Inconvenient Truth*. **■**

GREEN PRODUCTS:	SIMPLE TIPS TO HELP FIGHT GLOBAL WARMING:
<ul style="list-style-type: none"> <li>■ <b>Seventh Generation</b> <a href="http://www.seventhgeneration.com">www.seventhgeneration.com</a> (green products for the home)</li> </ul>	<ul style="list-style-type: none"> <li>■ Reuse plastic bags from the grocery store.</li> </ul>
<ul style="list-style-type: none"> <li>■ <b>green home</b> <a href="http://www.greenhome.com">www.greenhome.com</a> (green products for the home)</li> </ul>	<ul style="list-style-type: none"> <li>■ Reuse your cups from Starbucks, and use mugs at home or work.</li> </ul>
<ul style="list-style-type: none"> <li>■ <b>Ailin</b> <a href="http://www.ailin.com">www.ailin.com</a> (ECO/organic clothing for women)</li> </ul>	<ul style="list-style-type: none"> <li>■ Purchase products that use recyclable plastic and paper.</li> </ul>
<ul style="list-style-type: none"> <li>■ <b>evo</b> <a href="http://www.evo.com">www.evo.com</a> (they plant a tree when you join online)</li> </ul>	<ul style="list-style-type: none"> <li>■ Turn off the lights when not in use and unplug all appliances when not in use.</li> </ul>
<ul style="list-style-type: none"> <li>■ <b>for two</b> <a href="http://www.smartusa.com">www.smartusa.com</a> (smart cars)</li> </ul>	<ul style="list-style-type: none"> <li>■ Use the CFL (compact fluorescent) light bulb; it uses 66 percent less energy than normal light bulbs and can last up to 15 times longer.</li> </ul>
<ul style="list-style-type: none"> <li>■ <b>Gaiam</b> <a href="http://www.gaiam.com">www.gaiam.com</a> (sustainable living)</li> </ul>	<ul style="list-style-type: none"> <li>■ Buy Energy Star labeled products and front-load washers/dryers.</li> </ul>
<ul style="list-style-type: none"> <li>■ <b>Green Culture</b> <a href="http://www.greenculture.com">www.greenculture.com</a> (products for an "enlightened planet")</li> </ul>	<ul style="list-style-type: none"> <li>■ Run your dishwasher only if it's full.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Plant a tree.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Use recycled toilet paper and paper towels.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Think about where things come from, how they are made, and where they end up when thrown away.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Buy sustainable products like Seventh Generation's biodegradable toilet paper, you could save thousands of trees each day.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Calculate your own carbon footprint at <a href="http://www.stopglobalwarming.org">www.stopglobalwarming.org</a> or <a href="http://www.climatecrisis.net">www.climatecrisis.net</a>. Your estimated annual carbon dioxide footprint is the total carbon dioxide produced by your daily lifestyle. You can offset your personal or business carbon emissions by supporting organizations that build new wind farms, plant trees, and develop solar energy.</li> </ul>